

Industrial Identification Systems

Catalog ID 10 • 2012
















SIMATIC Ident

Answers for industry.

SIEMENS

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SIMATIC Ident Industrial Identification Systems

Catalog ID 10 · 2012



The products and systems described in this catalog are manufactured/distributed under application of a certified quality management system in accordance with DIN EN ISO 9001. The certificate is recognized by all IQNet countries.

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Refer to the Industry Mall for current updates of this catalog:

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The products contained in this catalog can also be found in the Interactive Catalog CA 01.

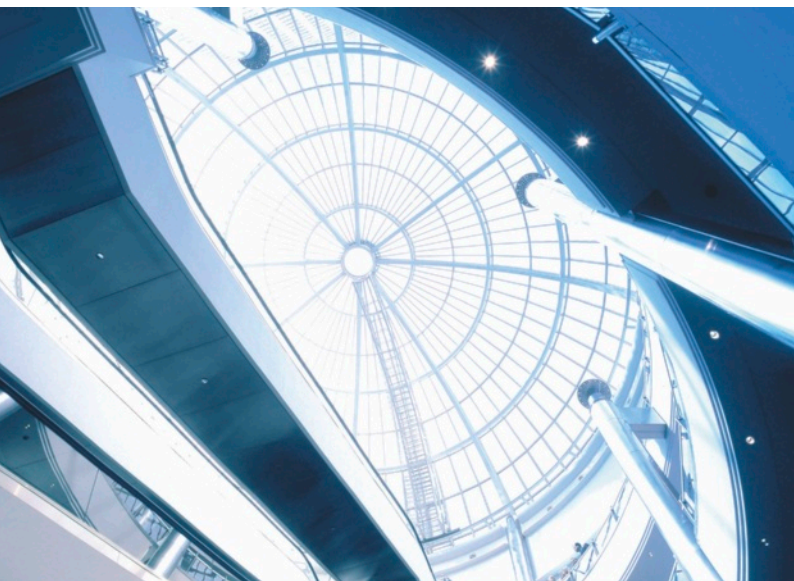
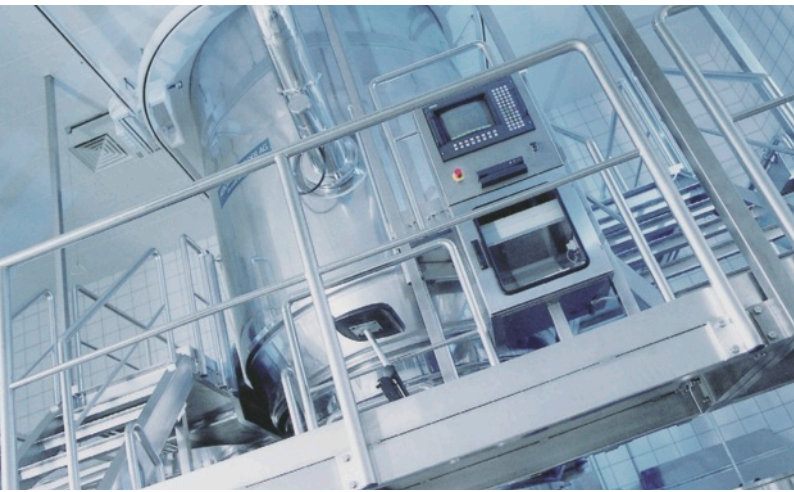
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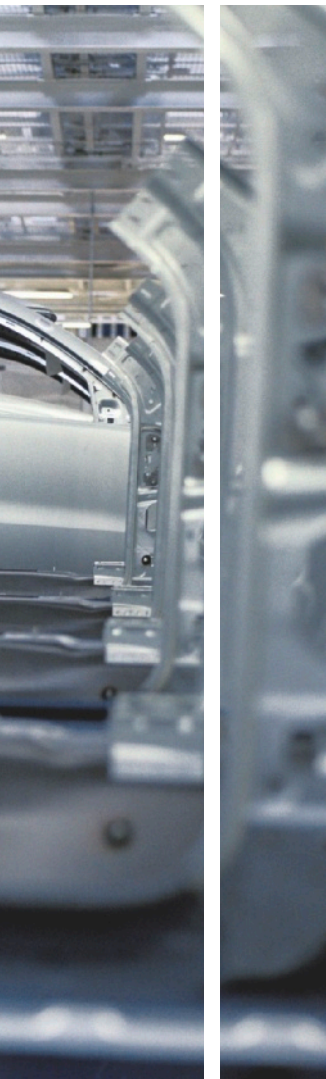
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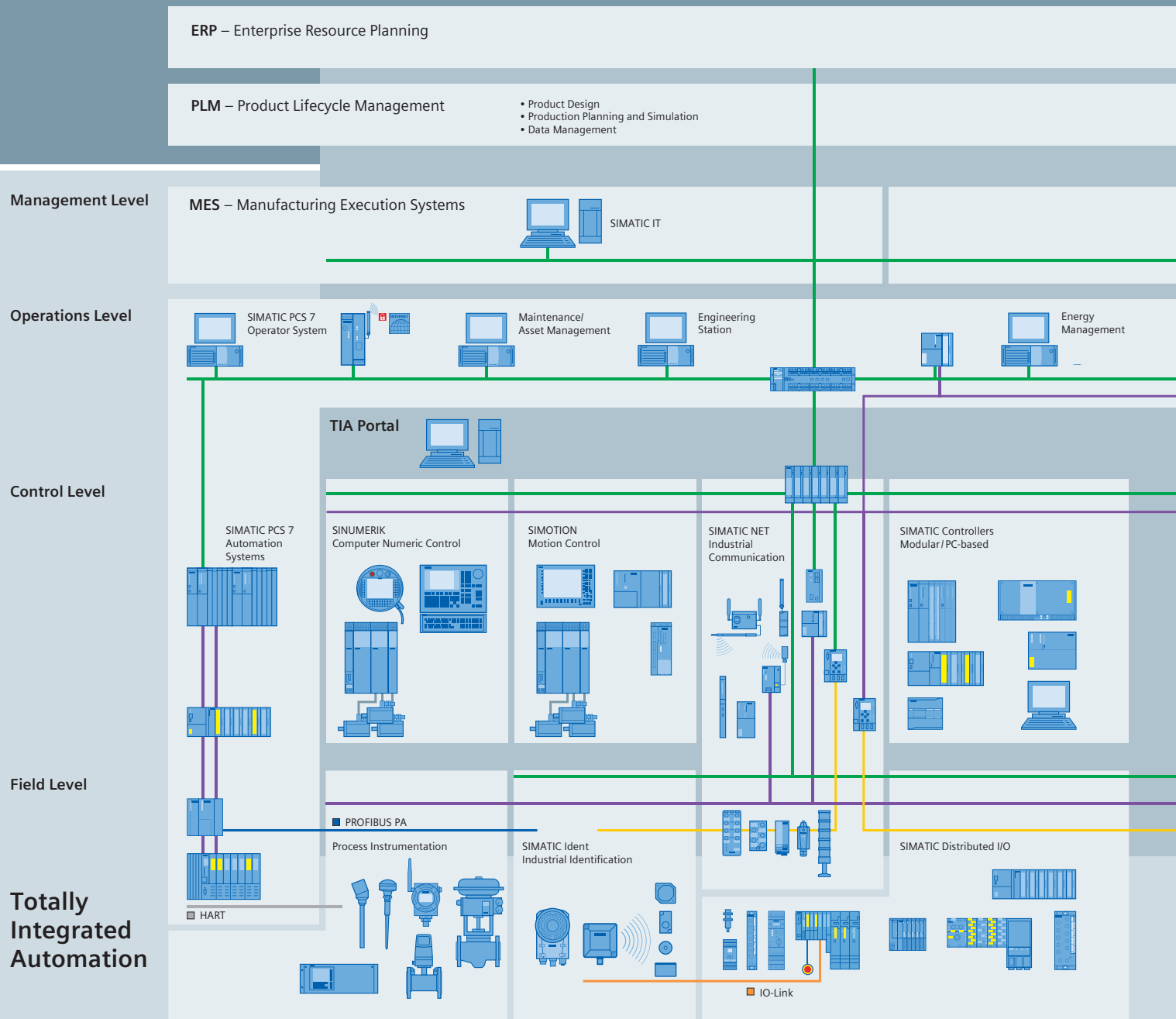
Answers for industry.

Siemens Industry answers the challenges in the manufacturing and the process industry as well as in the building automation business. Our drive and automation solutions based on Totally Integrated Automation (TIA) and Totally Integrated Power (TIP) are employed in all kinds of industry. In the manufacturing and the process industry. In industrial as well as in functional buildings

Siemens offers automation, drive, and low-voltage switching technology as well as industrial software from standard products up to entire industry solutions. The industry software enables our industry customers to optimize the entire value chain – from product design and development through manufacture and sales up to after-sales service. Our electrical and mechanical components offer integrated technologies for the entire drive train – from couplings to gear units, from motors to control and drive solutions for all engineering industries. Our technology platform TIP offers robust solutions for power distribution.

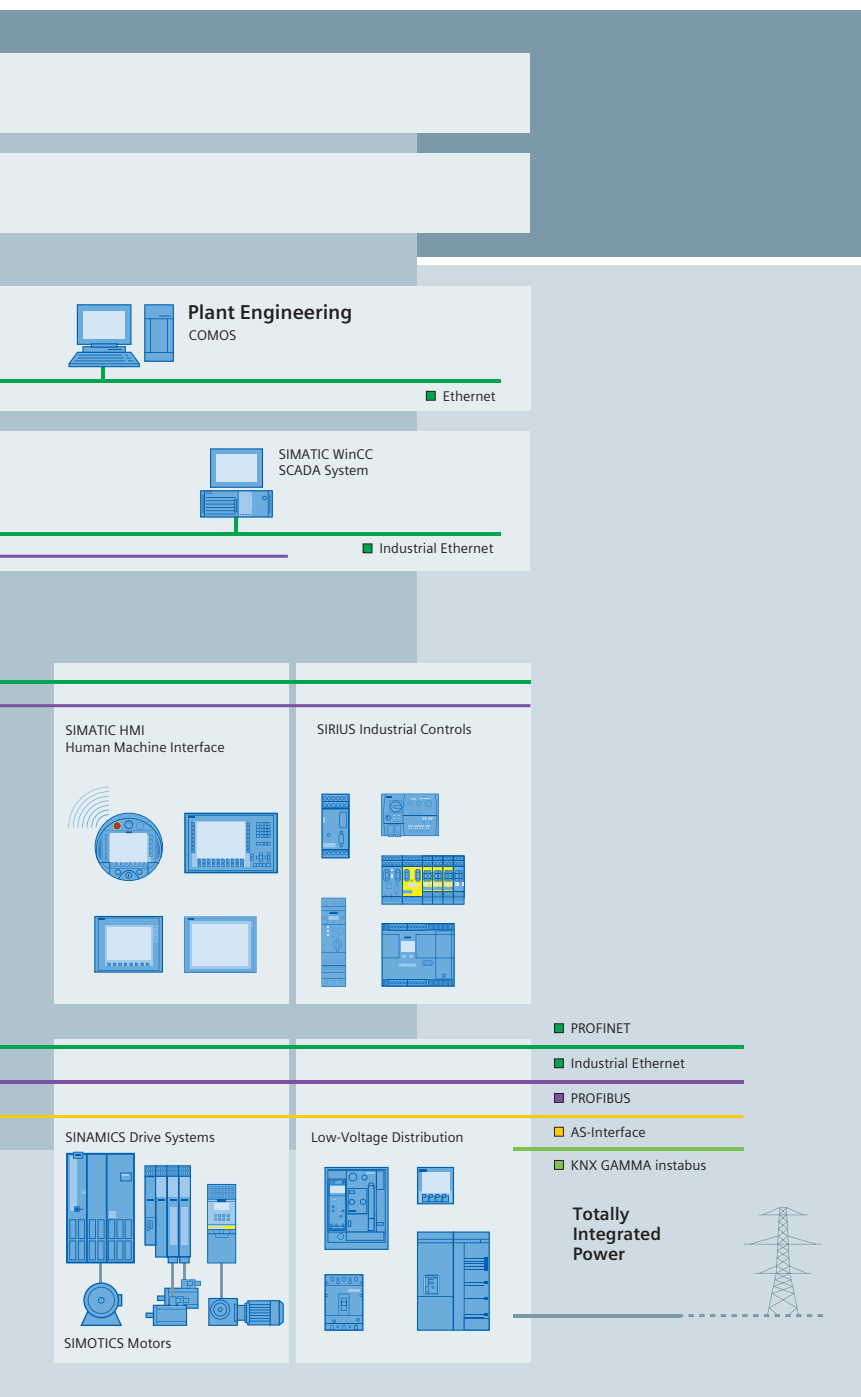
The high quality of our products sets industry-wide benchmarks. High environmental aims are part of our eco-management, and we implement these aims consistently. Right from product design, possible effects on the environment are examined. Hence many of our products and systems are RoHS compliant (Restriction of Hazardous Substances). As a matter of course, our production sites are certified according to DIN EN ISO 14001, but to us, environmental protection also means most efficient utilization of valuable resources. The best example are our energy-efficient drives with energy savings up to 60 %.

Check out the opportunities our automation and drive solutions provide. And discover how you can sustainably enhance your competitive edge with us.



Setting standards in productivity and competitiveness.

Totally Integrated Automation.



TIA is characterized by its unique continuity.

It provides maximum transparency at all levels with reduced interfacing requirements – covering the field level, production control level, up to the corporate management level. With TIA you also profit throughout the complete life cycle of your plant – starting with the initial planning steps through operation up to modernization, where we offer a high measure of investment security resulting from continuity in the further development of our products and from reducing the number of interfaces to a minimum.

The unique continuity is already a defined characteristic at the development stage of our products and systems.

The result: maximum interoperability – covering the controller, HMI, drives, up to the process control system. This reduces the complexity of the automation solution in your plant. You will experience this, for example, in the engineering phase of the automation solution in the form of reduced time requirements and cost, or during operation using the continuous diagnostics facilities of Totally Integrated Automation for increasing the availability of your plant

Thanks to Totally Integrated Automation, Siemens provides an integrated basis for the implementation of customized automation solutions – in all industries from inbound to outbound.

SIMATIC Ident – for more economic production and logistics processes

Fiercer competition, stricter standards and legal regulations, shorter product life cycles, more individual customer requirements and increasingly globalized value-adding chains: to stay ahead in dynamic markets, companies must increase the efficiency of their value-adding chains - in production control, asset management, tracking & tracing as well as in supply chain management. Through the use of innovative identification technology, companies gain an important advantage.

We offer SIMATIC Ident, a unique portfolio for industrial identification which can provide the perfect solution for your requirements while keeping you flexible for the future.

The right identification technology depends on factors such as sensing distance, lighting conditions, single or repeat markings, as well as environmental effects such as temperature and pollution.

Whether RFID, barcode, DMC or OCR: every technology has its specific strengths. Character recognition is used for cases in which codes must also be readable by persons, such as use-by dates.

2D codes and RFID impress customers with their high level of data security and have proved reliable even under harsh industrial conditions.

The decisive criterion for an identification system:
Your individual application.



Identification, mobile data storage: RFID

RFID is the ideal solution when there is no line of sight between the reader and the marking, large volumes of data or wide ranges are required, or the stored information has to be changed. Here the product or object is fitted with a memory chip that can be programmed and read using radio techniques. With low-cost Smart Labels available for logistics, rugged data memories for assembly lines as well as transponders with a wide range, RFID is perfectly suited to a variety of different applications.

Our intelligent SIMATIC RF system family offers you transparency without gaps. Data is therefore available at any time along the complete production and distribution chain - for perfect control and optimization of material flow and logistics.



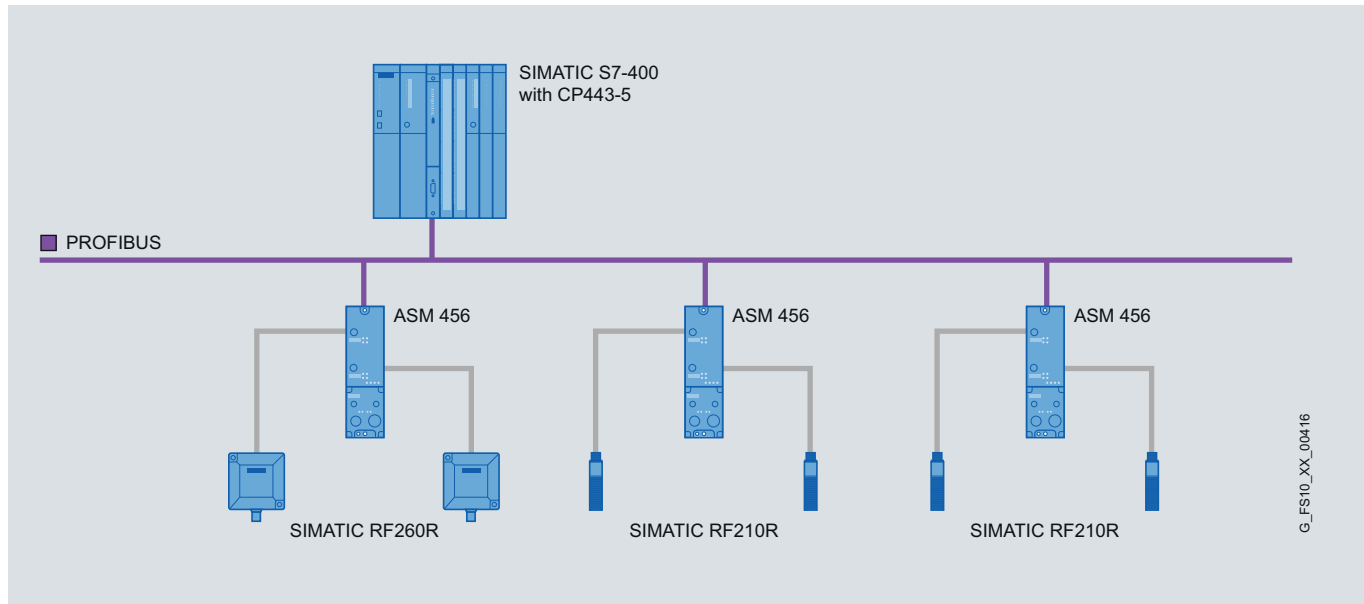
Verification, identification: Code reading systems

When higher performance is required, 2D codes are recommended as an alternative to barcodes, because they offer greater memory capacity and a better read rate. They can be applied inexpensively, e.g. together with shipping labels. They also enable products to be marked directly (Direct Part Marking, DPM) using lasers, printing or dot-peening, which is extremely resistant to external influences. 2D codes can be read with complete reliability even from a small viewing angle or under difficult lighting conditions.

With SIMATIC code reading systems, we offer you the ideal solution for reading and verifying 1D and 2D codes as well as for text recognition (OCR) - for the reliable tracing of production batches beyond the manufacturing plant.

Production control

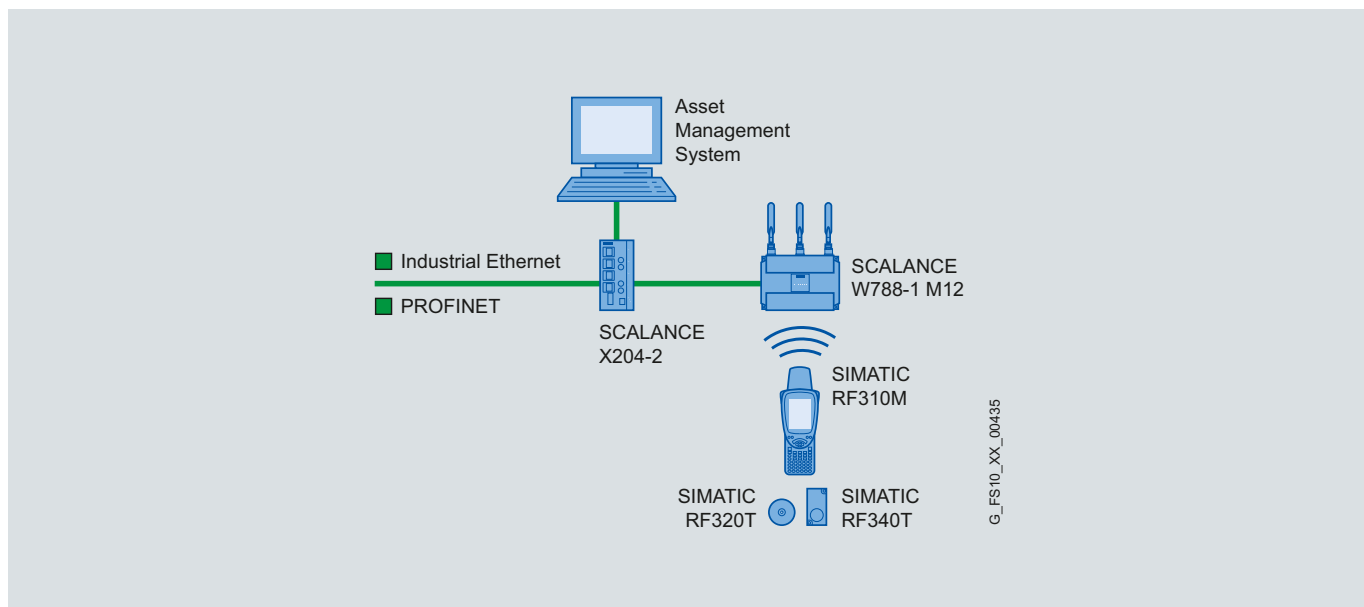
All over the world, consumers want more and more individual products. Versatile production and material flow control with industrial identification handles the requirements for growing product variety throughout the manufacturing process. This is made possible by reliable, efficient and cost-effective make-to-order production.



Example configuration of a small assembly line with SIMATIC RF200

Asset management

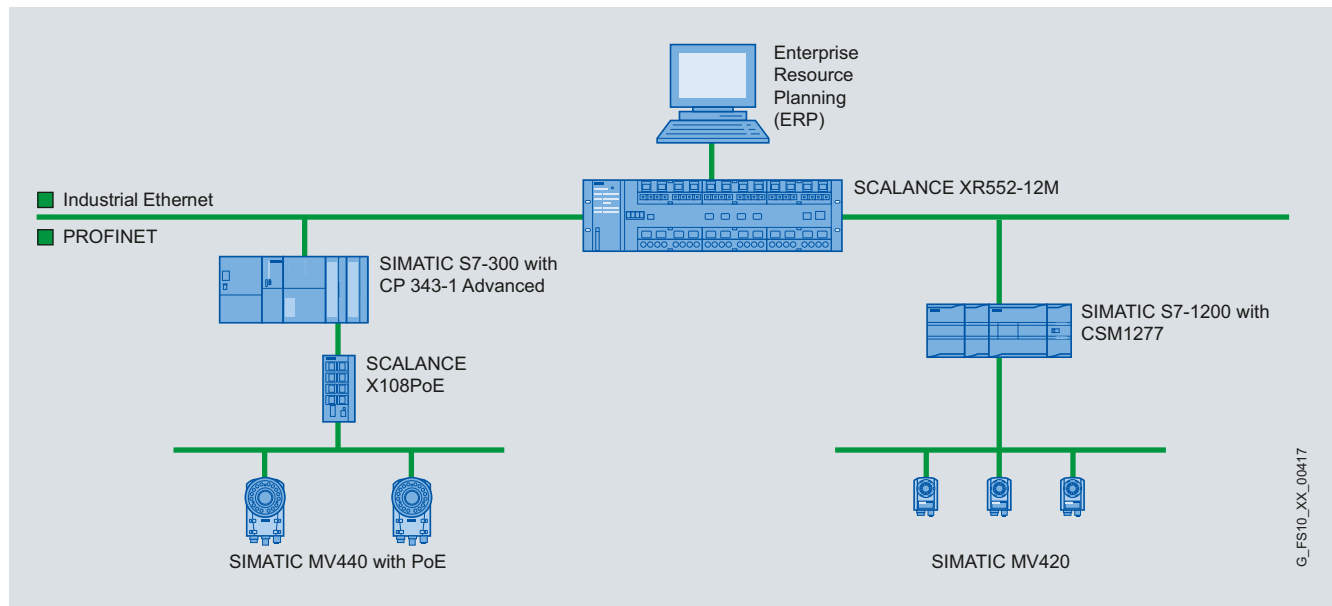
Assets such as tools, plant parts, or containers are essential for production and logistics. Industrial identification ensures they are used efficiently. The inventory can be acquired in real time and the status determined precisely. This means that the use of the assets can be monitored perfectly at any time and optimized specifically for stock quantity, capacity and maintenance.



Example configuration of asset management with the SIMATIC RF310M handheld reader

Tracking & tracing

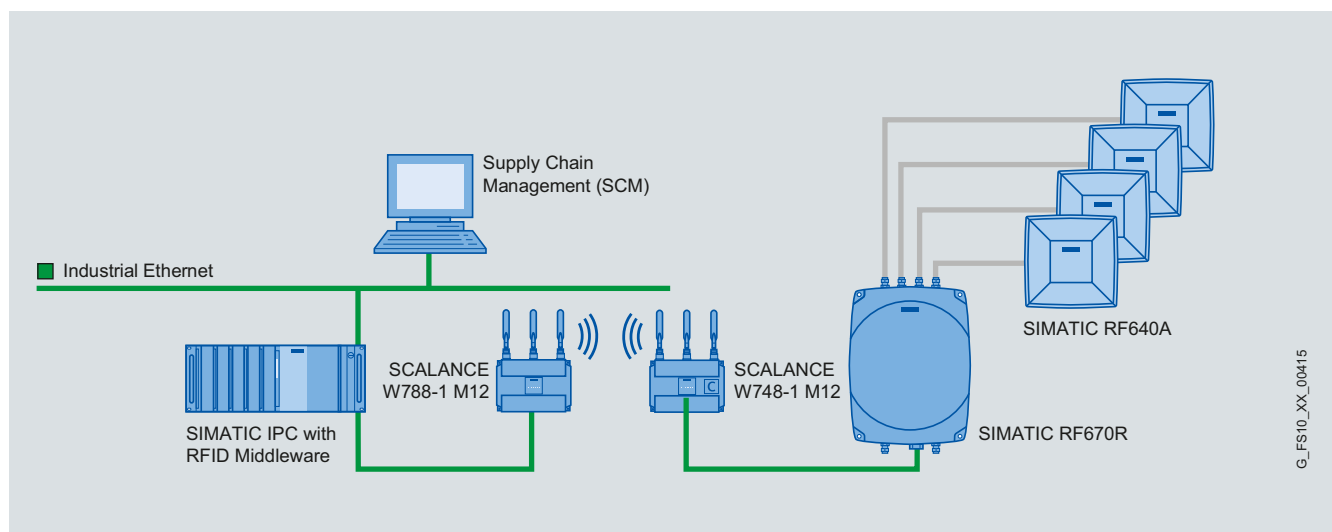
With industrial identification, each product leaves a digital trail that can be seamlessly traced and documented back to the origin of its individual components. This permits full transparency of the entire product life cycle and therefore the best possible quality.



Example configuration of tracking & tracing with code reading systems

Supply chain management

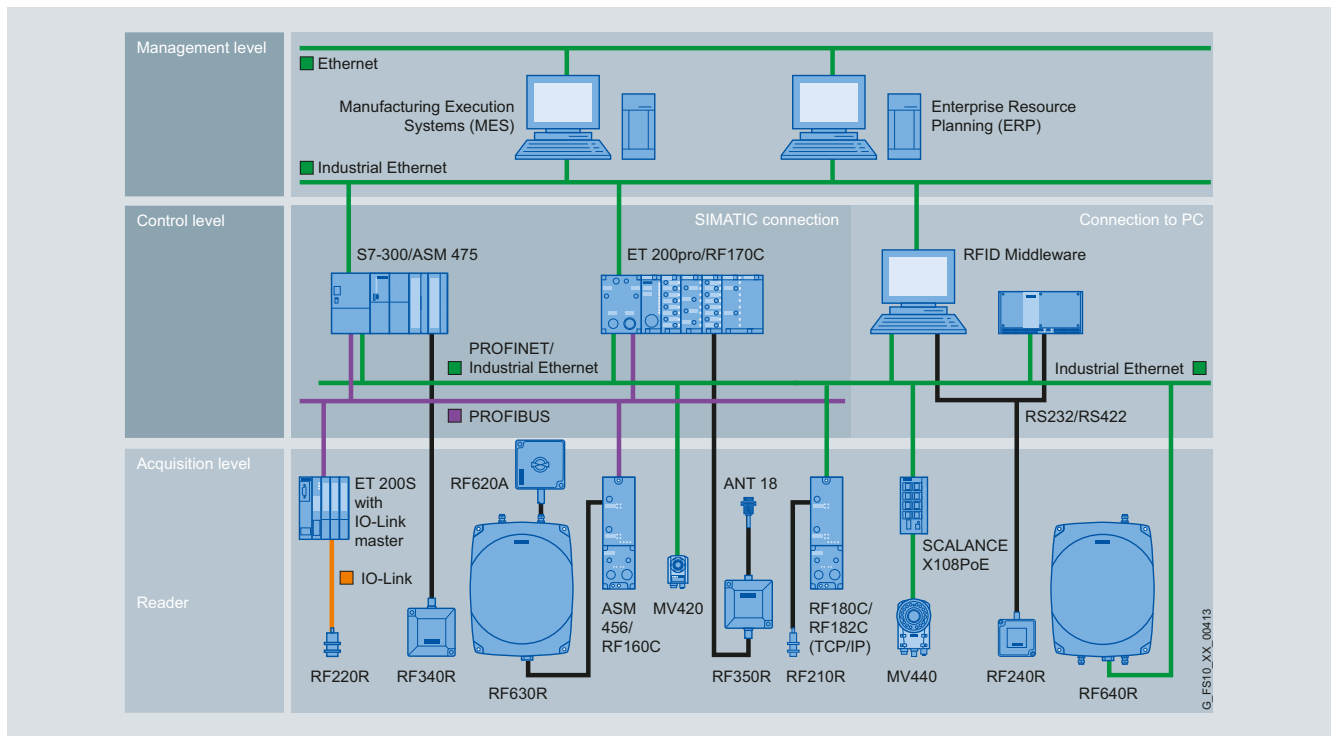
Competitive production on an industrial scale requires global supply chains for individual parts and components. Industrial identification makes these supply chains transparent and predictable, and facilitate optimum planning. This avoids delivery bottlenecks and downtimes, optimizes warehouse stocks and improves profit margins.



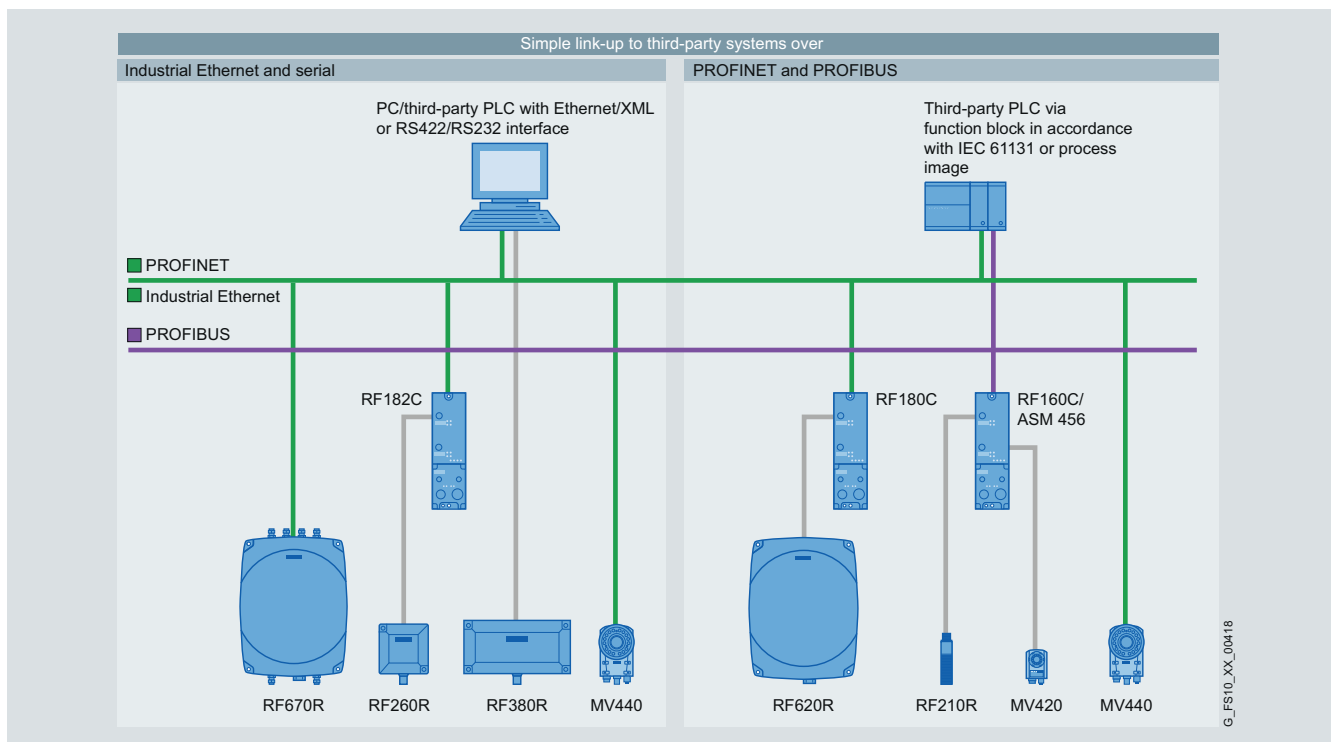
Example configuration of a logistics portal with SIMATIC RF600 and IWLAN

Simple integration into the automation level

With our SIMATIC Ident portfolio we can offer you the right solution: Using communication modules and convenient function blocks, it is easy to connect optical and RFID systems to the PLC (such as SIMATIC) or the IT landscape. This ensures that you have a system-wide, uniform software architecture and saves considerable outlay and costs in engineering, commissioning and maintenance.



Integration in Totally Integrated Automation



Connection to third-party systems

RFID systems for the HF frequency range



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2/61	MDS D261
2/63	MDS D100
2/65	MDS D200
2/67	MDS D421
2/68	MDS D422
2/69	MDS D423
2/70	MDS D124
2/72	MDS D324
2/74	MDS D424
2/76	MDS D425
2/78	MDS D126
2/80	MDS D426
2/82	MDS D428
2/84	MDS D139
2/86	MDS D339
2/88	MDS D160
2/89	MDS D460
2/12	<u>SIMATIC RF200 readers</u>
2/13	SIMATIC RF210R
2/15	SIMATIC RF220R
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2/19	SIMATIC RF260R
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2/25	SIMATIC RF320T
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2/56 MOBY D

2/58	<u>MOBY D transponders</u>
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2/61	MDS D261
2/63	MDS D100
2/65	MDS D200
2/70	MDS D124
2/72	MDS D324
2/74	MDS D424
2/78	MDS D126
2/80	MDS D426
2/82	MDS D428
2/84	MDS D139
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2/90	<u>MOBY D readers</u>
2/91	SLG D10 / SLG D10S basic units
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2/100	<u>MOBY D antennas</u>
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2/102	ANT D5
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2/104	ANT D10
2/105	<u>MOBY D configuring instructions</u>

RFID systems

Introduction

2

Overview



RFID systems – for optimization of material flow and logistics

As the world-leading supplier of RFID systems, Siemens offers a unique scalable portfolio for flexible and cost-effective solutions.

RFID systems are offered for the most diverse requirements on performance, range, frequency range as well as HF and UHF.

Easy integration of the RFID systems via communication modules and pre-configured software blocks in the world of Totally Integrated Automation significantly reduces the outlay and costs for commissioning, diagnostics and maintenance.

Thanks to many years of experience in the area of RFID, Siemens is a competent partner for implementation of the most diverse solutions in all sectors, but especially in the areas of production and logistics.

Meaningful data from the outset

The RFID systems ensure that meaningful data accompanies a product or object from the very beginning. The transponders are attached to the product, product carrier, object, or its transport or packing unit, and are detected, read, and written contact-free. This means that all the application-specific data is located on the transponder. This is true whether you are dealing with vehicle body parts in the automotive industry or order picking boxes. Up to 64 KB of data can be stored and individually read and supplemented when required at the various workstations or manufacturing stations. This all means that the flow of material and data is synchronized optimally.

Contactless data transfer and a high degree of industrial compatibility

Powerful readers (write/read devices) in various rugged designs ensure fast and reliable data transfer between the transponders and the higher-level systems (e.g. PLC, PC).

The data and power are transmitted inductively by an electromagnetic alternating field or by radio waves. This principle of contactless data transfer works reliably in the presence of contamination or through numerous non-metallic materials.

Perfectly matched components

The RFID systems consist of perfectly matched individual components:

- Transponder
- Readers
- Antennas
- Communication modules for connection to the automation system (e.g. PROFIBUS, PROFINET)
- Software for system integration

For a wide range of applications in all sectors

- Production control
- Asset management
- Tracking & tracing
- Supply chain

Wide range of transponders

A wide range of different transponders is available using a variety of storage technologies and geometric designs. Their strength is not only their high level of data security but also the excellent high degree of protection against ambient conditions such as contamination, temperature fluctuations, washing water or shock load.

Benefits



- Flexible and economic solutions thanks to the complete and scalable portfolio for the field of industrial identification.
- Simplified engineering, commissioning, diagnostics and maintenance through seamless integration into Totally Integrated Automation:
 - Integrated bus connection to an automation system, such as SIMATIC, SIMOTION or SINUMERIK via communication modules with PROFIBUS and PROFINET.
 - Simple S7 software integration via ready-to-use function blocks.
 - Extensive status and diagnostic functions.
- High degree of investment protection thanks to:
 - Open standards (e.g. ISO 15693, ISO 18000-6C).
 - Software compatibility between the RFID and code reading systems of Siemens.
 - Standardized communication interfaces.
- Openness through connection possibilities to different bus systems from different manufacturers and PC environments via communication modules.
- Worldwide Service and Support.




Integration



A wide range of communication modules, function blocks, as well as high-performance drivers and function libraries permits easy and quick integration into the application.

And best of all: SIMATIC RF is part of Totally Integrated Automation and can be incorporated easily and cost-effectively into the SIMATIC world.

For more details on the connection possibilities, see the section "Communication Modules" in chapter 6.

Technical specifications

Frequency range	HF		
RFID system	SIMATIC RF200	SIMATIC RF300	MOBY D
			
Transmission frequency	13.56 MHz	13.56 MHz	13.56 MHz
Range, max.	130 mm	210 mm	900 mm
Protocol (air interface)	ISO 15693, ISO 18000-3	ISO 15693, ISO 18000-3	ISO 15693, ISO 18000-3
Standards, specifications, approvals	<ul style="list-style-type: none"> • EN 300330, 301489, CE • FCC Part 15 • UL/CSA 	<ul style="list-style-type: none"> • EN 300330, 301489, CE • FCC Part 15 • UL/CSA • ATEX 	<ul style="list-style-type: none"> • EN 300330, 301489, CE • FCC Part 15 • UL/CSA
Memory capacity, max.	992 byte (EEPROM)/ 2000 byte (FRAM)	64 Kbyte	992 byte (EEPROM)/ 2000 byte (FRAM)
Data transfer rate Reader – Transponder			
• Reading, max.	1.5 kbyte/s	7.8 kbyte/s	1.5 kbyte/s
• Writing, max.	0.5 kbyte/s	7.8 kbyte/s	0.5 kbyte/s
Multitag/bulk capability	No	No	Yes
Special features	<ul style="list-style-type: none"> • Particularly compact designs • For particularly low-cost RFID solutions • IO-Link for simple identification tasks 	<ul style="list-style-type: none"> • High data transfer rate • Expanded diagnostic capabilities • High memory capacity 	<ul style="list-style-type: none"> • SIMATIC- or PC/IT-Integration • Long sensing ranges with excellent interference immunity • External antennas for industrial applications

Frequency range	UHF	Mikrowellenbereich
RFID system	SIMATIC RF600	MOBY U
		
Transmission frequency	865 ... 868 MHz (ETSI), 902 ... 928 MHz (FCC)	2.4 GHz
Range, max.	8 m	3 m
Protocol (air interface)	EPCglobal Class 1 Gen 2, ISO 18000-6C	ISO 18000-4
Standards, specifications, approvals	<ul style="list-style-type: none"> • ETSI EN 302208, CE • FCC • UL 	<ul style="list-style-type: none"> • ETSI EN 302208, CE • FCC • UL
Memory capacity, max.	96/240 bit EPC 512 bit user memory	32 Kbyte
Data transfer rate Reader – Transponder		
• Reading, max.	320 kbit/s	8 kbyte/s
• Writing, max.	320 kbit/s	4.8 kbyte/s
Multitag/bulk capability	Yes	Yes
Special features	<ul style="list-style-type: none"> • SIMATIC or PC/IT integration • Configurable data processing in the readers • Special antennas for industrial applications 	<ul style="list-style-type: none"> • Active range limiting • High memory capacity

RFID systems

Introduction

2

Technical specifications

<i>HF range</i>	MDS D165 MDS D261	MDS D100 MDS D200	MDS D421	MDS D422	MDS D423	MDS D124 MDS D324 MDS D424	MDS D425
							

SIMATIC RF200









SIMATIC RF210R	—	—	●	●	—	●	●
SIMATIC RF220R	—	—	—	●	—	●	●
SIMATIC RF240R	●	●	—	●	●	●	●
SIMATIC RF260R	●	●	—	—	●	●	—

SIMATIC RF300




SIMATIC RF310R	●	●	—	—	●	●	●
SIMATIC RF340R	●	●	—	—	●	●	●
SIMATIC RF350R with ANT 1	●	●	—	—	—	●	●
SIMATIC RF350R with ANT 12	—	—	●	—	—	—	—
SIMATIC RF350R with ANT 18	—	—	●	●	—	●	●
SIMATIC RF350R with ANT 30	—	—	—	●	—	●	●
SIMATIC RF380R	●	●	—	—	●	●	●
SIMATIC RF310M	●	●	—	—	●	●	●

MOBY D

SLG D10 / SLG D10S with ANT D5	●	●	—	—	—	●	—
SLG D10 / SLG D10S with ANT D6	●	●	—	—	—	●	—
SLG D10 / SLG D10S with ANT D10	●	●	—	—	—	●	—
SLG D11 / SLG D11S with ANT D2	—	—	—	—	—	●	—
SLG D11 / SLG D11S with ANT D5	●	●	—	—	—	●	—
SLG D12 / SLG D12S	●	●	—	—	—	●	—

<i>UHF range</i>	SIMATIC RF630L	SIMATIC RF680L	SIMATIC RF610T	SIMATIC RF620T	SIMATIC RF625T	SIMATIC RF630T	SIMATIC RF640T	SIMATIC RF680T
								
SIMATIC RF620R	●	●	●	●	●	●	●	●
SIMATIC RF630R	●	●	●	●	●	●	●	●
SIMATIC RF640R	●	●	●	●	●	●	●	●
SIMATIC RF670R	●	●	●	●	●	●	●	●
SIMATIC RF680M	●	●	●	●	●	●	●	●

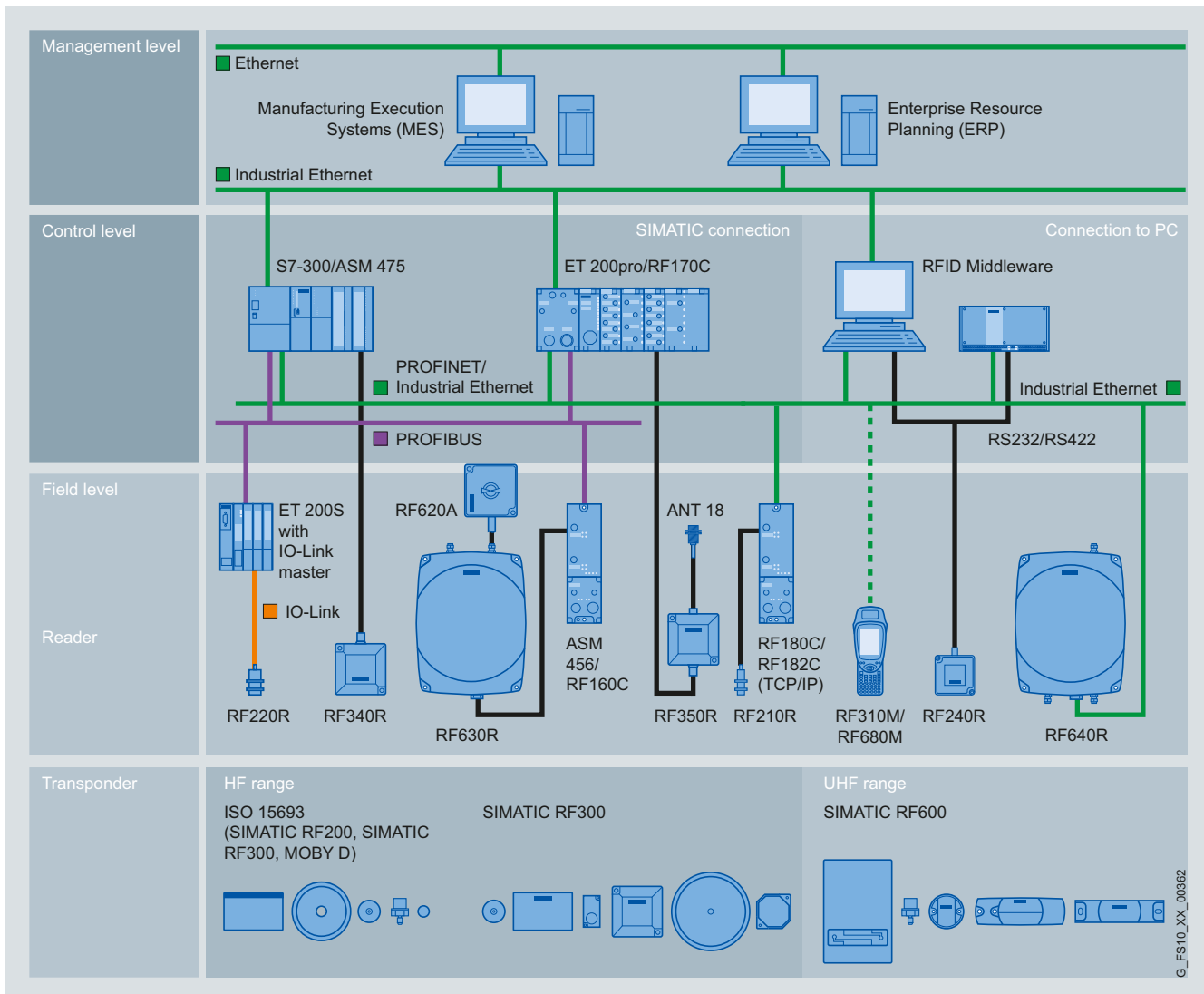
- Reader-transponder combination released.
- Reader-transponder combination not released.

<i>Microwave range</i>	MDS U315	MDS U525	MDS U589
			
SLG U92	•	•	•
STG U	•	•	•

RFID systems

Introduction

2



RFID systems for the HF frequency range

SIMATIC RF200

Introduction

Overview



The RFID system SIMATIC RF200 is, thanks to its compact and low-cost reader, particularly suitable for use in industrial production in the areas of small assembly lines and intralogistics.

With RF200, identification tasks of medium-performance in the RF range (13.56 MHz, ISO 15693) can be implemented extremely cost effectively. RF200 readers can be operated with all ISO transponders of the product range of MOBY D (MDS Dxxx).

The communication modules that can be used for all MOBY and SIMATIC RF systems (ASM 456, ASM 475, SIMATIC RF1xxC) are available for connecting to SIMATIC S7-300, PROFIBUS, PROFINET and TCP/IP (XML).

IO-Link

For simple identification tasks (e.g. reading the identification number, "read-only") the RF210/RF220/RF260R readers are available in an interface version for IO-Link. With the help of this standardized interface it is extremely easy and economical to integrate the data automatically read by the reader into the automation level. The SIMATIC RF200 readers can be connected to the controllers of many well-known suppliers of automation solutions through an appropriate IO-Link master module.

Siemens offers two master modules, one for the SIMATIC ET 200eco PN (IP67) distributed I/O system at the field level and one for SIMATIC ET 200S (IP20) in the control cabinet. Both support seamless integration in the established PROFINET and PROFIBUS fieldbuses, and therefore also into the world of Totally Integrated Automation.

Both master modules allow up to four SIMATIC RF200 IO-Link readers to be connected.

The essential features of IO-Link are:

- Ease of use: No RFID-specific programming is necessary, ideal for RFID beginners.
- Particularly low channel costs per reading point (reader + IO-Link master interface).
- Openness through standardization, many well-known manufacturers offer IO-Link master.

The SIMATIC RF200 identification system offers the following features:

- 13.56 MHz operating frequency (operation according to ISO 15693).
- Passive (without battery), maintenance-free transponders (MDS Dxxx) with memory capacities up to 2000 byte FRAM.
- Rugged, compact components with IP67 degree of protection.
- Easy integration into SIMATIC, PROFIBUS, PROFINET and TCP/IP.
- Reader versions with RS422, RS232 or IO-Link.

Benefits

get Designed for Industry

- Price-optimized and compact, space-saving components.
- Operation with the attractively priced and battery-free ISO 15693 transponders of MOBY D for low investment and operating costs.
- Flexible and economic solutions thanks to the complete and scalable portfolio for the field of industrial identification.
- Simplified engineering, commissioning, diagnostics and maintenance through seamless integration into Totally Integrated Automation:
 - Integrated bus connection to an automation system, such as SIMATIC, SIMOTION or SINUMERIK, via communication modules with PROFIBUS and PROFINET.
 - Simple S7 software integration via ready-to-use function blocks.
- High degree of investment protection thanks to:
 - Open ISO 15693 standard.
 - Software compatibility between the RFID systems of Siemens.
 - Standardized communication interfaces.
- Openness through connection options to various bus systems from different manufacturers and PC environments via communication modules, RS232 or IO-Link.
- Worldwide Service and Support.

Application

The RFID system SIMATIC RF200 is primarily used for non-contact identification of containers, pallets and workpiece holders where the demands on performance (data transmission rate, memory volume) satisfy the ISO 15693 standard.

The main application areas for SIMATIC RF200 are:

- Assembly and handling systems, assembly lines (identification of workpiece carriers), especially small assembly lines.
- Production logistics (material flow control, identification of containers and other vessels), intralogistics.
- Parts identification (the transponder is attached to the products or pallets).
- Conveyor systems (e.g. suspended monorail).

RFID systems for the HF frequency range

SIMATIC RF200

Introduction

Design

Due to their compact design and the integrated antenna, SIMATIC RF200 readers are suitable for mounting in confined spaces, e.g. in small assembly lines or in intralogistics.

The high IP67 degree of protection of the SIMATIC RF200 reader enables it to be used in harsh industrial environments.

Each SIMATIC RF200 reader has a multi color LED which locally indicates the function and status of the reader as well as of the transponder.

The interface to the automation level can be implemented by means of communication modules. For quick and easy cabling, pre-assembled cables with M12 plug-in connectors are available in various lengths.

The MOBY D transponders according to ISO 15693 are used as mobile data carriers.

Transponders suitable for a wide variety of different requirements can be selected from an extensive range: From low-cost SmartLabels for simple identification tasks, through rugged credit card formats, right up to screw-fit transponders that can be automatically attached by robots.

The transponders are attached to the object to be identified, e.g. by means of screws, adhesive or pre-assembled spacer.

Function

All of the SIMATIC RF200 readers are suitable for reliable reading and writing tasks in the HF range of 13.56 MHz. The SIMATIC RF200 IO-Link readers are available for simple several reading tasks.

The readers are connected (via an RS422 interface) to the automation level (e.g. SIMATIC S7) by means of communication modules over standard fieldbuses (e.g. PROFIBUS or PROFINET).

User-friendly function blocks are available for S7 programming.

In the event of an error, the S7 application receives a detailed error message from the communication module via the function block.

In addition, there are the (optional) SIMATIC RF210R, RF220R and RF240R readers with an RS232 interface for connection to the PC or to SIMATIC S7-1200.

The SIMATIC RF210R, RF220R, and RF260R readers are available as versions with an IO-Link interface.

Integration

A wide range of communication modules, function blocks, as well as high-performance drivers and function libraries permits easy and quick integration into the application.

And best of all: SIMATIC RF200 is part of Totally Integrated Automation and can be integrated easily and cost-effectively into the SIMATIC world.

The IO-Link versions of the RF200 readers are integrated into the control level with the help of standardized IO-Link masters.

For more details on the connection possibilities, see chapter 6 „Communication Modules“.

Technical specifications

RFID system	SIMATIC RF200
Transmission frequency	13.56 MHz
Maximum range	130 mm
Protocol (air interface)	ISO 15693 ISO 18000-3
Approvals ¹⁾	<ul style="list-style-type: none"> • EN 300330, 301489, CE • FCC Part 15 • UL/CSA
Memory capacity	max. 992 byte (EEPROM) / 2000 byte (FRAM)
Data transfer rate reader - transponder (not for IO-Link)	<ul style="list-style-type: none"> • Reading • Writing
	max. 1.5 kbyte/s max. 0.5 kbyte/s
Transmission time for user data for read access, per byte (IO-Link versions)	typ. 40 ms
Multitag/bulk capability	No
Special features	<ul style="list-style-type: none"> • Particularly compact designs • For particularly low-cost RFID solutions • IO-Link for simple identification tasks

¹⁾ All current approvals can be found on the Internet at:
www.siemens.com/rfid-approvals

RFID systems for the HF frequency range

SIMATIC RF200

Transponders

Overview



The transponders can be used for the following RFID systems:

- SIMATIC RF200
- SIMATIC RF300 (in ISO 15693 operating mode)
- MOBY D (except MDS D421, MDS D422, MDS D423, MDS D425)

Note

For detailed descriptions and ordering data of these transponders: See the specified pages.

Transponder	Features	Page
MDS D165	SmartLabel, (PET) in credit card format. Applications range from simple identification such as electronic barcode substitution or supplementation to storage and distribution logistics, right up to product identification. <ul style="list-style-type: none"> • 112 byte EEPROM • IP65 degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions L x W (mm): 86 x 54 	2/61
MDS D261	SmartLabel, (PET) in compact design. Applications range from simple identification such as electronic barcode substitution or supplementation to storage and distribution logistics, right up to product identification. <ul style="list-style-type: none"> • 256 byte EEPROM • IP65 degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions L x W (mm): 55 x 55 	2/61
MDS D100	Universal transponder in credit card format. <ul style="list-style-type: none"> • 112 byte EEPROM • IP68 degree of protection • Operating temperature range -25 °C to +80 °C • Dimensions L x W x H (mm): 85.6 x 54 x 0.9 	2/63
MDS D200	Universal transponder in credit card format. <ul style="list-style-type: none"> • 256 byte EEPROM • IP67 degree of protection • Operating temperature range -20 °C to +60 °C • Dimensions L x W x H (mm): 85.6 x 54 x 0.9 	2/65

Transponder	Features	Page
MDS D421	Transponder for tool coding according to DIN 69873. It can be used wherever very small data carriers and exact positioning are required (e.g. for tool identification). <ul style="list-style-type: none"> • 2000 byte FRAM • IP67 / IPx9K degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 10 x 4.5 Note: This transponder is operated exclusively with the following readers/antennas: SIMATIC RF350R with ANT 12 or ANT 18 and SIMATIC RF210R. Operation with the SIMATIC RF310M mobile reader is not possible.	2/67
MDS D422	Transponder for the identification of metallic workpiece holders, workpieces or containers. <ul style="list-style-type: none"> • 2000 byte FRAM • IP68 degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions, thread diameter x height (mm): M20 x 6 Note: This transponder is operated exclusively with the following readers/antennas: SIMATIC RF350R with ANT 12, ANT 18, ANT 30 and SIMATIC RF210R, RF220R. Operation with the SIMATIC RF310M mobile reader is not possible.	2/68
MDS D423	Rugged transponder for use in production and distribution logistics as well as in assembly and production lines. <ul style="list-style-type: none"> • 2 000 byte FRAM • IP68 / IPx9K degree of protection • Operating temperature -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 30 x 8 	2/69
MDS D124	Heat-resistant transponder for use in applications with high thermal stress. <ul style="list-style-type: none"> • 112 byte EEPROM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +180 °C • Dimensions diameter x height (mm): Ø 27 x 4 	2/70
MDS D324	Rugged transponder for use in harsh industrial environments and under extreme environmental conditions. <ul style="list-style-type: none"> • 992 byte EEPROM • IP67 degree of protection • Operating temperature range -25 °C to +125 °C • Dimensions diameter x height (mm): Ø 27 x 4 	2/72

RFID systems for the HF frequency range

SIMATIC RF200

Transponders

Transponder	Features	Page
MDS D424	Rugged transponder for use in production and distribution logistics as well as in assembly and production lines. <ul style="list-style-type: none"> • 2000 byte FRAM • IP67 / IPx9K degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 27 x 4 	2/74
MDS D425	Compact and rugged transponder; suitable for screw mounting; for use in assembly and production lines in the powertrain area. <ul style="list-style-type: none"> • 2000 byte FRAM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 24 x 10 (without M6 grub screw) 	2/76
MDS D126	Compact and rugged transponder; suitable for identification of transport units in production-related logistics; can also be used under harsh environmental conditions. <ul style="list-style-type: none"> • 112 byte EEPROM • IP68 degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 50 x 3.6 	2/78
MDS D426	Compact and rugged transponder; suitable for identification of transport units in production-related logistics; can also be used under harsh environmental conditions. <ul style="list-style-type: none"> • 2000 byte FRAM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 50 x 3.6 	2/80
MDS D428	Compact and rugged transponder; suitable for screw mounting; for use in assembly and production lines in the powertrain area. <ul style="list-style-type: none"> • 2000 byte FRAM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 24 x 20 (without M8 grub screw) 	2/82
MDS D139	Heat-resistant transponder for use in paint shops or applications with high thermal stress. <ul style="list-style-type: none"> • 112 byte EEPROM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +220 °C • Dimensions diameter x height (mm): Ø 85 x 15 	2/84
MDS D339	Heat-resistant transponder for use in paint shops or applications with high thermal stress. <ul style="list-style-type: none"> • 992 byte EEPROM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +220 °C • Dimensions diameter x height (mm): Ø 85 x 15 	2/86

Transponder	Features	Page
MDS D160	The transponder has been specially designed for harsh environments in the laundry and cleaning industry. <ul style="list-style-type: none"> • Its main applications include: <ul style="list-style-type: none"> - Rented work clothing - Rented laundry - OP textiles, hospital clothing - Hotel laundry - Dirt collection mats • 112 byte EEPROM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +175 °C • Dimensions diameter x height (mm): Ø 16 x 3 	2/88
MDS D460	Rugged transponder for use in assembly lines. <ul style="list-style-type: none"> • 2000 byte FRAM • IP67 degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 16 x 3 	2/89

Customer-specific transponders

Customer-specific transponders (packaging, temperature range, geometry, etc.) on request.

Benefits



The comprehensive portfolio of ISO 15693 transponders offers the right solution for every requirement in production and production logistics:

- Large memory up to 2000 byte FRAM.
- Low-cost transponders can, if necessary, be mounted on metal with a spacer.
- Extremely rugged transponder for high temperature ranges up to 220 degrees with ATEX approval for use in paint shops.
- Extremely small transponder for exact positioning, e.g. for tool identification.
- Screw-fit transponders for automatic attachment by means of robots.
- Screw-fit transponders for flush-mounting in metal for identifying workpieces or workpiece holders.
- Customized solutions for SmartLabels and transponders on request.

Technical specifications

Field data (operating/limit distance) of transponders and readers (all specifications in mm)

The following table shows the field data (unaffected by metal) for all ISO transponders (MDS Dxxx) in connection with RF200 readers. The listed technical data are typical values and are valid for a room temperature of +25 °C.

For detailed descriptions and ordering data of these ISO transponders, see under „MOBY D“ from page 2/61.

	MDS D165	MDS D261	MDS D100	MDS D200	MDS D421	MDS D422	MDS D423	MDS D124	MDS D324
SIMATIC RF210R	–	–	–	–	0 ... 3/4	1 ... 9/10	–	1 ... 18/20	1 ... 8/9
SIMATIC RF220R	–	–	–	–	–	1 ... 12/14	–	1 ... 28/31	2 ... 21/25
SIMATIC RF240R	2 ... 80/94	2 ... 60/70	2 ... 84/95	2 ... 69/78	–	1 ... 12/15	2 ... 30/35	2 ... 53/60	1 ... 36/40
SIMATIC RF260R	2 ... 120/135	2 ... 75/90	2 ... 110/130	2 ... 100/120	–	–	2 ... 30/35	2 ... 80/85	2 ... 60/70

	MDS D424	MDS D425	MDS D126	MDS D426	MDS D428	MDS D139	MDS D339	MDS D160	MDS D460
SIMATIC RF210R	1 ... 16/18	1 ... 7/8	–	–	1 ... 10/11	–	–	1 ... 10/12	1 ... 8/9
SIMATIC RF220R	2 ... 25/29	1 ... 12/14	2 ... 30/35	2 ... 18/20	1 ... 18/21	–	2 ... 15/20	1 ... 20/22	1 ... 18/20
SIMATIC RF240R	1 ... 47/53	1 ... 17/19	2 ... 57/65	2 ... 33/40	1 ... 30/34	–	0 ... 35/45	1 ... 33/37	1 ... 30/34
SIMATIC RF260R	2 ... 60/70	–	2 ... 75/100	2 ... 50/60	2 ... 40/45	2 ... 80/110	5 ... 65/80	2 ... 40/45	2 ... 40/45

–: Reader-transponder combination not released

RFID systems for the HF frequency range

SIMATIC RF200

Readers

Overview

2



Type	Features
SIMATIC RF210R	M18 reader with integrated antenna. <ul style="list-style-type: none"> • ISO 15693 functionality (HF; 13.56 MHz) • IP67 degree of protection • Temperature range -20 °C to +70 °C • Dimensions, thread diameter x length (mm): M18 x 71 • RS422 interface or IO-Link
SIMATIC RF220R	M30 reader with integrated antenna. <ul style="list-style-type: none"> • ISO 15693 functionality (HF; 13.56 MHz) • IP67 degree of protection • Temperature range -20 °C to +70 °C • Dimensions, thread diameter x length (mm): M30 x 71 • RS422 interface or IO-Link
SIMATIC RF240R	Very small compact reader with integrated antenna. <ul style="list-style-type: none"> • ISO 15693 functionality (HF; 13.56 MHz) • IP67 degree of protection • Temperature range -20 °C to +70 °C • Dimensions L x W x H (mm): 50 x 50 x 30 • RS-422 or RS-232 interface

Type	Features
SIMATIC RF260R	Compact reader with integrated antenna. <ul style="list-style-type: none"> • ISO 15693 functionality (HF; 13.56 MHz) • IP67 degree of protection • Temperature range -20 °C to +70 °C • Dimensions L x W x H (mm): 75 x 75 x 41 • RS422 or RS232 interface or IO-Link
SIMATIC RF310M	Mobile handheld terminal with integrated write/read antenna (see „RF300“, p. 2/54, for description). <ul style="list-style-type: none"> • Degree of protection IP54 (splashproof) • Temperature range -20 °C to +50 °C • Dimensions L x W x H (mm): 280 x 92 x 42 • WLAN (optional) • Can be used for all ISO 15693 transponders (MDS Dxxx), with the exception of MDS D421, D422 • Can be used for all RF300 transponders

RFID systems for the HF frequency range

SIMATIC RF200 readers

SIMATIC RF210R

Overview



SIMATIC RF210R is an M18 reader with integrated antenna. Its extremely compact design makes it ideal for use on small assembly lines.

This reader has either

- an RS-422 interface with transmission procedure 3964R for connection to the RFID communication modules ASM 456, ASM 475, SIMATIC RF160C, RF170C, RF180C and RF182C,
- or a standardized IO-Link interface for connection to IO-Link master modules from Siemens or third parties.

Thanks to its high degree of protection and rugged design, the SIMATIC RF210R reader ensures problem-free use even under the toughest industrial conditions. Connection is by means of either an 8-pin M12 plug-in connector (RS422 version) or a 4-pin M12 plug-in connector (IO-Link version).

The reader is operated with ISO 15693-compatible transponders from the extensive MOBY D product range.

Design

Field data

Minimum distance from reader to reader

SIMATIC RF210R	≥ 100 mm
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Technical specifications

Order No.	6GT2 821-1AC10	6GT2 821-1AC32
Product type designation	Reader RF210R	Reader RF210R IO-Link
Suitability for use	ISO 15693 (MOBY D) transponders, for connecting to communication modules	ISO 15693 (MOBY D) transponders, for connecting to IO-Link master
Wireless frequencies		
Operating frequency, rated value	13.56 MHz	13.56 MHz
Electrical data		
Maximum range	20 mm	20 mm
Protocol for wireless transmission	ISO 15693, ISO 18000-3	ISO 15693, ISO 18000-3
Transfer rate with radio transmission, maximum	26.5 kbit/s	26.5 kbit/s
Product property „multitag-capable“	No	No
Data transfer rate of the point-to-point connection (serial, max.)	115.2 kbit/s	38.4 kbit/s
Transmission time for user data		
• for write access, per byte, typical	0.6 ms	-
• for read access, per byte, typical	0.6 ms	40 ms
Interfaces		
Design of electrical connection	M12, 8-pin	M12, 4-pin
Standard for interfaces for communication	RS422	IO-Link
Mechanical data		
Material	Brass, nickel-plated / PBT	Brass, nickel-plated / PBT
Color	Silver / pastel turquoise	Silver / pastel turquoise
Maximum tightening torque of the screw for securing the equipment	20 Nm	20 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	0 m	0 mm
Supply voltage, current consumption		
DC supply voltage		
• Rated value	24 V	24 V
• minimum	20.4 V	20.4 V
• maximum	28.8 V	28.8 V

RFID systems for the HF frequency range

SIMATIC RF200 readers

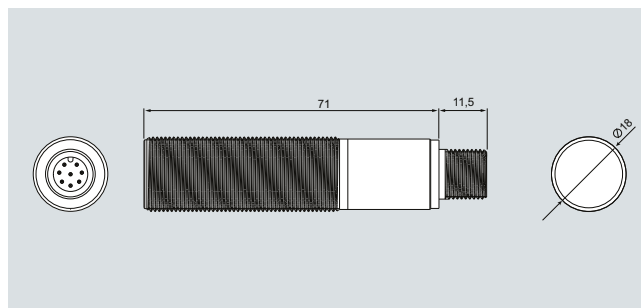
SIMATIC RF210R

Order No.	6GT2 821-1AC10	6GT2 821-1AC32
Product type designation	Reader RF210R	Reader RF210R IO-Link
Current input at 24 V DC		
• typical	0.05 A	0.05 A
Permissible ambient conditions		
Ambient temperature		
• during operation	-20 ... +70 °C	-20 ... +70 °C
• during storage	-25 ... +80 °C	-25 ... +80 °C
• during transport	-25 ... +80 °C	-25 ... +80 °C
Degree of protection	IP67	IP67
Shock resistance	EN 60721-3-7 class 7 M2	EN 60721-3-7 class 7 M2
Shock acceleration	500 m/s ²	500 m/s ²
Oscillation acceleration	200 m/s ²	200 m/s ²
Design, dimensions and weights		
Height	83 mm	83 mm
Diameter	18 mm	18 mm
Net weight	0.065 kg	0.065 kg
Type of mounting	2 nuts M18 (included in delivery)	2 nuts M18 (included in delivery)
Cable length		
• for RS 422 interface, maximum	1000 m	-
Maximum cable length between Master and IO-Link device	-	20 m
Product properties		
Type of display	3-color LED	3-color LED
Product property „silicon-free“	Yes	Yes
Standards, specifications, approvals		
Certificate of suitability	Wireless compliant with R&TTE guidelines EN 300330 and EN 301489, FCC, UL/CSA	Wireless compliant with R&TTE guidelines EN 300330 and EN 301489, FCC, UL/CSA

Selection and ordering data

	Order No.
Reader SIMATIC RF210R (RS422)	6GT2 821-1AC10
Reader SIMATIC RF210R (IO-Link)	6GT2 821-1AC32
Accessories	
Note: All connection options are shown in Chapter 6 „Communication modules“.	
IO-Link Master for SIMATIC ET 200eco PN, for 4 readers	6ES7 148-6JA00-0AB0
IO-Link Master 4SI for SIMATIC ET 200S, for 4 readers	6ES7 138-4GA50-0AB0
IO-Link connecting cables	
• With open end at IO-Link master for ET 200S, 5 m	6GT2 891-0LH50
• With open end at IO-Link master for ET 200S, 10 m	6GT2 891-0LN10
• With M12 connector at IO-Link master for ET 200eco PN, 5 m	6GT2 891-0MH50
• With M12 connector at IO-Link master for ET 200eco PN, 10 m	6GT2 891-0ML50
DVD „RFID Systems Software & Documentation“	6GT2 080-2AA20

Dimensions



Reader SIMATIC RF210R

Additional Info

All current approvals can be found on the Internet at:

www.siemens.com/rfid-approvals

RFID systems for the HF frequency range

SIMATIC RF200 readers

SIMATIC RF220R

Overview



SIMATIC RF220R is an M30 reader with integrated antenna. Its compact design makes it ideal for use in small assembly lines which require a slightly higher range.

This reader has either

- an RS-422 interface with transmission procedure 3964R for connection to the RFID communication modules ASM 456, ASM 475, SIMATIC RF160C, RF170C, RF180C and RF182C,
- or a standardized IO-Link interface for connection to IO-Link master modules from Siemens or third parties.

Thanks to its high degree of protection and rugged design, the SIMATIC RF220R reader ensures problem-free use even under the toughest industrial conditions. Connection is by means of either an 8-pin M12 plug-in connector (RS422 version) or a 4-pin M12 plug-in connector (IO-Link version).

The reader is operated with ISO 15693-compatible transponders from the extensive MOBY D product range.

2

Design

Field data

Minimum distance from reader to reader

SIMATIC RF220R	≥ 150 mm
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Technical specifications

Order No.	6GT2 821-2AC10	6GT2 821-2AC32
Product type designation	Reader RF220R	Reader RF220R IO-Link
Suitability for use	ISO 15693 (MOBY D) transponders, for connecting to communication modules	ISO 15693 (MOBY D) transponders, for connecting to IO-Link master
Wireless frequencies		
Operating frequency, rated value	13.56 MHz	13.56 MHz
Electrical data		
Maximum range	35 mm	35 mm
Protocol for wireless transmission	ISO 15693, ISO 18000-3	ISO 15693, ISO 18000-4
Transfer rate with radio transmission, maximum	26.5 kbit/s	26.5 kbit/s
Product property „multitag-capable“	No	No
Data transfer rate of the point-to-point connection (serial, max.)	115.2 kbit/s	38.4 kbit/s
Transmission time for user data		
• for write access, per byte, typical	0.6 ms	-
• for read access, per byte, typical	0.6 ms	40 ms
Interfaces		
Design of electrical connection	M12, 8-pin	M12, 4-pin
Standard for interfaces for communication	RS422	IO-Link
Mechanical data		
Material	Brass, nickel-plated / PBT	Brass, nickel-plated / PBT
Color	Silver / pastel turquoise	Silver / pastel turquoise
Maximum tightening torque of the screw for securing the equipment	40 Nm	40 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm	0 mm
Supply voltage, current consumption		
DC supply voltage		
• Rated value	24 V	24 V
• minimum	20.4 V	20.4 V
• maximum	28.8 V	28.8 V

RFID systems for the HF frequency range

SIMATIC RF200 readers

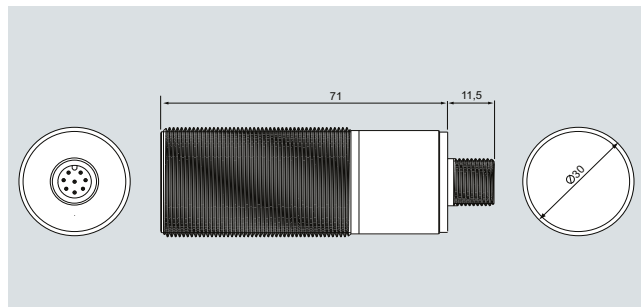
SIMATIC RF220R

Order No.	6GT2 821-2AC10	6GT2 821-2AC32
Product type designation	Reader RF220R	Reader RF220R IO-Link
Current input at 24 V DC, typical	0.05 A	0.05 A
Permissible ambient conditions		
Ambient temperature		
• during operation	-20 ... +70 °C	-20 ... +70 °C
• during storage	-25 ... +80 °C	-25 ... +80 °C
• during transport	-25 ... +80 °C	-25 ... +80 °C
Degree of protection	IP67	IP67
Shock resistance	EN 60721-3-7 class 7 M2	EN 60721-3-7 class 7 M2
Shock acceleration	500 m/s ²	500 m/s ²
Oscillation acceleration	200 m/s ²	200 m/s ²
Design, dimensions and weights		
Height	83 mm	83 mm
Diameter	30 mm	30 mm
Net weight	0.14 kg	0.14 kg
Type of mounting	2 nuts M30 (included in delivery)	2 nuts M30 (included in delivery)
Cable length for RS422 interface, max.	1000 m	-
Maximum cable length between Master and IO-Link device	-	20 m
Product properties		
Type of display	3-color LED	3-color LED
Product property „silicon-free“	Yes	Yes
Standards, specifications, approvals		
Certificate of suitability	Wireless compliant with R&TTE guidelines EN 300330 and EN 301489, FCC, UL/CSA	Wireless compliant with R&TTE guidelines and EN 301489, FCC, UL/CSA

Selection and ordering data

	Order No.
Reader SIMATIC RF220R (RS422)	6GT2 821-2AC10
Reader SIMATIC RF220R (IO-Link)	6GT2 821-2AC32
Accessories	
Note: All connection options are shown in Chapter 6 „Communication modules“.	
IO-Link Master for SIMATIC ET 200eco PN, for 4 readers	6ES7 148-6JA00-0AB0
IO-Link Master 4SI for SIMATIC ET 200S, for 4 readers	6ES7 138-4GA50-0AB0
IO-Link connecting cables	
• With open end at IO-Link master for ET 200S, 5 m	6GT2 891-0LH50
• With open end at IO-Link master for ET 200S, 10 m	6GT2 891-0LN10
• With M12 connector at IO-Link master for ET 200eco PN, 5 m	6GT2 891-0MH50
• With M12 connector at IO-Link master for ET 200eco PN, 10 m	6GT2 891-0ML50
DVD „RFID Systems Software & Documentation“	6GT2 080-2AA20

Dimensions



Reader SIMATIC RF220R

RFID systems for the HF frequency range

SIMATIC RF200 readers

SIMATIC RF240R

Overview



SIMATIC RF240R is a reader with an integrated antenna. Its extra compact design makes it ideal for use in small assembly lines.

This reader has either

- an RS-422 interface with transmission procedure 3964R for connection to the RFID communication modules ASM 456, ASM 475, SIMATIC RF160C, RF170C, RF180C and RF182C,
- or an RS232 interface with a 3964R transmission procedure for connection to S7-1200, PC-based systems or third-party controllers.

Thanks to its high degree of protection and rugged design, the SIMATIC RF240R reader ensures problem-free use even under the toughest industrial conditions. It is connected via an 8-pole M12 plug-in connector.

The reader is operated with ISO 15693-compatible transponders from the extensive product range of MOBY D.

Design

Field data

Minimum distance from reader to reader

SIMATIC RF240R	≥ 120 mm
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Technical specifications

Order No.	6GT2 821-4AC10	6GT2 821-4AC11
Product type designation	Reader RF240R	Reader RF240R
Suitability for use	ISO 15693 (MOBY D) transponders, for connecting to communication modules	ISO 15693 (MOBY D) transponders, for connecting to PC systems
Wireless frequencies		
Operating frequency, rated value	13.56 MHz	13.56 MHz
Electrical data		
Maximum range	65 mm	65 mm
Protocol for wireless transmission	ISO 15693, ISO 18000-3	ISO 15693, ISO 18000-3
Maximum data transfer rate for wireless transmission	26.5 kbit/s	26.5 kbit/s
Product property „multitag-capable“	No	No
Data transfer rate of the point-to-point connection (serial, max.)	115.2 kbit/s	115.2 kbit/s
Transmission time for user data		
• for write access, per byte, typical	0.6 ms	0.6 ms
• for read access, per byte, typical	0.6 ms	0.6 ms
Interfaces		
Design of electrical connection	M12, 8-pin	M12, 8-pin
Standard for interfaces for communication	RS422	RS232
Mechanical data		
Material	PA6.6	PA6.6
Color	Anthracite	Anthracite
Maximum tightening torque of the screw for securing the equipment	1.5 Nm	1.5 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm	0 mm
Supply voltage, current consumption		
DC supply voltage		
• Rated value	24 V	24 V
• minimum	20.4 V	20.4 V
• maximum	28.8 V	28.8 V

RFID systems for the HF frequency range

SIMATIC RF200 readers

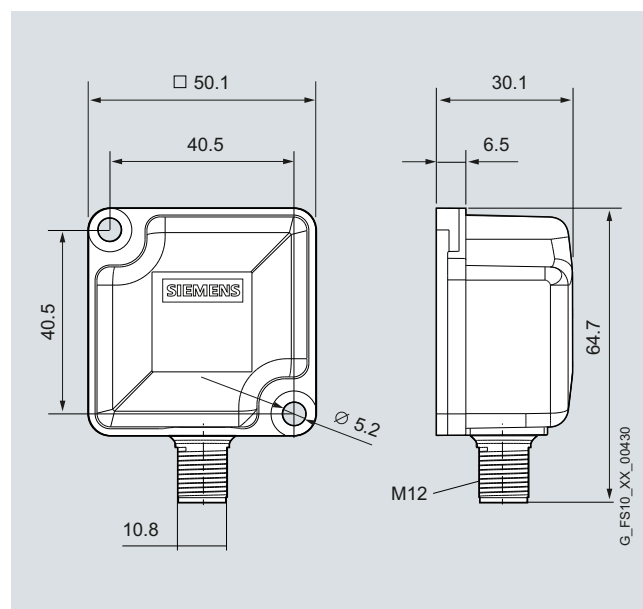
SIMATIC RF240R

Order No.	6GT2 821-4AC10	6GT2 821-4AC11
Product type designation	Reader RF240R	Reader RF240R
Current input at 24 V DC		
• typical	0.05 A	0.05 A
Permissible ambient conditions		
Ambient temperature		
• during operation	-20 ... +70 °C	-20 ... +70 °C
• during storage	-25 ... +80 °C	-25 ... +80 °C
• during transport	-25 ... +80 °C	-25 ... +80 °C
Degree of protection	IP67	IP67
Shock resistance	EN 60721-3-7 class 7 M2	EN 60721-3-7 class 7 M2
Shock acceleration	500 m/s ²	500 m/s ²
Oscillation acceleration	200 m/s ²	200 m/s ²
Design, dimensions and weights		
Width	50 mm	50 mm
Height	30 mm	30 mm
Depth	50 mm	50 mm
Net weight	0.06 kg	0.06 kg
Type of mounting	2 screws M5	2 screws M5
Cable length		
• for RS 232 interface, maximum	-	30 m
• for RS 422 interface, maximum	1000 m	-
Product properties		
Type of display	3-color LED	3-color LED
Product property „silicon-free“	Yes	Yes
Standards, specifications, approvals		
Certificate of suitability	Wireless compliant with R&TTE guidelines EN 300330 and EN 301489, FCC, UL/CSA	Wireless compliant with R&TTE guidelines EN 300330 and EN 301489, FCC, UL/CSA

Selection and ordering data

	Order No.
Reader SIMATIC RF240R (RS422)	6GT2 821-4AC10
Reader SIMATIC RF240R (RS232)	6GT2 821-4AC11
Accessories	
Note: All connection options are shown in Chapter 6 „Communication modules“.	
RS232 connecting cable	
Between reader and PC (RS232), 5 m long, material: PUR, CMG approval.	
• 24 V connection with M12 plug	6GT2 891-4KH50
• 24 V connection with open ends	6GT2 891-4KH50-0AX0
DVD „RFID Systems Software & Documentation“	6GT2 080-2AA20

Dimensions



Reader SIMATIC RF240R

Additional Info

All current approvals can be found on the Internet at:

www.siemens.com/rfid-approvals

RFID systems for the HF frequency range

SIMATIC RF200 readers

SIMATIC RF260R

Overview



SIMATIC RF260R is a reader with an integrated antenna. Its compact design makes it ideal for use in assembly lines.

This reader has either:

- An RS-422 interface with transmission procedure 3964R for connection to the RFID communication modules ASM 456, ASM 475, SIMATIC RF160C, RF170C, RF180C and RF182C,
- or an RS232 interface with a 3964R transmission procedure for connection to S7-1200, PC-based systems or third-party controllers,
- or a standardized IO-Link interface for connection to IO-Link master modules from Siemens or third parties.

Thanks to its high degree of protection and rugged design, the SIMATIC RF260R reader ensures problem-free use even under the toughest industrial conditions. Connection is by means of either an 8-pin M12 plug-in connector (RS422/RS232 version) or a 4-pin M12 plug-in connector (IO-Link version).

The reader is operated with ISO 15693-compatible transponders from the extensive MOBY D product range.

2

Design

Field data

Minimum distance from reader to reader

SIMATIC RF260R	≥ 150 mm
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Technical specifications

Order No.	6GT2 821-6AC10	6GT2 821-6AC11	6GT2 821-6AC32
Product type designation	Reader RF260R	Reader RF260R	Reader RF260R IO-Link
Suitability for use	ISO 15693 (MOBY D) transponders, for connecting to communication modules	ISO 15693 (MOBY D) transponders, for connecting to PC systems	ISO 15693 (MOBY D) transponders, for connecting to IO-Link master
Wireless frequencies			
Operating frequency, rated value	13.56 MHz	13.56 MHz	13.56 MHz
Electrical data			
Maximum range	135 mm	135 mm	135 mm
Protocol for wireless transmission	ISO 15693, ISO 18000-3	ISO 15693, ISO 18000-3	ISO 15693, ISO 18000-5
Maximum data transfer rate for wireless transmission	26.5 kbit/s	26.5 kbit/s	26.5 kbit/s
Product property „multitag-capable“	No	No	No
Data transfer rate of the point-to-point connection (serial, max.)	115.2 kbit/s	115.2 kbit/s	38.4 kbit/s
Transmission time for user data			
• for write access, per byte, typical	0.6 ms	0.6 ms	-
• for read access, per byte, typical	0.6 ms	0.6 ms	40 ms
Interfaces			
Design of electrical connection	M12, 8-pin	M12, 8-pin	M12, 4-pin
Standard for interfaces for communication	RS422	RS232	IO-Link
Mechanical data			
Material	PA6.6	PA6.6	PA6.6
Color	Anthracite	Anthracite	Anthracite
Maximum tightening torque of the screw for securing the equipment	1.5 Nm	1.5 Nm	1.5 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm	0 mm	0 mm

RFID systems for the HF frequency range

SIMATIC RF200 readers

SIMATIC RF260R

Order No.	6GT2 821-6AC10	6GT2 821-6AC11	6GT2 821-6AC32
Product type designation	Reader RF260R	Reader RF260R	Reader RF260R IO-Link
Supply voltage, current consumption			
DC supply voltage			
• Rated value	24 V	24 V	24 V
• minimum	20.4 V	20.4 V	20.4 V
• maximum	28.8 V	28.8 V	28.8 V
Current input at 24 V DC			
• typical	0.05 A	0.05 A	0.05 A
Permissible ambient conditions			
Ambient temperature			
• during operation	-20 ... +70 °C	-20 ... +70 °C	-20 ... +70 °C
• during storage	-25 ... +80 °C	-25 ... +80 °C	-25 ... +80 °C
• during transport	-25 ... +80 °C	-25 ... +80 °C	-25 ... +80 °C
Degree of protection	IP67	IP67	IP67
Shock resistance	EN 60721-3-7 class 7 M2	EN 60721-3-7 class 7 M2	EN 60721-3-7 class 7 M2
Shock acceleration	500 m/s ²	500 m/s ²	500 m/s ²
Oscillation acceleration	200 m/s ²	200 m/s ²	200 m/s ²
Design, dimensions and weights			
Width	75 mm	75 mm	75 mm
Height	41 mm	41 mm	41 mm
Depth	75 mm	75 mm	75 mm
Net weight	0.2 kg	0.2 kg	0.2 kg
Type of mounting	2 screws M5	2 screws M5	2 screws M5
Cable length			
• for RS 232 interface, maximum	-	30 m	-
• for RS 422 interface, maximum	1000 m	-	-
Maximum cable length between Master and IO-Link device	-	-	20 m
Product properties			
Type of display	3-color LED	3-color LED	3-color LED
Product property „silicon-free“	Yes	Yes	Yes
Standards, specifications, approvals			
Certificate of suitability	Wireless compliant with R&TTE guidelines EN 300330 and EN 301489, FCC, UL/CSA	Wireless compliant with R&TTE guidelines EN 300330 and EN 301489, FCC, UL/CSA	Wireless compliant with R&TTE guidelines EN 300330 and EN 301489, FCC, UL/CSA

RFID systems for the HF frequency range

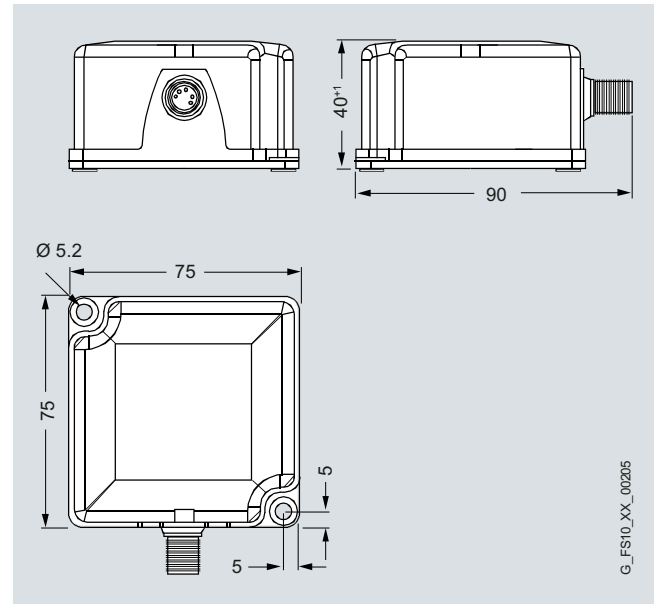
SIMATIC RF200 readers

SIMATIC RF260R

Selection and ordering data

	Order No.
Reader SIMATIC RF260R (RS422)	6GT2 821-6AC10
Reader SIMATIC RF260R (RS232)	6GT2 821-6AC11
Reader SIMATIC RF260R (IO-Link)	6GT2 821-6AC32
Accessories Note: All connection options are shown in Chapter 6 „Communication modules“.	
RS232 connecting cables Between reader and PC (RS232), 5 m long, material: PUR, CMG approval.	
• 24 V connection with M12 plug	6GT2 891-4KH50
• 24 V connection with open ends	6GT2 891-4KH50-0AX0
IO-Link Master for SIMATIC ET 200eco PN, for 4 readers	6ES7 148-6JA00-0AB0
IO-Link Master 4SI for SIMATIC ET 200S, for 4 readers	6ES7 138-4GA50-0AB0
IO-Link connecting cables • With open end at IO-Link master for ET 200S, 5 m • With open end at IO-Link master for ET 200S, 10 m • With M12 connector at IO-Link master for ET 200eco PN, 5 m • With M12 connector at IO-Link master for ET 200eco PN, 10 m	6GT2 891-0LH50 6GT2 891-0LN10 6GT2 891-0MH50 6GT2 891-0ML50
DVD „RFID Systems Software & Documentation“	6GT2 080-2AA20

Dimensions



Reader SIMATIC RF260R

Additional Info

All current approvals can be found on the Internet at:

www.siemens.com/rfid-approvals

RFID systems for the HF frequency range

SIMATIC RF300

Introduction

Overview



The RFID system SIMATIC RF300 is particularly suitable for use in industrial production in the areas of production control, assembly lines and conveyors.

SIMATIC RF300 is used to implement identification tasks with medium to high performance in the HF range (13.56 MHz).

Depending on the demands on the performance of the identification system, three versions of the system are available:

- A particularly economical solution with a link to SIMATIC S7-300 over the IQ-Sense interface for low requirements in terms of speed and data volume.
- Medium performance: System configuration with SIMATIC RF300 readers in ISO 15963 mode and low-cost MOBY D transponders.
- High performance: System configuration with SIMATIC RF300 readers in RF300 mode and SIMATIC RF300 transponders.

The SIMATIC RF300 identification system offers the following features:

- 13.56 MHz operating frequency
- For operating with ISO 15693 mode or RF300 mode
- Passive (without battery), maintenance-free transponder (MDS Dxxx and RF3xxT) with memory up to 64 KB
- Rugged, compact components with IP67 / IP68 degree of protection
- Very high immunity to noise
- Extensive diagnostic functions
- Extremely fast data transmission
- Easy integration in SIMATIC, PROFIBUS, PROFINET and TCP/IP.

Benefits

get Designed for Industry

- Rugged, compact components with high degree of protection (up to IP68).
- Data communication that is highly resistant to interference with a high degree of data security.
- Maintenance-free data carriers with up to 64 KB.
- Extremely high-speed data transmission between reader and tag (up to 7.8 kbyte/s).
- Flexible and economic solutions thanks to the complete and scalable portfolio for the field of industrial identification.
- Simplified engineering, commissioning, diagnostics and maintenance through seamless integration into Totally Integrated Automation:
 - Integrated bus connection to an automation system, such as SIMATIC, SIMOTION or SINUMERIK via communication modules with PROFIBUS and PROFINET.
 - Simple S7 software integration via ready-to-use function blocks.
 - Extensive status and diagnostic functions.
- High degree of investment protection thanks to:
 - Open ISO 15693 standard.
 - Software compatibility between the RFID systems of Siemens.
 - Standardized communication interfaces.
- Openness through connection possibilities to various bus systems from different manufacturers and PC environments via communication modules.
- Worldwide Service and Support.

Application

The RFID system SIMATIC RF300 is used primarily for contact-free identification of containers, pallets and workpiece holders in a closed production cycle. This means that the data carriers (transponders, tags) remain in the production chain and are not shipped out with the products. Thanks to the compact enclosure dimensions of the transponders as well as of the read/write devices, SIMATIC RF300 is particularly suitable for (small) assembly lines where space is at a premium.

The main application areas of SIMATIC RF300 are:

- Assembly and handling systems, assembly lines (identification of workpiece carriers).
- Production logistics (material flow control, identification of containers and other vessels).
- Parts identification (e.g. transponder is attached to product or pallet).
- Conveyor systems (e.g. overhead monorail conveyors).

RFID systems for the HF frequency range

SIMATIC RF300

Introduction

2

Design

The high IP67 degree of protection of the SIMATIC RF300 reader enables it to be used in harsh industrial environments.

The SIMATIC RF310R, RF340R and RF380R devices have an integrated antenna. The SIMATIC RF350R reader is operated with an external antenna.

Each SIMATIC RF300 reader has a multi color LED which locally indicates the function and status of the reader as well as of the transponder.

The interface to the automation level can be implemented by means of communication modules. For quick and easy cabling, pre-assembled cables with M12 plug-in connectors are available in various lengths.

All readers can be operated either according to the RFID standard ISO 15693, or in high-performance RF300 mode.

Depending on the mode of the reader, a comprehensive range of transponders is available for a wide variety of requirements.

For use in accordance with ISO 15693 there are various versions, e.g. low-cost SmartLabels for simple identification tasks, rugged credit card formats or screw-fit transponders that can be attached automatically by robots.

For the high-performance RF300 mode further transponders are available for selection, e.g. particularly heat-resistant transponders for temperatures up to +220 degrees, or particularly compact rectangular designs for use on small workplace holders.

The transponders are attached to the object to be identified, e.g. by means of screws, adhesive or pre-assembled spacer.

Function

All of the SIMATIC RF300 readers are suitable for reliable reading and writing tasks in the HF range of 13.56 MHz. In the ISO 15693 operating mode, identification tasks in the medium-performance range are possible.

The RF300 mode permits high-performance operation with a high-speed data transmission of up to 7.8 kbyte/s and is therefore one of the fastest RFID systems in the HF range.

Connection of readers to the automation level (e.g. SIMATIC S7) via standard fieldbuses (e.g. PROFIBUS or PROFINET) is by means of communication modules to which the readers can be connected via an RS422 interface.

User-friendly function blocks are available for the S7 programming.

In the event of an error, the S7 application receives a detailed error message from the communication module via the function block.

In addition, there is the option of the SIMATIC RF380R readers with an RS232 interface for the connection to the PC or to SIMATIC S7-1200.

The SIMATIC RF310R reader is available with an IQ-Sense interface for low requirements in terms of speed and data volume.

Extended diagnostics functions in RF300 mode, such as field strength as the measured variable or the signature error counter, enable the HF field or the quality of the air interface to be measured.

Integration

A wide range of communication modules, function blocks, as well as high-performance drivers and function libraries permits easy and quick integration into the application.

And best of all: SIMATIC RF300 is part of Totally Integrated Automation and can be integrated easily and cost-effectively into the SIMATIC world.

For more details on the connection possibilities, see chapter 6 "Communication Modules".

Technical specifications

RFID system	SIMATIC RF300
Transmission frequency	13.56 MHz
Maximum range	210 mm
Protocol (air interface)	ISO 15693 ISO 18000-3
Approvals ¹⁾	<ul style="list-style-type: none"> • EN 300330, 301489, CE • FCC Part 15 • UL/CSA • ATEX
Memory capacity	max. 64 Kbyte
Data transfer rate reader - transponder	<ul style="list-style-type: none"> • Reading • Writing
Multitag/bulk capability	Yes
Special features	<ul style="list-style-type: none"> • High data transfer rate • Expanded diagnostic capabilities

¹⁾ All current approvals can be found on the Internet at:
www.siemens.com/rfid-approvals

RFID systems for the HF frequency range

SIMATIC RF300

Transponders (RF300 mode)

Overview



Transponder	Features
SIMATIC RF380T	<p>Heat-resistant transponder, designed for skid identification in paint shops, for mounting directly on metal.</p> <ul style="list-style-type: none"> • 32 KB FRAM + 24 byte EEPROM • IP68 degree of protection • Operating temperature range -25 °C to +220 °C (cyclic) • Dimensions diameter x height (mm): Ø 114 x 83

Transponder	Features
SIMATIC RF320T	<p>Universal, compact transponder.</p> <ul style="list-style-type: none"> • 20 + 4 byte EEPROM • Degree of protection IP67 / IPx9K¹⁾ • Operating temperature range -25 °C to +125 °C • Dimensions diameter x height (mm): Ø 27 x 4
SIMATIC RF340T	<p>Universal transponder, for mounting directly on metal.</p> <ul style="list-style-type: none"> • 8 KB FRAM + 24 byte EEPROM • Degree of protection IP68 / IPx9K¹⁾ • Operating temperature range -25 °C to +85 °C • Dimensions L x W x H (mm): 48 x 25 x 15
SIMATIC RF350T	<p>Universal transponder, for mounting directly on metal.</p> <ul style="list-style-type: none"> • 32 KB FRAM + 24 byte EEPROM • IP68 degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions L x W x H (mm): 50 x 50 x 20
SIMATIC RF360T	<p>Universal transponder in credit card format.</p> <ul style="list-style-type: none"> • 8 KB FRAM + 24 byte EEPROM • IP67 degree of protection • Operating temperature range -25 °C to +75 °C • Dimensions L x W x H (mm): 86 x 55 x 2.5
SIMATIC RF370T	<p>Universal transponder, for mounting directly on metal.</p> <ul style="list-style-type: none"> • 32 KB or 64 KB FRAM + 24 byte EEPROM • IP68 degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions L x W x H (mm): 75 x 75 x 41

Benefits



The comprehensive portfolio of SIMATIC RF300 transponders offers the right solution for every requirement in production:

- For high-performance applications.
- Large memory up to 64 KB.
- IP68 / IPx9K degree of protection.
- Extremely rugged transponder for high temperature ranges up to 220 degrees with ATEX approval for use in paint shops.
- Customized solutions for SmartLabels and transponders on request.

¹⁾ Extract:
 Test equipment: Steam jet 0 °C, 30 °C, 60 °C, 90 °C
 Water flow: 10 to 15 l/min with 100 bar (75 °C)
 Distance: 10 to 15 cm

RFID systems for the HF frequency range

SIMATIC RF300 transponders (RF300 mode)

SIMATIC RF320T

Overview



Universal, compact transponder (20 + 4 byte EEPROM) in button format (Ø 27 mm x 4 mm).

2

Design

Field data in mm

SIMATIC RF320T to:	SIMATIC RF310R	SIMATIC RF340R	SIMATIC RF350R with ANT 1	SIMATIC RF350R with ANT 18	SIMATIC RF350R with ANT 30	SIMATIC RF380R
Operating distance (S_a)	1 ... 15	1 ... 20	1 ... 30	0 ... 10	0 ... 15	2 ... 45
Limit distance (S_g)	20	25	40	15	20	60
Transmission window (L)	30	45	45	10	15	100

Technical specifications

Order No.	6GT2 800-1CA00
Product type designation	Transponder RF320T
Suitability for use	RF300
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	55 mm
Protocol for wireless transmission	RF300-specific
Maximum data transfer rate for wireless transmission	106 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	EEPROM
Capacity of user memory	20 byte
Type of memory organization	UID (fixed code) 4 byte, user memory 20 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ⁵
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the user memory

Order No.	6GT2 800-1CA00
Product type designation	Transponder RF320T
Mechanical data	
Material	Epoxide resin
Color	Black
Mounting distance with regard to metal surfaces (recommended minimum)	20 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +125 °C
• during storage	-40 ... +150 °C
• during transport	-40 ... +150 °C
Degree of protection	IP67 / IPx9K ¹⁾
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	1000 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Height	4 mm
Diameter	27 mm
Net weight	5 g
Type of mounting	M3 screw, adhesive
Product properties	
Product property „silicon-free“	Yes
Product property „printable“	No
Accessories	Spacer

¹⁾ Test equipment: Steam jet-air ejector 0 °C, 30 °C, 60 °C, 90 °C
Water flow: 10 to 15 l/min with 100 bar (75°C)
Distance: 10 to 15 cm

RFID systems for the HF frequency range

SIMATIC RF300 transponders (RF300 mode)

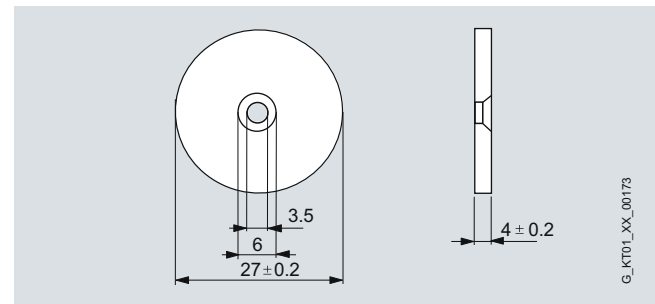
SIMATIC RF320T

Selection and ordering data

	Order No.
Transponder SIMATIC RF320T 20 byte EEPROM Ordering quantity 20 units or a multiple thereof.	6GT2 800-1CA00
Accessories Spacer For MDS D124, MDS D324, MDS D424 and RF320T. Required for mounting on metal surfaces. Diameter = 35 mm, Height = 15 mm. Ordering quantity 20 units or a multiple thereof.	6GT2 690-0AK00



Dimensions



Transponder SIMATIC RF320T

RFID systems for the HF frequency range

SIMATIC RF300 transponders (RF300 mode)

SIMATIC RF340T

Overview



Universal transponder (8 KB FRAM + 24 byte EEPROM + 4 byte serial number), particularly suitable for small workpiece carriers. For mounting directly onto metal.

2

Design

Field data in mm

SIMATIC RF340T to:	SIMATIC RF310R	SIMATIC RF340R	SIMATIC RF350R with ANT 1	SIMATIC RF350R with ANT 18	SIMATIC RF350R with ANT 30	SIMATIC RF380R
Operating distance (S_a)	2 ... 32	5 ... 50	5 ... 55	2 ... 20	5 ... 30	2 ... 80
Limit distance (S_g)	40	65	70	25	35	105
Transmission window (L)	40	80	80	20	25	120

Technical specifications

Order No.	6GT2 800-4BB00
Product type designation	Transponder RF340T
Suitability for use	RF300
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	100 mm
Protocol for wireless transmission	RF300-specific
Maximum data transfer rate for wireless transmission	106 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	FRAM / EEPROM
Capacity of user memory	8189 byte
Type of memory organization	UID (fixed code) 4 byte, user memory 8189 byte, OTP memory 20 byte
Number of read cycles at ambient temperature < 40 °C, max.	10 ¹⁰
Maximum number of write cycles at ambient temperature < 40 °C	10 ¹⁰

Order No.	6GT2 800-4BB00
Product type designation	Transponder RF340T
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the OTP memory
Mechanical data	
Material	PA12
Color	Anthracite
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +85 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
Degree of protection	IP67 / IPx9K ¹⁾
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	500 m/s ²
Oscillation acceleration	200 m/s ²

¹⁾ Test equipment: Steam jet-air ejector 0 °C, 30 °C, 60 °C, 90 °C
Water flow: 10 to 15 l/min with 100 bar (75 °C)
Distance: 10 to 15 cm

RFID systems for the HF frequency range

SIMATIC RF300 transponders (RF300 mode)

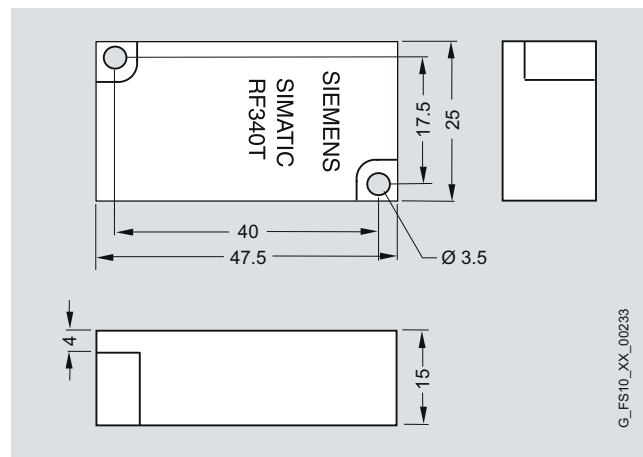
SIMATIC RF340T

Order No.	6GT2 800-4BB00
Product type designation	Transponder RF340T
Design, dimensions and weights	
Width	25 mm
Height	15 mm
Depth	48 mm
Net weight	25 g
Type of mounting	2 screws M3
Product properties	
Product property „silicon-free“	Yes
Product property „printable“	No

Selection and ordering data

	Order No.
Transponder SIMATIC RF340T	6GT2 800-4BB00
8 Kbyte FRAM. Ordering quantity 5 units or a multiple thereof.	

Dimensions



Transponder SIMATIC RF340T

RFID systems for the HF frequency range

SIMATIC RF300 transponders (RF300 mode)

SIMATIC RF350T

Overview



Universal transponder (32 KB FRAM + 24 byte EEPROM). For mounting directly onto metal.

2

Design

Field data in mm

SIMATIC RF350T to:	SIMATIC RF310R	SIMATIC RF340R	SIMATIC RF350R with ANT 1	SIMATIC RF350R with ANT 18	SIMATIC RF350R with ANT 30	SIMATIC RF380R
Operating distance (S_a)	2 ... 38	2 ... 60	2 ... 65	–	0 ... 35	2 ... 100
Limit distance (S_g)	50	75	80	–	40	125
Transmission window (L)	45	80	80	–	25	140

–: Reader-transponder combination not released

Technical specifications

Order No.	6GT2 800-5BD00
Product type designation	Transponder RF350T
Suitability for use	RF300
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	130 mm
Protocol for wireless transmission	RF300-specific
Maximum data transfer rate for wireless transmission	106 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	FRAM / EEPROM
Capacity of user memory	32765 byte
Type of memory organization	UID (fixed code) 4 byte, user memory 32765 byte, OTP memory 20 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁰
Maximum number of write cycles at ambient temperature < 40 °C	10 ¹⁰
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the OTP memory

Order No.	6GT2 800-5BD00
Product type designation	Transponder RF350T
Mechanical data	
Material	PA12
Color	Anthracite
Mounting distance with regard to metal surfaces, recommended minimum	0 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +85 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
Degree of protection	IP68
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	500 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Width	50 mm
Height	20 mm
Depth	50 mm
Net weight	25 g
Type of mounting	2 screws M4
Product properties	
Product property „silicon-free“	Yes
Product property „printable“	No

RFID systems for the HF frequency range

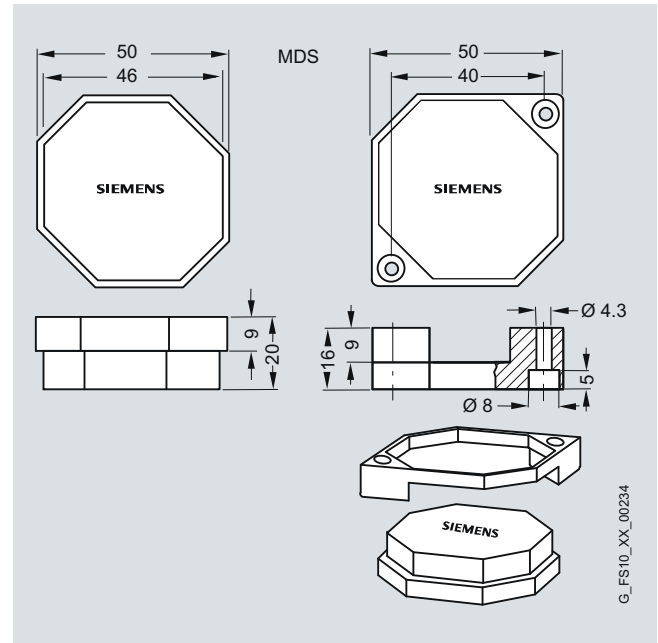
SIMATIC RF300 transponders (RF300 mode)

SIMATIC RF350T

Selection and ordering data

	Order No.
Transponder SIMATIC RF350T	6GT2 800-5BD00
32 Kbyte FRAM.	

Dimensions



Left: Transponder SIMATIC RF350T.

Top right: Mounting frame.

Lower right: Installation diagram. The transponder can be mounted with the mounting frame as shown.

G_FS10_XX_00234

RFID systems for the HF frequency range

SIMATIC RF300 transponders (RF300 mode)

SIMATIC RF360T

Overview



Universal transponder in credit card format (8 KB FRAM + 24 byte EEPROM). For mounting with spacer onto metal.

2

Design

Field data in mm

SIMATIC RF360T to:	SIMATIC RF310R	SIMATIC RF340R	SIMATIC RF350R with ANT 1	SIMATIC RF350R with ANT 18	SIMATIC RF350R with ANT 30	SIMATIC RF380R
Operating distance (S_a)	2 ... 40	2 ... 65	2 ... 75	–	–	2 ... 120
Limit distance (S_g)	55	85	100	–	–	150
Transmission window (L)	45	90	90	–	–	160

–: Reader-transponder combination not released

Technical specifications

Order No.	6GT2 800-4AC00
Product type designation	Transponder RF360T
Suitability for use	RF300
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	150 mm
Protocol for wireless transmission	RF300-specific
Maximum data transfer rate for wireless transmission	106 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	FRAM / EEPROM
Capacity of user memory	8189 byte
Type of memory organization	UID (fixed code) 4 byte, user memory 8189 byte, OTP memory 20 byte
Number of read cycles at ambient temperature < 40 °C, max.	10 ¹⁰
Maximum number of write cycles at ambient temperature < 40 °C	10 ¹⁰
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the OTP memory

Order No.	6GT2 800-4AC00
Product type designation	Transponder RF360T
Mechanical data	
Material	epoxide resin
Color	Anthracite
Mounting distance with regard to metal surfaces (recommended minimum)	20 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +75 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
Degree of protection	IP67
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	500 m/s ²
Oscillation acceleration	200 m/s ²
Resistance to mechanical stress	Continuous torsion and bending stress not permissible
Design, dimensions and weights	
Width	55 mm
Height	2.5 mm
Depth	86 mm
Net weight	25 g
Type of mounting	2 screws M3, with fixing pocket (see accessories)

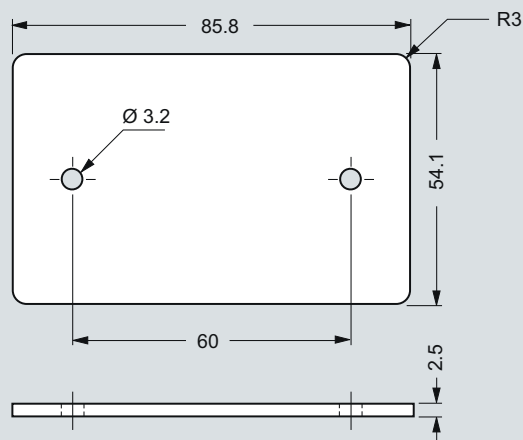
RFID systems for the HF frequency range

SIMATIC RF300 transponders (RF300 mode)

SIMATIC RF360T

Order No.	6GT2 800-4AC00
Product type designation	Transponder RF360T
Product properties	
Product property „silicon-free“	Yes
Product property „printable“	No
Accessories	Fixing pocket, spacer

Dimensions

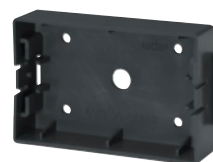


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Transponder SIMATIC RF360T

Selection and ordering data

	Order No.
Transponder SIMATIC RF360T 8 Kbyte FRAM. Ordering quantity 10 units or a multiple thereof.	6GT2 800-4AC00
Accessories Fixing pocket For SIMATIC RF360T, only usable together with spacer 6GT2 190-0AA00 Ordering quantity 50 units or a multiple thereof.	6GT2 190-0AB00
Spacer For fixing pocket 6GT2 190-0AB00, thickness 20 mm. The purpose of the spacer is to maintain the recommended distance to the metal when installing the transponder. Ordering quantity 50 units or a multiple thereof.	6GT2 190-0AA00



RFID systems for the HF frequency range

SIMATIC RF300 transponders (RF300 mode)

SIMATIC RF370T

Overview



Universal transponder in block format (available with 32 or 64 KB FRAM + 24 byte EEPROM). For mounting directly onto metal.

2

Design

Field data in mm

SIMATIC RF370T to:	SIMATIC RF310R	SIMATIC RF340R	SIMATIC RF350R with ANT 1	SIMATIC RF350R with ANT 18	SIMATIC RF350R with ANT 30	SIMATIC RF380R
Operating distance (S_a)	–	5 ... 60	5 ... 65	–	–	5 ... 100
Limit distance (S_g)	–	80	85	–	–	135
Transmission window (L)	–	85	85	–	–	160

–: Reader-transponder combination not released

Technical specifications

Order No.	6GT2 800-5BE00	6GT2 800-6BE00
Product type designation	Transponder RF370T	Transponder RF370T
Suitability for use	RF300	RF300
Wireless frequencies		
Operating frequency, rated value	13.56 MHz	13.56 MHz
Electrical data		
Maximum range	135 mm	135 mm
Protocol for wireless transmission	RF300-specific	RF300-specific
Maximum data transfer rate for wireless transmission	106 kbit/s	106 kbit/s
Product property „multitag-capable“	Yes	Yes
Product constituent „backup battery“	No	No
Memory		
Type of memory	FRAM / EEPROM	FRAM / EEPROM
Capacity of user memory	32765 byte	65277 byte
Type of memory organization	UID (fixed code) 4 byte, user memory 32765 byte, OTP memory 20 byte	UID (fixed code) 4 byte, user memory 65277 byte, OTP memory 20 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁰	10 ¹⁰
Maximum number of write cycles at ambient temperature < 40 °C	10 ¹⁰	10 ¹⁰
Data retention time at ambient temperature < 40 °C, at least	10 a	10 a
Property of memory	Block-by-block write protection of the OTP memory	Block-by-block write protection of the OTP memory

RFID systems for the HF frequency range

SIMATIC RF300 transponders (RF300 mode)

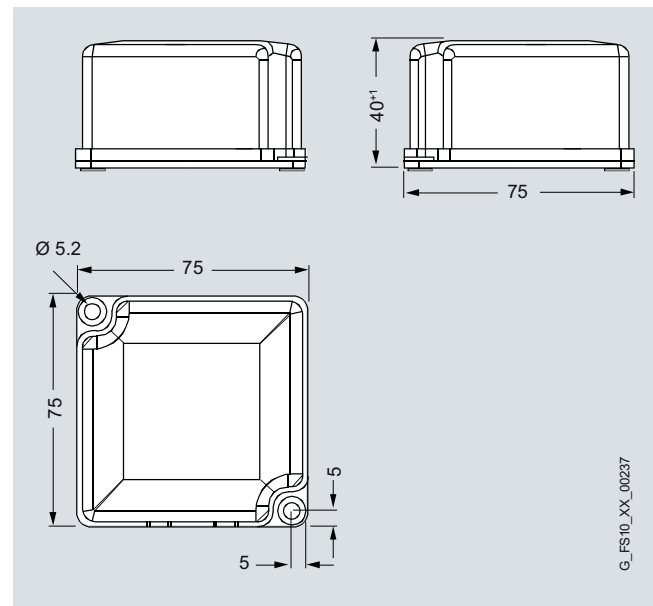
SIMATIC RF370T

Order No.	6GT2 800-5BE00	6GT2 800-6BE00
Product type designation	Transponder RF370T	Transponder RF370T
Mechanical data		
Material	PA12	PA12
Color	Anthracite	Anthracite
Maximum tightening torque of the screw for securing the equipment	1.2 Nm	1.2 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm	0 mm
Permissible ambient conditions		
Ambient temperature		
• during operation	-25 ... +85 °C	-25 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C
Degree of protection	IP68	IP68
Shock resistance	According to DIN EN 60721-3-7 class 7 M3	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	500 m/s ²	500 m/s ²
Oscillation acceleration	200 m/s ²	200 m/s ²
Design, dimensions and weights		
Width	75 mm	75 mm
Height	41 mm	41 mm
Depth	75 mm	75 mm
Net weight	200 g	200 g
Type of mounting	2 screws M5	2 screws M5
Product properties		
Product property „silicon-free“	Yes	Yes
Product property „printable“	No	No

Selection and ordering data

	Order No.
Transponder SIMATIC RF370T With 32 Kbyte FRAM.	6GT2 800-5BE00
Transponder SIMATIC RF370T With 64 Kbyte FRAM.	6GT2 800-6BE00

Dimensions



Transponder SIMATIC RF370T

RFID systems for the HF frequency range

SIMATIC RF300 transponders (RF300 mode)

SIMATIC RF380T

Overview



Heat-resistant transponder, designed for skid identification in paint shops (32 KB FRAM + 24 byte EEPROM), temperature range up to +220 °C (cyclic).

Application

Typical applications are:

- Primer application, cataphoresis with the associated drying ovens.
- Outer paint coating area with drying ovens.
- Washing area with temperatures > +85 °C.

2

Design

Field data in mm

SIMATIC RF380T to:	SIMATIC RF310R	SIMATIC RF340R	SIMATIC RF350R with ANT 1	SIMATIC RF350R with ANT 18	SIMATIC RF350R with ANT 30	SIMATIC RF380R
Operating distance (S_a)	–	5 ... 80	5 ... 90	–	–	5 ... 125
Limit distance (S_g)	–	100	110	–	–	160
Transmission window (L)	–	90	90	–	–	180

–: Reader-transponder combination not released

Mode of operation

Cyclic operation of the transponder at temperatures > 100 °C

At ambient temperatures between +110 °C and +220 °C, care must be taken to ensure that the internal temperature of the SIMATIC RF380T does not exceed the critical threshold of +110 °C. Each heating phase must therefore be followed by a cooling phase. Some limit cycles are listed in the table below

A temperature calculation tool computes the temperature curve for the heat-proof SIMATIC RF380T transponder (see DVD "RFID Systems Software & Documentation", Order No. 6GT2 080-2AA20).

Heating up		Cooling down	
Temperature	Time	Temperature	Time
200 °C	2 h	25 °C	> 8 h
200 °C	1 h	25 °C	> 2 h
190 °C	2 h	25 °C	> 7 h
190 °C	1 h	25 °C	> 1 h 45 min
180 °C	2 h	25 °C	> 5 h 30 min
180 °C	2 h	25 °C	> 4 h 30 min

RFID systems for the HF frequency range

SIMATIC RF300 transponders (RF300 mode)

SIMATIC RF380T

Technical specifications

Order No.	6GT2 800-5DA00
Product type designation	Transponder RF380T
Suitability for use	RF300
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	140 mm
Protocol for wireless transmission	RF300-specific
Maximum data transfer rate for wireless transmission	106 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	FRAM / EEPROM
Capacity of user memory	32765 byte
Type of memory organization	UID (fixed code) 4 byte, user memory 32765 byte, OTP memory 20 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁰
Maximum number of write cycles at ambient temperature < 40 °C	10 ¹⁰
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the OTP memory
Mechanical data	
Material	PPS
Color	brown
Mounting distance with regard to metal surfaces (recommended minimum)	0 m
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +220 °C
• during storage	-40 ... +110 °C
• during transport	-40 ... +110 °C
Degree of protection	IP68
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	500 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Height	83 mm
Diameter	114 mm
Net weight	900 g
Type of mounting	Bracket (see accessories)
Product properties	
Product property „silicon-free“	Yes
Product property „printable“	No
Standards, specifications, approvals	
Certificate of suitability	Ex: II 3G Ex nC IIB T5
Accessories	Skid support, Universal support, Shrouding cover

Selection and ordering data

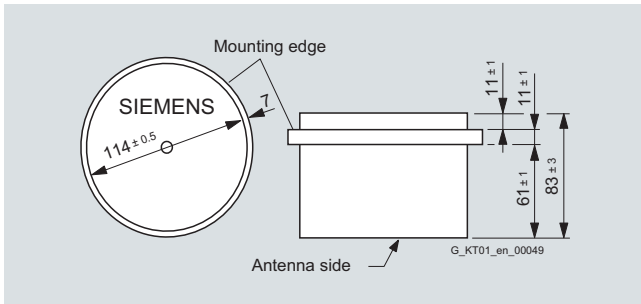
	Order No.
Transponder SIMATIC RF380T	6GT2 800-5DA00
With 32 Kbyte FRAM	
Accessories	
Skid support for SIMATIC RF380T	
• Short type	6GT2 090-0QA00
• Long type	6GT2 090-0QA00-0AX3
Universal support	6GT2 590-0QA00
For SIMATIC RF380T, e.g. for attaching to the body with a customer-specific adapter.	
Shrouding cover	6GT2 090-0QB00
For skid support	

RFID systems for the HF frequency range

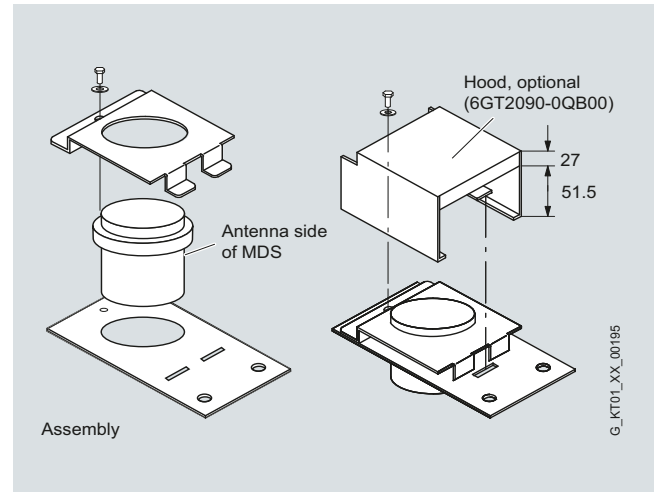
SIMATIC RF300 transponders (RF300 mode)

SIMATIC RF380T

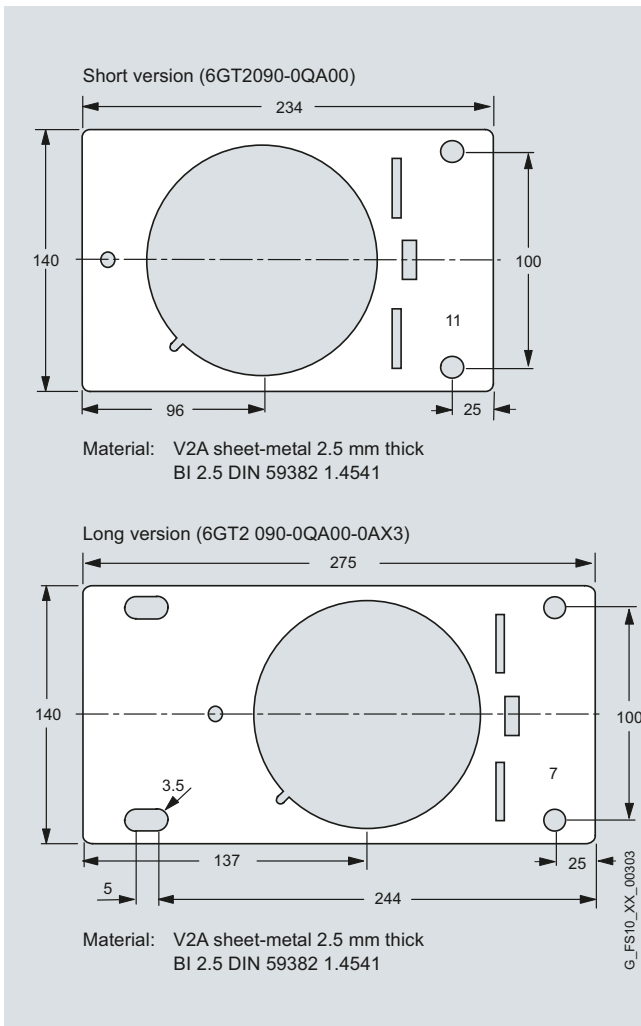
Dimensions



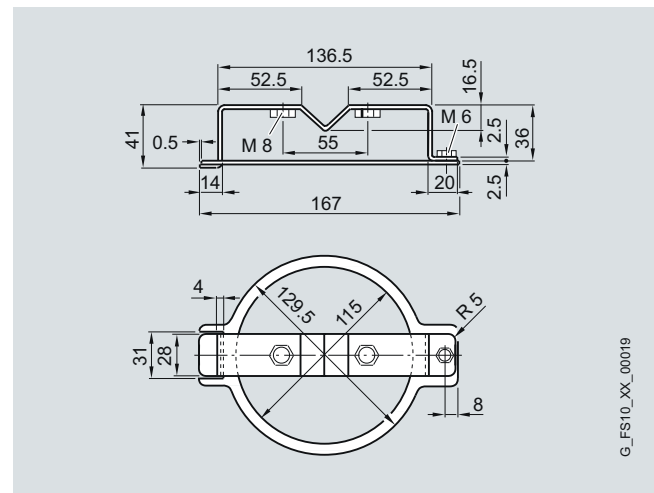
Transponder SIMATIC RF380T



Skid support, shrouding cover



Bracket for RF380T



Universal bracket

RFID systems for the HF frequency range

SIMATIC RF300

SIMATIC RF300 transponders (ISO mode)

Overview



The transponders can be used for the following RFID systems:

- SIMATIC RF200
- SIMATIC RF300 (in ISO 15693 operating mode)
- MOBY D (except MDS D421, MDS D422, MDS D423, MDS D425)

Note

For detailed descriptions and ordering data of these transponders: See the specified pages.

Transponder	Features	Page
MDS D165	SmartLabel, (PET) in credit card format. Applications range from simple identification such as electronic barcode substitution or or supplementation, to storage and distribution logistics, up to product identification. <ul style="list-style-type: none"> • 112 byte EEPROM • IP65 degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions L x W (mm): 86 x 54 	2/61
MDS D261	SmartLabel, (PET) in compact design. Applications range from simple identification such as electronic barcode substitution or supplementation, to storage and distribution logistics, up to product identification. <ul style="list-style-type: none"> • 256 byte EEPROM • IP65 degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions L x W (mm): 55 x 55 	2/61
MDS D100	Universal transponder in credit card format. <ul style="list-style-type: none"> • 112 byte EEPROM • IP68 degree of protection • Operating temperature range -25 °C to +80 °C • Dimensions L x W x H (mm): 85.6 x 54 x 0.9 	2/63
MDS D200	Universal transponder in credit card format. <ul style="list-style-type: none"> • 256 byte EEPROM • IP67 degree of protection • Operating temperature range -20 °C to +60 °C • Dimensions L x W x H (mm): 85.6 x 54 x 0.9 	2/65

Transponder	Features	Page
MDS D421	Transponder for tool coding according to DIN 69873. It can be used wherever very small data carriers and exact positioning are required (e.g. for tool identification). <ul style="list-style-type: none"> • 2000 byte FRAM • IP67 / IPx9K degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 10 x 4.5 Note: This transponder is operated exclusively with the following readers/antennas: SIMATIC RF350R with ANT 12 or ANT 18 and SIMATIC RF210R. Operation with the SIMATIC RF310M mobile reader is not possible.	2/67
MDS D422	Transponder for the identification of metallic workpiece holders, workpieces or containers. <ul style="list-style-type: none"> • 2000 byte FRAM • IP68 degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions, thread diameter x height (mm): M20 x 6 Note: This transponder is operated exclusively with the following readers/antennas: SIMATIC RF350R with ANT 12, ANT 18, ANT 30 and SIMATIC RF210R, RF220R. Operation with the SIMATIC RF310M mobile reader is not possible.	2/68
MDS D423	Rugged transponder for use in production and distribution logistics as well as in assembly and production lines. <ul style="list-style-type: none"> • 2 000 byte FRAM • IP68 / IPx9K degree of protection • Operating temperature -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 30 x 8 	2/69
MDS D124	Heat-resistant transponder for use in applications with high thermal stress. <ul style="list-style-type: none"> • 112 byte EEPROM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +180 °C • Dimensions diameter x height (mm): Ø 27 x 4 	2/70
MDS D324	Rugged transponder for use in harsh industrial environments and under extreme environmental conditions. <ul style="list-style-type: none"> • 992 byte EEPROM • IP67 degree of protection • Operating temperature range -25 °C to +125 °C • Dimensions diameter x height (mm): Ø 27 x 4 	2/72
MDS D424	Rugged transponder for use in production and distribution logistics as well as in assembly and production lines. <ul style="list-style-type: none"> • 2000 byte FRAM • IP67 / IPx9K degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 27 x 4 	2/74

RFID systems for the HF frequency range

SIMATIC RF300

SIMATIC RF300 transponders (ISO mode)

Transponder	Features	Page
MDS D425	Compact and rugged transponder; suitable for screw mounting; for use in assembly and production lines in the powertrain area. <ul style="list-style-type: none"> • 2000 byte FRAM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 24 x 10 (without M6 grub screw) 	2/76
MDS D126	Compact and rugged transponder; suitable for identification of transport units in production-related logistics; can also be used under harsh environmental conditions. <ul style="list-style-type: none"> • 112 byte EEPROM • IP68 degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 50 x 3.6 	2/78
MDS D426	Compact and rugged transponder; suitable for identification of transport units in production-related logistics; can also be used under harsh environmental conditions. <ul style="list-style-type: none"> • 2000 byte FRAM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 50 x 3.6 	2/76
MDS D428	Compact and rugged transponder; suitable for screw mounting; for use in assembly and production lines in the powertrain area. <ul style="list-style-type: none"> • 2000 byte FRAM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 24 x 20 (without M8 grub screw) 	2/82
MDS D139	Heat-resistant transponder for use in paint shops or applications with high thermal stress. <ul style="list-style-type: none"> • 112 byte EEPROM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +220 °C • Dimensions diameter x height (mm): Ø 85 x 15 	2/84
MDS D339	Heat-resistant transponder for use in paint shops or applications with high thermal stress. <ul style="list-style-type: none"> • 1024 byte EEPROM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +220 °C • Dimensions diameter x height (mm): Ø 85 x 15 	2/86

Transponder	Features	Page
MDS D160	The transponder has been specially designed for harsh environments in the laundry and cleaning industry. <ul style="list-style-type: none"> • Its main applications include: <ul style="list-style-type: none"> - Rented work clothing - Rented laundry - OP textiles, hospital clothing - Hotel laundry - Dirt collection mats • 112 byte EEPROM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +175 °C • Dimensions diameter x height (mm): Ø 16 x 3 	2/88
MDS D460	Rugged transponder for use in assembly lines. <ul style="list-style-type: none"> • 2000 byte FRAM • IP67 degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 16 x 3 	2/89

Customer-specific transponders

Customer-specific transponders (packaging, temperature range, geometry, etc.) on request.

Benefits



The comprehensive portfolio of ISO 15693 transponders offers the right solution for every requirement in production and production logistics:

- Large memory up to 2000 byte FRAM.
- Low-cost transponders can, if necessary, be mounted on metal with a spacer.
- Extremely rugged transponder for high temperature ranges up to 220 degrees with ATEX approval for use in paint shops.
- Extremely small transponder for exact positioning, e.g. for tool identification.
- Screw-fit transponders for automatic attachment by means of robots
- Screw-fit transponders for flush-mounting in metal for identifying workpieces or workpiece holders.
- Customized solutions for SmartLabels and transponders on request.

RFID systems for the HF frequency range

SIMATIC RF300

SIMATIC RF300 transponders (ISO mode)

Technical specifications

Field data (operating/limit distance) of transponders and readers (all specifications in mm)

The following table shows the field data (unaffected by metal) for all ISO transponders (MDS Dxxx) in connection with RF300 readers. The listed technical data are typical values and are valid for a room temperature of +25 °C.

For detailed descriptions and ordering data of these ISO transponders, see pages 2/61ff.

	MDS D165	MDS D261	MDS D100	MDS D200	MDS D421	MDS D422	MDS D423	MDS D124	MDS D324
SIMATIC RF310R	2 ... 75/85	2 ... 60/70	2 ... 80/95	2 ... 70/80	–	–	2 ... 32/42	2 ... 45/55	2 ... 35/45
SIMATIC RF340R	5 ... 100/125	5 ... 60/70	5 ... 110/140	5 ... 80/110	–	–	2 ... 35/46	2 ... 60/75	2 ... 55/70
SIMATIC RF350R with ANT 1	5 ... 100/120	5 ... 80/95	5 ... 110/140	5 ... 95/115	–	–	–	2 ... 65/85	2 ... 70/90
SIMATIC RF350R with ANT 12	–	–	–	–	0 ... 3/5	–	–	–	–
SIMATIC RF350R with ANT 18	–	–	–	–	0 ... 6/8	1 ... 10/13	–	2 ... 24/34	1 ... 22/28
SIMATIC RF350R with ANT 30	–	–	–	–	–	0 ... 15/19	–	1 ... 35/46	1 ... 35/45
SIMATIC RF380R	5 ... 170/200	5 ... 120/160	5 ... 170/210	5 ... 150/195	–	–	5 ... 60/75	1 ... 120/140	2 ... 96/120

	MDS D424	MDS D425	MDS D126	MDS D426	MDS D428	MDS D139	MDS D339	MDS D160	MDS D460
SIMATIC RF310R	1 ... 40/45	1 ... 13/15	2 ... 50/60	1 ... 20/35	2 ... 25/35	–	5 ... 55/70	1 ... 28/32	2 ... 20/30
SIMATIC RF340R	2 ... 55/70	2 ... 20/30	2 ... 85/110	10 ... 60/90	2 ... 35/50	5 ... 80/110	5 ... 75/85	2 ... 35/60	2 ... 25/40
SIMATIC RF350R with ANT 1	2 ... 60/80	2 ... 25/35	2 ... 90/120	10 ... 60/90	2 ... 35/50	5 ... 85/115	5 ... 90/105	2 ... 35/60	2 ... 35/50
SIMATIC RF350R with ANT 12	–	–	–	–	1 ... 10/17	–	–	0 ... 8/15	1 ... 10/14
SIMATIC RF350R with ANT 18	1 ... 27/35	1 ... 10/14	–	–	1 ... 12/14	–	–	1 ... 18/27	1 ... 12/18
SIMATIC RF350R with ANT 30	0 ... 45/50	1 ... 15/20	0 ... 47/60	–	1 ... 25/34	–	–	1 ... 25/30	1 ... 18/25
SIMATIC RF380R	2 ... 120/140	2 ... 35/50	2 ... 145/190	10 ... 100/130	2 ... 70/95	5 ... 160/200	5 ... 160/200	2 ... 64/80	2 ... 65/90

–: Reader-transponder combination not released.

Overview



Reader	Features
SIMATIC RF310R	<p>Ideal for use on small assembly lines. Reader with integrated antenna.</p> <ul style="list-style-type: none"> • IP67 degree of protection • Operating temperature range -25 °C to +70 °C • Dimensions L x W x H (mm): 55 x 75 x 30 • 2 interface variants (IQ-Sense or RS422) • Can be parameterized for ISO 15693 compatibility (only applies to RS422 models) and RF300 transponders
SIMATIC RF340R	<p>Ideal for use on assembly lines. Reader with integrated antenna.</p> <ul style="list-style-type: none"> • IP67 degree of protection • Operating temperature range -25 °C to +70 °C • Dimensions L x W x H (mm): 75 x 75 x 41 • Interface RS422 • Can be parameterized for ISO 15693 compatibility and RF300 transponders
SIMATIC RF350R	<p>Ideal for use on assembly lines. Reader for the connection of external antennas (ANT 1, ANT 12, ANT 18, ANT 30).</p> <ul style="list-style-type: none"> • IP65 degree of protection • Operating temperature range -25 °C to +70 °C • Dimensions L x W x H (mm): 75 x 75 x 41 • Interface RS422 • Can be parameterized for ISO 15693 compatibility and RF300 transponders
SIMATIC RF380R	<p>Ideal for use in assembly lines in which long ranges are required. Reader with integrated antenna.</p> <ul style="list-style-type: none"> • IP67 degree of protection • Operating temperature range -25 °C to +70 °C • Dimensions L x W x H (mm): 160 x 80 x 41 • Interface RS422 / RS232 • Can be parameterized for ISO 15693 compatibility and RF300 transponders
SIMATIC RF310M	<p>Mobile handheld reader with integral write/read antenna.</p> <ul style="list-style-type: none"> • Degree of protection IP54 (splashproof) • Operating temperature range -20 °C to +50 °C • Approx. dimensions L x W x H (mm): 280 x 100 x 45 • WLAN (optional)

RFID systems for the HF frequency range

SIMATIC RF300 readers

SIMATIC RF310R

Overview



Due to its small, compact design, the SIMATIC RF310R reader can be used to considerable advantage in small assembly lines.

This reader is available in two interface variants:

- With IQ-Sense interface for the 8xIQ-Sense module SM338 on S7-300/ET 200M.
- With RS422 interface for the RFID communication modules ASM 456, ASM 475, SIMATIC RF160C, RF170C, RF180C and RF182C.

Due to the high degree of protection and the use of high-quality materials, the SIMATIC RF310R ensures problem-free operation even under the harshest industrial conditions. Connection is either over a 4-pin M12 plug-in connector (IQ-Sense variant) or over an 8-pin M12 plug-in connector (RS422 variant). The RS422 model can also be parameterized for use with ISO 15693-compatible transponders, for example from the MOBY D product spectrum.

Design

Field data

Minimum distance from reader to reader

SIMATIC RF310R	≥ 100 mm
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Technical specifications

Order No.	6GT2 801-0AA00	6GT2 801-1AB10
Product type designation	Reader RF310R IQ-Sense	Reader RF310R
Suitability for use	RF300 transponders, for connecting to IQ-Sense	RF300 and MOBY D transponder, for connecting to communication modules
Wireless frequencies		
Operating frequency, rated value	13.56 MHz	13.56 MHz
Electrical data		
Maximum range	35 mm	60 mm
Protocol for wireless transmission	RF300-specific	RF300-specific, ISO 15693, ISO 18000-3
Maximum data transfer rate for wireless transmission	106 kbit/s	106 kbit/s
Product property „multitag-capable“	No	No
Data transfer rate of the point-to-point connection (serial, max.)	0.4 kbit/s	115.2 kbit/s
Transmission time for user data		
• for write access, per byte, typical	25 ms	0.13 ms
• for read access, per byte, typical	20 ms	0.13 ms
Interfaces		
Design of electrical connection	M12, 4-pin	M12, 8-pin
Standard for interfaces for communication	IQ-Sense	RS422
Mechanical data		
Material	PA 12	PA 12
Color	Anthracite	Anthracite
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm	0 mm

RFID systems for the HF frequency range

SIMATIC RF300 readers

SIMATIC RF310R

2

Order No.	6GT2 801-0AA00	6GT2 801-1AB10
Product type designation	Reader RF310R IQ-Sense	Reader RF310R
Supply voltage, current consumption		
DC supply voltage		
• Rated value	24 V	24 V
• minimum	20.4 V	20.4 V
• maximum	28.8 V	28.8 V
Current input at 24 V DC		
• typical	0.04 A	0.05 A
Permissible ambient conditions		
Ambient temperature		
• during operation	-25 ... +70 °C	-25 ... +70 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C
Degree of protection	IP67	IP67
Shock resistance	EN 60721-3-7 class 7 M2	EN 60721-3-7 class 7 M2
Shock acceleration	500 m/s ²	500 m/s ²
Oscillation acceleration	200 m/s ²	200 m/s ²
Design, dimensions and weights		
Width	55 mm	55 mm
Height	30 mm	30 mm
Depth	75 mm	75 mm
Net weight	0.2 kg	0.2 kg
Type of mounting	4 screws M5	4 screws M5
Cable length for RS422 interface, max.	-	1000 m
Product properties		
Type of display	-	3-color LED
Product property „silicon-free“	-	Yes
Standards, specifications, approvals		
Certificate of suitability	Wireless compliant with R&TTE guidelines EN 300330, EN 301489, CE, FCC, UL/CSA	Wireless compliant with R&TTE guidelines EN 300330, EN 301489, CE, FCC, UL/CSA

RFID systems for the HF frequency range

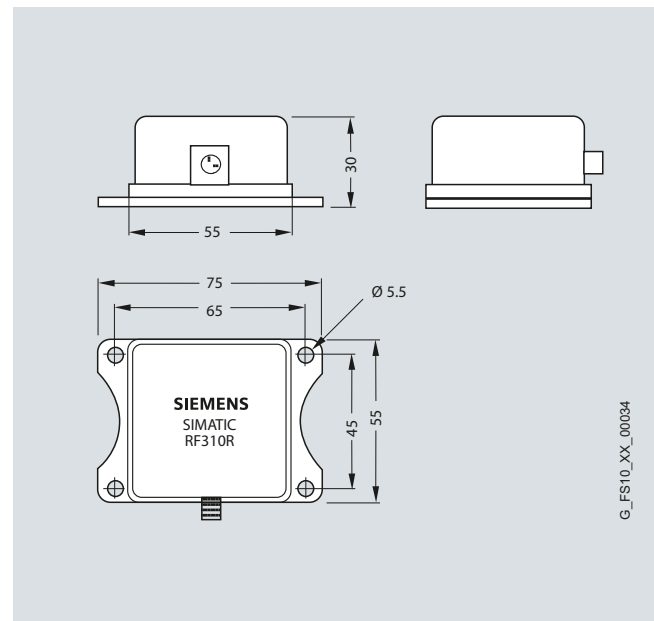
SIMATIC RF300 readers

SIMATIC RF310R

Selection and ordering data

	Order No.
Reader SIMATIC RF310R <ul style="list-style-type: none"> • With IQ-Sense interface • With RS422 interface (3964R protocol) 	6GT2 801-0AA00 6GT2 801-1AB10
Accessories Note: All connection options are shown in Chapter 6 „Communication modules“.	
IQ-Sense module SM 338 for S7-300 and ET 200M	6ES7 338-7XF00-0AB0
M12 cable plug PUR cable 4 x 0.34 mm ² , straight connector for SIMATIC RF310R (IQ-Sense)	
5 m	6GT2 891-0LH50
10 m	6GT2 891-0LN10
DVD „RFID Systems Software & Documentation“	6GT2 080-2AA20

Dimensions



Reader SIMATIC RF310R

Additional Info

All current approvals can be found on the Internet at:

www.siemens.com/rfid-approvals

RFID systems for the HF frequency range

SIMATIC RF300 readers

SIMATIC RF340R

Overview



The SIMATIC RF340R is a reader with integrated antenna for the medium performance range and can be used to great advantage in assembly lines thanks to its compact design. This reader is also particularly suitable for dynamic applications, in which the transponder does not stop during the read/write process.

This reader has an RS422 interface with transmission procedure 3964R for connection to the RFID communication modules ASM 456, ASM 475, SIMATIC RF160C, RF170C, RF180C and RF182C.

Thanks to the high degree of protection and the use of high-quality materials, the SIMATIC RF340R ensures problem-free use even under the toughest industrial conditions. It is connected via an 8-pole M12 plug-in connector.

The reader can also be parameterized for use with ISO 15693-compatible transponders, for example from the MOBY D product spectrum

Design

Field data

Minimum distance from reader to reader

SIMATIC RF340R	≥ 200 mm
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Technical specifications

Order No.	6GT2 801-2AB10
Product type designation	Reader RF340R
Suitability for use	RF300 and MOBY D transponders, for connecting to communication modules
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	140 mm
Protocol for wireless transmission	RF300-specific, ISO 15693, ISO 18000-3
Maximum data transfer rate for wireless transmission	106 kbit/s
Product property „multitag-capable“	No
Data transfer rate of the point-to-point connection (serial, max.)	115.2 kbit/s
Transmission time for user data	
• for write access, per byte, typical	0.13 ms
• for read access, per byte, typical	0.13 ms
Interfaces	
Design of electrical connection	M12, 8-pin
Standard for interfaces for communication	RS422
Mechanical data	
Material	PA 12
Color	Anthracite
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm
Supply voltage, current consumption	
DC supply voltage	
• Rated value	24 V
• minimum	20.4 V
• maximum	28.8 V
Current input at 24 V DC	
• typical	0.1 A
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +70 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
Degree of protection	IP67
Shock resistance	EN 60721-3-7 class 7 M2
Shock acceleration	500 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Width	75 mm
Height	41 mm
Depth	75 mm
Net weight	0.25 kg
Type of mounting	2 screws M5
Cable length	
• for RS 422 interface, maximum	1000 m

RFID systems for the HF frequency range

SIMATIC RF300 readers

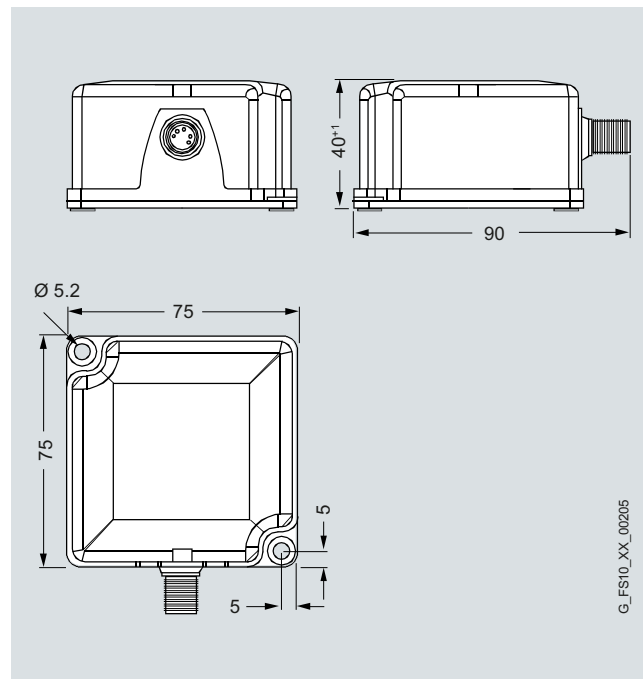
SIMATIC RF340R

Order No.	6GT2 801-2AB10
Product type designation	Reader RF340R
Product properties	
Type of display	3-color LED
Product property „silicon-free“	Yes
Standards, specifications, approvals	
Certificate of suitability	Wireless compliant with R&TTE guidelines EN 300330, EN 301489, CE, FCC, UL/CSA, Ex: II 3G Ex nA nC IIB T5, II 3D Ex tD A22 IP6x T80°C

Selection and ordering data

	Order No.
Reader SIMATIC RF340R	6GT2 801-2AB10
Accessories	
Note: All connection options are shown in Chapter 6 „Communication modules“.	
DVD „RFID Systems Software & Documentation“	6GT2 080-2AA20

Dimensions



Reader SIMATIC RF340R

Additional Info

All current approvals can be found on the Internet at:

www.siemens.com/rfid-approvals

RFID systems for the HF frequency range

SIMATIC RF300 readers

SIMATIC RF350R

Overview



SIMATIC RF350R is a universal reader for operation with external antennas. Due to the different, pluggable antenna designs (flat antenna, round antennas), there are many possible applications in the area of industrial production, especially in assembly lines.

This reader has an RS422 interface with transmission procedure 3964R for connection to the RFID communication modules ASM 456, ASM 475, SIMATIC RF160C, RF170C, RF180C and RF182C.

Thanks to the high degree of protection and the use of high-quality materials, the SIMATIC RF350R ensures problem-free use even under the toughest industrial conditions. It is connected via an 8-pole M12 plug-in connector.

The reader can also be parameterized for use with ISO 15693-compatible transponders, for example from the MOBY D product spectrum.

One of each of the following antennas can be operated on a SIMATIC RF350R:

- ANT 1, universal flat antenna, also for dynamic applications, dimensions L x W x H (mm): 75 x 75 x 20.
- ANT 12, universal round antenna in M12 design for assembly lines with extremely small workpiece holders, dimensions Ø x L (mm) M12 x 40.
- ANT 18, universal round antenna in M18 design for assembly lines with small workpiece holders, dimensions Ø x L (mm) M18 x 55.
- ANT 30, universal round antenna for assembly lines with small workpiece holders, dimensions Ø x L (mm) M30 x 58.

Design

Connectable antennas	ANT 1	ANT 12	ANT 18	ANT 30
Inductive interface to the transponder	13.56 MHz			
Range, maximum	140 mm	17 mm	35 mm	60 mm
Antenna cable length (cannot be changed)	3 m			
Ambient temperature				
• during operation	- 25 ... + 70 °C			
• during transportation and storage	- 40 ... + 85 °C			
Type of protection according to EN 60529	IP67	IP67 (front)		
Mechanical stress in accordance with EN 60721 3-7 Class 7 M2				
• Shock	50 g maximum value, no continuous load			
• Vibration	20 g maximum value, no continuous load			
Type of construction				
• Dimensions (mm)	75 x 75 x 20	M12 x 40	M18 x 55	M30 x 58
• Color	Anthracite	Pastel turquoise		
• Weight, approx.	80 g	45 g	120 g	150 g
• Material	Plastic PA 12	Plastic Krastin		
Mounting	2 screws M5	2 nuts M12	2 nuts M18	2 nuts M30

RFID systems for the HF frequency range

SIMATIC RF300 readers

SIMATIC RF350R

Field data in mm

RF350R with antenna	ANT 1	ANT 12	ANT 18	ANT 30
Operating distance (S_a)	See field data of transponders			
Limit distance (S_g)				
Diameter of transmission window (L_d)				
Minimum distance (mm) from antenna to antenna (D)				
• ANT 1	800	400	400	400
• ANT 12	400	80	125	200
• ANT 18	400	125	125	200
• ANT 30	400	200	200	200

Technical specifications

Order No.	6GT2 801-4AB10
Product type designation	Reader RF350R
Suitability for use	RF300 and MOBY D transponders, for connecting to communication modules
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	140 mm
Protocol for wireless transmission	RF300-specific, ISO 15693, ISO 18000-3
Maximum data transfer rate for wireless transmission	106 kbit/s
Product property „multitag-capable“	No
Data transfer rate of the point-to-point connection (serial, max.)	115.2 kbit/s
Transmission time for user data	
• for write access, per byte, typical	0.13 ms
• for read access, per byte, typical	0.13 ms
Interfaces	
Design of electrical connection for external antenna(s)	M8, 8-pin
Number of external antennas	1
Standard for interfaces for communication	RS422
Mechanical data	
Material	PA 12
Color	Anthraxite
Supply voltage, current consumption	
DC supply voltage, rated value	24 V
DC supply voltage	20.4 ... 28.8 V
Current input at 24 V DC	
• typical	0.1 A

Order No.	6GT2 801-4AB10
Product type designation	Reader RF350R
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +70 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
Degree of protection	IP65
Shock resistance	EN 60721-3-7 class 7 M2
Shock acceleration	500 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Width	75 mm
Height	41 mm
Depth	75 mm
Net weight	0.25 kg
Type of mounting	2 screws M5
Cable length	
• of antenna cable, fixed value	3 m
• for RS 422 interface, maximum	1000 m
Product properties	
Type of display	3-color LED
Product property „silicon-free“	Yes
Standards, specifications Approvals	
Certificate of suitability	Wireless compliant with R&TTE guidelines EN 300330, EN 301489, CE, FCC, UL/CSA, Ex: II 3G Ex nA nC IIB T5, II 3D Ex tD A22 IP6x T80°C
Accessories	Various antennas available

RFID systems for the HF frequency range

SIMATIC RF300 readers

SIMATIC RF350R

2

Order No.	6GT2 398-1CB00	6GT2 398-1CC00
Product type designation	Antenna ANT 1	Antenna ANT 12
Suitability for use	RF300 / MOBY E	RF300 / MOBY E
Wireless frequencies		
Transmission frequency rated value	13.56 MHz	13.56 MHz
Mechanical data		
Material	PA 12	Krastin
Color	Anthracite	Pastel turquoise
Maximum tightening torque of the screw for securing the equipment	2 Nm	3 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	20 mm	0 mm
Type of connector	M8, 8-pin	M8, 8-pin
Permissible ambient conditions		
Ambient temperature		
• during operation	-25 ... +70 °C	-25 ... +70 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C
Degree of protection	IP67	IP67, front
Resistance to mechanical stress	No bending or torsion is allowed	-
Shock resistance	According to EN 60721-3-7 class 7M2	According to EN 60721-3-7 class 7M2
Shock acceleration	500 m/s ²	500 m/s ²
Oscillation acceleration	200 m/s ²	200 m/s ²
Design, dimensions and weights		
Width	75 mm	-
Height	75 mm	-
Depth	20 mm	40 mm
Diameter	-	12 mm
Net weight	80 g	45 g
Type of mounting	2 screws M5	2 plastic nuts M12 x 1.0
Product properties		
Certificate of suitability	CE, FCC, IC, cULus, Ex approval only together with 6GT2 801-4AB10	CE, FCC, IC, cULus, Ex approval only together with 6GT2 801-4AB10

RFID systems for the HF frequency range

SIMATIC RF300 readers

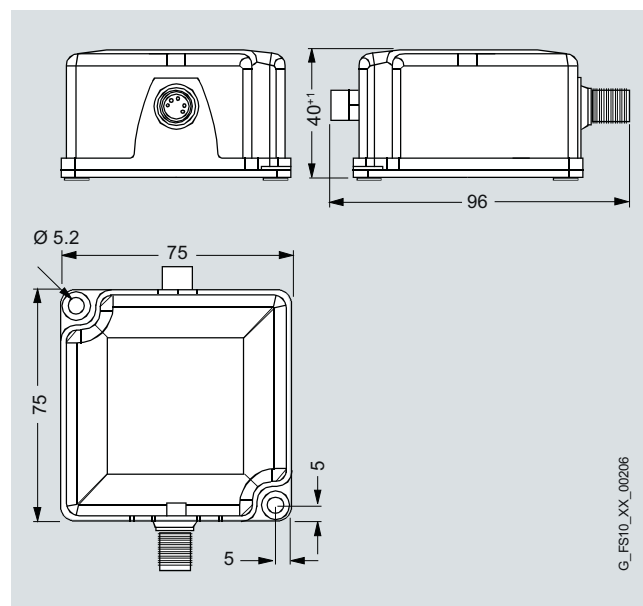
SIMATIC RF350R

Order No.	6GT2 398-1CA00	6GT2 398-1CD00
Product type designation	Antenna ANT 18	Antenna ANT 30
Suitability for use	RF300 / MOBY E	RF300 / MOBY E
Wireless frequencies		
Transmission frequency rated value	13.56 MHz	13.56 MHz
Mechanical data		
Material	Krastin	Krastin
Color	Pastel turquoise	Pastel turquoise
Maximum tightening torque of the screw for securing the equipment	3 Nm	3 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	0 m	0 m
Type of connector	M8, 8-pin	M8, 8-pin
Permissible ambient conditions		
Ambient temperature		
• during operation	-25 ... +70 °C	-25 ... +70 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C
Degree of protection	IP67, front	IP67, front
Shock resistance	According to EN 60721-3-7 class 7M2	According to EN 60721-3-7 class 7M2
Shock acceleration	500 m/s ²	500 m/s ²
Oscillation acceleration	200 m/s ²	200 m/s ²
Design, dimensions and weights		
Depth	55 mm	58 mm
Diameter	18 mm	30 mm
Net weight	120 g	150 g
Type of mounting	2 plastic nuts M18 x 1.0	2 plastic nuts M30 x 1.5
Product properties, functions, components, in general		
Certificate of suitability	CE, FCC, IC, cULus, Ex approval only together with 6GT2 801-4AB10	CE, FCC, IC, cULus, Ex approval only together with 6GT2 801-4AB10

Selection and ordering data

	Order No.
Reader SIMATIC RF350R	6GT2 801-4AB10
Without antenna.	
Antenna ANT 1	6GT2 398-1CB00
For Reader RF350R.	
Antenna ANT 12	6GT2 398-1CC00
For Reader RF350R.	
Antenna ANT 18	6GT2 398-1CA00
For Reader RF350R.	
Antenna ANT 30	6GT2 398-1CD00
For Reader RF350R.	
Accessories	
Note:	
All connection options are shown in Chapter 6 „Communication modules“.	
DVD “RFID Systems Software & Documentation”	6GT2 080-2AA20

Dimensions



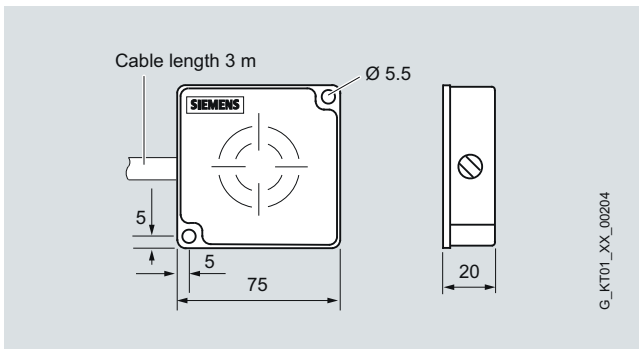
Reader SIMATIC RF350R

RFID systems for the HF frequency range

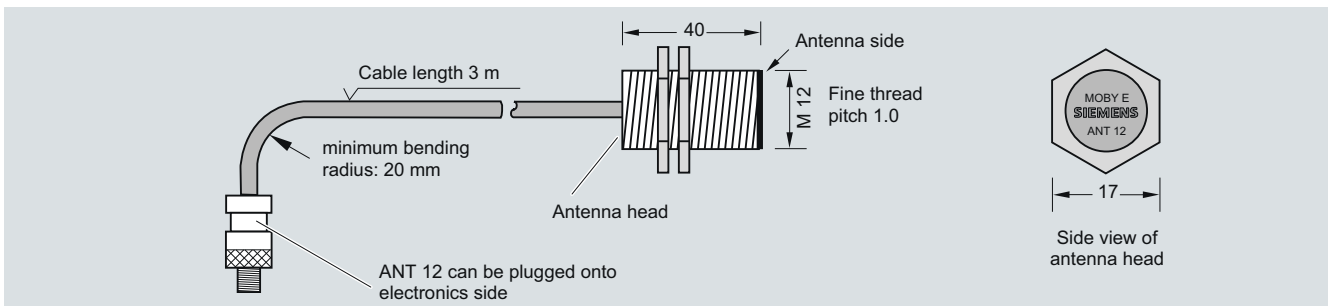
SIMATIC RF300 readers

SIMATIC RF350R

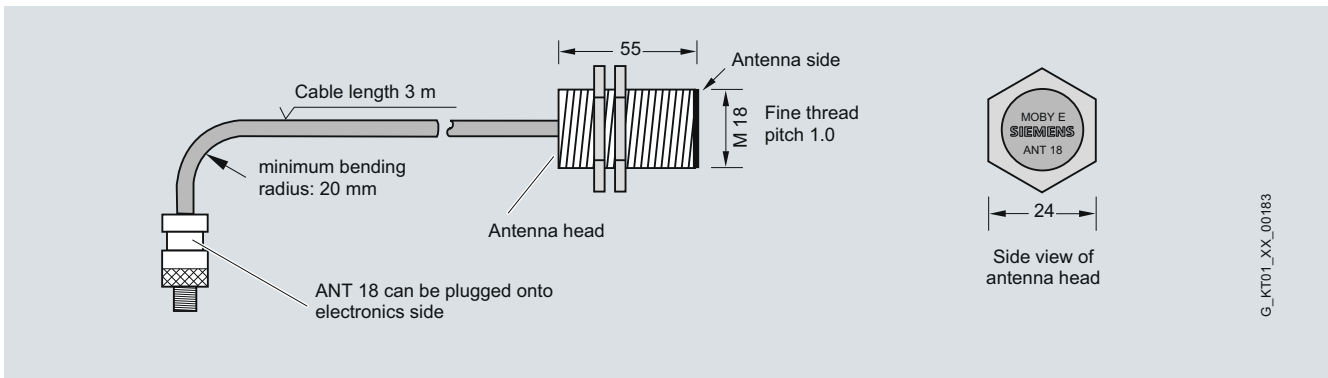
2



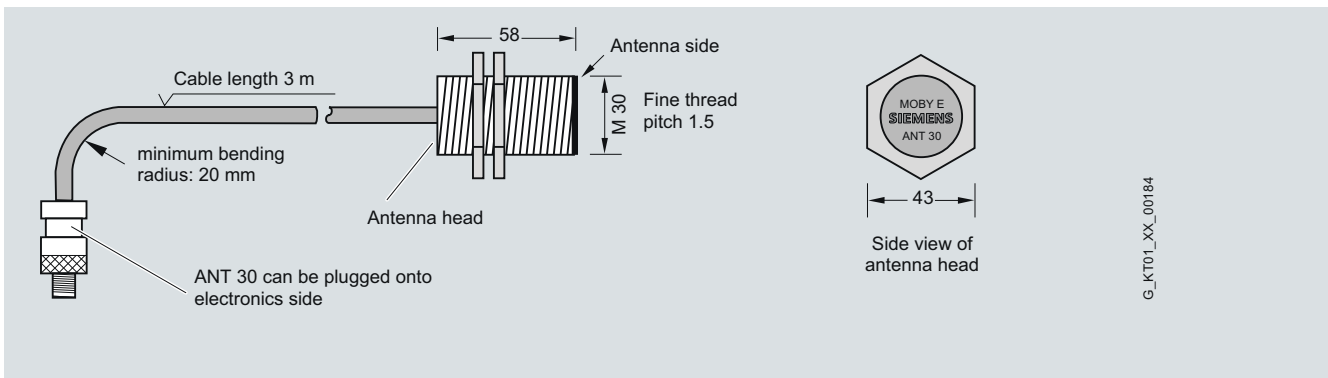
Antenna ANT 1



Antenna ANT 12



Antenna ANT 18



Antenna ANT 30

Additional Info

All current approvals can be found on the Internet at:

www.siemens.com/rfid-approvals

RFID systems for the HF frequency range

SIMATIC RF300 readers

SIMATIC RF380R

Overview



SIMATIC RF380R is a reader with an integral antenna for the top-end performance range and its compact construction makes it ideal for implementation in assembly lines in which long ranges are required (e.g. body shop/paint shop in the automotive industry). This reader is also particularly well-suited to dynamic applications in which the transponder is not stopped during the read/write process (e.g. baggage conveyors in airports).

This reader has both an RS422 and an RS232 interface with a 3964R transmission procedure for connection to RFID communication modules ASM 456, ASM 475, SIMATIC RF160C, RF170C, RF180C and SIMATIC RF182C as well as to non-Siemens controllers or PCs.

Due to the high degree of protection and the use of high-quality materials, the SIMATIC RF380R ensures problem-free operation even under the harshest industrial conditions. It is connected via an 8-pole M12 plug-in connector.

The reader can also be parameterized for use with ISO 15693-compatible transponders, for example from the MOBY D product spectrum.

Design

Field data

Minimum distance from reader to reader

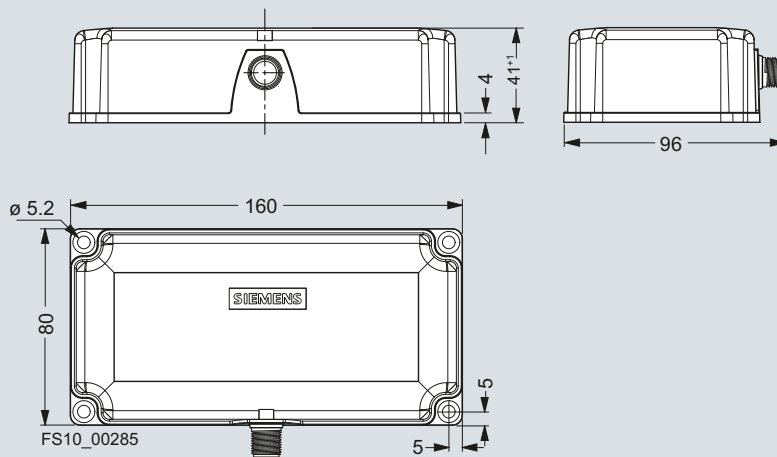
SIMATIC RF380R	≥ 400 mm
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Technical specifications

Order No.	6GT2 801-3AB10
Product type designation	Reader RF380R
Suitability for use	RF300 and MOBY D transponders, for connecting to communication modules and PC systems
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	200 mm
Protocol for wireless transmission	RF300-specific, ISO 15693, ISO 18000-3
Maximum data transfer rate for wireless transmission	106 kbit/s
Product property „multitag-capable“	No
Data transfer rate of the point-to-point connection (serial, max.)	115.2 kbit/s

Order No.	6GT2 801-3AB10
Product type designation	Reader RF380R
Transmission time for user data	
• for write access, per byte, typical	0.13 ms
• for read access, per byte, typical	0.13 ms
Interfaces	
Design of electrical connection	M12, 8-pin
Standard for interfaces for communication	RS422 / RS232
Mechanical data	
Material	PA 12
Color	Anthracite
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm
Supply voltage, current consumption	
DC supply voltage	
• Rated value	24 V
• minimum	20.4 V
• maximum	28.8 V
Current input at 24 V DC	
• typical	0.16 A
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +70 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
Degree of protection	IP67
Shock resistance	EN 60721-3-7 class 7 M2
Shock acceleration	500 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Width	80 mm
Height	41 mm
Depth	160 mm
Net weight	0.6 kg
Type of mounting	4 screws M5
Cable length	
• for RS 232 interface, maximum	30 m
• for RS 422 interface, maximum	1000 m
Product properties	
Type of display	3-color LED
Product property „silicon-free“	Yes
Standards, specifications, approvals	
Certificate of suitability	Wireless compliant with R&TTE guidelines EN 300330, EN 301489, CE, FCC, UL/CSA, Ex: II 3G Ex nC IIB T5

Dimensions



Reader SIMATIC RF380R

Selection and ordering data

	Order No.
Reader SIMATIC RF380R RF300 and ISO15693 mode.	6GT2 801-3AB10
Accessories Note: All connection options are shown in Chapter 6 „Communication modules“.	
RS232 connecting cable Between reader and PC (RS232), 5 m long, material: PUR, CMG approval.	
• 24 V connection with M12 plug	6GT2 891-4KH50
• 24 V connection with open ends	6GT2 891-4KH50-0AX0
DVD „RFID Systems Software & Documentation“	6GT2 080-2AA20

Additional Info

All current approvals can be found on the Internet at:

www.siemens.com/rfid-approvals

RFID systems for the HF frequency range

SIMATIC RF300 readers

SIMATIC RF310M mobile handheld terminal

Overview



The SIMATIC RF310M is a powerful mobile handheld terminal with integral read/write antenna for applications in the field of production logistics, distribution and service. In addition, it is an indispensable tool for commissioning and testing.

Design

The SIMATIC RF310M mobile handheld terminal consists of one basic unit (based on PSION Workabout PRO-3C) and an integrated read/write device for RF300 transponders and MOBY D transponders according to the ISO15693 standard.

The SIMATIC RF310M has a splashwater-proof enclosure (IP65), LCD color monitor 1/4 VGA, 640 x 480 pixels, TFT portrait format, alphanumeric keyboard and various interfaces (for SD memory card, battery charging, USB, Compact Flash for expansion modules, Bluetooth, etc.).

Integral read/write unit, inductive interface to transponder	For SIMATIC RF300 / MOBY D (ISO)
Read/write distance to the transponder	RF300: up to 50 mm ISO: up to 80 mm
Energy/data transmission frequency	13.56 MHz
Serial interface (internal, to basic unit)	RS232, 3964R protocol
Functionality of the software application	Standard user interface for reading/writing of transponders, etc.

Function

The supplied and pre-installed RF300 software provides the following service and test functions for RF300 and MOBY D MDS Dxxx transponders¹⁾:

- Reading data from the transponder
- Writing data to the transponder
- Reading and displaying the ID number of the transponder
- Displaying and editing the data in hexadecimal, ASCII, decimal and binary formats
- Activate/deactivate password

Based on the operating system and communication standard (WIN CE), the unit ensures simple integration into existing or planned infrastructures. Various optional development tools for the PC and a wide selection of accessories are available for this direct from PSION and Microsoft.

In addition to the standard applications, the user has access to an RFID function library (API), with which he can create his own ".Net"-based applications. The software components required for this purpose are also preinstalled.

Technical specifications

Order No.	6GT2 803-1AC00
Product type designation	SIMATIC RF310M mobile handheld terminal
Suitability for use	RF300 and MOBY D transponders
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Protocol for wireless transmission	RF300-specific, ISO 15693, ISO 18000-3
Maximum range	80 mm
Maximum data transfer rate for wireless transmission	106 kbit/s
Product property „multitag-capable“	No
Supply voltage, current consumption	
Type of power supply	Battery operation or mains operation via docking station
Type of battery	Lithium ion battery, fast charging capability
• Integrated back-up battery	Lithium ion rechargeable battery, permanently installed, cannot be replaced by customer
Battery capacity	3 Ah
Running time with standard rechargeable battery, typical	8 h
Permissible ambient conditions	
Ambient temperature	
• during operation	-20 ... +50 °C
• during storage	-40 ... +60 °C
Degree of protection	IP54
Maximum drop height	1.5 m
Design, dimensions and weights	
Width	92 mm
Height	265 mm
Depth	42 mm
Net weight	0.6 kg

¹⁾ Exception: The MDS D421 and MDS D422 transponders cannot be operated with the mobile handheld terminal SIMATIC RF310M.

RFID systems for the HF frequency range

SIMATIC RF300 readers

SIMATIC RF310M mobile handheld terminal

Order No.	6GT2 803-1AC00
Product type designation	SIMATIC RF310M mobile handheld terminal
Product properties	
Type of display	VGA color touchscreen 3.6", 480 x 640 pixels
Type of operating elements	Alphanumeric
Type of acoustic signalling element	Loudspeaker
Type of interface	Tether-Port with RS232 and USB 1.1, docking connection with Low Insertion Force (LIF)
Memory capacity	
• of RAM	256 Mibyte
• of data and program memory	1000 Mibyte
• of usable data memory	900 Mibyte
Product functions „Management, configuration, engineering“	
Operating system pre-installed	Windows Embedded CE 5.0
Product function of software	RF310M.exe for execution of RF300 and ISO15693 (RF200, MOBY D) transponders
Type of programming	.NET and C++; programming with Microsoft Visual Studio via API 'RFID reader interface'
Certificate of suitability	EMC: EN 55022, Safety RF EFT: IEC 801-2, IEC 801-3, IEC 801-4, FCC ID NXW-RF310M01
Accessories	Charging/docking station, WLAN module, barcode scanner

Selection and ordering data

	Order No.
SIMATIC RF310M mobile handheld terminal	6GT2 803-1AC00
Basic unit (PSION Workabout PRO-3) with integrated RFID read/write unit (RF300 and ISO 15693), battery, standard software pre-installed, without charging/docking station.	
Accessories	
Note: All connection options are shown in Chapter 6 „Communication modules“.	
Charging/docking station	6GT2 898-0BA00
For a mobile handheld terminal as well as a spare battery, incl. wide-range plug-in power supply 100 to 240 V AC and country-specific adapters as well as USB cable.	
SIMATIC RF WLAN module	6GT2 898-0DA00
CF card according to standard IEEE 802.11b/g.	
Spare rechargeable battery	6GT2 898-0CA00
For basic unit (PSION Workabout PRO), High Capacity 3300 mAh, Lithium ion.	
DVD „RFID Systems Software & Documentation“	6GT2 080-2AA20

Additional Info

All current approvals can be found on the Internet at:

www.siemens.com/rfid-approvals

RFID systems for the HF frequency range

MOBY D

Introduction

Overview



The RFID system MOBY D is particularly suitable for use in industrial production in the areas of production control, asset management and tracking & tracing.

MOBY D is used to implement identification tasks with medium to high performance (ISO 15693) in the HF range (13.56 MHz) that require particularly high ranges.

MOBY D offers a comprehensive portfolio of ISO 15693 transponders for a whole variety of requirements - from low-cost SmartLabels for simple identification tasks through rugged credit card formats, right up to transponders for use in especially harsh environments such as paint shops or in the laundry and cleaning industry.

The communication modules that can be used for all MOBY and SIMATIC RF systems (ASM 456, ASM 475, SIMATIC RF1xxC) are available for connecting to SIMATIC S7-300, PROFIBUS, PROFINET and TCP/IP (XML).

Depending on the read/write distance, different readers are available with integrated or remote antennas.

The MOBY D identification system provides the following performance features:

- 13.56 MHz operating frequency
- Operation according to ISO 15693.
- Passive (without battery), maintenance-free transponder (MDS Dxxx) with memory of up to 2000 byte FRAM.
- Rugged, compact components with IP67 / IPx9K degree of protection.
- Simple integration in SIMATIC, PROFIBUS, PROFINET and TCP/IP with the help of tried and tested function blocks (FC45, FB45).

Benefits

get

Designed for Industry

- High-performance reader with bulk detection capability and range of up to 0.9 m.
- Cost-effective and battery-free ISO 15693 transponders up to 64 KB with IP68 degree of protection and 220 °C temperature range, with ATEX approval.
- Flexible and economic solutions thanks to the complete and scalable portfolio for the field of industrial identification.
- Simplified engineering, commissioning, diagnostics and maintenance through seamless integration into Totally Integrated Automation:
 - Integrated bus connection to an automation system, such as SIMATIC, SIMOTION or SINUMERIK via communication modules with PROFIBUS and PROFINET.
 - Simple S7 software integration via ready-to-use function blocks.
- High degree of investment protection thanks to:
 - Open ISO 15693 standard.
 - Software compatibility between the RFID systems of Siemens.
 - Standardized communication interfaces.
- Openness through connection possibilities to different bus systems from different manufacturers and PC environments via communication modules.
- Worldwide Service and Support.

Application

Applications range from simple identification, such as electronic barcode substitution or supplementation, or delivery notes in harsh environments, storage and distribution logistics, right up to product identification.

The main applications for MOBY D are:

- Container and box identification in logistics and distribution in open systems.
- Distribution logistics and goods identification.
- Parcel and postal services, couriers and logistics companies.
- Baggage check-in and baggage tracking.
- Production logistics and in assembly lines, including those with demanding temperature requirements, (e.g.: paint shop, temperature range up to +220 °C).
- Parts identification (e.g.: transponder is attached directly to products/pallets).

Design

The MOBY D readers are available in different designs. In addition to the SLG D12 and SLG D12S readers with integrated antennas, the SLG D10/SLG D10S and SLG D11/SLG D11S readers permit the connection of various external antennas with which particularly long ranges of up to 650 mm can be achieved.

The high degree of protection of up to IP65 enables the MOBY D readers to be used in harsh, industrial environments.

The interface to the automation level can be implemented by means of communication modules. For quick and easy cabling, pre-assembled cables with M12 plug-in connectors are available in various lengths.

The MOBY D transponders according to ISO 15693 are used as mobile data carriers.

Transponders suitable for a wide variety of different requirements can be selected from an extensive range: From low-cost SmartLabels for simple identification tasks, through rugged credit card formats, right up to screw-fit transponders that can be automatically attached by robots.

The transponders are attached to the object to be identified, e.g. by means of screws, adhesive or pre-assembled spacer.

Function

All MOBY D readers are suitable for reliable reading and writing tasks in the HF range.

The readers are equipped either with an RS232 interface for the connection to the PC or to SIMATIC S7-1200 or with an RS422 interface for the connection via communication modules to the automation level (e.g. SIMATIC S7) via standard fieldbuses (e.g. PROFIBUS or PROFINET).

User-friendly function blocks are available for the S7 programming.

In the event of an error, the S7 application receives a detailed error message from the communication module via the function block.

Integration

A wide range of communication modules, function blocks, as well as high-performance drivers and function libraries permits easy and quick integration into the application.

And best of all: MOBY D is part of Totally Integrated Automation and can be integrated easily and cost-effectively into the SIMATIC world.

For more details on the connection possibilities, see chapter 6 "Communication Modules".

Technical specifications

RFID system	MOBY D
Transmission frequency	13.56 MHz
Maximum range	900 mm
Protocol (air interface)	ISO 15693 ISO 18000-3
Approvals	<ul style="list-style-type: none"> • EN 300330, 301489, CE • FCC Part 15 • UL/CSA
Memory capacity	992 byte (EEPROM) / 2000 byte (FRAM)
Data transfer rate reader - transponder	<ul style="list-style-type: none"> • Reading: max. 1.5 kbyte/s • Writing: max. 0.5 kbyte/s
Multitag/bulk capability	Yes
Special features	<ul style="list-style-type: none"> • SIMATIC or PC/IT integration • Long sensing ranges with excellent interference immunity • External antennas for industrial applications

RFID systems for the HF frequency range

MOBY D

Transponders

Overview



The transponders can be used for the following RFID systems:

- SIMATIC RF200
- SIMATIC RF300 (in ISO 15693 operating mode)
- MOBY D

Note

For detailed descriptions and ordering data of these transponders: See the specified pages.

Transponder	Features	Page
MDS D165	SmartLabel, (PET) in credit card format. Applications range from simple identification such as electronic barcode substitution or supplementation, to storage and distribution logistics, up to product identification. <ul style="list-style-type: none"> • 112 byte EEPROM • IP65 degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions L x W (mm): 86 x 54 	2/61
MDS D261	SmartLabel, (PET) in compact design. Applications range from simple identification such as electronic barcode substitution or supplementation, to storage and distribution logistics, up to product identification. <ul style="list-style-type: none"> • 256 byte EEPROM • IP65 degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions L x W (mm): 55 x 55 	2/61
MDS D100	Universal transponder in credit card format. <ul style="list-style-type: none"> • 112 byte EEPROM • IP68 degree of protection • Operating temperature range -25 °C to +80 °C • Dimensions L x W x H (mm): 85.6 x 54 x 0.9 	2/63
MDS D200	Universal transponder in credit card format. <ul style="list-style-type: none"> • 256 byte EEPROM • IP67 degree of protection • Operating temperature range -20 °C to +60 °C • Dimensions L x W x H (mm): 85.6 x 54 x 0.9 	2/65
MDS D124	Heat-resistant transponder for use in applications with high thermal stress. <ul style="list-style-type: none"> • 112 byte EEPROM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +180 °C • Dimensions diameter x height (mm): Ø 27 x 4 	2/70
MDS D324	Rugged transponder for use in harsh industrial environments and under extreme environmental conditions. <ul style="list-style-type: none"> • 992 byte EEPROM • IP67 degree of protection • Operating temperature range -25 °C to +125 °C • Dimensions diameter x height (mm): Ø 27 x 4 	2/72
MDS D424	Rugged transponder for use in production and distribution logistics as well as in assembly and production lines: <ul style="list-style-type: none"> • 2000 byte FRAM • IP67 / IPx9K degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 27 x 4 	2/74
MDS D126	Compact and rugged transponder; suitable for identification of transport units in production-related logistics; can also be used under harsh environmental conditions. <ul style="list-style-type: none"> • 112 byte EEPROM • IP68 degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 50 x 3.6 	2/78

Transponder	Features	Page
MDS D426	Compact and rugged transponder; suitable for identification of transport units in production-related logistics; can also be used under harsh environmental conditions. <ul style="list-style-type: none"> • 2000 byte FRAM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 50 x 3.6 	2/80
MDS D428	Compact and rugged ISO transponder; suitable for screw mounting; for use in assembly and production lines in the powertrain area. <ul style="list-style-type: none"> • 2000 byte FRAM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 24 x 20 (without M8 grub screw) 	2/82
MDS D139	Heat-resistant transponder for use in paint shops or applications with high thermal stress. <ul style="list-style-type: none"> • 112 byte EEPROM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +220 °C • Dimensions diameter x height (mm): Ø 85 x 15 	2/84
MDS D339	Heat-resistant transponder for use in paint shops or applications with high thermal stress. <ul style="list-style-type: none"> • 992 byte EEPROM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +220 °C • Dimensions diameter x height (mm): Ø 85 x 15 	2/86
MDS D160	The transponder has been specially designed for harsh environments in the laundry and cleaning industry. <ul style="list-style-type: none"> • Its main applications include: <ul style="list-style-type: none"> - Rented work clothing - Rented laundry - OP textiles, hospital clothing - Hotel laundry - Dirt collection mats • 112 byte EEPROM • IP68 / IPx9K degree of protection • Operating temperature range -25 °C to +175 °C • Dimensions diameter x height (mm): Ø 16 x 3 	2/88
MDS D460	Rugged transponder for use in assembly lines. <ul style="list-style-type: none"> • 2000 byte FRAM • IP67 degree of protection • Operating temperature range -25 °C to +85 °C • Dimensions diameter x height (mm): Ø 16 x 3 	2/89

Benefits

get

Designed for Industry

The comprehensive portfolio of ISO 15693 transponders offers the right solution for every requirement in production and production logistics:

- Large memory up to 2000 byte FRAM.
- Low-cost transponders can, if necessary, be mounted on metal with a spacer.
- Extremely rugged transponder for high temperature ranges up to 220 degrees with ATEX approval for use in paint shops.
- Extremely small transponder for exact positioning, e.g. for tool identification.
- Screw-fit transponders for automatic attachment by means of robots.
- Screw-fit transponders for flush-mounting in metal for identifying workpieces or workpiece holders.
- Customized solutions for SmartLabels and transponders on request.

RFID systems for the HF frequency range

MOBY D

Transponders

Technical specifications

Field data (operating/limit distance) of transponders and readers (all specifications in mm)

The following tables show the field data (unaffected by metal) for all ISO transponders (MDS Dxxx) in connection with MOBY D readers.

The listed technical data are typical values and are valid for a room temperature of +25 °C

	MDS D165	MDS D261	MDS D100	MDS D200	MDS D124	MDS D324	MDS D424
SLG D10/D10S with ANT D5	0 ... 350/450	0 ... 300/400	0 ... 400/500	0 ... 400/500	0 ... 200/280	0 ... 200/280	0 ... 200/280
SLG D10/D10S with ANT D6	0 ... 400/500	0 ... 350/400	0 ... 550/650	0 ... 500/600	0 ... 220/300	0 ... 200/280	0 ... 220/300
SLG D10/D10S with ANT D10	0 ... 350/450	0 ... 300/400	0 ... 500/600	0 ... 450/550	0 ... 200/280	0 ... 200/280	0 ... 200/280
SLG D11/D11S with ANT D2	–	–	–	–	45 ... 70/90	35 ... 60/70	45 ... 70/90
SLG D11/D11S with ANT D5	0 ... 220/300	0 ... 200/280	0 ... 300/380	0 ... 220/320	0 ... 150/220	0 ... 120/160	0 ... 150/200
SLG D12/D12S	0 ... 120/150	0 ... 100/140	0 ... 160/220	0 ... 120/150	0 ... 70/100	0 ... 60/80	0 ... 70/100

	MDS D126	MDS D426	MDS D428	MDS D139	MDS D339	MDS D160	MDS D460
SLG D10/D10S with ANT D5	0 ... 250/350	0 ... 220/300	0 ... 120/160	0 ... 400/500	0 ... 300/380	0 ... 130/180	0 ... 120/160
SLG D10/D10S with ANT D6	0 ... 300/400	0 ... 260/350	0 ... 100/150	0 ... 500/600	0 ... 400/480	0 ... 130/180	0 ... 100/150
SLG D10/D10S with ANT D10	0 ... 200/260	0 ... 180/220	0 ... 100/150	0 ... 450/550	0 ... 300/380	0 ... 130/180	0 ... 100/150
SLG D11/D11S with ANT D2	–	–	–	–	–	35 ... 55/65	30 ... 50/60
SLG D11/D11S with ANT D5	0 ... 200/260	0 ... 180/220	0 ... 70/100	0 ... 280/350	0 ... 180/220	0 ... 75/110	0 ... 70/100
SLG D12/D12S	0 ... 100/140	0 ... 90/120	0 ... 40/60	0 ... 120/150	0 ... 90/110	0 ... 45/65	0 ... 40/60

–: Reader-transponder combination not released.

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D165 / D261

Overview



The SmartLabel can be used for the RFID system MOBY D as well as for SIMATIC RF200 and SIMATIC RF300 (ISO mode).

2

Application

SmartLabels permit numerous flexible constructions to ensure optimum dimensioning for many different applications.

Thanks to their very reasonable price, the SmartLabels can be used universally as "electronic barcode substitutes or supplements" or "delivery notes".

Technical specifications

Order No.	6GT2 600-1AB00-0AX0	6GT2 600-1AA01-0AX0
Product type designation	Label MDS D165	Label MDS D261
Suitability for use	RF200, RF300, MOBY D	RF200, RF300, MOBY D
Wireless frequencies		
Operating frequency, rated value	13.56 MHz	13.56 MHz
Electrical data		
Maximum range	500 m	500 mm
Protocol for wireless transmission	ISO 15693	ISO 15693
Transmission rate for wireless transmission	< 26.5 kbit/s	< 26.5 kbit/s
Product property „multitag-capable“	Yes	Yes
Product constituent „backup battery“	No	No
Memory		
Type of memory	EEPROM	EEPROM
Capacity of user memory	112 byte	256 byte
Type of memory organization	UID (fixed code) 8 byte, user memory 112 byte, configuration memory 8 byte	UID (fixed code) 8 byte, user memory 256 byte, configuration memory 8 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ⁶	10 ⁶
Data retention time at ambient temperature < 40 °C, at least	10 a	10 a
Property of memory	Block-by-block write protection of the user memory	Block-by-block write protection of the user memory
Mechanical data		
Material	Upper side + inlay: PET; antenna: aluminum	Upper side + inlay: PET; antenna: aluminum
Color	White	White
Mounting distance with regard to metal surfaces (recommended minimum)	25 mm	25 mm
Permissible ambient conditions		
Ambient temperature		
• during operation	-25 ... +85 °C	-25 ... +85 °C
• during storage	20 ... 30 °C	20 ... 30 °C
• during transport	20 ... 30 °C	20 ... 30 °C
Degree of protection	IP65	IP65
Resistance to mechanical stress	Maximum storage period: 2 years (determined by durability of the adhesive)	Maximum storage period: 2 years (determined by durability of the adhesive)

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D165 / D261

Order No.	6GT2 600-1AB00-0AX0	6GT2 600-1AA01-0AX0
Product type designation	Label MDS D165	Label MDS D261
Design, dimensions and weights		
Width	54 mm	55 mm
Thickness	0.3 mm	0.3 mm
Depth	86 mm	55 mm
Net weight	1 g	1 g
Type of mounting	Single-sided adhesive	Single-sided adhesive
Product properties, functions, components, in general		
Product property „printable“	Yes	Yes
Printing process	Thermal transfer process	Thermal transfer process

Selection and ordering data

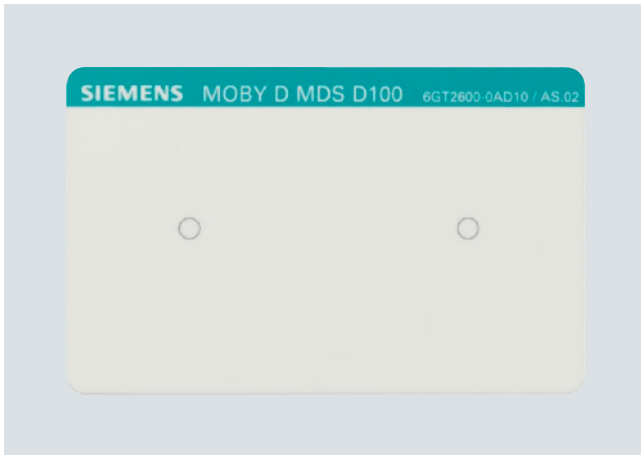
	Order No.
SmartLabel MDS D165 112 byte EEPROM Ordering quantity 1000 units or a multiple thereof.	6GT2 600-1AB00-0AX0
SmartLabel MDS D261 256 byte EEPROM Ordering quantity 1000 units or a multiple thereof.	6GT2 600-1AA01-0AX0

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D100

Overview



The transponder in credit card format can be used for the RFID system MOBY D as well as for SIMATIC RF200 and SIMATIC RF300 (ISO mode).

Application

Applications range from simple identification such as electronic bar code substitution or supplementation, to storage and distribution logistics, up to product identification.

This transponder can even be used problem-free under extreme environmental conditions (e.g. when subjected to temperatures up to +80 °C).

Technical specifications

Order No.	6GT2 600-0AD10
Product type designation	Transponder MDS D100
Suitability for use	RF200, RF300, MOBY D
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	650 mm
Protocol for wireless transmission	ISO 15693
Maximum data transfer rate for wireless transmission	26.5 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	EEPROM
Capacity of user memory	112 byte
Type of memory organization	UID (fixed code) 8 byte, user memory 112 byte, configuration memory 8 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ⁶
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the user memory




Order No.	6GT2 600-0AD10
Product type designation	Transponder MDS D100
Mechanical data	
Material	PC laminated plastic
Color	White / Petrol
Mounting distance with regard to metal surfaces (recommended minimum)	20 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +80 °C
• during storage	-25 ... +80 °C
• during transport	-25 ... +80 °C
Degree of protection	IP68
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Resistance to mechanical stress	Shock and vibration according to ISO 10373 / ISO 7810, torsion and bending according to ISO 10373 / ISO 7816-3
Design, dimensions and weights	
Width	54 mm
Height	0.9 mm
Depth	85.6 mm
Net weight	5 g
Type of mounting	Adhesive, fixing pocket (see accessories)
Product properties	
Product property „printable“	Yes
Printing process	Printable on both sides
Accessories	Fixing pocket, holder, spacer

RFID systems for the HF frequency range

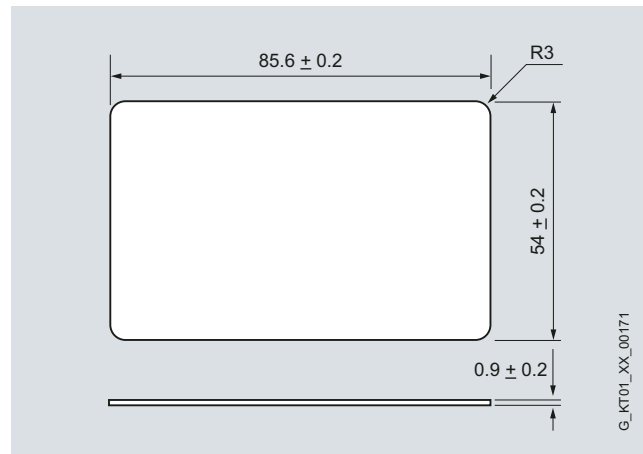
Transponders (ISO mode)

MDS D100

Selection and ordering data

	Order No.
Transponder MDS D100 112 byte EEPROM. Ordering quantity 50 units or a multiple thereof.	6GT2 600-0AD10
Accessories Fixing pocket For MDS D100, use together with spacer 6GT2 190-0AA00. Ordering quantity 50 units or a multiple thereof.	6GT2 190-0AB00
	
Spacer For fixing pocket (6GT2 190-0AB00), thickness 20 mm. The purpose of the spacer is to maintain the recommended distance to the metal when installing the transponder. Ordering quantity 50 units or a multiple thereof.	6GT2 190-0AA00
	
Holder For MDS D100. Ordering quantity 50 units or a multiple thereof.	6GT2 390-0AA00
	

Dimensions



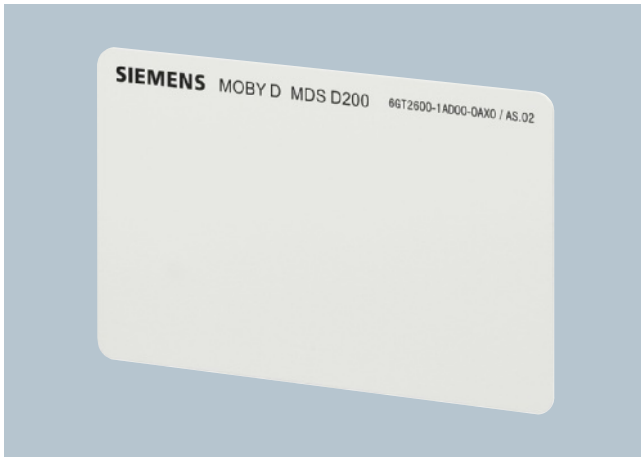
Transponder MDS D100

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D200

Overview



The MDS D200 is a mobile, passive, maintenance-free transponder based on ISO 15693.

The MDS D200 can be used for the RFID system MOBY D as well as for SIMATIC RF200 and SIMATIC RF300 (ISO mode).

Application

From simple identification, e.g. as electronic barcode replacement or supplementation, through warehouse and distribution logistics, to product identification.

Technical specifications

Order No.	6GT2 600-1AD00-0AX0
Product type designation	Transponder MDS D200
Suitability for use	RF200, RF300, MOBY D
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	450 mm
Protocol for wireless transmission	ISO 15693
Maximum data transfer rate for wireless transmission	26.5 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	EEPROM
Capacity of user memory	256 byte
Type of memory organization	UID (fixed code) 8 byte, user memory 256 byte, configuration memory 8 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ⁶
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the user memory
Mechanical data	
Material	PET
Color	White




Order No.	6GT2 600-1AD00-0AX0
Product type designation	Transponder MDS D200
Mounting distance with regard to metal surfaces, recommended minimum	25 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +60 °C
• during storage	-25 ... +60 °C
• during transport	-25 ... +60 °C
Degree of protection	IP67
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Resistance to mechanical stress	Shock and vibration according to ISO 10373 / ISO 7810, torsion and bending according to ISO 10373 / ISO 7816-3
Design, dimensions and weights	
Width	54 mm
Height	0.8 mm
Depth	85.6 mm
Net weight	5 g
Type of mounting	Adhesive, fixing pocket (see accessories)
Product properties	
Product property „printable“	Yes
Printing process	Printable on both sides
Accessories	Fixing pocket, holder, spacer

RFID systems for the HF frequency range

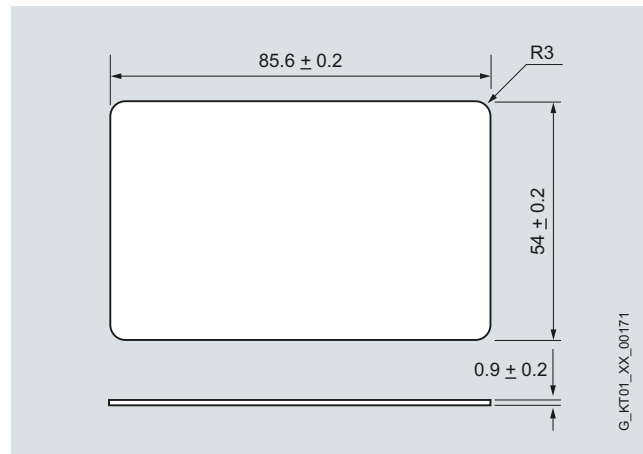
Transponders (ISO mode)

MDS D200

Selection and ordering data

	Order No.
Transponder MDS 200 256 byte EEPROM. Ordering quantity 250 units or a multiple thereof.	6GT2 600-1AD00-0AX0
Accessories Fixing pocket For MDS D200, use together with spacer 6GT2 190-0AA00. Ordering quantity 50 units or a multiple thereof.	6GT2 190-0AB00
	
Spacer For fixing pocket (6GT2 190-0AB00), thickness 20 mm. The purpose of the spacer is to maintain the recommended distance to the metal when installing the transponder. Ordering quantity 50 units or a multiple thereof.	6GT2 190-0AA00
	
Holder For MDS D200. Ordering quantity 50 units or a multiple thereof.	6GT2 390-0AA00
	

Dimensions



Transponder MDS D200

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D421

Overview



The MDS D421 is a passive (maintenance-free) transponder based on ISO 15693 with FRAM technology.

Note

This transponder is operated exclusively with the following readers/antennas: SIMATIC RF350R with ANT 12 or ANT 18 and SIMATIC RF210R.

Operation with mobile readers (SIMATIC RF310M and MOBY STG D) and the MOBY D readers is not possible!

Application

The MDS D421 is designed for tool coding according to DIN 69873.

It can be used wherever small transponders and exact positioning are required, for example, for tool identification or on work-piece holders.

Technical specifications

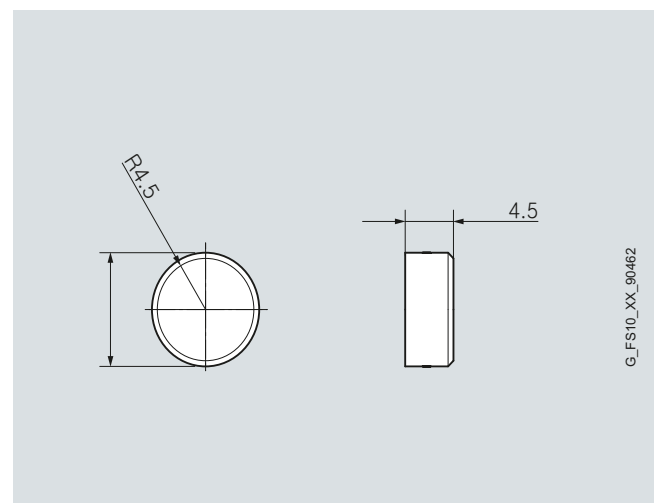
Order No.	6GT2 600-4AE00
Product type designation	Transponder MDS D421
Suitability for use	RF200, RF300
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	8 mm
Protocol for wireless transmission	ISO 15693
Maximum data transfer rate for wireless transmission	26.5 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	FRAM
Capacity of user memory	2000 byte
Type of memory organization	UID (fixed code) 8 byte, user memory 2000 byte, configuration memory 40 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁰
Maximum number of write cycles at ambient temperature < 40 °C	10 ¹⁰

Order No.	6GT2 600-4AE00
Product type designation	Transponder MDS D421
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the user memory
Mechanical data	
Material	Epoxy resin
Color	Black
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +85 °C
• during storage	-40 ... +100 °C
• during transport	-40 ... +100 °C
Degree of protection	IP67 / IPx9K
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	1000 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Height	4.5 mm
Diameter	10 mm
Net weight	4 g
Type of mounting	Adhesive
Product properties	
Product property „silicon-free“	Yes
Product property „printable“	No

Selection and ordering data

	Order No.
Transponder MDS D421	6GT2 600-4AE00
2000 byte FRAM.	
Ordering quantity 10 units or a multiple thereof.	

Dimensions



Transponder MDS D421

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D422

Overview



The MDS D422 is a passive (maintenance-free) transponder in accordance with ISO 15693 with FRAM technology.

The transponder can only be operated with the RFID systems SIMATIC RF200 and SIMATIC RF300 (ISO mode).

Operation with mobile readers (SIMATIC RF310M and MOBY STG D) and MOBY D readers is not possible!

Application

Identification of metallic workpiece holders, workpieces or containers

Technical specifications

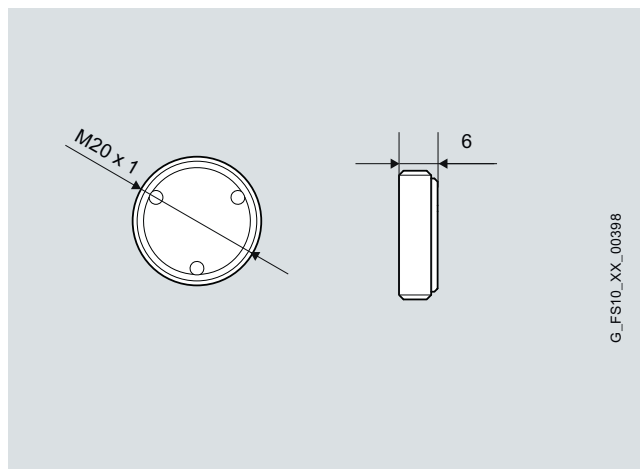
Order No.	6GT2 600-4AF00
Product type designation	Transponder MDS D422
Suitability for use	RF200, RF300
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	15 mm
Protocol for wireless transmission	ISO 15693
Maximum data transfer rate for wireless transmission	26.5 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	FRAM
Capacity of user memory	2000 byte
Type of memory organization	UID (fixed code) 8 byte, user memory 2000 byte, configuration memory 40 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁰
Maximum number of write cycles at ambient temperature < 40 °C	10 ¹⁰
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the user memory

Order No.	6GT2 600-4AF00
Product type designation	Transponder MDS D422
Mechanical data	
Material	PA6.6 GF / Brass, nickel-plated
Color	Black / silver
Maximum tightening torque of the screw for securing the equipment	1 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +85 °C
• during storage	-40 ... +100 °C
• during transport	-40 ... +100 °C
Degree of protection	IP68
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	500 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Height	6 mm
Diameter	20 mm
Net weight	13 g
Type of mounting	Adhesive, screwing
Product properties	
Product property „silicon-free“	Yes
Product property „printable“	No

Selection and ordering data

	Order No.
Transponder MDS D422	6GT2 600-4AF00
2000 byte FRAM	
One installation tool is included in each packing unit.	
Ordering quantity 5 units or a multiple thereof.	

Dimensions



Transponder MDS D422

G_FS10_XX_00398

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D423

Overview



The MDS D423 is a passive (maintenance-free) transponder based on ISO 15693 with FRAM technology.

The transponder can be operated with the SIMATIC RF200 and SIMATIC RF300 (ISO mode) RFID systems. Operation with MOBY D readers is not possible!

Application

The particularly compact transponder of small design can be flush-mounted in metal and is thus suitable for identifying metallic workpiece holders, workpieces or containers.

As a result of its high IP68 / IPx9K degree of protection, it is suitable for use in particularly harsh environments such as the passage through washing machines.

Technical specifications

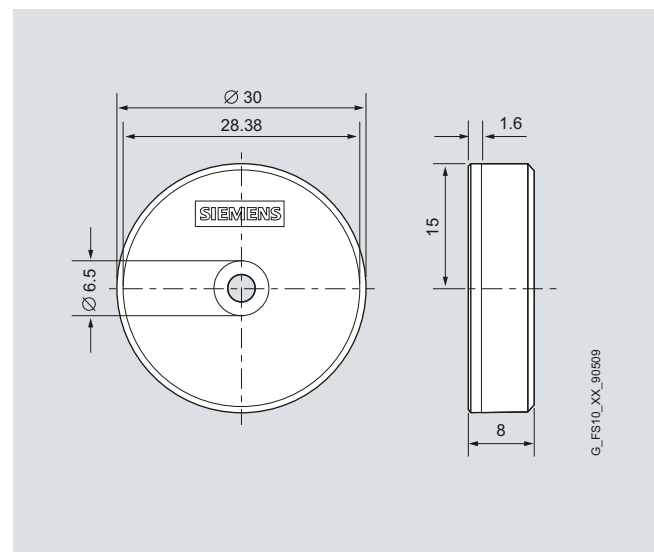
Order No.	6GT2 600-4AA00
Product type designation	Transponder MDS D423
Suitability for use	RF200, RF300
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	80 mm
Protocol for wireless transmission	ISO 15693
Maximum data transfer rate for wireless transmission	26.5 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	EEPROM
Capacity of user memory	112 byte
Type of memory organization	UID (fixed code) 8 byte, user memory 2000 byte, configuration memory 40 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁰
Maximum number of write cycles at ambient temperature < 40 °C	10 ¹⁰
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the user memory

Order No.	6GT2 600-4AA00
Product type designation	Transponder MDS D423
Mechanical data	
Material	PPS
Color	Black
Maximum tightening torque of the screw for securing the equipment	1 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +85 °C
• during storage	-40 ... +100 °C
• during transport	-40 ... +100 °C
Degree of protection	IP68 / IPx9K
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	500 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Height	8 mm
Diameter	30 mm
Net weight	15 g
Type of mounting	Screws
Product properties	
Product property „silicon-free“	Yes
Product property „printable“	No

Selection and ordering data

	Order No.
Transponder MDS D423	6GT2 600-4AA00
2000 byte FRAM	
Ordering quantity 10 units or a multiple thereof.	

Dimensions



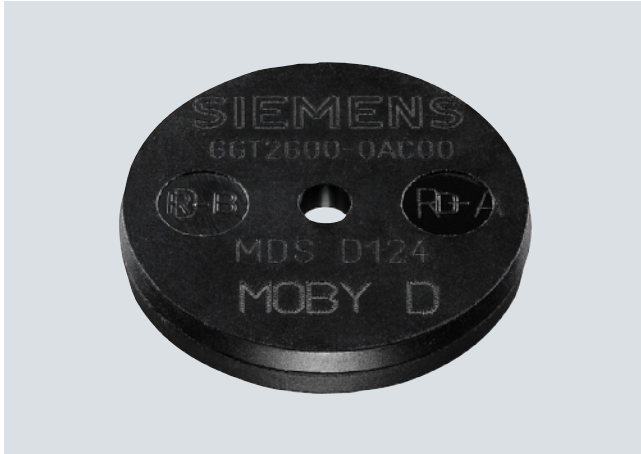
Transponder MDS D423

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D124

Overview



The MDS D124 is a mobile, passive, maintenance-free transponder based on ISO 15693.

The MDS D124 can be used for the RFID system MOBY D as well as for SIMATIC RF200 and SIMATIC RF300 (ISO mode).

Application

This transponder can even be used problem-free under extreme environmental conditions (e.g. when subjected to temperatures up to +180 °C).

Technical specifications

Order No.	6GT2 600-0AC10
Product type designation	Transponder MDS D124
Suitability for use	RF200, RF300, MOBY D
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	300 mm
Protocol for wireless transmission	ISO 15693
Maximum data transfer rate for wireless transmission	26.5 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	EEPROM
Capacity of user memory	112 byte
Type of memory organization	UID (fixed code) 8 byte, user memory 112 byte, configuration memory 8 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ⁶
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the user memory

Order No.	6GT2 600-0AC10
Product type designation	Transponder MDS D124
Mechanical data	
Material	Epoxy resin
Color	Black
Maximum tightening torque of the screw for securing the equipment	1 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	25 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +180 °C
• during storage	-40 ... +125 °C
• during transport	-40 ... +125 °C
Degree of protection	IP68 / IPx9K
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	1000 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Height	4 mm
Diameter	27 mm
Net weight	5 g
Type of mounting	M3 screw, adhesive
Product properties	
Product property „silicon-free“	Yes
Product property „printable“	No
Accessories	Spacer

RFID systems for the HF frequency range

Transponders (ISO mode)

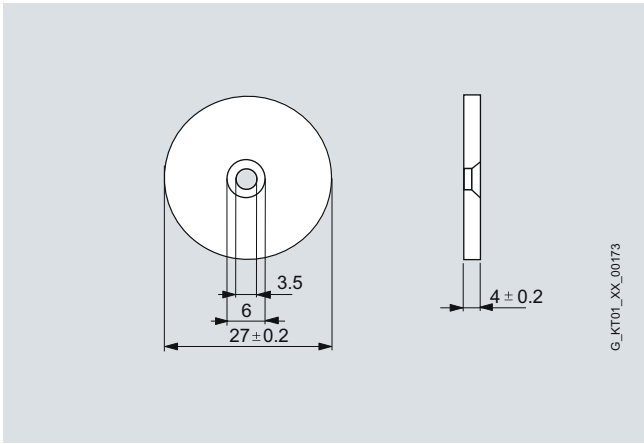
MDS D124

Selection and ordering data

	Order No.
Transponder MDS D124 112 byte EEPROM. Ordering quantity 20 units or a multiple thereof.	6GT2 600-0AC10
Accessories Spacer For MDS D124, MDS D324, MDS D424 and RF320T. Required for mounting on metal surfaces. Diameter = 35 mm, Height = 15 mm. Ordering quantity 20 units or a multiple thereof.	6GT2 690-0AK00



Dimensions



Transponder MDS D124

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D324

Overview



The MDS D324 is a passive (maintenance-free) transponder based on ISO15693.

The MDS D324 can be used for the RFID system MOBY D as well as for SIMATIC RF200 and SIMATIC RF300 (ISO mode).

Application

The MDS D324 was developed for applications in production and distribution logistics as well as product identification.

For the user, the usable application memory amounts to 992 byte.

This transponder can also be easily used in harsh environments under extreme environmental conditions (e.g. with higher thermal stress).

Technical specifications

Order No.	6GT2 600-3AC00
Product type designation	Transponder MDS D324
Suitability for use	RF200, RF300, MOBY D
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	280 mm
Protocol for wireless transmission	ISO 15693
Maximum data transfer rate for wireless transmission	26.5 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	EEPROM
Capacity of user memory	992 byte
Type of memory organization	UID (fixed code) 8 byte, user memory 992 byte, configuration memory 24 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ⁶
Data retention time at ambient temperature < 40 °C, at least	10 a

Order No.	6GT2 600-3AC00
Product type designation	Transponder MDS D324
Property of memory	Block-by-block write protection of the user memory
Mechanical data	
Material	PPS
Color	Black
Maximum tightening torque of the screw for securing the equipment	1 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	25 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +125 °C
• during storage	-40 ... +150 °C
• during transport	-40 ... +150 °C
Degree of protection	IP67
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	1000 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Height	4 mm
Diameter	27 mm
Net weight	5 g
Type of mounting	M3 screw, adhesive
Product properties	
Product property „silicon-free“	Yes
Product property „printable“	No
Accessories	Spacer

RFID systems for the HF frequency range

Transponders (ISO mode)

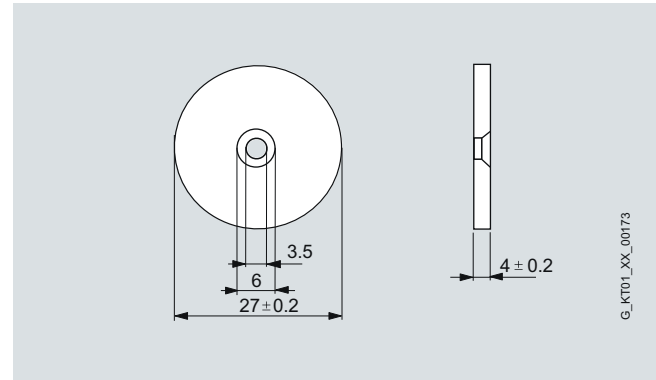
MDS D324

Selection and ordering data

	Order No.
Transponder MDS D324 992 byte EEPROM. Ordering quantity 20 units or a multiple thereof.	6GT2 600-3AC00
Accessories	
Spacer for MDS D124, MDS D324, MDS D424 and RF320T. Required for mounting on metal surfaces. Diameter = 35 mm, Height = 15 mm. Ordering quantity 20 units or a multiple thereof.	6GT2 690-0AK00



Dimensions



Transponder MDS D324

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D424

Overview



The MDS D424 is a passive (maintenance-free) transponder based on ISO 15693 with FRAM technology.

The MDS D424 can be used for the RFID system MOBY D as well as for SIMATIC RF200 and SIMATIC RF300 (ISO mode).

Application

Production and distribution logistics as well as for use in assembly and production lines.

Technical specifications

Order No.	6GT2 600-4AC00
Product type designation	Transponder MDS D424
Suitability for use	RF200, RF300, MOBY D
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	300 mm
Protocol for wireless transmission	ISO 15693
Maximum data transfer rate for wireless transmission	26.5 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	FRAM
Capacity of user memory	2000 byte
Type of memory organization	UID (fixed code) 8 byte, user memory 2000 byte, configuration memory 40 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁰
Maximum number of write cycles at ambient temperature < 40 °C	10 ¹⁰
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the user memory

Order No.	6GT2 600-4AC00
Product type designation	Transponder MDS D424
Mechanical data	
Material	Epoxy resin
Color	Black
Maximum tightening torque of the screw for securing the equipment	1 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	25 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +85 °C
• during storage	-40 ... +100 °C
• during transport	-40 ... +100 °C
Degree of protection	IP67 / IPx9K
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	1000 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Height	4 mm
Diameter	27 mm
Net weight	5 g
Type of mounting	M3 screw, adhesive
Product properties	
Product property „silicon-free“	Yes
Product property „printable“	No
Accessories	Spacer

RFID systems for the HF frequency range

Transponders (ISO mode)

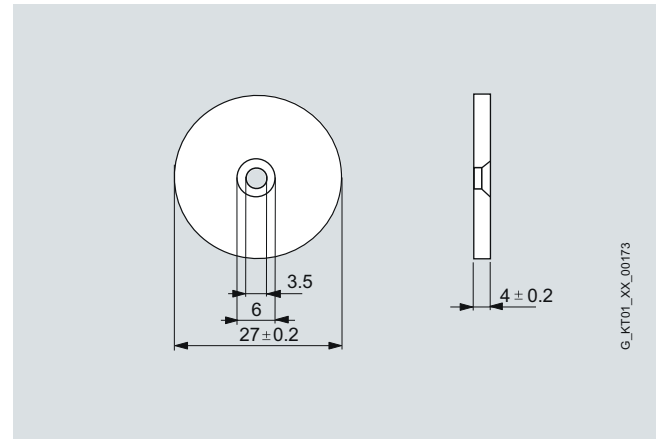
MDS D424

Selection and ordering data

	Order No.
Transponder MDS D424 2000 byte FRAM. Ordering quantity 20 units or a multiple thereof.	6GT2 600-4AC00
Accessories Spacer For MDS D124, MDS D324, MDS D424 and RF320T. Required for mounting on metal surfaces. Diameter = 35 mm, Height = 15 mm. Ordering quantity 20 units or a multiple thereof.	6GT2 690-0AK00



Dimensions



Transponder MDS D424

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D425

Overview



The MDS D425 is a passive (maintenance-free) transponder based on ISO 15693 with FRAM technology.

The MDS D425 can be operated with the RFID systems SIMATIC RF200 and SIMATIC RF300 (ISO mode).

Operation with MOBY D readers is not possible!

Technical specifications

Order No.	6GT2 600-4AG00
Product type designation	Transponder MDS D425
Suitability for use	RF200, RF300
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	50 mm
Protocol for wireless transmission	ISO 15693
Maximum data transfer rate for wireless transmission	26.5 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	FRAM
Capacity of user memory	2000 byte
Type of memory organization	UID (fixed code) 8 byte, user memory 2000 byte, configuration memory 40 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁰
Maximum number of write cycles at ambient temperature < 40 °C	10 ¹⁰
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the user memory

Order No.	6GT2 600-4AG00
Product type designation	Transponder MDS D425
Mechanical data	
Material	PA6.6 GF / Stainless steel
Color	Black / silver
Maximum tightening torque of the screw for securing the equipment	6 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +85 °C
• during storage	-40 ... +125 °C
• during transport	-40 ... +125 °C
Degree of protection	IP68 / IPx9K
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	500 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Height	10 mm
Diameter	24 mm
Net weight	35 g
Type of mounting	Screws (M6)
Product properties	
Product property „silicon-free“	Yes
Product property „printable“	No

RFID systems for the HF frequency range

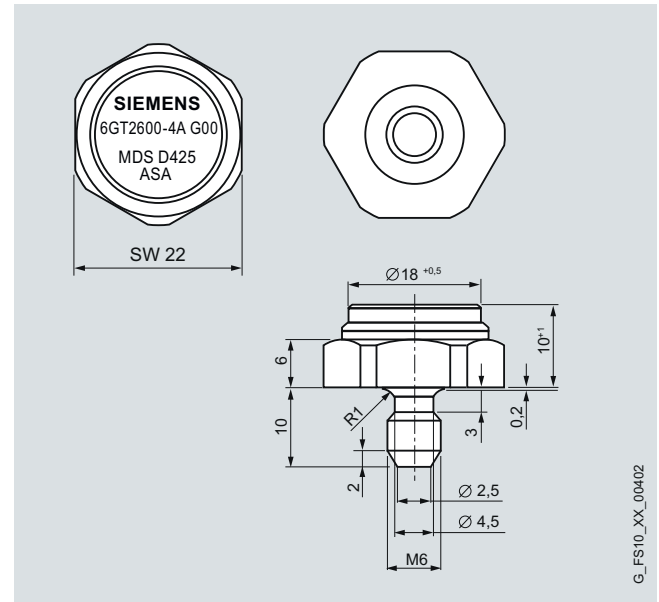
Transponders (ISO mode)

MDS D425

Selection and ordering data

	Order No.
Transponder MDS D425	6GT2 600-4AG00
2000 byte FRAM. Ordering quantity 5 units or a multiple thereof.	

Dimensions



Transponder MDS D425

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D126

Overview



The MDS D126 is a passive (maintenance-free) transponder based on ISO 15693.

The MDS D126 can be used for the RFID system MOBY D as well as for SIMATIC RF200 and SIMATIC RF300 (ISO mode).

Application

Compact and rugged ISO transponder; suitable for identification of transport units in production-related logistics; can also be used under harsh environmental conditions.

Technical specifications

Order No.	6GT2 600-0AE00
Product type designation	Transponder MDS D126
Suitability for use	RF200, RF300, MOBY D
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	400 mm
Protocol for wireless transmission	ISO 15693
Maximum data transfer rate for wireless transmission	26.5 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	EEPROM
Capacity of user memory	112 byte
Type of memory organization	UID (fixed code) 8 byte, user memory 112 byte, configuration memory 8 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ⁶
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the user memory

Order No.	6GT2 600-0AE00
Product type designation	Transponder MDS D126
Mechanical data	
Material	PA6.6 GF
Color	Black
Maximum tightening torque of the screw for securing the equipment	1 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	25 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +85 °C
• during storage	-40 ... +100 °C
• during transport	-40 ... +100 °C
Degree of protection	IP68
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	500 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Height	3.6 mm
Diameter	50 mm
Net weight	13 g
Type of mounting	M4 screw
Product properties	
Product property „printable“	No
Accessories	Spacer

RFID systems for the HF frequency range

Transponders (ISO mode)

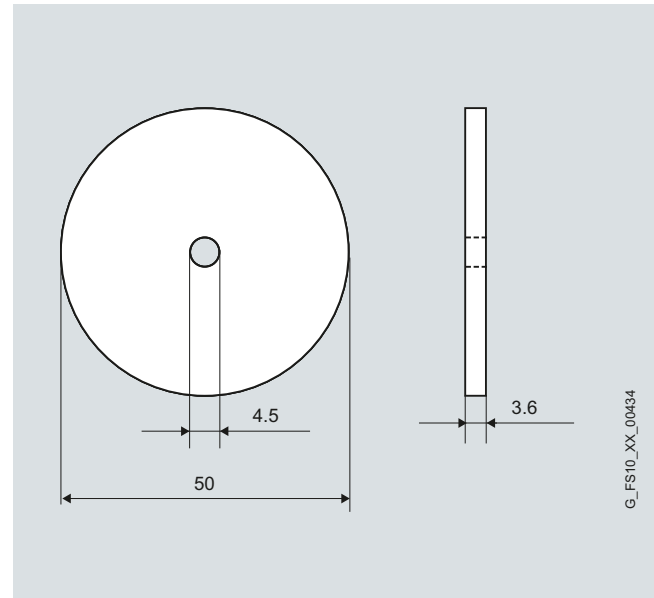
MDS D126

Selection and ordering data

	Order No.
Transponder MDS D126 112 byte EEPROM. Ordering quantity 250 units or a multiple thereof.	6GT2 600-0AE00
Accessories Spacer for MDS D126, required for mounting on metal surfaces. Diameter = 60 mm Height = 30 mm. Ordering quantity 50 units or a multiple thereof.	6GT2 690-0AL00



Dimensions



Transponder MDS D126

2

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D426

Overview



The MDS D426 is a passive (maintenance-free) transponder based on ISO 15693 with FRAM technology.

The MDS D426 can be used for the RFID system MOBY D as well as for SIMATIC RF200 and SIMATIC RF300 (ISO mode).

Application

Compact and rugged ISO transponder; suitable for identification of transport units in production-related logistics; can also be used under harsh environmental conditions.

Technical specifications

Order No.	6GT2 600-4AH00
Product type designation	Transponder MDS D426
Suitability for use	RF200, RF300, MOBY D
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	350 mm
Protocol for wireless transmission	ISO 15693
Maximum data transfer rate for wireless transmission	26.5 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	FRAM
Capacity of user memory	2000 byte
Type of memory organization	UID (fixed code) 8 byte, user memory 2000 byte, configuration memory 40 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁰
Maximum number of write cycles at ambient temperature < 40 °C	10 ¹⁰
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the user memory

Order No.	6GT2 600-4AH00
Product type designation	Transponder MDS D426
Mechanical data	
Material	PA6.6 GF
Color	Black
Maximum tightening torque of the screw for securing the equipment	1 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	25 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +85 °C
• during storage	-40 ... +100 °C
• during transport	-40 ... +100 °C
Degree of protection	IP68
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	500 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Height	3.6 mm
Diameter	50 mm
Net weight	13 g
Type of mounting	M4 screw
Product properties	
Product property „printable“	No
Accessories	Spacer

RFID systems for the HF frequency range

Transponders (ISO mode)

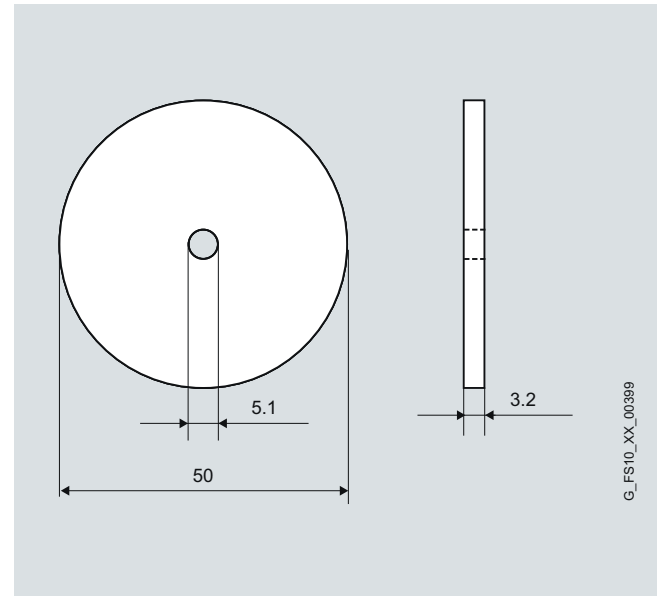
MDS D426

Selection and ordering data

	Order No.
Transponder MDS D426 2000 byte FRAM. Ordering quantity 50 units or a multiple thereof.	6GT2 600-4AH00
Accessories Spacer For MDS D426, required for mounting on metal surfaces. Diameter = 60 mm Height = 30 mm. Ordering quantity 50 units or a multiple thereof.	6GT2 690-0AL00



Dimensions



Transponder MDS D426

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D428

Overview



The MDS D428 is a passive (maintenance-free) transponder based on ISO 15693 with FRAM technology.

The MDS D428 can be used for the RFID system MOBY D as well as for SIMATIC RF200 and SIMATIC RF300 (ISO mode).

Application

Compact and rugged ISO transponder; suitable for screw mounting.

For use in assembly and production lines in the powertrain area.

Technical specifications

Order No.	6GT2 600-4AK00 6GT2 600-4AK00-0AX0 (With surface protection plate)
Product type designation	Transponder MDS D428
Suitability for use	RF200, RF300, MOBY D
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	150 mm
Protocol for wireless transmission	ISO 15693
Maximum data transfer rate for wireless transmission	26.5 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	FRAM
Capacity of user memory	2000 byte
Type of memory organization	UID (fixed code) 8 byte, user memory 2000 byte, configuration memory 40 byte
Number of read cycles at ambient temperature < 40 °C, max.	10 ¹⁰
Maximum number of write cycles at ambient temperature < 40 °C	10 ¹⁰
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the user memory

Order No.	6GT2 600-4AK00 6GT2 600-4AK00-0AX0 (With surface protection plate)
Product type designation	Transponder MDS D428
Mechanical data	
Material	PA6.6 GF / Stainless steel
Color	Black / silver
Maximum tightening torque of the screw for securing the equipment	6 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	0 m
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +85 °C
• during storage	-40 ... +125 °C
• during transport	-40 ... +125 °C
Degree of protection	IP68 / IPx9K
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	500 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Height	20 mm
Diameter	18 mm
Net weight	35 g
Type of mounting	Screws (M8)
Product properties	
Product property „silicon-free“	Yes
Product property „printable“	No

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D428

Selection and ordering data

Order No.

Transponder MDS D428

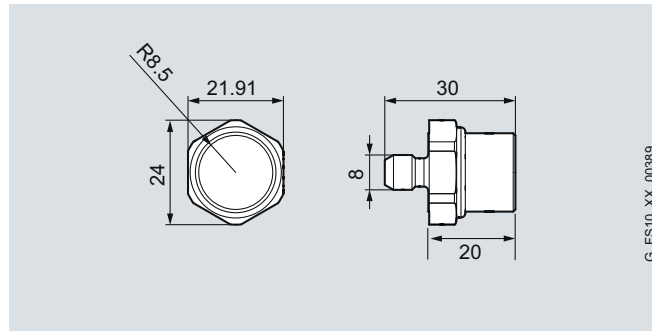
2000 byte FRAM.

Ordering quantity 5 units or a multiple thereof.

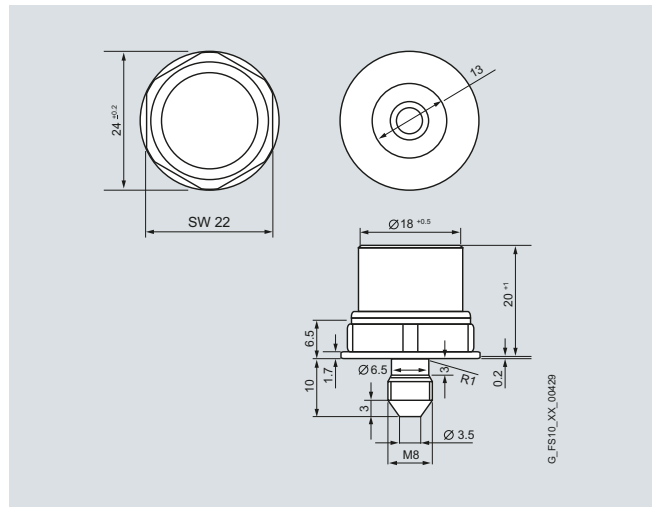
- Without surface protection plate.
- With surface protection plate to prevent scratching of the screw-in surface.

6GT2 600-4AK00**6GT2 600-4AK00-0AX0**

Dimensions



6GT2 600-4AK00



6GT2 600-4AK00-0AX0

2

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D139

Overview



MDS D139 with spacer

The MDS D139 is a passive (maintenance-free) heat-resistant transponder based on ISO 15693.

The MDS D139 can be used for the RFID system MOBY D as well as for SIMATIC RF200 and SIMATIC RF300 (ISO mode).

Application

Applications in production logistics and in assembly lines subject to high temperatures (up to +200 °C, e.g. in a paint shop).

Technical specifications

Order No.	6GT2 600-0AA10
Product type designation	Transponder MDS D139
Suitability for use	RF200, RF300, MOBY D
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	600 mm
Protocol for wireless transmission	ISO 15693
Maximum data transfer rate for wireless transmission	26.5 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	EEPROM
Capacity of user memory	112 byte
Type of memory organization	UID (fixed code) 8 byte, user memory 112 byte, configuration memory 8 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ⁶
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the user memory

Order No.	6GT2 600-0AA10
Product type designation	Transponder MDS D139
Mechanical data	
Material	PPS
Color	Black
Maximum tightening torque of the screw for securing the equipment	1.5 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	30 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +220 °C
• during storage	-40 ... +100 °C
• during transport	-40 ... +100 °C
Degree of protection	IP68 / IPx9K
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	500 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Height	15 mm
Diameter	85 mm
Net weight	50 g
Type of mounting	M5 screw
Product properties	
Product property „silicon-free“	Yes
Product property „printable“	No
Standards, specifications, approvals	
Certificate of suitability	Ex: II 3 G Ex nA II T2, II 3 D Ex tD A22 IP68 T 210 °C
Accessories	Spacer, quick change holder

RFID systems for the HF frequency range

Transponders (ISO mode)

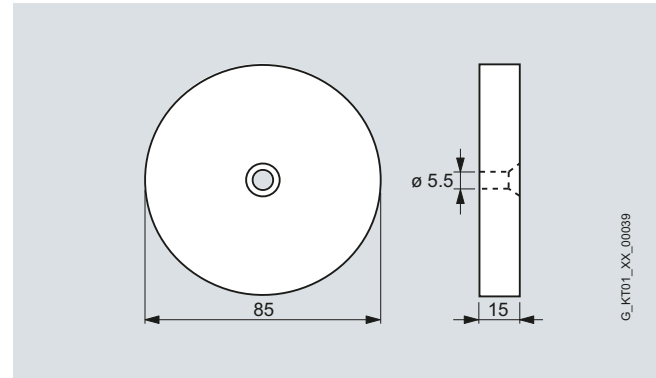
MDS D139

Selection and ordering data

	Order No.
Transponder MDS D139 112 byte EEPROM. Ordering quantity 10 units or a multiple thereof.	6GT2 600-0AA10
Accessories Spacer Required for mounting on metal surfaces. Ordering quantity 10 units or a multiple thereof.	6GT2 690-0AA00
Quick change holder For MDS D139, stainless steel, diameter = 22 mm, height = 48 mm. Ordering quantity 10 units or a multiple thereof.	6GT2 690-0AH00



Dimensions



Transponder MDS D139

2

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D339

Overview



The MDS D339 is a passive (maintenance-free) heat-resistant transponder based on ISO 15693.

The MDS D339 can be used for the RFID system MOBY D as well as for SIMATIC RF200 and SIMATIC RF300 (ISO mode).

Application

Applications in production logistics and in assembly lines subject to high temperatures (up to +220 °C, e.g. in a paint shop).

Technical specifications

Order No.	6GT2 600-3AA10
Product type designation	Transponder MDS D339
Suitability for use	RF200, RF300, MOBY D
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	500 mm
Protocol for wireless transmission	ISO 15693
Maximum data transfer rate for wireless transmission	26.5 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	EEPROM
Capacity of user memory	992 byte
Type of memory organization	UID (fixed code) 8 byte, user memory 992 byte, configuration memory 24 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ⁶
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the user memory

Order No.	6GT2 600-3AA10
Product type designation	Transponder MDS D339
Mechanical data	
Material	Epoxy resin
Color	Black
Maximum tightening torque of the screw for securing the equipment	1.5 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	30 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +220 °C
• during storage	-40 ... +100 °C
• during transport	-40 ... +100 °C
Degree of protection	IP68 / IPx9K
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	500 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Height	15 mm
Diameter	85 mm
Net weight	50 g
Type of mounting	M5 screw
Product properties	
Product property	
• silicone-free	Yes
• printable	No
Standards, specifications Approvals	
Certificate of suitability	Ex: II 3 G Ex nA II T2, II 3 D Ex tD A22 IP68 T 210 °C
Accessories	Spacer, quick change holder

RFID systems for the HF frequency range

Transponders (ISO mode)

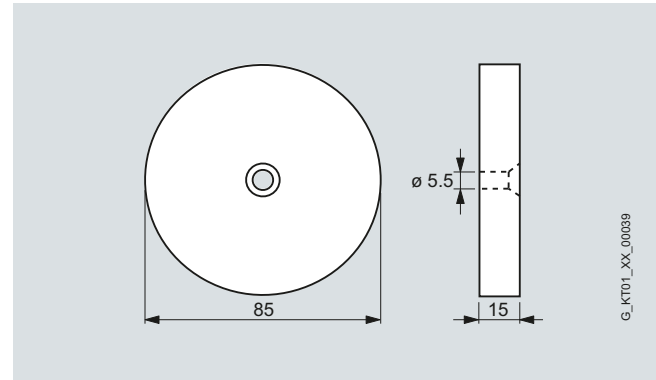
MDS D339

Selection and ordering data

	Order No.
Transponder MDS D339 ISO 992 byte EEPROM. Ordering quantity 10 units or a multiple thereof.	6GT2 600-3AA10
Accessories Spacer Required for mounting on metal surfaces. Ordering quantity 10 units or a multiple thereof.	6GT2 690-0AA00
Quick change holder For MDS D339, stainless steel, Diameter = 22 mm, Height = 48 mm. Ordering quantity 10 units or a multiple thereof.	6GT2 690-0AH00



Dimensions



Transponder MDS D339 ISO

2

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D160

Overview



The MDS D160 transponder can be used for the RFID system MOBY D as well as for SIMATIC RF200 and SIMATIC RF300 (ISO mode)

Application

Typical applications are, for example:

- Rented work clothing
- Hotel laundry
- Surgical textiles
- Hospital clothing
- Dirt collection mats
- Clothing for nursing homes/hostels

Technical specifications

Order No.	6GT2 600-0AB10
Product type designation	Transponder MDS D160
Suitability for use	RF200, RF300, MOBY D
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	180 mm
Protocol for wireless transmission	ISO 15693
Maximum data transfer rate for wireless transmission	26.5 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	EEPROM
Capacity of user memory	112 byte
Type of memory organization	UID (fixed code) 8 byte, user memory 112 byte, configuration memory 8 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ⁶
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the user memory
Mechanical data	
Material	PPA
Color	Beige

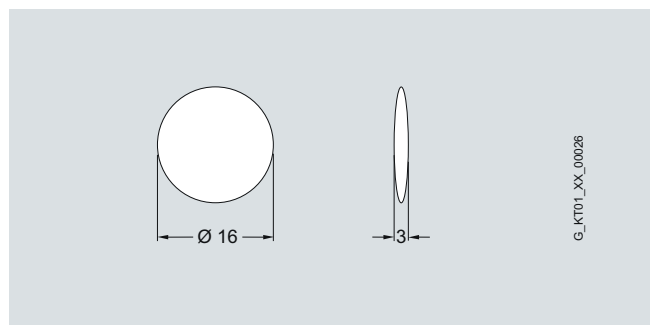
Order No.	6GT2 600-0AB10
Product type designation	Transponder MDS D160
Mounting distance with regard to metal surfaces (recommended minimum)	25 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +175 °C
• during storage	-40 ... +100 °C
• during transport	-40 ... +100 °C
Degree of protection	IP68 / IPx9K
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	400 m/s ²
Oscillation acceleration	100 m/s ²
Design, dimensions and weights	
Height/Diameter	3 mm/16 mm
Net weight	1.2 g
Type of mounting	Patching, sewing, gluing
Product properties	
Product property „printable“	No
Accessories	Spacer

Selection and ordering data

	Order No.
Transponder MDS D160	6GT2 600-0AB10
112 byte EEPROM. Ordering quantity 100 units or a multiple thereof.	
Accessories	
Spacer	6GT2 690-0AG00
For MDS D160, required for mounting on metal surfaces. Diameter = 20 mm, Height = 15 mm. Ordering quantity 50 units or a multiple thereof.	



Dimensions



Transponder MDS D160

RFID systems for the HF frequency range

Transponders (ISO mode)

MDS D460

Overview



The MDS D460 is a passive (maintenance-free) transponder based on ISO 15693 with FRAM technology.

The MDS D460 can be used for the RFID system MOBY D as well as for SIMATIC RF200 and SIMATIC RF300 (ISO mode).

Application

Identification on small assembly lines.

Technical specifications

Order No.	6GT2 600-4AB00
Product type designation	Transponder MDS D460
Suitability for use	RF200, RF300, MOBY D
Wireless frequencies	
Operating frequency, rated value	13.56 MHz
Electrical data	
Maximum range	160 mm
Protocol for wireless transmission	ISO 15693
Maximum data transfer rate for wireless transmission	26.5 kbit/s
Product property „multitag-capable“	Yes
Product constituent „backup battery“	No
Memory	
Type of memory	FRAM
Capacity of user memory	2000 byte
Type of memory organization	UID (fixed code) 8 byte, user memory 2000 byte, configuration memory 40 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁰
Maximum number of write cycles at ambient temperature < 40 °C	10 ¹⁰
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Block-by-block write protection of the user memory
Mechanical data	
Material	Epoxy resin
Color	Black
Mounting distance with regard to metal surfaces (recommended minimum)	15 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +85 °C

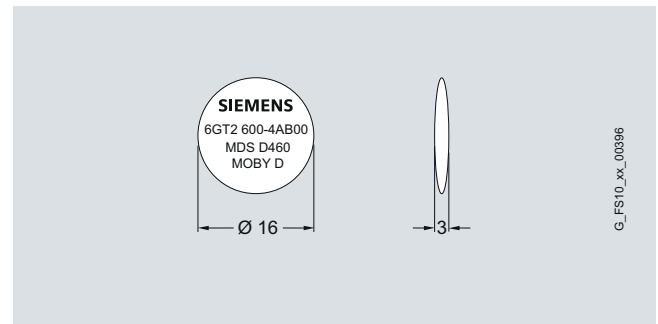
Order No.	6GT2 600-4AB00
Product type designation	Transponder MDS D460
• during storage	-40 ... +100 °C
• during transport	-40 ... +100 °C
Degree of protection	IP67 / IPx9K
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	500 m/s ²
Oscillation acceleration	200 m/s ²
Design, dimensions and weights	
Height	3 mm
Diameter	16 mm
Net weight	3 g
Type of mounting	Patching, sewing, gluing
Product properties	
Product property „printable“	No
Accessories	Spacer

Selection and ordering data

	Order No.
Transponder MDS D460	6GT2 600-4AB00
2000 byte FRAM. Ordering quantity 50 units or a multiple thereof.	
Accessories	
Spacer	6GT2 690-0AG00
for MDS D460, required for mounting on metal surfaces. Diameter = 20 mm, Height = 15 mm. Ordering quantity 50 units or a multiple thereof.	



Dimensions



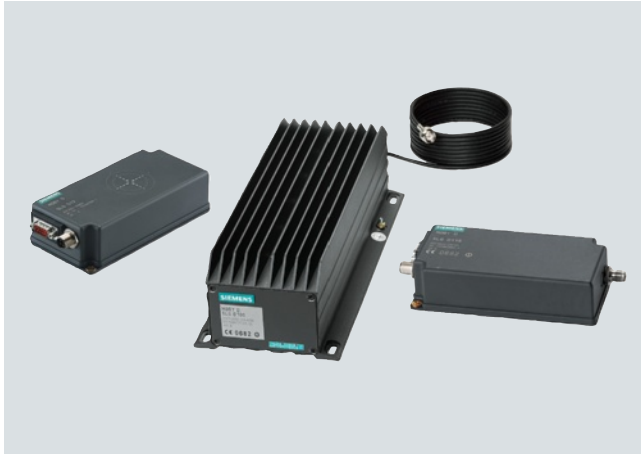
Transponder MDS D460

RFID systems for the HF frequency range

MOBY D

Readers

Overview



Reader	Features
SLG D10 basic unit	Reader for connection of an external antenna (ANT D5 / ANT D6 / ANT D10). <ul style="list-style-type: none"> • IP65 degree of protection • Operating temperature range -20 °C to +55 °C • RS232 interface for connection to PC/PLC
SLG D10S basic unit	Reader for connection of an external antenna (ANT D5 / ANT D6 / ANT D10). <ul style="list-style-type: none"> • IP65 degree of protection • Operating temperature range -20 °C to +55 °C • RS422 interface for connection to SIMATIC S7 / PROFIBUS / PROFINET / Ethernet TCP/IP via ASM 456, ASM 475, SIMATIC RF160C, RF170C, RF180C or RF182C
SLG D11 basic unit	Reader for connection of an external antenna (ANT D2 / ANT D5). <ul style="list-style-type: none"> • IP65 degree of protection • Operating temperature range -25 °C to +55 °C • RS232 interface for connection to a standard PC or external controllers
SLG D11S basic unit	Reader for connection of an external antenna (ANT D2 / ANT D5). <ul style="list-style-type: none"> • IP65 degree of protection • Operating temperature range -25 °C to +55 °C • RS422 interface for connection to SIMATIC S7 / PROFIBUS / PROFINET / Ethernet TCP/IP via ASM 456, ASM 475, SIMATIC RF160C, RF170C, RF180C or RF182C
SLG D12	Universal reader with integrated antenna (160 mm x 80 mm x 40 mm). <ul style="list-style-type: none"> • Max. range 160 mm • IP65 degree of protection • Operating temperature range -25 °C to +55 °C • With RS232 interface for connection to PC/PLC
SLG D12S	Like SLG D12, but with RS422 interface for connection to SIMATIC S7 / PROFIBUS / PROFINET / Ethernet TCP/IP via ASM 456, ASM 475, SIMATIC RF160C, RF170C, RF180C or RF182C

RFID systems for the HF frequency range

MOBY D readers

SLG D10 / SLG D10S basic units for antenna
ANT D5, ANT D6 and ANT D10

Overview



The SLG D10 / SLG D10S basic units are readers in the upper performance range and can be operated with the ANT D5, ANT D6 and ANT D10 antennas.

The readers are equipped with an RS232 serial interface for connection to PCs/PLCs or RS422, which permits communication via the communication modules ASM 456, ASM 475, SIMATIC RF160C, RF170C, RF180C or SIMATIC RF182C to SIMATIC S7, PROFIBUS/PROFINET or Ethernet TCP/IP.

The antenna switch enables several individual antennas or portal solutions to be operated with only one reader (SLG D10 / SLG D10S).

The RF260X antenna multiplexer supports the connection of up to 6 antennas to one reader and operates in quasi-parallel mode.

Connectable antennas

ANT D5

An antenna for universal applications designed for warehouse, logistics and distribution applications. The high degree of protection (IP65) enables the antenna to be used under harsh industrial conditions.

ANT D6

An antenna in the upper performance range, designed for warehouse, logistics and distribution applications. It can be used wherever high speeds are required together with a large write/read distance.

ANT D10

The ANT D10 is suitable for use in warehouses, logistics and distribution. An antenna with this geometry is required in the clothing industry and laundries in particular.

Technical specifications

Order No.	6GT2 698-1AA00	6GT2 698-2AA00
Product type designation	Reader SLG D10	Reader SLG D10S
Suitability for use	MOBY D transponders, for connecting to PC systems	MOBY D transponders, for connecting communication modules
Wireless frequencies		
Operating frequency, rated value	13.56 MHz	13.56 MHz
Electrical data		
Maximum range	650 mm	650 mm
Protocol for wireless transmission	ISO 15693, ISO 18000-3	ISO 15693, ISO 18000-3
Maximum data transfer rate for wireless transmission	26.5 kbit/s	26.5 kbit/s
Product property „multitag-capable“	Yes	No
Data transfer rate of the point-to-point connection (serial, max.)	115.2 kbit/s	115.2 kbit/s
Transmission time for user data		
• for write access, per byte, typical	2.5 ms	2.5 ms
• for read access, per byte, typical	2.5 ms	2.5 ms
Interfaces		
Design of electrical connection for external antenna(s)	TNC	TNC
Number of external antennas	1	1
Design of electrical connection		
• for supply voltage	M12, 4-pin, socket	M12, 4-pin, socket
Standard for interfaces for communication	RS232	RS422
• for communication interface	Sub-D, 9-pin, male	Sub-D, 9-pin, male
Mechanical data		
Material	Aluminum	Aluminum
Color	Anthracyte	Anthracyte

RFID systems for the HF frequency range

MOBY D readers

SLG D10 / SLG D10S basic units for antenna ANT D5, ANT D6 and ANT D10

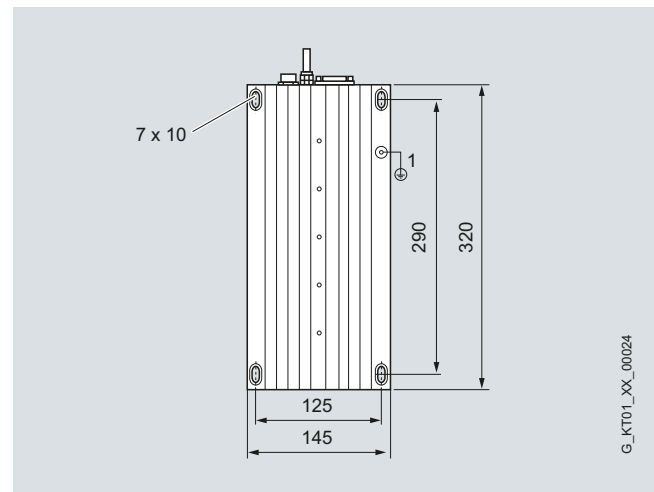
Order No.	6GT2 698-1AA00	6GT2 698-2AA00
Product type designation	Reader SLG D10	Reader SLG D10S
Supply voltage, current consumption		
DC supply voltage		
• Rated value	24 V	24 V
• minimum	22.8 V	22.8 V
• maximum	25.2 V	25.2 V
Current input at 24 V DC		
• typical	1.4 A	1.4 A
• maximum	2.8 A	2.8 A
Permissible ambient conditions		
Ambient temperature		
• during operation	-20 ... +55 °C	-20 ... +55 °C
• during storage	-25 ... +70 °C	-25 ... +70 °C
• during transport	-25 ... +70 °C	-25 ... +70 °C
Degree of protection	IP65	IP65
Shock resistance	EN 60721-3-7 class 7M2	EN 60721-3-7 class 7M2
Shock acceleration	300 m/s ²	300 m/s ²
Oscillation acceleration	15 m/s ²	15 m/s ²
Design, dimensions and weights		
Width	145 mm	145 mm
Height	100 mm	100 mm
Depth	320 mm	320 mm
Net weight	3.5 kg	3.5 kg
Type of mounting	4 screws M4	4 screws M4
Cable length		
• of antenna cable		
- minimum	3.3 m	3.3 m
- maximum	25 m	25 m
• for RS 232 interface, maximum	30 m	-
• for RS 422 interface, maximum	-	300 m
Standards, specifications, approvals		
Certificate of suitability	CE, FCC, IC (Canada), UL 60950, safe for heart pacemakers	CE, FCC, IC (Canada), UL 60950, safe for heart pacemakers
Accessories		
	Various antennas, antenna combiners, and antenna splitters are available	Various antennas, antenna combiners, and antenna splitters are available

Selection and ordering data

	Order No.
Reader SLG D10 Basic unit (without antenna) with RS232 serial interface for connection to PC/PLC.	6GT2 698-1AA00
Reader SLG D10S Basic unit (without antenna) with RS422 serial interface for connection to SIMATIC S7 /PROFIBUS/PROFINET or Ethernet TCP/IP	6GT2 698-2AA00
Accessories Note: All connection options are shown in Chapter 6 „Communication modules“.	
Antenna ANT D5 For SLG D10 / SLG D10S basic units.	6GT2 698-5AA10
Spacer kit for ANT D5	6GT2 690-0AB00
Antenna ANT D6 For SLG D10 / SLG D10S basic units.	6GT2 698-5AB00
Shrouding cover for ANT D6 Provides protection against contact.	6GT2 690-0AD00
Antenna ANT D10 For SLG D10 / SLG D10S basic units, cover and antenna cable included in scope of delivery.	6GT2 698-5AF00
Antenna switch For connecting several antennas (ANT D5 or ANT D6) to one reader SLG D10 / SLG D10S, IP65, -25 °C to +65 °C	6GT2 690-0AC00
SIMATIC RF260X antenna multiplexer Antenna multiplexer for SLG D10; 6 x antenna outputs (for ANT D5, ANT D6 and ANT D10); IP65; 240 mm x 150 mm x 70 mm; including antenna cable, cable length 0.4 m.	6GT2 894-0EA00
MOBY D cables • Cable between ANT D6 and SLG D10/SLG D10S, antenna switch; PVC, length 3.3 m • Cable between ANT D6 and SLG D10/SLG D10S, antenna switch; PVC, length 10 m • Cable extension between ANT D6 and SLG D10/SLG D10S, antenna switch; PVC, length 7.2 m	6GT2 691-0CH33 6GT2 691-0CN10 6GT2 691-0DH72
RS232 connecting cable between the PC and SLG D10 reader, PUR 5 m 20 m	6GT2 691-4BH50 6GT2 691-4BN20
Connector for reader and SIM of MOBY D IP65 degree of protection, 9-pin sub D connector	6GT2 490-1AA00

	Order No.
Reader cable Without connector, between communication module and reader; 6 x 0.25 mm ² , PUR. 50 m 120 m 800 m Note: Note: The total length of a reader cable must not exceed 300 m.	6GT2 090-4AN50 6GT2 090-4AT12 6GT2 090-4AT80
Wide-range power supply Primary side: 100 ... 240 V AC, secondary side: 24 V DC, 3 A, with no-load protection, with continuous short-circuit protection. • With EU plug • with UK plug • With US plug	6GT2 898-0AA00 6GT2 898-0AA10 6GT2 898-0AA20
Cable for wide-range power supply 24 V DC, Length 5 m, PUR.	6GT2 491-1HH50
24 V connector (M12 socket) For communication modules ASM 424/724/754, Reader SLG Ux (over PC connecting cable).	6GT2 390-1AB00
DVD „RFID Systems Software & Documentation“	6GT2 080-2AA20

Dimensions



Reader SLG D10 basic unit

RFID systems for the HF frequency range

MOBY D readers

SLG D11 / SLG D11S basic units for antenna
ANT D2 and ANT D5

Overview



The SLG D11/SLG D11S basic units are readers in the mid-performance range and can be operated with the ANT D2 and ANT D5 antennas.

SLG D11

Equipped with RS232 serial interface for connection to PC/PLC

SLG D11S

Equipped with an RS422 serial interface, which permits communication via the communication modules ASM 456, ASM 475, SIMATIC RF160C, RF170C and SIMATIC RF180C, or RF182C to SIMATIC S7, PROFIBUS/PROFINET or Ethernet TCP/IP.

Connectable antennas

ANT D2

Designed for transponders that are directed sideways past the antenna. This antenna is specially designed for high speeds, e.g. in overhead conveyors, assembly lines, production and order picking. It can be mounted directly onto metal surfaces.

ANT D5

An antenna for universal applications designed for warehouse, logistics and distribution applications. The high degree of protection (IP65) enables the antenna to be used under harsh industrial conditions. A spacer kit is required for mounting on metal surfaces.

Technical specifications

Order No.	6GT2 698-1AC00	6GT2 698-2AC00
Product type designation	Reader SLG D11	Reader SLG D11S
Suitability for use	MOBY D transponders, for connecting to PC systems	MOBY D transponders, for connecting communication modules
Wireless frequencies		
Operating frequency, rated value	13.56 MHz	13.56 MHz
Electrical data		
Maximum range	380 mm	380 mm
Protocol for wireless transmission	ISO 15693, ISO 18000-3	ISO 15693, ISO 18000-3
Maximum data transfer rate for wireless transmission	26.5 kbit/s	26.5 kbit/s
Product property „multitag-capable“	Yes	No
Data transfer rate of the point-to-point connection (serial, max.)	38.4 kbit/s	19.2 kbit/s
Transmission time for user data		
• for write access, per byte, typical	2.5 ms	2.5 ms
• for read access, per byte, typical	2.5 ms	2.5 ms
Interfaces		
Design of electrical connection for external antenna(s)	TNC	TNC
Number of external antennas	1	1
Design of electrical connection		
• for supply voltage	M12, 4-pin, socket	M12, 4-pin, socket
Standard for interfaces for communication	RS232	RS422
• for communication interface	Sub-D, 9-pin, male	Sub-D, 9-pin, male
Mechanical data		
Material	PA 12	PA 12
Color	Anthracite	Anthracite
Maximum tightening torque of the screw for securing the equipment	2 Nm	2 Nm

RFID systems for the HF frequency range

MOBY D readers

SLG D11 / SLG D11S basic units for antenna ANT D2 and ANT D5

2

Order No.	6GT2 698-1AC00	6GT2 698-2AC00
Product type designation	Reader SLG D11	Reader SLG D11S
Supply voltage, current consumption, power loss		
DC supply voltage		
• Rated value	24 V	24 V
• minimum	20 V	20 V
• maximum	30 V	30 V
Current input at 24 V DC		
• typical	0.2 A	0.2 A
• maximum	0.6 A	0.6 A
Permissible ambient conditions		
Ambient temperature		
• during operation	-25 ... +55 °C	-25 ... +55 °C
• during storage	-25 ... +70 °C	-25 ... +70 °C
• during transport	-25 ... +70 °C	-25 ... +70 °C
Degree of protection	IP65	IP65
Shock resistance	EN 60721-3-7 class 7M2	EN 60721-3-7 class 7M2
Shock acceleration	300 m/s ²	300 m/s ²
Oscillation acceleration	15 m/s ²	15 m/s ²
Design, dimensions and weights		
Width	80 mm	80 mm
Height	40 mm	40 mm
Depth	160 mm	160 mm
Net weight	0.26 kg	0.26 kg
Type of mounting	2 screws M5	2 screws M5
Cable length		
• of antenna cable		
- minimum	3.3 m	3.3 m
- maximum	10.5 m	10.5 m
• for RS 232 interface, maximum	30 m	-
• for RS 422 interface, maximum	-	300 m
Standards, specifications, approvals		
Certificate of suitability	CE, FCC, IC (Canada), UL 60950, safe for heart pacemakers	CE, FCC, IC (Canada), UL 60950, safe for heart pacemakers
Accessories	Various antennas, etc., are available	Various antennas, etc., are available

RFID systems for the HF frequency range

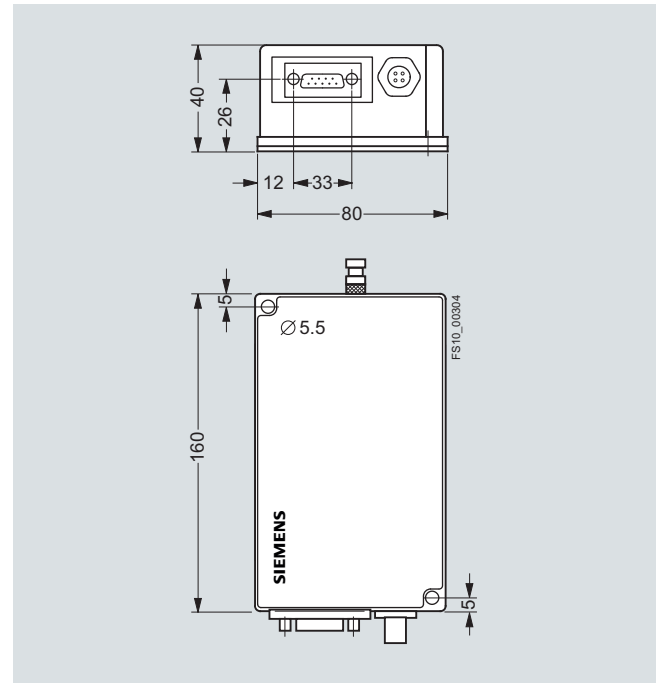
MOBY D readers

SLG D11 / SLG D11S basic units for antenna ANT D2 and ANT D5

Selection and ordering data

	Order No.
Reader SLG D11 Basic unit (without antenna) with RS232 serial interface for connection to PC/PLC.	6GT2 698-1AC00
Reader SLG D11S Basic unit (without antenna) with RS422 serial interface for connection to SIMATIC S7/ PROFIBUS/ PROFINET via communication module.	6GT2 698-2AC00
Accessories Note: All connection options are shown in Chapter 6 „Communication modules“.	
Antenna ANT D2 For SLG D11 / SLG D11S basic units, incl. antenna cable, PVC, length 3.3 m	6GT2 698-5BB00
Antenna ANT D5 For SLG D11 / SLG D11S basic units	6GT2 698-5AA10
Spacer kit for ANT D5	6GT2 690-0AB00
Wide-range power supply Primary side: 100 ... 240 V AC, 120 ... 353 V DC, secondary side: 24 V DC, 3 A, with no-load protection and continuous short-circuit protection	
• With EU plug	6GT2 898-0AA00
• With UK plug	6GT2 898-0AA10
• With US plug	6GT2 898-0AA20
24 V DC connecting cable For wide-range power supply, PUR, length 5 m	6GT2 491-1HH50
RS232 cable for SLG D11, PUR 5 m	6GT2 691-4BH50
20 m	6GT2 691-4BN20
DVD „RFID Systems Software & Documentation“	6GT2 080-2AA20

Dimensions



Reader SLG D11 / SLG D11S basic unit

RFID systems for the HF frequency range

MOBY D readers

SLG D12/SLG D12S

Overview



The SLG D12 / SLG D12S basic devices are universal readers in the medium performance range with integral antennas.

SLG D12

Equipped with RS232 serial interface for connection to PC/PLC.

SLG D12S

Equipped with an RS422 serial interface which permits communication via the communication modules ASM 456, ASM 475, SIMATIC RF160C, RF170C and SIMATIC RF180C or RF182C to SIMATIC S7, PROFIBUS/PROFINET or Ethernet TCP/IP.

2

Technical specifications

Order No.	6GT2 601-0AB00	6GT2 602-0AB00	6GT2 602-0AB10-0AX0
Product type designation	Reader SLG D12	Reader SLG D12S	Reader SLG D12S
Suitability for use	MOBY D transponders, for connecting to PC systems	MOBY D transponders, for connecting communication modules	MOBY D transponders, for connecting communication modules
Wireless frequencies			
Operating frequency, rated value	13.56 MHz	13.56 MHz	13.56 MHz
Electrical data			
Maximum range	220 mm	220 mm	220 mm
Protocol for wireless transmission	ISO 15693, ISO 18000-3	ISO 15693, ISO 18000-3	ISO 15693, ISO 18000-3
Maximum data transfer rate for wireless transmission	26.5 kbit/s	26.5 kbit/s	26.5 kbit/s
Product property „multitag-capable“	Yes	No	No
Data transfer rate of the point-to-point connection (serial, max.)	38.4 kbit/s	19.2 kbit/s	19.2 kbit/s
Transmission time for user data for write access, per byte, typical	2.5 ms	2.5 ms	2.5 ms
Transmission time for user data for read access, per byte, typical	2.5 ms	2.5 ms	2.5 ms
Interfaces			
Design of electrical connection	Data: Sub-D, 9-pin, pins, voltage: M12, 4-pin, socket	Data: Sub-D, 9-pin, pins, voltage: M12, 4-pin, socket	M12, 8-pin
Standard for interfaces for communication	RS232	RS422	RS422
Mechanical data			
Material	PA 12	PA 12	PA 12
Color	Anthracite	Anthracite	Anthracite
Maximum tightening torque of the screw for securing the equipment	2 Nm	2 Nm	2 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm	0 mm	0 mm
Supply voltage, current consumption			
DC supply voltage			
• Rated value	24 V	24 V	24 V
• minimum	20 V	20 V	20 V
• maximum	30 V	30 V	30 V

RFID systems for the HF frequency range

MOBY D readers

SLG D12/SLG D12S

Order No.	6GT2 601-0AB00	6GT2 602-0AB00	6GT2 602-0AB10-0AX0
Product type designation	Reader SLG D12	Reader SLG D12S	Reader SLG D12S
Current input at 24 V DC			
• typical	0.15 A	0.15 A	0.15 A
• maximum	0.6 A	0.6 A	0.6 A
Permissible ambient conditions			
Ambient temperature			
• during operation	-25 ... +55 °C	-25 ... +55 °C	-25 ... +55 °C
• during storage	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
• during transport	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
Degree of protection	IP65	IP65	IP65
Shock resistance	EN 60721-3-7 class 7M2	EN 60721-3-7 class 7M2	EN 60721-3-7 class 7M2
Shock acceleration	300 m/s ²	300 m/s ²	300 m/s ²
Oscillation acceleration	15 m/s ²	15 m/s ²	15 m/s ²
Design, dimensions and weights			
Width	80 mm	80 mm	80 mm
Height	40 mm	40 mm	40 mm
Depth	160 mm	160 mm	160 mm
Net weight	0.23 kg	0.23 kg	0.23 kg
Type of mounting	2 screws M5	2 screws M5	2 screws M5
Cable length			
• for RS 232 interface, maximum	30 m	-	-
• for RS 422 interface, maximum	-	300 m	300 m
Standards, specifications			
Approvals			
Certificate of suitability	CE, FCC, IC (Canada), UL 60950, safe for heart pacemakers	CE, FCC, IC (Canada), UL 60950, safe for heart pacemakers	CE, FCC, IC (Canada), UL 60950, safe for heart pacemakers
Accessories	See „Selection and ordering data“	See „Selection and ordering data“	See „Selection and ordering data“

RFID systems for the HF frequency range

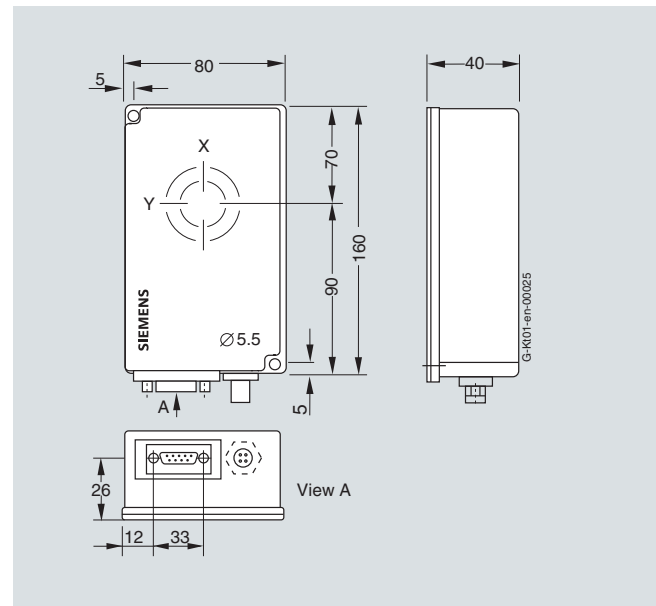
MOBY D readers

SLG D12/SLG D12S

Selection and ordering data

	Order No.
Reader SLG D12 With RS232 serial interface and integrated antenna.	6GT2 601-0AB00
Reader SLG D12S With RS422 serial interface and integrated antenna for connection to SIMATIC S7 / PROFIBUS / PROFINET or Ethernet TCP/IP.	6GT2 602-0AB00
Reader SLG D12S, for single-cable connection With RS422 serial interface and integrated antenna. Only one connector for data and voltage supply. Power supply via communication module. Connector: M12, 8-pin (male).	6GT2 602-0AB10-0AX0
Accessories Note: All connection options are shown in Chapter 6 „Communication modules“.	
RS232 connecting cable Between PC and SLG D12, PUR.	
5 m	6GT2 691-4BH50
20 m	6GT2 691-4BN20
Connector for reader IP65 degree of protection, 9-pin Sub-D connector.	6GT2 490-1AA00
Wide-range power supply Primary side: 100 ... 240 V AC, secondary side: 24 V DC, 3 A, with no-load protection, with continuous short-circuit protection.	
• With EU plug	6GT2 898-0AA00
• With UK plug	6GT2 898-0AA10
• With US plug	6GT2 898-0AA20
Cable for wide-range power supply 24 V DC, PUR, Length 5 m.	6GT2 491-1HH50
24 V connector (M12 socket) For communication modules ASM 424/724/754, reader SLG Ux (over PC connecting cable), SLG D1x.	6GT2 390-1AB00
DVD „RFID Systems Software & Documentation“	6GT2 080-2AA20

Dimensions



Reader SLG D12 basic unit

RFID systems for the HF frequency range

MOBY D antennas

Antennas

Overview



ANT D5 (front), ANT D6

Antennas	Features
ANT D2	<p>Universal antenna can be connected to basic units SLG D11 / SLG D11S.</p> <ul style="list-style-type: none"> • IP65 degree of protection • Operating temperature range -20 °C to +55 °C • Dimensions L x W x H (mm): 75 x 75 x 40 <p>Cable length 3.3 m (for plugging in at both ends)</p>
ANT D5	<p>Universal antenna can be connected to basic units SLG D10 / SLG D10S, SLG D11 / SLG D11S.</p> <ul style="list-style-type: none"> • IP65 degree of protection • Operating temperature range -20 °C to +55 °C • Dimensions L x W x H (mm): 380 x 380 x 110 <p>Cable length 3.6 m (permanently connected on antenna side)</p>
ANT D6	<p>Universal antenna can be connected to basic units SLG D10 / SLG D10S.</p> <ul style="list-style-type: none"> • IP65 degree of protection • Operating temperature range -20 °C to +55 °C • Dimensions L x W x H (mm): 580 x 480 x 110 <p>Cable length 3.3 m (connectable at both ends, included in scope of delivery)</p>
ANT D10	<p>Antenna for warehousing, logistics and distribution. Ideally suited to the clothing industry/laundries. For connection to SLG D10 and SLG D10S. Advantageous geometry for small transponders and a long transmission field.</p> <ul style="list-style-type: none"> • IP65 degree of protection • Operating temperature range -20 °C to +55 °C • Dimensions L x W x H (mm): 1150 x 365 x 115 <p>Cable length 3.3 m (connectable at both ends, included in scope of delivery), cover included in scope of delivery</p>

RFID systems for the HF frequency range

MOBY D antennas

ANT D2

Overview



The ANT D2 antenna is designed for transponders that pass the antenna laterally. This antenna is specially designed for high speeds, e.g. in overhead conveyors, assembly lines, production and order picking. It can be mounted directly onto metal surfaces.

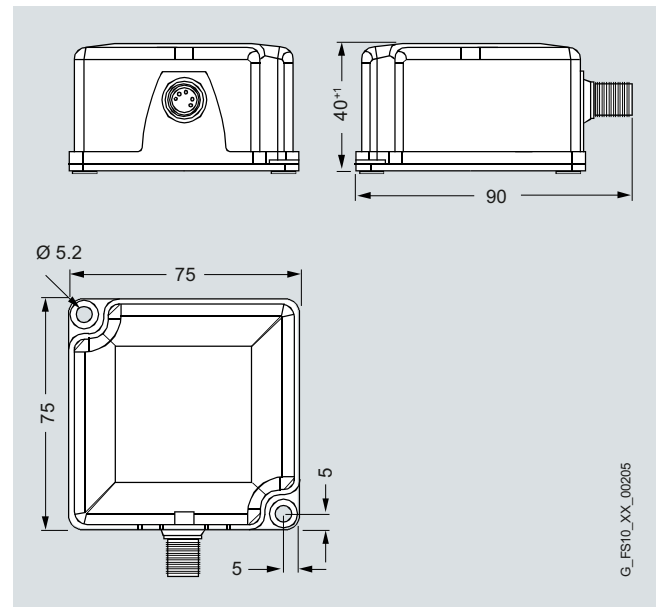
Technical specifications

Order No.	6GT2 698-5BB00
Product type designation	Antenna ANT D2
Suitability for use	MOBY D with SLG D11
Wireless frequencies	
Transmission frequency rated value	13.56 MHz
Mechanical data	
Material	PA 12
Color	Anthracite
Maximum tightening torque of the screw for securing the equipment	2 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	0 m
Type of connector	1-pin TNC connector
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +70 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
Degree of protection	IP65
Shock resistance	According to EN 60721-3-7 class 7M2
Shock acceleration	500 m/s ²
Oscillation acceleration	100 m/s ²
Design, dimensions and weights	
Width	75 mm
Height	75 mm
Depth	40 mm
Net weight	260 g
Type of mounting	2 x M5 screws, mounting depends on orientation
Product properties	
Certificate of suitability	CE, FCC, IC, cULus

Selection and ordering data

	Order No.
Antenna ANT D2	6GT2 698-5BB00
For SLG D11 / SLG D11S basic units, including antenna cable, lateral antenna field, PVC, length 3.3 m.	

Dimensions



Antenna ANT D2

RFID systems for the HF frequency range

MOBY D antennas

ANT D5

Overview



An ANT D5 is a universal antenna designed for warehouse, logistics and distribution applications. The high degree of protection (IP65) enables the antenna to be used under harsh industrial conditions. The antenna is designed for transponders that pass the antenna laterally.

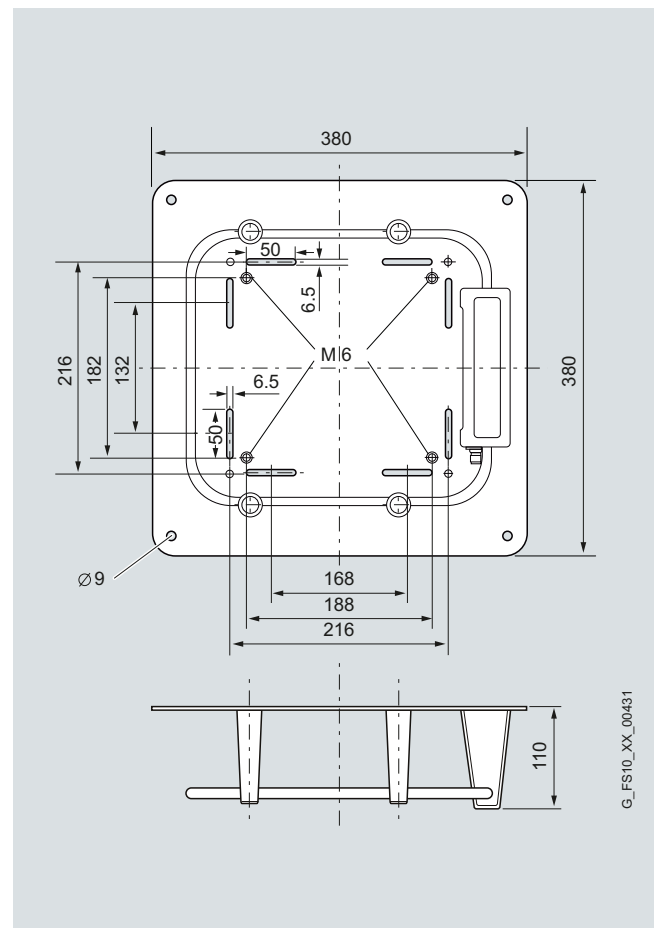
Technical specifications

Order No.	6GT2 698-5AA10
Product type designation	Antenna ANT D5
Suitability for use	MOBY D with SLG D10, D11
Wireless frequencies	
Transmission frequency rated value	13.56 MHz
Mechanical data	
Material	Aluminum / Plastic
Color	Black / gray
Mounting distance with regard to metal surfaces (recommended minimum)	0 m
Type of connector	1-pin TNC connector
Permissible ambient conditions	
Ambient temperature	
• during operation	-20 ... +55 °C
• during storage	-25 ... +70 °C
• during transport	-25 ... +70 °C
Degree of protection	IP65
Shock resistance	According to EN 60721-3-7 class 7M2
Shock acceleration	300 m/s ²
Oscillation acceleration	10 m/s ²
Design, dimensions and weights	
Width	380 mm
Height	380 mm
Depth	110 mm
Net weight	2 kg
Type of mounting	4 screws M5
Standards, specifications, approvals	
Certificate of suitability	CE, FCC

Selection and ordering data

	Order No.
Antenna ANT D5 For SLG D10 / SLG D10S / SLG D11 / SLG D11S basic units, including antenna cable, PVC, cable length 3.3 m.	6GT2 698-5AA10
Accessories	
Spacer kit For ANT D5 in order to guarantee optimum field data in the metallic environments; ANT D5 is calibrated at the factory at a distance of 100 mm from metal.	6GT2 690-0AB00
Antenna switch For connecting several antennas (ANT D5 or ANT D6) to one SLG D10 / SLG D10S reader, IP65, -25 °C to +65 °C.	6GT2 690-0AC00
SIMATIC RF260X antenna multiplexer Antenna multiplexer for SLG D10; 6 x antenna outputs (for ANT D5, ANT D6 and ANT D10); IP65; 240 mm x 150 mm x 70 mm; including antenna connecting cable, cable length 0.4 m	6GT2 894-0EA00

Dimensions



Antenna ANT D5

RFID systems for the HF frequency range

MOBY D antennas

ANT D6

Overview



The ANT D6 is a universal antenna designed for warehouse, logistics and distribution applications. The high degree of protection (IP65) enables the antenna to be used under harsh industrial conditions.

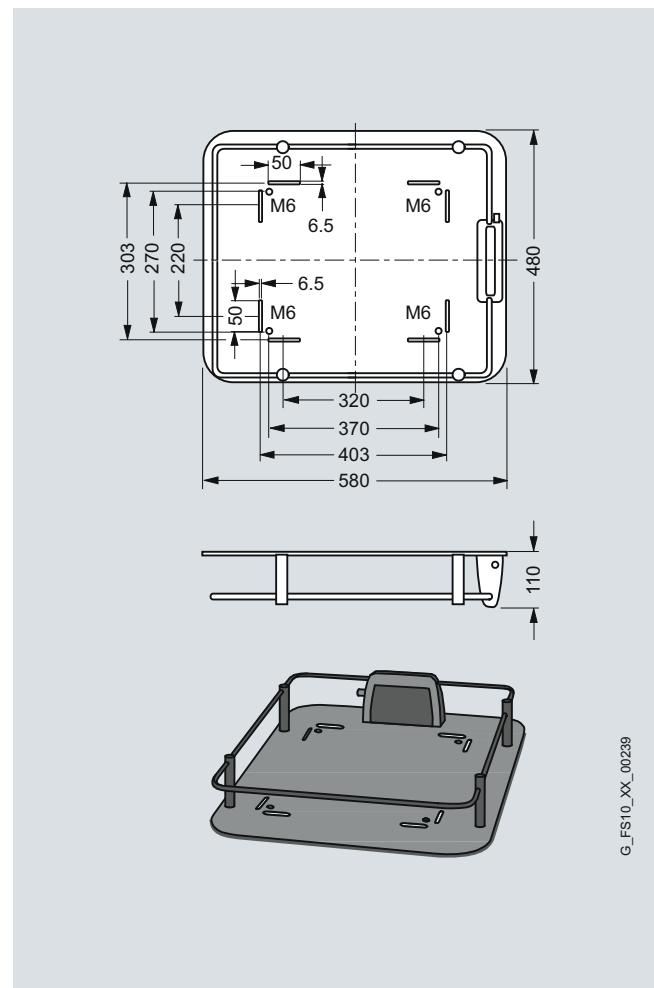
Technical specifications

Order No.	6GT2 698-5AB00
Product type designation	Antenna ANT D6
Suitability for use	MOBY D with SLG D10
Wireless frequencies	
Transmission frequency rated value	13.56 MHz
Mechanical data	
Material	Aluminum / Plastic
Color	Black / gray
Mounting distance with regard to metal surfaces (recommended minimum)	0 m
Type of connector	1-pin TNC connector
Permissible ambient conditions	
Ambient temperature	
• during operation	-20 ... +55 °C
• during storage	-25 ... +70 °C
• during transport	-25 ... +70 °C
Degree of protection	IP52
Shock resistance	According to EN 60721-3-7 class 7M2
Shock acceleration	300 m/s ²
Oscillation acceleration	10 m/s ²
Design, dimensions and weights	
Width	480 mm
Height	580 mm
Depth	110 mm
Net weight	3,3 kg
Type of mounting	4 screws M4
Standards, specifications Approvals	
Certificate of suitability	CE, FCC, cULus

Selection and ordering data

	Order No.
Antenna ANT D6 For SLG D10 / SLG D10S basic units, including antenna cable, PVC, length 3.3 m.	6GT2 698-5AB00
Accessories	
Shrouding cover Serves as contact protection for ANT D6.	6GT2 690-0AD00
Antenna switch For connecting several antennas (ANT D5 or ANT D6) to one SLG D10 / SLG D10S reader, IP65, -25 °C to +65 °C.	6GT2 690-0AC00
SIMATIC RF260X antenna multiplexer Antenna multiplexer for SLG D10; 6 x antenna outputs (for ANT D5, ANT D6 and ANT D10); IP65; 240 mm x 150 mm x 70 mm; including antenna connecting cable, cable length 0.4 m.	6GT2 894-0EA00

Dimensions



Antenna ANT D6

RFID systems for the HF frequency range

MOBY D antennas

ANT D10

Overview



The ANT D10 is a universal antenna designed for warehouse, logistics and distribution applications. The high degree of protection (IP65) enables the antenna to be used under harsh industrial conditions.

Technical specifications

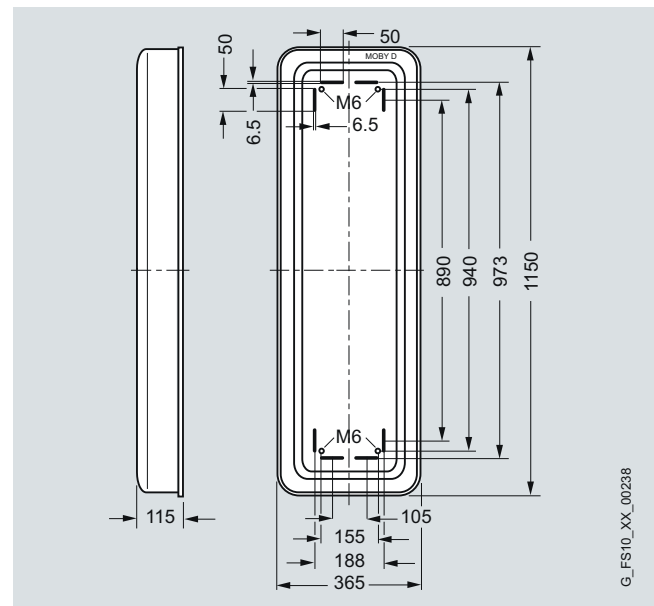
Order No.	6GT2 698-5AF00
Product type designation	Antenna ANT D10
Suitability for use	MOBY D with SLG D10
Wireless frequencies	
Transmission frequency rated value	13.56 MHz
Mechanical data	
Material	Aluminum / plastic
Color	Gray / Black
Mounting distance with regard to metal surfaces (recommended minimum)	0 m
Type of connector	1-pin TNC connector
Permissible ambient conditions	
Ambient temperature	
• during operation	-20 ... +55 °C
• during storage	-25 ... +70 °C
• during transport	-25 ... +70 °C
Degree of protection	IP52
Shock resistance	According to EN 60721-3-7 class 7M2
Shock acceleration	300 m/s ²
Oscillation acceleration	10 m/s ²
Design, dimensions and weights	
Width	365 mm
Height	1 150 mm
Depth	115 mm
Net weight	10 kg
Type of mounting	4 screws M4

Order No.	6GT2 698-5AF00
Product type designation	Antenna ANT D10
Standards, specifications, approvals	
Certificate of suitability	CE, FCC, cULus

Selection and ordering data

	Order No.
Antenna ANT D10 For SLG D10 / SLG D10S basic units, including antenna cable, PVC, length 3.3 m.	6GT2 698-5AF00
SIMATIC RF260X antenna multiplexer Antenna multiplexer for SLG D10; 6 x antenna outputs (for ANT D5, ANT D6 and ANT D10); IP65; 240 mm x 150 mm x 70 mm; including antenna connecting cable, cable length 0.4 m.	6GT2 894-0EA00

Dimensions



Antenna ANT D10

Overview

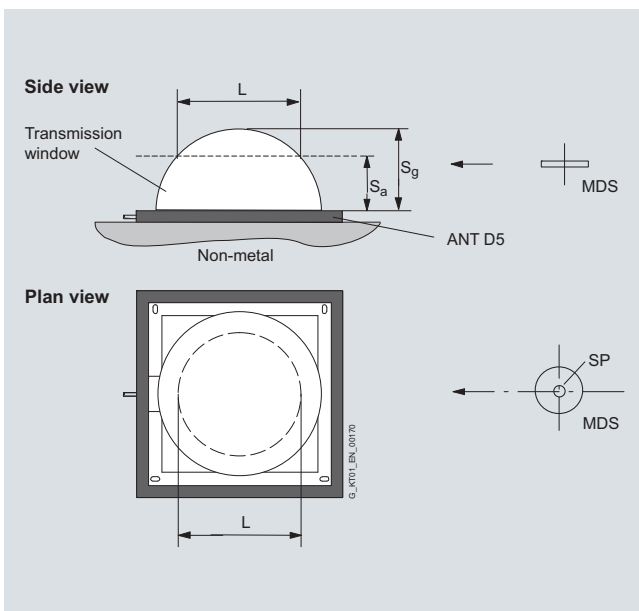
Note

Detailed configuration and commissioning data is contained in the „Manual for Configuration, Assembly and Service“.

Transmission window

The reader generates an inductive alternating field. The field is at its strongest near the antenna and declines considerably as the distance from the antenna increases. The distribution of the field depends on the structure and geometry of the antennas in the reader and transponder.

A prerequisite for the function of the transponder is a minimum field strength at the transponder that is achieved at a distance S_g from the reader. The picture below shows the transmission window between the transponder and reader:



S_a : Operating distance between transponder and reader

S_g : Limit distance (maximum clear distance between upper surface of antenna and transponder, at which the transmission can still function under normal conditions)

L: Length of transmission window

SP: Intersection of the axes of symmetry of the transponder

The transmittable quantity of information between reader and transponder depends on:

- The speed at which the transponder passes the antenna („passing speed“).
- Length of the inductive alternating field of the reader, through which the transponder moves („transmission window“).

Communication between reader and transponder

Communication between the reader and transponder is asynchronous.

Data transfer, reader - transponder

Reading	≥ 3.5 ms/Byte
Writing	≥ 9.5 ms/Byte
Transmission time of ID number	
• SLG D10 ANT D5, ANT D6, ANT D10	30 ms (8 byte at 115.2 kbit/s)
• SLG D11S ANT D5	
• SLG D12S ANT D5, ANT D6, ANT D10	90 ms (8 byte at 19.2 kbit/s)
• SLG D11S ANT D5	
• SLG D12 ANT D5, ANT D6, ANT D10	60 ms (8 byte at 38.4 kbit/s)
• SLG D11 ANT D5	

Traversing speed for SLG D1x / ANT Dx (with one transponder in the field)

	SLG D10			SLG D11		SLG D12	SLG D10S			SLG D11S		SLG D12S
	ANT D10*	ANT D6	ANT D5	ANT D2	ANT D5		ANT D10*	ANT D6	ANT D5	ANT D2	ANT D5	
UID number (8 byte)	≤ 15	≤ 8.0	≤ 5.0	≤ 1.2	≤ 3.5	≤ 2.5	≤ 6.0	≤ 3.8	≤ 2.0	≤ 0.4	≤ 1.0	≤ 0.8
ISO transponder e.g. MDS D100												
Read (with 4 byte of user data / 1 block)	≤ 10	≤ 6.0	≤ 3.5	≤ 1.2	≤ 1.6	≤ 1.2	≤ 6.5	≤ 4.0	≤ 2.2	≤ 0.4	≤ 3.0	≤ 1.4
Write (with 4 byte of user data / 1 block)	≤ 9	≤ 5.5	≤ 3.0	≤ 0.2	≤ 1.2	≤ 1.0	≤ 5.5	≤ 3.4	≤ 1.8	≤ 0.3	≤ 2.8	≤ 1.2
Read (with 112 byte of complete user data)	≤ 7.5	≤ 4.0	≤ 2.4	≤ 0.4	≤ 1.4	≤ 0.8	≤ 5.0	≤ 3.0	≤ 1.6	≤ 0.2	≤ 2.2	≤ 1.0
Write (with 112 byte of complete user data)	≤ 2.0	≤ 1.0	≤ 0.6	≤ 0.1	≤ 0.4	≤ 0.2	≤ 2.0	≤ 1.0	≤ 0.6	≤ 0.1	≤ 0.5	≤ 0.2

All values in the table in m/s.

* Passing velocity in the transverse direction as for SLG D10 ANT D5/ SLG D10S ANT D5.

RFID systems for the HF frequency range

Notes

2

RFID system for the UHF frequency range



3/2	SIMATIC RF600
3/4	<u>SIMATIC RF600 transponders</u>
3/6	SIMATIC RF630L
3/8	SIMATIC RF680L
3/9	SIMATIC RF610T
3/11	SIMATIC RF620T
3/13	SIMATIC RF625T
3/14	SIMATIC RF630T
3/16	SIMATIC RF640T
3/18	SIMATIC RF680T
3/19	<u>SIMATIC RF600 readers</u>
3/20	SIMATIC RF620R / SIMATIC RF630R
3/25	SIMATIC RF640R
3/29	SIMATIC RF670R
3/32	SIMATIC RF680M mobile handheld terminal
3/34	<u>SIMATIC RF600 antennas</u>
3/35	SIMATIC RF620A
3/37	SIMATIC RF640A / SIMATIC RF642A
3/39	SIMATIC RF660A
3/42	<u>SIMATIC RF600 software</u>
3/42	SIMATIC RF-DIAG

RFID system for the UHF frequency range

SIMATIC RF600

Introduction

Overview



Identification tasks in the UHF range (865 to 868 MHz and 902 to 928 MHz) that demand a wide range of several meters are implemented with SIMATIC RF600. The system is suitable for storing and recording a unique identification according to the EPCglobal standard (Electronic Product Code) on products, containers or transport units. Storage of additional, freely-definable user data is also possible.

Various data carriers - from low-cost SmartLabels through to heat-resistant transponders that can be used for several thousand cycles - are available for industrial applications.

SIMATIC RF600 can be used with SIMATIC controllers and PC/IT systems.

Benefits



SIMATIC RF600 has been specially developed for the requirements of industry. It enables economical and reliable use of RFID in production, materials management and logistics.

- Cost savings and improvement in process quality through application of UHF RFID with maximum reliability in the industrial environment:
 - Application of a uniform RFID system throughout the entire production process and supplier chain as a result of inexpensive transponders and wide ranges (no technology gaps).
 - Maximum availability even in applications with a complex radio environment such as high reader density, strongly reflecting metal environments, dynamic surroundings.
 - Permanent RFID identification of products thanks to disposable transponders matched to the application, e.g. heat-resistant, high degree of protection.
 - Wide transponder portfolio and customized versions for cost-optimized use.
- Flexibility due to compact designs and remote antennas.
- Safe and selective individual acquisition or bulk identification is possible.
- High reading speed: Even fast-moving transponders are reliably detected.
- Simplified engineering, commissioning, diagnostics and maintenance through seamless integration into Totally Integrated Automation:
 - Integrated bus connection to an automation system, such as SIMATIC, SIMOTION or SINUMERIK via communication modules with PROFIBUS and PROFINET.
 - Direct interfacing to IT systems via Ethernet.

- Integrated processing logic allows data preprocessing in the reader and saves costs for external PCs, software modules, etc.
- Simple S7 software integration via ready-to-use function blocks.
- Extensive diagnostic functions.
- High degree of investment protection thanks to
 - Open standards EPCglobal Class 1 Gen 2 / ISO 18000-6C.
 - Software compatibility between the RFID systems of Siemens.
 - Standardized communication interfaces.
 - Openness through connection possibilities to various bus systems from different manufacturers and PC environments via communication modules.

Worldwide service and support.

- Tried and tested in numerous customer projects.

Application

SIMATIC RF600 is used for the contactless identification of every kind of object, e.g. transport containers, pallets, production goods, or it can be used generally for recording goods in bulk. As a rule, these applications are open loops in which passive SmartLabels on goods, products, bulk containers or transport units are used. In this case, the system distinguishes itself due to its high reading speeds, large data transmission rates and the fact that it can handle long reading distances.

In addition, the system is suitable for reading and writing reusable transponders that are used in closed loops.

Typical applications include:

- Acquisition of deliveries in the incoming goods / outgoing goods departments.
- Identification of transport containers, barrels or containers at important stations in the process; creation of a "Container passport" for automatic creation of a usage history.
- Control of material flow and production in multi-variant, order-related production.
- Labeling of products under severe ambient conditions, e.g. dust, dirt, high temperatures.
- Stock monitoring and usage monitoring of tools and devices.
- Automation of warehouses and distribution centers with industrial trucks.

RFID system for the UHF frequency range

SIMATIC RF600

Introduction

Design

The SIMATIC RF600 readers are available as variants with an integral antenna and with connection options for external antennas.

The high IP65 degree of protection of the SIMATIC RF600 reader enables it to be used in harsh industrial environments.

Each SIMATIC RF600 reader has a multi color LED which locally indicates the function and status of the reader as well as of the transponder.

The SIMATIC RF620R and RF630R readers can be connected to the automation level by means of communication modules. For quick and easy cabling, pre-assembled cables with M12 plug-in connectors are available in various lengths. The SIMATIC RF640R and RF670R readers have an onboard Ethernet interface for direct connection to the IT level.

The SIMATIC RF600 transponders are used as mobile data carriers.

Transponders suitable for a wide variety of different requirements can be selected from an extensive range: from low-cost, heat-resistant SmartLabel for the temperature range up to 220 degrees, by way of rugged credit card formats, right up to screw-fit transponders that can be affixed on an automated basis by robots.

The transponders are attached to the object to be identified, e.g. by means of screws, adhesive or pre-assembled spacer.

Function

All SIMATIC RF600 readers are suitable for reliable writing and reading tasks in the UHF range from 865 to 868 MHz (ETSI) or 902 to 928 MHz (FCC) with very large ranges up to 8 m.

The SIMATIC RF620R and RF630R readers are particularly suitable for applications in production environments.

The two readers are connected via standard fieldbuses such as PROFIBUS or PROFINET to the automation level, for example SIMATIC S7, by means of communication modules to which the readers can be connected via an RS422 interface.

User-friendly function blocks are available for the S7 programming. In the event of an error, the S7 application receives a detailed error message from the communication module via the function block.

Special functions are available for the difficult environmental conditions encountered in production environments, such as reflections and dead zones resulting from metal or superimposed radio fields due to a high reader density.

In this manner, process stability is substantially increased by automatic adaptation of the transmit power and intelligent filtering of the reading results. The multi-stage filter concept ensures that, based on the wireless properties, the correct transponder within the RF field of the reader is always processed. The appropriate data storage medium is automatically selected on the basis of various indicators, such as the evaluation of the RSSI value (Received Signal Strength Indicator), the reading frequency, or the transmit power required.

Transponders that have already been processed can be stored in a "blacklist" in the reader and thus filtered out. Various mechanisms can be activated according to requirements. Configuration and diagnostics are carried out in the SIMATIC RF-DIAG software.

The SIMATIC RF640R and RF670R readers are particularly suitable for applications in the logistics sector.

The two readers have an Ethernet interface (XML protocol via TCP/IP) which enables simple connection to the PC or IT level.

The integrated processing logic allows comprehensive filter functions and control of the digital inputs/outputs in the reader

itself. The readers are configured using the RF-MANAGER Basic, which is provided free with each reader.

In addition, both readers have digital inputs/outputs for connecting sensors or actuators.

Whereas the RF640R with its integrated antenna is suitable for implementing single recording stations, the RF670R and its four external antenna connections can be used to implement up to four individual reading stations or large gate applications.

Integration

A wide range of communication modules, function blocks, as well as high-performance drivers and function libraries permits easy and quick integration into the application.

And best of all: SIMATIC RF600 is part of Totally Integrated Automation and can be integrated easily and cost-effectively into the SIMATIC world.

For more details on the connection possibilities, see chapter 6 „Communication Modules“.

Technical specifications

RFID system	SIMATIC RF600
Transmission frequency	865 ... 868 MHz (ETSI) 902 ... 928 MHz (FCC)
Range	max. 8 m
Protocol (air interface)	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Approvals	<ul style="list-style-type: none"> • ETSI EN 302208, CE • FCC • UL • CMIIT
Memory capacity	max. 96/240 bit EPC, 512 bit user memory
Data transfer rate	<ul style="list-style-type: none"> • Read • Write
Multitag/bulk capability	Yes
Special features	<ul style="list-style-type: none"> • SIMATIC or PC/IT integration • Configurable data processing in the readers • Special antennas for industrial applications • Powerful diagnostics functions

RFID system for the UHF frequency range

SIMATIC RF600

Transponders

Overview



SIMATIC RF600 offers a variety of transponders for numerous applications. All transponders are designed to be passive and maintenance-free and thus ensure problem-free operation. The transponders support the EPCglobal Class 1, Gen 2 / ISO 18000-6C standard, and can be used with all SIMATIC RF600 readers.

Transponder	Features
SIMATIC RF630L	SmartLabel based on UHF Class 1 Gen 2 technology <ul style="list-style-type: none"> • available in four versions • up to 96/128 bits (EPC) • up to 512 bit (user memory) • up to IP65 degree of protection • Operating temperature range -40 °C to +65 °C • Dimensions L x W (mm): <ul style="list-style-type: none"> 101 x 152; 101 x 50; 97 x 27; 54 x 34.
SIMATIC RF680L	Heat-resistant UHF SmartLabel <ul style="list-style-type: none"> • 64/240 bit (EPC) • 512 bit (user memory) • Operating temperature range -25 °C to +240 °C (short term) • Dimensions L x W x H (mm): 86 x 54 x 0.3
SIMATIC RF610T	ISO card <ul style="list-style-type: none"> • 96/240 bit (EPC) • 512 bit (user memory) • Operating temperature range -25 °C to +85 °C • IP67 degree of protection • Dimensions L x W x H (mm): 86 x 54 x 0.4
SIMATIC RF620T	Container transponder <ul style="list-style-type: none"> • 96/128 bit (EPC) • 512 bit (user memory) • Operating temperature range -25 °C to +80 °C • IP67 degree of protection • Dimensions L x W x H (mm): 127 x 38 x 6
SIMATIC RF625T	Disk transponder <ul style="list-style-type: none"> • 96/128 bit (EPC) • 512 bit (user memory) • Operating temperature range -25 °C to +85 °C • IP68 / IPx9K degree of protection • Dimensions diameter x H (mm): 30 x 8

Transponder	Features
SIMATIC RF630T	Screw transponder (M6) <ul style="list-style-type: none"> • 96/240 bit (EPC) • 512 bit (user memory) • Operating temperature range -25 °C to +85 °C • IP68 / IPx9K degree of protection • Dimensions diameter x H (mm): 21 x 20 (without thread)
SIMATIC RF640T	Tool transponder <ul style="list-style-type: none"> • 96/240 bit (EPC) • 512 bit (user memory) • Operating temperature range -25 °C to +85 °C • IP68 / IPx9K degree of protection • Dimensions diameter x H (mm): 50 x 8
SIMATIC RF680T	High-temperature transponder <ul style="list-style-type: none"> • 96/240 bit (EPC) • 512 bit (user memory) • Operating temperature range -25 °C to +220 °C (tested for up to 2000 hours or for 1500 cycles) • IP68 / IPx9K degree of protection • Dimensions L x W x H (mm): 130 x 32 x 15

Benefits



The comprehensive portfolio of SIMATIC RF600 transponders with long ranges according to EPCglobal standard offers the appropriate solution for every requirement in logistics and production:

- Low-cost SmartLabels and credit card formats.
- Heat-resistant SmartLabels and transponders for high temperature ranges up to 220 degrees for use in paint shops.
- Screw-fit transponders for automatic attachment by means of robots.
- Screw-fit transponders for flush-mounting in metal for identifying workpieces or workpiece holders.
- Rugged transponders with high resistance to environmental influences.
- Customized solutions for SmartLabels and transponders on request.

RFID system for the UHF frequency range

SIMATIC RF600

Transponders

Technical specifications

Range between readers and transponders (all specifications in m)

The following table shows the maximum range of all UHF transponders in conjunction with RF600 readers. All technical specifications listed are typical data and apply at a room temperature of +25 °C.

With the RF620T the data applies when mounted on a non-metallic base, with the RF625T when mounted on metal

	SIMATIC RF630L 6GT2810-2AB00 6GT2810-2AB01 6GT2810-2AB02-0AX0	SIMATIC RF630L 6GT2810-2AB03	SIMATIC RF680L	SIMATIC RF610T	SIMATIC RF620T
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SIMATIC RF620R

SIMATIC RF620R	5	3	2.5	3	5
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SIMATIC RF630R

SIMATIC RF630R with RF620A	1.6	1	0.8	1	1.6
SIMATIC RF630R with RF640A	4.5	2.8	2.2	2.8	4.5
SIMATIC RF630R with RF642A	5.5	3.5	2.8	3.5	5.5
SIMATIC RF630R with RF660A	6	4	3	4	6

SIMATIC RF640R

SIMATIC RF640R	7	4	3.5	4.5	7
SIMATIC RF640R with RF620A	2.2	1.4	1.1	1.4	2.2
SIMATIC RF640R with RF640A	6	4	3,1	4	6
SIMATIC RF640R with RF642A	8	5	4	5	8
SIMATIC RF640R with RF660A	8	5	4	5	8

SIMATIC RF670R

SIMATIC RF670R with RF620A	2.2	1.4	1.1	1.4	2.2
SIMATIC RF670R with RF640A	6	4	3	4	6
SIMATIC RF670R with RF642A	8	5	4	5	8
SIMATIC RF670R with RF660A	8	5	4	5	8

	SIMATIC RF625T	SIMATIC RF630T	SIMATIC RF640T	SIMATIC RF680T
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SIMATIC RF620R

SIMATIC RF620R	1	0.8	2.5	2.5
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SIMATIC RF630R

SIMATIC RF630R with RF620A	0.3	0.3	0.8	0.8
SIMATIC RF630R with RF640A	0.8	0.7	2.2	2.2
SIMATIC RF630R with RF642A	1.1	0.8	2.8	2.8
SIMATIC RF630R with RF660A	1.2	0.9	3	3

SIMATIC RF640R

SIMATIC RF640R	1.3	1	3.5	3.5
SIMATIC RF640R with RF620A	0.4	0.3	1.1	1.1
SIMATIC RF640R with RF640A	1.2	0.9	3	3
SIMATIC RF640R with RF642A	1.5	1.2	4	4
SIMATIC RF640R with RF660A	1.5	1.2	4	4

SIMATIC RF670R

SIMATIC RF670R with RF620A	0.4	0.3	1.1	1.1
SIMATIC RF670R with RF640A	1.2	0.9	3	3
SIMATIC RF670R with RF642A	1.5	1.2	4	4
SIMATIC RF670R with RF660A	1.5	1.2	4	4

RFID system for the UHF frequency range

SIMATIC RF600 transponders

SIMATIC RF630L

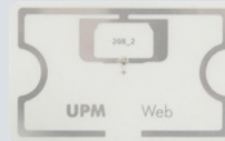
Overview



6GT2810-2AB00



6GT2810-2AB02-0AX0



6GT2810-2AB03



6GT2810-2AB01

The SIMATIC RF630L SmartLabels are suitable for (permanent) identification of products or shipping units with the Electronic Product Code (EPC) as well as with other user data. Thanks to its broadband design, the SIMATIC RF630L SmartLabel can be used in numerous countries.

Technical specifications

Order No.	6GT2 810-2AB00	6GT2 810-2AB01	6GT2 810-2AB02-0AX0	6GT2 810-2AB03
Product type designation	Transponder RF630L	Transponder RF630L	Transponder RF630L	Transponder RF630L
Suitability for use	RF600	RF600	RF600	RF600
Wireless frequencies				
Operating frequency	865 ... 960 MHz	865 ... 960 MHz	865 ... 960 MHz	865 ... 960 MHz
Electrical data				
Maximum range	8 m	8 m	8 m	5 m
Protocol for wireless transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Maximum data transfer rate for wireless transmission	320 kbit/s	320 kbit/s	320 kbit/s	320 kbit/s
Product property „multitag-capable“	Yes	Yes	Yes	Yes
Polarization	Linear	Linear	Linear	Linear
Product constituent „backup battery“	No	No	No	No
Memory				
Type of memory	EEPROM	EEPROM	EEPROM	EEPROM
Capacity of user memory	12 byte	12 byte	64 byte	64 byte
Type of memory organization	EPC memory 96 bit	EPC memory 96 bit	EPC memory 96/128 bits, user memory 64 byte (512 bit)	EPC memory 96/240 bits, user memory 64 byte (512 bit)
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴	10 ¹⁴	10 ¹⁴	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ⁵	10 ⁵	10 ⁵	10 ⁵
Data retention time at ambient temperature < 40 °C, at least	10 a	10 a	10 a	10 a

RFID system for the UHF frequency range

SIMATIC RF600 transponders

SIMATIC RF630L

Order No.	6GT2 810-2AB00	6GT2 810-2AB01	6GT2 810-2AB02-0AX0	6GT2 810-2AB03
Product type designation	Transponder RF630L	Transponder RF630L	Transponder RF630L	Transponder RF630L
Property of memory	Lock, unlock, kill, write protection, password protection	Lock, unlock, kill, write protection, password protection	Lock, unlock, kill, write protection, password protection	Lock, unlock, kill, write protection, password protection
Mechanical data				
Material	Paper	Paper	PET	PET
Color	White	White	Transparent	Transparent
Mounting distance with regard to metal surfaces (recommended minimum)	3 mm	3 mm	3 mm	3 mm
Permissible ambient conditions				
Ambient temperature				
• during operation	-40 ... +65 °C	-40 ... +65 °C	-40 ... +65 °C	-40 ... +65 °C
• during storage	15 ... 25 °C	15 ... 25 °C	15 ... 25 °C	15 ... 25 °C
• during transport	15 ... 25 °C	15 ... 25 °C	15 ... 25 °C	15 ... 25 °C
Degree of protection	None, the label must be protected against humidity	None, the label must be protected against humidity	IP65	IP65
Resistance to mechanical stress	Torsion and bending stress conditionally permissible	Torsion and bending stress conditionally permissible	Torsion and bending stress conditionally permissible	Torsion and bending stress conditionally permissible
Design, dimensions and weights				
Width	101 mm	101 mm	27 mm	34 mm
Height	0.3 mm	0.3 mm	0.3 mm	0.3 mm
Depth	152 mm	50 mm	97 mm	54 mm
Net weight	3 g	2 g	1 g	1 g
Type of mounting	Adhesive (single-sided) on paper/cardboard	Adhesive (single-sided) on paper/cardboard	Adhesive (single-sided) on plastic/foil	Adhesive (single-sided) on plastic/foil
Product properties				
Product property „printable“	Yes	Yes	Yes	No
Printing process	Thermal transfer process	Thermal transfer process	Thermal transfer process (currently only using Toshiba B-SX4T)	-

Selection and ordering data

	Order No.
SmartLabel SIMATIC RF630L	
Transmission frequency 865 to 960 MHz (ETSI, FCC).	
• Paper, adhesive on one side, 100 mm x 150 mm (4" x 6"); minimum ordering quantity 1600 units (supplied on two rolls).	6GT2810-2AB00
• Paper, adhesive on one side, 101 mm x 55 mm (4" x 2"); minimum ordering quantity 1000 units (supplied on one roll).	6GT2810-2AB01
• Plastic PET, adhesive on one side, 97 mm x 27 mm (3.8" x 1.1"); minimum ordering quantity 5000 units (supplied on one roll).	6GT2810-2AB02-0AX0
• Plastic PET, adhesive on one side, non-printable, 54 mm x 34 mm (2.1" x 1.3"); minimum ordering quantity 2000 units (supplied on one roll).	6GT2810-2AB03

RFID system for the UHF frequency range

SIMATIC RF600 transponders

SIMATIC RF680L

Overview



SIMATIC RF680L is a heat-resistant SmartLabel that is suitable for the identification of objects in production and logistics with high temperature requirements (e.g. for the identification of products in the paint shop/drying area).

The storage capacity is 96/240 bits for the Electronic Product Code (EPC) and 512 bits for user memory. Thanks to its broad-band design, the SIMATIC RF680L SmartLabel can be used in numerous countries.

Technical specifications

Order No.	6GT2 810-2AG80
Product type designation	Transponder RF680L
Suitability for use	RF600
Wireless frequencies	
Operating frequency	860 ... 960 MHz
Electrical data	
Maximum range	4 m
Protocol for wireless transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Maximum data transfer rate for wireless transmission	320 kbit/s
Product property „multitag-capable“	Yes
Polarization	Linear
Product constituent „backup battery“	No
Memory	
Type of memory	EEPROM
Capacity of user memory	64 byte
Type of memory organization	EPC memory 96/240 bits, user memory 64 byte (512 bits), TID memory 8 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ⁵
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Lock, unlock, kill, write protection, password protection,

Order No.	6GT2 810-2AG80
Product type designation	Transponder RF680L
Mechanical data	
Material	Paper
Color	Beige
Mounting distance with regard to metal surfaces (recommended minimum)	3 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +220 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
Resistance to mechanical stress	Torsion and bending stress conditionally permissible
Design, dimensions and weights	
Width	54 mm
Height	0.3 mm
Depth	89 mm
Net weight	3 g
Type of mounting	Adhesive, cable tie, screw fixing
Product properties	
Product property „silicon-free“	Yes
Product property „printable“	Yes
Printing process	Thermal transfer process

Selection and ordering data

	Order No.
SmartLabel SIMATIC RF680L	6GT2 810-2AG80
Frequency 865 to 960 MHz (ETSI, FCC).	
Minimum order quantity 1000 units (supplied on a roll).	

RFID system for the UHF frequency range

SIMATIC RF600 transponders

SIMATIC RF610T

Overview



The transponder SIMATIC RF610T is a flexible card in ISO format that is suitable for a wide variety of applications, e.g. for identification of containers, pallets, vessels, or trolleys. SIMATIC RF610T can be attached to many different materials, including plastic, wood, glass and metal (with spacer).

The plastic enclosure is designed for food safety and is therefore also suitable for use with food and beverages. Thanks to its broadband design, the transponder can be used in numerous countries.

Technical specifications

Order No.	6GT2 810-2BB80
Product type designation	Transponder RF610T
Suitability for use	RF600
Wireless frequencies	
Operating frequency	860 ... 960 MHz
Electrical data	
Maximum range	5 m
Protocol for wireless transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Maximum data transfer rate for wireless transmission	320 kbit/s
Product property „multitag-capable“	Yes
Polarization	Linear
Product constituent „backup battery“	No
Memory	
Type of memory	EEPROM
Capacity of user memory	64 byte
Type of memory organization	EPC memory 96/240 bits, user memory 64 byte (512 bits), TID memory 8 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ⁵
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Lock, unlock, write protection, password protection

Order No.	6GT2 810-2BB80
Product type designation	Transponder RF610T
Mechanical data	
Material	PVC, food-safe
Color	White
Mounting distance with regard to metal surfaces (recommended minimum)	3 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +85 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
Degree of protection	IP67
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	1000 m/s ²
Oscillation acceleration	500 m/s ²
Resistance to mechanical stress	Torsion and bending stress conditionally permissible
Design, dimensions and weights	
Width	54 mm
Height	0.4 mm
Depth	86 mm
Net weight	3 g
Type of mounting	Adhesive, cable tie, screw fixing
Product properties	
Product property „printable“	Yes
Printing process	Thermal transfer process
Accessories	Fixing pocket, spacer

RFID system for the UHF frequency range

SIMATIC RF600 transponders

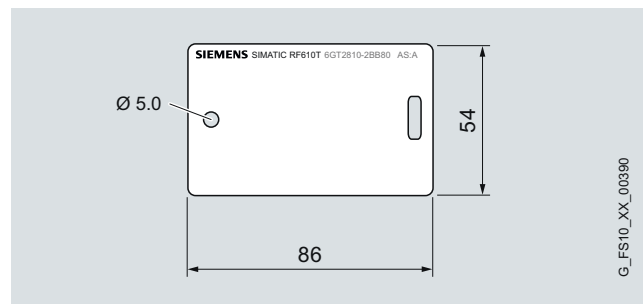
SIMATIC RF610T

Selection and ordering data

	Order No.
ISO card transponder SIMATIC RF610T Frequency 865 MHz to 960 MHz (ETSI, FCC). Ordering quantity 1000 units or a multiple thereof.	6GT2 810-2BB80
Accessories Fixing pocket For SIMATIC RF610T, for attaching to metal surfaces in combination with spacer 6GT2 190-0AA00. Ordering quantity 50 units or a multiple thereof.	6GT2 190-0AB00
Spacer For SIMATIC RF610T, for attaching to metal surfaces, in combination with fixing pocket 6GT2 190-0AB00. Ordering quantity 50 units or a multiple thereof.	6GT2 190-0AA00



Dimensions



SIMATIC RF610T

G_FS10_XX_00390

RFID system for the UHF frequency range

SIMATIC RF600 transponders

SIMATIC RF620T

Overview



The SIMATIC RF620T container transponder is designed for industrial requirements and has a high immunity to environmental effects and cleaning agents. It can be attached to plastic, wood or glass; and with a spacer even on metal and ESD plastic.

The SIMATIC RF620T is suitable for identification of transport containers, pallets or vessels. The plastic enclosure is food safe. Thanks to its broadband design, the transponder can be used in numerous countries.

Technical specifications

Order No.	6GT2 810-2HC81
Product type designation	Transponder RF620T
Suitability for use	RF600
Wireless frequencies	
Operating frequency	860 ... 960 MHz
Electrical data	
Maximum range	8 m
Protocol for wireless transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Maximum data transfer rate for wireless transmission	320 kbit/s
Product property „multitag-capable“	Yes
Polarization	Linear
Product constituent „backup battery“	No
Memory	
Type of memory	EEPROM
Capacity of user memory	64 byte
Type of memory organization	EPC memory 96/128 bit
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ⁵
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Lock, unlock, write protection, password protection
Mechanical data	
Material	PP (polypropylene)
Color	Anthracite
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm

Order No.	6GT2 810-2HC81
Product type designation	Transponder RF620T
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +80 °C
• during storage	-40 ... +80 °C
• during transport	-40 ... +80 °C
Degree of protection	IP67
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	1000 m/s ²
Oscillation acceleration	500 m/s ²
Resistance to mechanical stress	Torsion and bending stress not permissible
Design, dimensions and weights	
Width	38 mm
Height	6 mm
Depth	127 mm
Net weight	18 g
Type of mounting	Adhesive, 2 screws M5, spacer (see accessories)
Product properties	
Product property „printable“	No
Accessories	Spacer

Selection and ordering data

	Order No.
Container transponder SIMATIC RF620T	6GT2 810-2HC81
Frequency 860 MHz to 960 MHz (ETSI, FCC).	
Ordering quantity 20 units or a multiple thereof.	
Accessories	
Spacer	6GT2 898-2AA00
For SIMATIC RF620T, for mounting on metal.	
Dimensions L x W x H (mm)	
155 x 38 x 12	
Ordering quantity 20 units or a multiple thereof.	

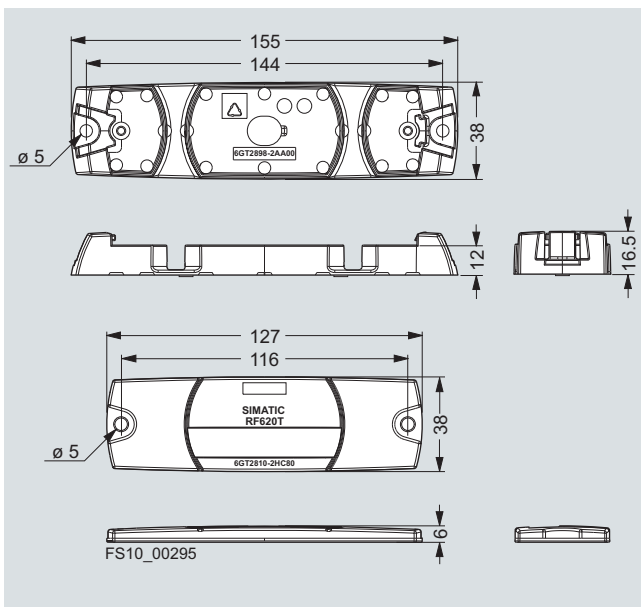


RFID system for the UHF frequency range

SIMATIC RF600 transponders

SIMATIC RF620T

Dimensions



Container transponder SIMATIC RF620T

RFID system for the UHF frequency range

SIMATIC RF600 transponders

SIMATIC RF625T

Overview



The SIMATIC RF625T disk transponder can be fitted recessed in metal, on metal, and also flush-mounted on non-metallic surfaces.

Thanks to its rugged design and high IP68 degree of protection, it is ideal for use for demanding production processes in industrial environments.

The SIMATIC RF625T can not only be used for applications in the field of installation, production and logistics, but also for the permanent equipping of tools, machines and plants for RFID-based asset management.

SIMATIC RF625T is available in two frequency versions for 865 to 868 MHz (ETSI) and 902 to 928 MHz (FCC).

Technical specifications

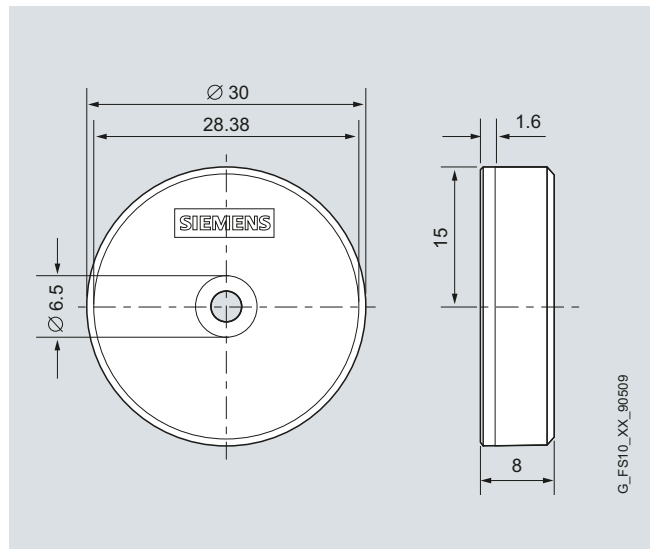
Order No.	6GT2 810-2EE00 (ETSI version) 6GT2 810-2EE01 (FCC version)
Product type designation	Transponder RF625T
Suitability for use	RF600
Wireless frequencies	
• Operating frequency ETSI	865 ... 868 MHz
• Operating frequency FCC	902 ... 928 MHz
Electrical data	
Maximum range	1.5 m
Protocol for wireless transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Maximum data transfer rate for wireless transmission	320 kbit/s
Product property „multitag-capable“	Yes
Polarization	Linear
Product constituent „backup battery“	No
Memory	
Type of memory	EEPROM
Capacity of user memory	64 byte
Type of memory organization	EPC memory 96/128 bits, user memory 64 byte (512 bits), TID memory 4 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ⁵
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Lock, unlock, write protection, password protection

Order No.	6GT2 810-2EE00 (ETSI version) 6GT2 810-2EE01 (FCC version)
Product type designation	Transponder RF625T
Mechanical data	
Material	PA6
Color	Black
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +85 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
Degree of protection	IP68
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	1000 m/s ²
Oscillation acceleration	500 m/s ²
Design, Dimensions	
Height	8 mm
Diameter	30 mm
Type of mounting	Adhesive, screw M3
Product properties	
Product property „printable“	No

Selection and ordering data

	Order No.
Disk-Transponder SIMATIC RF625T	
Ordering quantity 20 units or a multiple thereof.	
• Frequency 865 MHz to 868 MHz (ETSI)	6GT2 810-2EE00
• Frequency 902 MHz to 928 MHz (FCC)	6GT2 810-2EE01

Dimensions



Disk transponder SIMATIC RF625T

RFID system for the UHF frequency range

SIMATIC RF600 transponders

SIMATIC RF630T

Overview



The SIMATIC RF630T screw transponder is particularly suitable for controlling and monitoring production processes. It can be automatically screwed on to products such as motors or gearbox casings by means of robots and using the M6 grub screw.

The screw transponder for industrial requirements is rugged and highly resistant to cleaning agents.

It can be attached to materials such as plastic or wood as well as directly onto metal. SIMATIC RF630T is available in two frequency versions for 865 to 868 MHz (ETSI) and 902 to 928 MHz (FCC).

Technical specifications

Order No.	6GT2 810-2EC00	6GT2 810-2EC10
Product type designation	Transponder RF630T	Transponder RF630T
Suitability for use	RF600	RF600
Wireless frequencies		
Operating frequency	865 ... 868 MHz	902 ... 928 MHz
Electrical data		
Maximum range	1.2 m	1.2 m
Protocol for wireless transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Maximum data transfer rate for wireless transmission	320 kbit/s	320 kbit/s
Product property „multitag-capable“	Yes	Yes
Polarization	Linear	Linear
Product constituent „backup battery“	No	No
Memory		
Type of memory	EEPROM	EEPROM
Capacity of user memory	64 byte	64 byte
Type of memory organization	EPC memory 96/240 bits, user memory 64 byte (512 bits)	EPC memory 96/240 bits, user memory 64 byte (512 bits)
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ⁵	10 ⁵
Data retention time at ambient temperature < 40 °C, at least	10 a	10 a
Property of memory	Lock, unlock, write protection, password protection,	Lock, unlock, write protection, password protection,
Mechanical data		
Material	PA6.6 GF / stainless steel	PA6.6 GF / stainless steel
Color	Black, silver	Black, silver
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm	0 mm
Permissible ambient conditions		
Ambient temperature		
• during operation	-25 ... +85 °C	-25 ... +85 °C
• during storage	-40 ... +125 °C	-40 ... +125 °C
• during transport	-40 ... +125 °C	-40 ... +125 °C
Degree of protection	IP68 / IPx9K	IP68 / IPx9K
Shock resistance	according to DIN EN 60721-3-7 class 7 M3	according to DIN EN 60721-3-7 class 7 M3

RFID system for the UHF frequency range

SIMATIC RF600 transponders

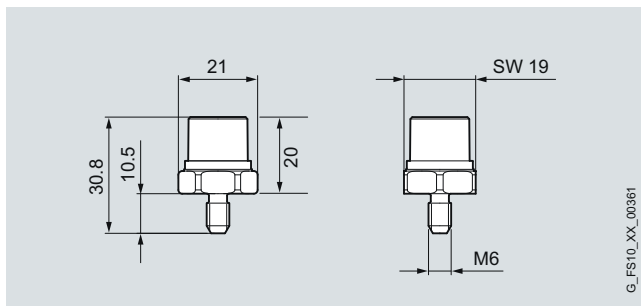
SIMATIC RF630T

Order No.	6GT2 810-2EC00	6GT2 810-2EC10
Product type designation	Transponder RF630T	Transponder RF630T
Shock acceleration	1000 m/s ²	1000 m/s ²
Oscillation acceleration	200 m/s ²	200 m/s ²
Design, dimensions and weights		
Height	20 mm	20 mm
Diameter	21 mm	21 mm
Net weight	22 g	22 g
Type of mounting	Screws (M6)	Screws (M6)
Product properties		
Product property „printable“	No	No

Selection and ordering data

	Order No.
Screw transponder SIMATIC RF630T Ordering quantity 10 units or a multiple thereof. <ul style="list-style-type: none"> Frequency 865 MHz to 868 MHz (ETSI) Frequency 902 MHz to 928 MHz (FCC) 	6GT2 810-2EC00 6GT2 810-2EC10

Dimensions



Screw transponder SIMATIC RF630T

RFID system for the UHF frequency range

SIMATIC RF600 transponders

SIMATIC RF640T

Overview



The SIMATIC RF640T tool transponder can be used directly on metal, and is therefore particularly suitable for tracking tools, containers and metallic equipment (asset management).

Its rugged and yet compact design, its high degree of protection and resistance to mineral oils, lubricants and cleaning agents make it the first choice in industrial environments. The European version has ATEX approval (Ex Zone II).

This tool transponder is available in two frequency variants: 865 to 868 MHz (ETSI) and 902 to 928 MHz (FCC).

Technical specifications

Order No.	6GT2 810-2DC00	6GT2 810-2DC10
Product type designation	Transponder RF640T	Transponder RF640T
Suitability for use	RF600	RF600
Wireless frequencies		
Operating frequency	865 ... 868 MHz	902 ... 928 MHz
Electrical data		
Maximum range	4 m	4 m
Protocol for wireless transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Maximum data transfer rate for wireless transmission	320 kbit/s	320 kbit/s
Product property „multitag-capable“	Yes	Yes
Polarization	Linear	Linear
Product constituent „backup battery“	No	No
Memory		
Type of memory	EEPROM	EEPROM
Capacity of user memory	64 byte	64 byte
Type of memory organization	EPC memory 96/240 bits, user memory 64 byte (512 bits), TID memory 8 byte	EPC memory 96/240 bits, user memory 64 byte (512 bits), TID memory 8 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ⁵	10 ⁵
Data retention time at ambient temperature < 40 °C, at least	10 a	10 a
Property of memory	Lock, unlock, write protection, password protection	Lock, unlock, write protection, password protection
Mechanical data		
Material	PA12	PA12
Color	anthracite	anthracite
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm	0 mm
Permissible ambient conditions		
Ambient temperature		
• during operation	-25 ... +85 °C	-25 ... +85 °C
• during storage	-40 ... +125 °C	-40 ... +125 °C
• during transport	-40 ... +125 °C	-40 ... +125 °C
Degree of protection	IP68 / IPx9K	IP68 / IPx9K
Shock resistance	According to DIN EN 60721-3-7 class 7 M3	According to DIN EN 60721-3-7 class 7 M3

RFID system for the UHF frequency range

SIMATIC RF600 transponders

SIMATIC RF640T

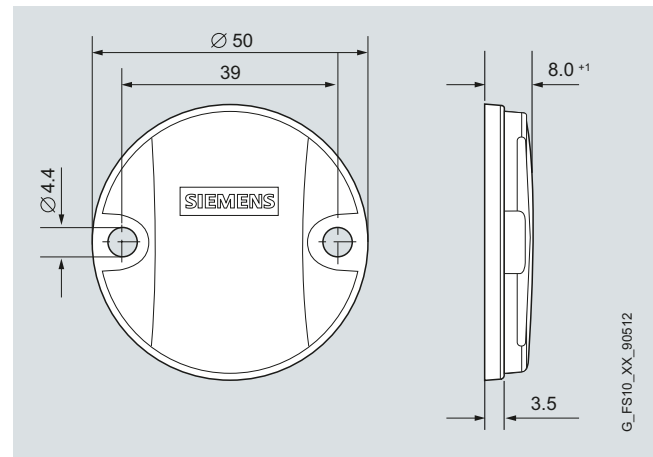
Order No.	6GT2 810-2DC00	6GT2 810-2DC10
Product type designation	Transponder RF640T	Transponder RF640T
Shock acceleration	1000 m/s ²	1000 m/s ²
Oscillation acceleration	200 m/s ²	200 m/s ²
Design, dimensions and weights		
Height	8 mm	8 mm
Diameter	50 mm	50 mm
Net weight	13 g	13 g
Type of mounting	2 screws M4	2 screws M4
Product properties		
Product property „silicon-free“	Yes	Yes
Product property „printable“	No	No
Standards, specifications, approvals		
Certificate of suitability	Ex: II 2 G Ex ib IIC T6 to T3, II 2 D Ex ibD 21 T140°C, -25 °C < Ta° < +85 °C	Ex: II 2 G Ex ib IIC T6 to T3, II 2 D Ex ibD 21 T140°C, -25 °C < Ta° < +85 °C

3

Selection and ordering data

	Order No.
Tool transponder SIMATIC RF640T	
Ordering quantity 10 units or a multiple thereof.	
• Frequency 865 MHz to 868 MHz (ETSI)	6GT2810-2DC00
• Frequency 902 MHz to 928 MHz (FCC)	6GT2810-2DC10

Dimensions



Tool transponder SIMATIC RF640T

RFID system for the UHF frequency range

SIMATIC RF600 transponders

SIMATIC RF680T

Overview



The heat-resistant transponder SIMATIC RF680T has a wide range and, thanks to the high IP68 / IPx9K degree of protection and its resistance to chemicals, it can even be used in harsh industrial applications, for example, in automotive production (including identification of skids in paint shops) or in the chemical industry. The transponder is silicon-free and withstands temperatures up to 220 °C. The storage capacity is 96/240 bit Electronic Product Code (EPC) plus 512-bit user memory. Thanks to its broadband design, the transponder can be used in numerous countries.

Technical specifications

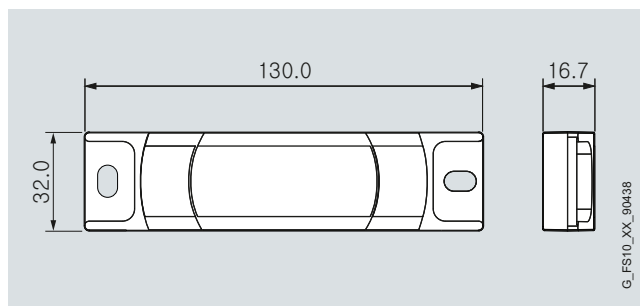
Order No.	6GT2 810-2HG80
Product type designation	Transponder RF680T
Suitability for use	RF600
Wireless frequencies	
Operating frequency	865 ... 928 MHz
Electrical data	
Maximum range	4 m
Protocol for wireless transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Maximum data transfer rate for wireless transmission	320 kbit/s
Product property „multitag-capable“	Yes
Polarization	Linear
Product constituent „backup battery“	No
Memory	
Type of memory	EEPROM
Capacity of user memory	64 byte
Type of memory organization	EPC memory 96/240 bits, user memory 64 byte (512 bits)
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ⁵
Data retention time at ambient temperature < 40 °C, at least	10 a
Property of memory	Lock, unlock, write protection, password protection
Mechanical data	
Material	PPS
Color	Black
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm

Order No.	6GT2 810-2HG80
Product type designation	Transponder RF680T
Permissible ambient conditions	
Ambient temperature	
• during operation	-40 ... +220 °C
• during storage	-40 ... +100 °C
• during transport	-40 ... +100 °C
Degree of protection	IP68 / IPx9K
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	1000 m/s ²
Oscillation acceleration	200 m/s ²
Resistance to mechanical stress	Torsion and bending stress not permissible
Design, dimensions and weights	
Width	32 mm
Height	15 mm
Depth	130 mm
Net weight	50 g
Type of mounting	2 screws M6
Product properties	
Product property „silicon-free“	Yes
Product property „printable“	No

Selection and ordering data

	Order No.
High-temperature Transponder SIMATIC RF680T	6GT2 810-2HG80
Frequency 865 to 928 MHz (ETSI, FCC).	
Ordering quantity 10 units or a multiple thereof.	

Dimensions



High-temperature transponder SIMATIC RF680T

G_FS10_XX_90438

RFID system for the UHF frequency range

SIMATIC RF600

Readers

Overview



Reader	Features
SIMATIC RF620R	<p>The SIMATIC RF620R reader features an integrated antenna and can be linked to SIMATIC automation systems via the SIMATIC RF communication modules.</p> <ul style="list-style-type: none"> • IP65 degree of protection • Operating temperature range -25 °C to +55 °C • Dimensions L x W x H (mm): 260 x 193 x 52 • Interface RS422 • Programmable
SIMATIC RF630R	<p>In the case of the SIMATIC RF630R reader, one or two external antennas can be connected. SIMATIC RF communication modules can be used to connect the reader to SIMATIC automation systems.</p> <ul style="list-style-type: none"> • IP65 degree of protection • Operating temperature range -25 °C to +55 °C • Dimensions L x W x H (mm): 260 x 193 x 52 • Interface RS422 • Programmable
SIMATIC RF640R	<p>The SIMATIC RF640R has an integrated antenna. An Ethernet interface (XML protocol via TCP/IP) is available for the connection to the IT level.</p> <ul style="list-style-type: none"> • IP65 degree of protection • Operating temperature range -25 °C to +55 °C • Dimensions L x W x H (mm): 252 x 193 x 52 • Ethernet interface (XML protocol) • Programmable
SIMATIC RF670R	<p>SIMATIC RF670R is a powerful RFID reader and supports as many as four independent read stations. An Ethernet interface (XML protocol via TCP/IP) is available for the connection to the IT level.</p> <ul style="list-style-type: none"> • IP65 degree of protection • Operating temperature range -25 °C to +55 °C • Dimensions L x W x H (mm): 260 x 193 x 52 • Ethernet interface (XML protocol) • Programmable
SIMATIC RF680M	<p>The mobile handheld terminal has an integrated UHF module. Transponder data can be displayed and edited using a preinstalled application. Furthermore, own Windows applications can be developed for the device.</p> <p>The mobile handheld terminal forwards the transponder data to the downstream systems via either WLAN or the interface of the docking station.</p> <ul style="list-style-type: none"> • IP65 degree of protection • Operating temperature range -25 °C to +55 °C • Dimensions L x W x H (mm): 265 x 100 x 42 (without barcode scanner) • LIF interface (LIF: low insertion force) for battery charging and communication with the PC over a USB interface; additional CF slot for expansion cards (e.g. WLAN) • Programmable

RFID system for the UHF frequency range

SIMATIC RF600 readers

SIMATIC RF620R, SIMATIC RF630R

Overview



SIMATIC RF620R (ETSI and FCC)



SIMATIC RF630R

The UHF RFID readers SIMATIC RF620R and SIMATIC RF630R have been specially designed for the requirements in production. While the SIMATIC RF630R operates with up to two external antennas (SIMATIC RF620A/640A/642A/660A), SIMATIC RF620R has one integrated antenna, so installation outlay is reduced. Both devices are integrated into automation systems via the RS422 system interface. Connection to PROFIBUS, PROFINET, and Industrial Ethernet or directly to SIMATIC S7-300 is supported (via communication modules SIMATIC RF170C/180C/182C or ASM 456/475).

Special functions are available for the difficult environmental conditions encountered in production environments, such as reflections and dead zones resulting from metal or superimposed radio fields due to a high reader density.

In this manner, process stability is substantially increased by automatic adaptation of the transmit power and intelligent filtering of the reading results.

The SIMATIC RF Diag software is available for fast and simple commissioning and diagnostics.

The reader is easily configured by selecting pre-defined profiles and using the well-known FB45 and FB55 function blocks. These are available on the DVD "RFID Systems Software & Documentation" that can be ordered separately (Order no. 6GT2080-2AA20).

For further information on configuration, runtime behavior of SIMATIC RF620R and SIMATIC RF630R, as well as for integration with SIMATIC controllers, please refer to the relevant documentation.

Application

The stationary readers SIMATIC RF620R and SIMATIC RF630R are ideal for use in production as well as in logistics scenarios close to the production process. Thanks to the IP65 degree of protection, the high degree of noise immunity and special algorithms, the readers are specially prepared for industrial use in metallic environments.

Mounting and integration are particularly easy using the SIMATIC RF communication modules. The devices support the established EPCglobal Class 1, Gen 2 standard and are offered in the three versions according to ETSI for Europe, FCC for the USA/Canada and CMIIT for China.

Technical specifications

Order No.	6GT2 811-5BA00-0AA0	6GT2 811-5BA00-1AA0	6GT2 811-5BA00-2AA1
Product type designation	Reader RF620R ETSI	Reader RF620R FCC	Reader RF620R CMIIT
Suitability for use	RF600 transponder, for connecting to communication modules	RF600 transponder, for connecting to communication modules	RF600 transponder, for connecting to communication modules
Wireless frequencies			
Operating frequency	865 ... 868 MHz	902 ... 928 MHz	920 ... 925 MHz
Effective radiation intensity			
• compliant with ETSI	65 ... 800 mW	-	-
Equivalent isotropic radiated power			
• compliant with FCC	-	105 ... 1250 mW	105 ... 1250 mW
Electrical data			
Maximum range	5 m	5 m	5 m
Protocol for wireless transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C

RFID system for the UHF frequency range

SIMATIC RF600 readers

SIMATIC RF620R, SIMATIC RF630R

Order No.	6GT2 811-5BA00-0AA0	6GT2 811-5BA00-1AA0	6GT2 811-5BA00-2AA1
Product type designation	Reader RF620R ETSI	Reader RF620R FCC	Reader RF620R CMIIT
Maximum data transfer rate for wireless transmission	320 kbit/s	320 kbit/s	320 kbit/s
Product property „multitag-capable“	Yes	Yes	Yes
Polarization	Circular	Circular	Circular
Data transfer rate an der point-to-point connection (serial, max.)	115.2 kbit/s	115.2 kbit/s	115.2 kbit/s
Transmission time for user data			
• for write access, per byte, typical	6.3 ms	6.3 ms	6.3 ms
• for read access, per byte, typical	1 ms	1 ms	1 ms
Interfaces			
Design of electrical connection	M12, 8-pin	M12, 8-pin	M12, 8-pin
Standard for interfaces for communication	RS422	RS422	RS422
Mechanical data			
Material	Aluminum, ABS (GF20)	Aluminum, ABS (GF20)	Aluminum, ABS (GF20)
Color	Silver / pastel turquoise	Silver / pastel turquoise	Silver / pastel turquoise
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm	0 mm	0 mm
Supply voltage, current consumption			
DC supply voltage			
• Rated value	24 V	24 V	24 V
• minimum	21.6 V	21.6 V	21.6 V
• max.	30 V	30 V	30 V
Current input at 24 V DC			
• typical	0.395 A	0.395 A	0.395 A
• max.	0.47 A	0.47 A	0.47 A
Permissible ambient conditions			
Ambient temperature			
• during operation	-25 ... +55 °C	-25 ... +55 °C	-25 ... +55 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Degree of protection	IP65	IP65	IP65
Shock resistance	EN 60068-2-27, EN 60068-2-6	EN 60068-2-27, EN 60068-2-6	EN 60068-2-27, EN 60068-2-6
Shock acceleration	500 m/s ²	500 m/s ²	500 m/s ²
Oscillation acceleration	200 m/s ²	200 m/s ²	200 m/s ²
Design, dimensions and weights			
Width	193 mm	193 mm	193 mm
Height	252 mm	252 mm	252 mm
Depth	52 mm	52 mm	52 mm
Net weight	1.85 kg	1.85 kg	1.85 kg
Type of mounting	4 screws M6, Vesa 100 with 4 screws M4	4 screws M6, Vesa 100 with 4 screws M4	4 screws M6, Vesa 100 with 4 screws M4
Cable length			
• for RS 422 interface, maximum	100 m	100 m	100 m
Product properties			
Type of display	3-color LED	3-color LED	3-color LED
Product property „silicon-free“	Yes	Yes	Yes
Certificate of suitability	Wireless compliant with R&TTE guidelines, CE, FCC, IC (Canada), cULus, IEC 60950	Wireless compliant with R&TTE guidelines, CE, FCC, IC (Canada), cULus, IEC 60950	Wireless compliant with R&TTE guidelines, CE, FCC, IC (Canada), cULus, IEC 60950

RFID system for the UHF frequency range

SIMATIC RF600 readers

SIMATIC RF620R, SIMATIC RF630R

Order No.	6GT2 811-4AA00-0AA0	6GT2 811-4AA00-1AA0	6GT2 811-4AA00-2AA1
Product type designation	Reader RF630R ETSI	Reader RF630R FCC	Reader RF630R CMIIT
Suitability for use	RF600 transponder, for connecting to communication modules	RF600 transponder, for connecting to communication modules	RF600 transponder, for connecting to communication modules
Wireless frequencies			
Operating frequency	865 ... 868 MHz	902 ... 928 MHz	902 ... 928 MHz
Transmit power	65 ... 500 mW	65 ... 500 mW	65 ... 500 mW
Effective radiation intensity, max.			
• compliant with ETSI	1200 mW	-	1200 mW
Equivalent isotropic radiated power, max.			
• compliant with FCC	-	2000 mW	-
Electrical data			
Maximum range	6 m	6 m	6 m
Protocol for wireless transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Maximum data transfer rate for wireless transmission	320 kbit/s	320 kbit/s	320 kbit/s
Product property „multitag-capable“	Yes	Yes	Yes
Data transfer rate an der point-to-point connection (serial, max.)	115.2 kbit/s	115.2 kbit/s	115.2 kbit/s
Transmission time for user data			
• for write access, per byte, typical	6.3 ms	6.3 ms	6.3 ms
• for read access, per byte, typical	1 ms	1 ms	1 ms
Interfaces			
Design of electrical connection for external antenna(s)	Reverse TNC	Reverse TNC	Reverse TNC
Number of external antennas	2	2	2
Standard for interfaces for communication	RS422	RS422	RS422
Mechanical data			
Material	Aluminum, ABS (GF20)	Aluminum, ABS (GF20)	Aluminum, ABS (GF20)
Color	Silver / anthracite	Silver / anthracite	Silver / anthracite
Supply voltage, current consumption			
DC supply voltage			
• Rated value	24 V	24 V	24 V
• minimum	21.6 V	21.6 V	21.6 V
• max.	30 V	30 V	30 V
Current input at 24 V DC			
• typical	0.395 A	0.395 A	0.395 A
• max.	0.47 A	0.47 A	0.47 A
Permissible ambient conditions			
Ambient temperature			
• during operation	-25 ... +55 °C	-25 ... +55 °C	-25 ... +55 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Degree of protection	IP65	IP65	IP65
Shock resistance	EN 60068-2-27, EN 60068-2-6	EN 60068-2-27, EN 60068-2-6	EN 60068-2-27, EN 60068-2-6
Shock acceleration	500 m/s ²	500 m/s ²	500 m/s ²
Oscillation acceleration	200 m/s ²	200 m/s ²	200 m/s ²
Design, dimensions and weights			
Width	193 mm	193 mm	193 mm
Height	252 mm	252 mm	252 mm
Depth	52 mm	52 mm	52 mm
Net weight	1.64 kg	1.64 kg	1.64 kg

RFID system for the UHF frequency range

SIMATIC RF600 readers

SIMATIC RF620R, SIMATIC RF630R

Order No.	6GT2 811-4AA00-0AA0	6GT2 811-4AA00-1AA0	6GT2 811-4AA00-2AA1
Product type designation	Reader RF630R ETSI	Reader RF630R FCC	Reader RF630R CMIIT
Type of mounting	4 screws M6, Vesa 100 with 4 screws M4	4 screws M6, Vesa 100 with 4 screws M4	4 screws M6, Vesa 100 with 4 screws M4
Cable length of antenna cable			
• minimum	3 m	3 m	3 m
• max.	20 m	20 m	20 m
Cable length for RS422 interface, max.	100 m	100 m	100 m
Product properties			
Type of display	3-color LED	3-color LED	3-color LED
Product property „silicon-free“	Yes	Yes	Yes
Certificate of suitability	Wireless compliant with R&TTE guidelines, CE, FCC, IC (Canada), cULus, IEC 60950	Wireless compliant with R&TTE guidelines, CE, FCC, IC (Canada), cULus, IEC 60950	Wireless compliant with R&TTE guidelines, CE, FCC, IC (Canada), cULus, IEC 60950
Accessories	Up to 2 external antennas	Up to 2 external antennas	Up to 2 external antennas

3

Selection and ordering data

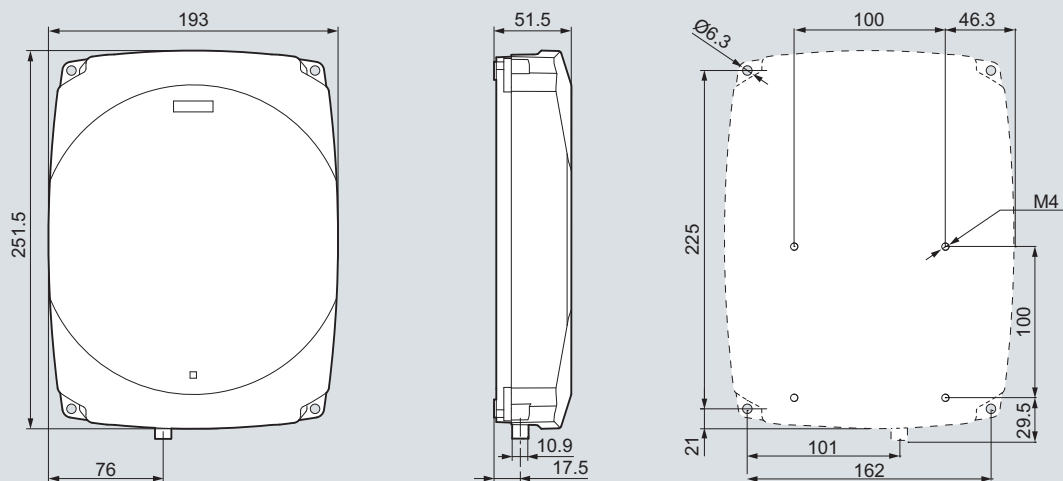
	Order No.
SIMATIC RF620R for Europe (ETSI) UHF reader with integrated antenna, for SIMATIC integration.	6GT2 811-5BA00-0AA0
SIMATIC RF630R for Europe (ETSI) UHF reader for connecting up to two external UHF antennas, for SIMATIC Integration.	6GT2 811-4AA00-0AA0
SIMATIC RF620R for USA (FCC) UHF reader with integrated antenna, for SIMATIC integration.	6GT2 811-5BA00-1AA0
SIMATIC RF630R for USA (FCC) Compact UHF reader for connecting up to two external UHF antennas, for SIMATIC integration.	6GT2 811-4AA00-1AA0
SIMATIC RF620R for China (CMIIT) UHF reader with integrated antenna, for SIMATIC integration.	6GT2 811-5BA00-2AA1
SIMATIC RF630R for China (CMIIT) Compact UHF reader for connecting up to two external UHF antennas, for SIMATIC integration.	6GT2 811-4AA00-2AA1
Accessories Note: For proper functioning of the SIMATIC RF630R reader, we recommend using the SIMATIC RF620A / 640A / 642A / 660A antennas.	
Antenna mounting kit For flexible mounting, with articulated bracket.	6GT2 890- 0AA00
DVD „RFID Systems Software & Documentation“	6GT2 080-2AA20

RFID system for the UHF frequency range

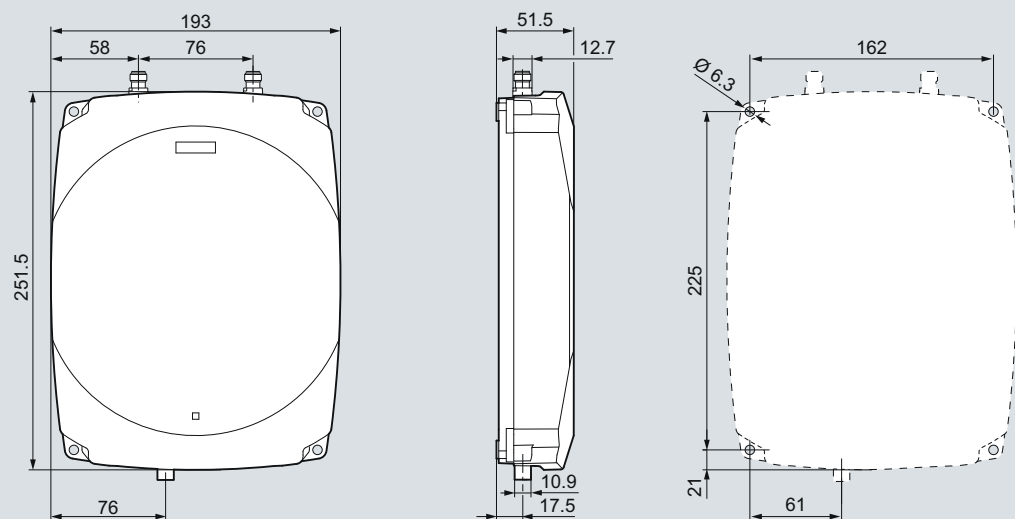
SIMATIC RF600 readers

SIMATIC RF620R, SIMATIC RF630R

Dimensions



SIMATIC RF620R



SIMATIC RF630R

Additional Info

All current approvals can be found on the Internet at:

www.siemens.com/rfid-approvals

G_FS10_XX_00353

RFID system for the UHF frequency range

SIMATIC RF600 readers

SIMATIC RF640R

Overview



SIMATIC RF640R is a powerful UHF reader with integral antenna that is suitable for applications at single recording stations, in conveyor systems or production plants. Due to its high maximum transmission power of up to 2 W ERP (ETSI) / 4 W EIRP (FCC), longer ranges can also be achieved. The high degree of protection of the overall system is a guarantee for problem-free use, even under the most difficult environmental conditions. Instead of the integral antenna, an external antenna of the RF600 series (SIMATIC RF620A, RF640A, RF642A, RF660A) can be used. The reader offers 2 digital inputs (24 V) and 2 digital outputs (typ. 24 V/0.5 A) that have protection circuits for industrial use.

The integrated processing logic of the reader enables numerous functions to be executed in the device itself. For example, the reader offers extensive, intelligent filter functions, a parameterizable state machine for forwarding the data, the automatic control of the digital outputs for signaling functions, and the extensive configuration of response message frames. The advantage: Thanks to its intelligence, this considerably reduces the cost for additional software modules (RFID middleware). The reader is configured by means of the easy-to-use SIMATIC RF-MANAGER Basic software, which is provided on a free CD supplied with each reader.

Data communication takes place via an XML protocol with TCP/IP; the reader provides an Ethernet interface for this purpose. The protocol is compatible with the SIMATIC RF670R.

Application

The stationary SIMATIC RF640R UHF reader with its integral antenna is suitable for applications in production (with PC/IT interface), production-level logistics, distribution, supply chain management, asset management, service processes or material flow control.

The digital inputs and outputs (DI/DO) are used for simple process interfacing (sensors, actuators).

The SIMATIC RF640R supports the established EPCglobal Class 1, Gen 2 standard and is offered in three versions: compliant with ETSI for Europe, compliant with FCC for USA/Canada, and compliant with CMIIT for China.

RFID system for the UHF frequency range

SIMATIC RF600 readers

SIMATIC RF640R

Technical specifications

Order No.	6GT2 811-3BA00-0AA0	6GT2 811-3BA00-1AA0	6GT2 811-3BA00-2AA0
Product type designation	Reader RF640R ETSI	Reader RF640R FCC	Reader RF640R CMIIT
Suitability for use	RF600 transponder, for connecting to Ethernet networks	RF600 transponder, for connecting to Ethernet networks	RF600 transponder, for connecting to Ethernet networks
Wireless frequencies			
Operating frequency	865 ... 868 MHz	902 ... 928 MHz	920 ... 925 MHz
Transmit power	50 ... 1000 mW	50 ... 1250 mW	50 ... 1000 mW
Effective radiation intensity, max.			
• compliant with ETSI	100 ... 2000 mW	-	100 ... 2000 mW
Equivalent isotropic radiated power, max.			
• compliant with FCC	-	400 ... 4000 mW	-
Electrical data			
Range, maximum	8 m	8 m	8 m
Protocol for wireless transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Transfer rate with wireless transmission, maximum	320 kbit/s	320 kbit/s	320 kbit/s
Product property „multitag-capable“	Yes	Yes	Yes
Polarization	Internal: circular, external: according to antenna	Internal: circular, external: according to antenna	Internal: circular, external: according to antenna
Transmission time for user data			
• For write access per byte, typical	6.3 ms	6.3 ms	6.3 ms
• For read access per byte, typical	1 ms	1 ms	1 ms
Interfaces			
Number of external antennas	1	1	1
Design of electrical connection			
• for external antenna(s)	Reverse TNC	Reverse TNC	Reverse TNC
• for supply voltage	M12, 4-pin, socket	M12, 4-pin, socket	M12, 4-pin, socket
Standard for interfaces for communication	Ethernet	Ethernet	Ethernet
Design of electrical connection			
• for communication interface	Push Pull RJ45	Push Pull RJ45	Push Pull RJ45
• at digital inputs and outputs	M12, 8-pin, socket	M12, 8-pin, socket	M12, 8-pin, socket
Number of digital inputs	2	2	2
Number of digital outputs	2	2	2
Mechanical data			
Material	Aluminum, ABS (GF20)	Aluminum, ABS (GF20)	Aluminum, ABS (GF20)
Color	Silver / anthracite	Silver / anthracite	Silver / anthracite
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm	0 mm	0 mm
Supply voltage, current consumption			
DC supply voltage			
• Rated value	24 V	24 V	24 V
• minimum	20 V	20 V	20 V
• max.	30 V	30 V	30 V
Current input at 24 V DC			
• typical	0.45 A	0.45 A	0.45 A
• max.	1.5 A	1.5 A	1.5 A

RFID system for the UHF frequency range

SIMATIC RF600 readers

SIMATIC RF640R

Order No.	6GT2 811-3BA00-0AA0	6GT2 811-3BA00-1AA0	6GT2 811-3BA00-2AA0
Product type designation	Reader RF640R ETSI	Reader RF640R FCC	Reader RF640R CMIIT
Permissible ambient conditions			
Ambient temperature			
• during operation	-25 ... +55 °C	-25 ... +55 °C	-25 ... +55 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Ambient conditions for operation	With operating temperature below -20 °C: Warming-up time at least 10 minutes	With operating temperature below -20 °C: Warming-up time at least 10 minutes	With operating temperature below -20 °C: Warming-up time at least 10 minutes
Degree of protection	IP65	IP65	IP65
Shock resistance	EN 60068-2-27, EN 60068-2-6	EN 60068-2-27, EN 60068-2-6	EN 60068-2-27, EN 60068-2-6
Shock acceleration	500 m/s ²	500 m/s ²	500 m/s ²
Oscillation acceleration	200 m/s ²	200 m/s ²	200 m/s ²
Design, dimensions and weights			
Width	193 mm	193 mm	193 mm
Height	252 mm	252 mm	252 mm
Depth	52 mm	52 mm	52 mm
Net weight	2.02 kg	2.01 kg	1.99 kg
Type of mounting	4 screws M6, Vesa 100 with 4 screws M4	4 screws M6, Vesa 100 with 4 screws M4	4 screws M6, Vesa 100 with 4 screws M4
Cable length of antenna cable			
• minimum	3 m	3 m	3 m
• max.	20 m	20 m	20 m
Product properties, functions, components, in general			
Type of display	3-color LED	3-color LED	3-color LED
Product property „silicon-free“	Yes	Yes	Yes
Standards, specifications, approvals			
Certificate of suitability	Wireless compliant with R&TTE guidelines, CE, IEC 60950	Wireless compliant with FCC, IC (Canada), cULus	Wireless compliant with CMIIT
Accessories			
	See selection and ordering data Optional: external antenna	See selection and ordering data Optional: external antenna	See selection and ordering data Optional: external antenna

RFID system for the UHF frequency range

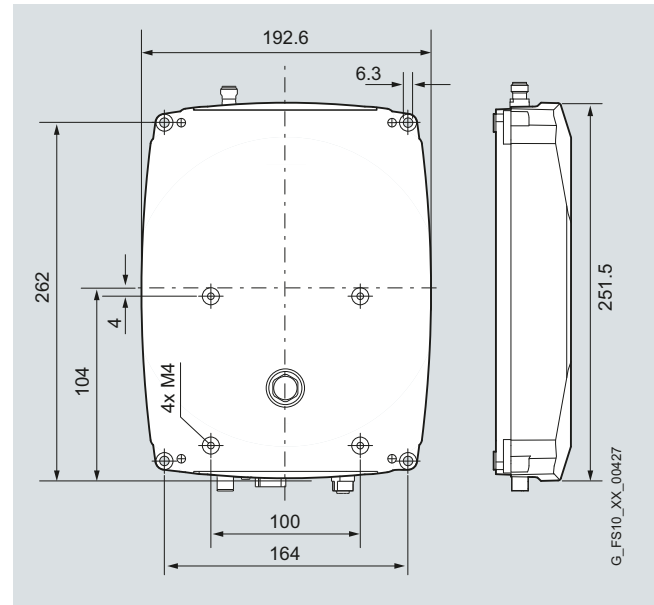
SIMATIC RF600 readers

SIMATIC RF640R

Selection and ordering data

	Order No.
SIMATIC RF640R for Europe (ETSI) UHF RFID reader with integral antenna for frequencies of 865 to 868 MHz (ETSI), including SIMATIC RF-MANAGER Basic on DVD.	6GT2 811-3BA00-0AA0
SIMATIC RF640R for USA (FCC) UHF RFID reader with integral antenna for frequencies of 902 to 928 MHz (FCC), including SIMATIC RF-MANAGER Basic on DVD.	6GT2 811-3BA00-1AA0
SIMATIC RF640R for China (CMIIT) UHF-RFID reader with integral antenna for frequencies of 920 to 925 MHz (China), including SIMATIC RF-MANAGER Basic on DVD.	6GT2 811-3BA00-2AA0
Accessories DI/DO cable For the connection of digital sensors and actuators to SIMATIC RF640R. M12 connector on reader side, open stranded wires on the sensor side. DI/DO cable, PUR material, black, shielded, M12, 8 x 0.14 mm ² , length 5 m.	6GT2 891-0DH50
Set of protective caps For achieving IP65 degree of protection if not all connections on the reader are assigned. Content: 3x protective caps for antenna connection, 1x protective cap for DI/DO connection; material: metal.	6GT2 898-4AA00
Wide-range power supply Primary side: 100 ... 240 V AC, 120 ... 353 V DC, secondary side: 24 V DC, 3 A, with no-load protection and continuous short-circuit protection.	
<ul style="list-style-type: none"> • With EU plug • With UK plug • With US plug 	6GT2 898-0AA00 6GT2 898-0AA10 6GT2 898-0AA20
Cable for wide-range power supply 24 V DC, material; PUR, length 5 m. Note: This cable is not suitable for SIMATIC RF660R.	6GT2 891-0NH50
Ethernet connection <ul style="list-style-type: none"> • Twisted connecting cable, IP65 on reader side, Length 10 m. • Push-pull cable connector for RJ45, not pre-assembled. • Covers for push-pull sockets, RJ45, 5 units per pack. 	6GT2 891-1HN10 6GK1 901-1BB10-6AA0 6ES7 194-4JD50-0AA0

Dimensions



Reader SIMATIC RF640R

Additional Info

All current approvals can be found on the Internet at:

www.siemens.com/rfid-approvals

RFID system for the UHF frequency range

SIMATIC RF600 readers

SIMATIC RF670R

Overview



SIMATIC RF670R is a high-performance RFID reader with four antenna connections which can be configured as required for individual read stations, detecting at conveyor systems, or as gates. The high transmit power of up to 2 W ERP / 4 W EIRP (dependent on antenna and cable) permits large ranges of up to 10 m in gate applications. The high degree of protection of the overall system is a guarantee for problem-free use, even under the most difficult environmental conditions.

Due to the monostatic antenna principle, as many as four independent read stations can be implemented. All antennas of the RF600 series are supported (SIMATIC RF620A, RF640A,

RF642A, RF660A). The reader offers 4 digital inputs (24 V) and 4 digital outputs (typ. 24 V/0.5 A) that have protection circuits for industrial use.

The integrated processing logic of the reader enables numerous functions of the higher-level software layers to be executed in the device itself. For example, the reader offers extensive, intelligent filter functions, a parameterizable state machine for forwarding the data, the automatic control of the digital outputs for signaling functions, and the extensive configuration of response message frames. The advantage: Thanks to its intelligence, this considerably reduces the cost for additional software modules (RFID middleware). The reader is configured by means of the easy-to-use SIMATIC RF-MANAGER Basic software, which is provided on a free CD supplied with each reader.

Data communication for the RF670R is performed by means of an XML protocol with TCP/IP; the reader provides an Ethernet interface for this purpose.

Application

With up to four antennas, the stationary SIMATIC RF670R UHF portal reader is suitable for applications in production (with PC/IT interface), production-level logistics, distribution, supply chain management, asset management, service processes, or material flow control.

The digital inputs and outputs (DI/DO) are used for simple process interfacing (sensors, actuators).

The SIMATIC RF670R supports the established EPCglobal Class 1, Gen 2 standard and is offered in three versions: compliant with ETSI for Europe, compliant with FCC for USA/Canada, and compliant with CMIIT for China.

Technical specifications

Order No.	6GT2 811-0AB00-0AA0	6GT2 811-0AB00-1AA0	6GT2 811-0AB00-2AA0
Product type designation	Reader RF670R ETSI	Reader RF670R FCC	Reader RF670R CMIIT
Suitability for use	RF600 transponder, for connecting to Ethernet networks	RF600 transponder, for connecting to Ethernet networks	RF600 transponder, for connecting to Ethernet networks
Wireless frequencies			
Operating frequency	865 ... 868 MHz	902 ... 928 MHz	920 ... 925 MHz
Transmit power	50 ... 1000 mW	50 ... 1250 mW	50 ... 1000 mW
Effective radiation intensity, max.			
• compliant with ETSI	2000 mW	-	100 ... 2000 mW
Equivalent isotropic radiated power, max.			
• compliant with FCC	-	400 ... 4000 mW	-
Electrical data			
Maximum range	8 m	8 m	8 m
Protocol for wireless transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Maximum data transfer rate for wireless transmission	320 kbit/s	320 kbit/s	320 kbit/s
Product property „multitag-capable“	Yes	Yes	Yes
Transmission time for user data			
• for write access, per byte, typical	6.3 ms	6.3 ms	6.3 ms
• for read access, per byte, typical	1 ms	1 ms	1 ms
Interfaces			
Design of electrical connection for external antenna(s)	Reverse TNC	Reverse TNC	Reverse TNC
Number of external antennas	4	4	4
Design of electrical connection			
• for supply voltage	M12, 4-pin, socket	M12, 4-pin, socket	M12, 4-pin, socket

RFID system for the UHF frequency range

SIMATIC RF600 readers

SIMATIC RF670R

Order No.	6GT2 811-0AB00-0AA0	6GT2 811-0AB00-1AA0	6GT2 811-0AB00-2AA0
Product type designation	Reader RF670R ETSI	Reader RF670R FCC	Reader RF670R CMIIT
Standard for interfaces for communication	Ethernet	Ethernet	Ethernet
• for communication interface	Push Pull RJ45	Push Pull RJ45	Push Pull RJ45
• at digital inputs and outputs	M12, 12-pin, socket	M12, 12-pin, socket	M12, 12-pin, socket
Number of digital inputs	4	4	4
Number of digital outputs	4	4	4
Mechanical data			
Material	Aluminum, ABS (GF20)	Aluminum, ABS (GF20)	Aluminum, ABS (GF20)
Color	Silver / anthracite	Silver / anthracite	Silver / anthracite
Supply voltage, current consumption			
DC supply voltage			
• Rated value	24 V	24 V	24 V
• minimum	20 V	20 V	20 V
• max.	30 V	30 V	30 V
Current input at 24 V DC			
• typical	0.45 A	0.45 A	0.45 A
• max.	2 A	2 A	2 A
Permissible ambient conditions			
Ambient temperature			
• during operation	-25 ... +55 °C	-25 ... +55 °C	-25 ... +55 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Degree of protection	IP65	IP65	IP65
Shock resistance	EN 60068-2-27, EN 60068-2-6	EN 60068-2-27, EN 60068-2-6	EN 60068-2-27, EN 60068-2-6
Shock acceleration	500 m/s ²	500 m/s ²	500 m/s ²
Oscillation acceleration	200 m/s ²	200 m/s ²	200 m/s ²
Design, dimensions and weights			
Width	193 mm	193 mm	193 mm
Height	252 mm	252 mm	252 mm
Depth	52 mm	52 mm	52 mm
Net weight	1.8 kg	1.8 kg	1.8 kg
Type of mounting	4 screws M6, Vesa 100 with 4 screws M4	4 screws M6, Vesa 100 with 4 screws M4	4 screws M6, Vesa 100 with 4 screws M4
Cable length of antenna cable			
• minimum	3 m	3 m	3 m
• max.	20 m	20 m	20 m
Product properties			
Type of display	3-color LED	3-color LED	3-color LED
Product property „silicon-free“	Yes	Yes	Yes
Certificate of suitability			
	Wireless compliant with R&TTE guidelines, CE, IEC 60950	Wireless compliant with FCC, IC (Canada), cULus	Wireless compliant with CMIIT
Accessories			
	See selection and ordering data	See selection and ordering data	See selection and ordering data

RFID system for the UHF frequency range

SIMATIC RF600 readers

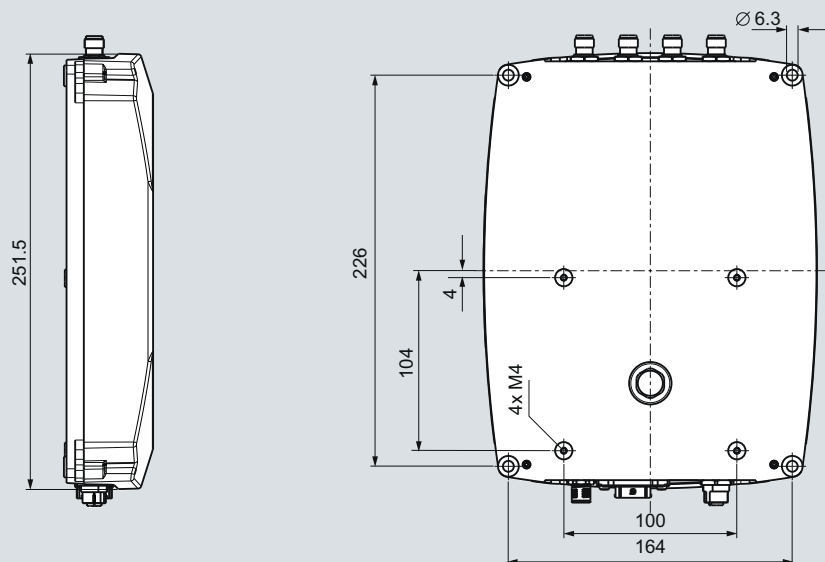
SIMATIC RF670R

Selection and ordering data

	Order No.		Order No.
Reader SIMATIC RF670R UHF RFID reader for frequencies 865 to 868 MHz (ETSI), incl. SIMATIC RF-MANAGER Basic on CD	6GT2 811-0AB00-0AA0	Wide-range power supply Primary side: 100 ... 240 V AC, 120 ... 353 V DC, secondary side: 24 V DC, 3 A, with no-load protection, with continuous short-circuit protection	
Reader SIMATIC RF670R UHF RFID reader for frequencies 902 to 928 MHz (FCC), incl. SIMATIC RF-MANAGER Basic on CD	6GT2 811-0AB00-1AA0	<ul style="list-style-type: none"> • With EU plug • With UK plug • With US plug 	6GT2 898-0AA00 6GT2 898-0AA10 6GT2 898-0AA20
Reader SIMATIC RF670R UHF RFID reader for frequencies 920 to 925 MHz (CMIIT), incl. SIMATIC RF-MANAGER Basic on CD	6GT2 811-0AB00-2AA0	Cable for wide-range power supply 24 V DC, material: PUR, length 5 m Note: This cable is not suitable for SIMATIC RF660R	6GT2 891-0NH50
Accessories Note: For proper functioning of the SIMATIC RF670R reader, we recommend using the SIMATIC RF620A / 640A / 642A / 660A antennas.		Ethernet connection <ul style="list-style-type: none"> • Twisted connecting cable, IP65 on reader side, Length 10 m. • Push-pull cable connector for RJ45, not pre-assembled. • Covers for push-pull sockets, RJ45, 5 units per pack. 	6GT2 891-1HN10 6GK1 901-1BB10-6AA0 6ES7 194-4JD50-0AA0
DI/DO cable For the connection of digital sensors and actuators to SIMATIC RF670R. M12 connector on reader side, open stranded wires on the sensor side. DI/DO cable, PUR material, black, shielded, M12, 12 x 0.14 mm ² , length 5 m.	6GT2 891-0CH50	Set of protective caps For achieving IP65 degree of protection if not all connections on the reader are assigned. Content: 3x protective caps for antenna connection, 1x protective cap for DI/DO connection; material: metal.	6GT2 898-4AA00

3

Dimensions



G_FS10_XX_00414

Reader SIMATIC RF670R

RFID system for the UHF frequency range

SIMATIC RF600 readers

SIMATIC RF680M mobile handheld terminal

Overview



SIMATIC RF680M is a powerful, mobile RFID reader for applications in the field of production logistics, warehouse management, inventories and service. The device is also an important tool for commissioning and testing of RFID systems. Thanks to the high transmit power, the RFID transponders can even be reliably detected at large distances.

Design

The mobile reader SIMATIC RF680M consists of one basic unit (based on PSION Workabout PRO 3) and one RFID unit for SIMATIC RF600 transponders and SmartLabels. It has a rugged, splashproof housing, an LCD color display with touch functionality and an alphanumeric keyboard with function keys.

Function

The supplied and pre-installed RF600 software provides service and test functions for reading and writing the RF600 transponders and SmartLabels. Data that have been read can be saved in file structures.

In addition, an already installed API library is included. This allows the customer to program his/her own RFID applications for the mobile handheld terminal. For access to further device functions, a Software Development Kit (SDK) can be ordered from PSION Teklogix.

Based on the operating system and communication standards (WIN CE), the device ensures easy integration in existing or planned IT networks or in the process infrastructure. For this purpose, various optional development tools are available for the PC as well as a wide range of accessories directly from PSION Teklogix and Microsoft.

Technical specifications

Order No.	6GT2 813-0BC00	6GT2 813-0BC10
Product type designation	Mobile handheld terminal RF680M ETSI	Mobile handheld terminal RF680M FCC
Suitability for use	RF600 transponder	RF600 transponder
Wireless frequencies		
Operating frequency	865 ... 868 MHz	902 ... 928 MHz
Effective radiation intensity		
• compliant with ETSI	10 ... 500 mW	-
Equivalent isotropic radiated power		
• compliant with FCC	-	16 ... 820 mW
Electrical data		
Range, max.	600 mm	600 mm
Protocol for wireless transmission	EPCglobal Class 1 Gen 2 / ISO 18000-6C	EPCglobal Class 1 Gen 2 / ISO 18000-6C
Maximum data transfer rate for wireless transmission	400 kbit/s	400 kbit/s
Product property „multitag-capable“	Yes	Yes
Polarization	Linear	Linear
Supply voltage, current consumption		
Type of power supply	Battery operation or mains operation via docking station	Battery operation or mains operation via docking station
Type of battery	Lithium ion battery, fast charging capability	Lithium ion battery, fast charging capability
• Integrated back-up battery	Lithium ion rechargeable battery, permanently installed, cannot be replaced by customer	Lithium ion rechargeable battery, permanently installed, cannot be replaced by customer
Battery capacity	3 Ah	3 Ah
Running time with standard rechargeable battery, typical	8 h	8 h
Permissible ambient conditions		
Ambient temperature		
• during operation	-20 ... +50 °C	-20 ... +50 °C
• during storage	-40 ... +60 °C	-40 ... +60 °C
Degree of protection	IP54	IP54
Maximum drop height	1.5 m	1.5 m

RFID system for the UHF frequency range

SIMATIC RF600 readers

SIMATIC RF680M mobile handheld terminal

Order No.	6GT2 813-0BC00	6GT2 813-0BC10
Product type designation	Mobile handheld terminal RF680M ETSI	Mobile handheld terminal RF680M FCC
Design, dimensions and weights		
Width	92 mm	92 mm
Height	265 mm	265 mm
Depth	42 mm	42 mm
Net weight	0.6 kg	0.6 kg
Product properties		
Type of display	VGA color touchscreen 3.6", 480 x 640 pixels	VGA color touchscreen 3.6", 480 x 640 pixels
Type of operating elements	Alphanumeric	Alphanumeric
Type of acoustic signalling element	Loudspeaker	Loudspeaker
Type of interface	Tether-Port with RS232 and USB 1.1, docking connection with Low Insertion Force (LIF)	Tether-Port with RS232 and USB 1.1, docking connection with Low Insertion Force (LIF)
Memory capacity		
• of RAM	256 MB	256 MB
• of data and program memory	1000 MB	1000 MB
• of usable data memory	900 MB	900 MB
Product functions „Management, configuration, engineering		
Operating system pre-installed	Windows Embedded CE 5.0	Windows Embedded CE 5.0
Product function of Software	RF610M.exe for processing of RF600 transponders	RF610M.exe for processing of RF600 transponders
Type of programming	.NET and C++ programming with Microsoft Visual Studio via API „RFID reader interface“	.NET and C++ programming with Microsoft Visual Studio via API „RFID reader interface“
Standards, specifications, approvals		
Certificate of suitability	EMC: EN 55022, EN 301 489, Safety: EN 60950, RF: EN 300 220, FCC Part 15, UL/CSA	EMC: EN 55022, EN 301 489, Safety: EN 60950, RF: EN 300 220, FCC Part 15, UL/CSA
Accessories		
	Charging/docking station, WLAN module, Barcode scanner	Charging/docking station, WLAN module, Barcode scanner

Selection and ordering data

	Order No.
Mobile handheld terminal SIMATIC RF680M (ETSI)	6GT2 813-0BC00
Basic unit (PSION Workabout Pro 3) with UHF RFID module (EPCglobal Class 1, Gen 2 / ISO 18000-6C), battery, standard software pre-installed, without charging/docking station, frequency 865 to 868 MHz (ETSI).	
Mobile handheld terminal SIMATIC RF680M (FCC)	6GT2 813-0BC10
Basic unit (PSION Workabout Pro 3) with UHF RFID module (EPCglobal Class 1, Gen 2 / ISO 18000-6C), battery, standard software pre-installed, without charging/docking station, frequency 902 to 928 MHz (FCC).	
Accessories	
Barcode scanner with pistol grip	6GT2 898-0DB00
Barcode module for mounting on SIMATIC RF680M with pistol grip and release button.	
WLAN module	6GT2 898-0DA00
WLAN interface for mounting in the CF slot. Communication according to IEEE 802.11 b/g	

	Order No.
Charging/docking station	6GT2 898-0BA00
For a mobile reader as well as for spare batteries. Including a plug-in power supply with a wide-range input of 100 to 240 V AC and country-specific adapters as well as USB interface and USB cable.	
Replacement battery for SIMATIC RF680M mobile handheld terminal	6GT2 898-0CA00
DVD „RFID Systems Software & Documentation“	6GT2 080-2AA20

Accessories

For optional components, visit:
www.psiointeklogix.com

Additional Info

All current approvals can be found on the Internet at:
www.siemens.com/rfid-approvals

RFID system for the UHF frequency range

SIMATIC RF600 antennas

Antennas

Overview



SIMATIC RF600 UHF antennas are used in many different applications in production, material handling, and logistics. Thanks to their rugged design and high degree of protection, they are also suitable for harsh industrial environments.

Antennas	Features
SIMATIC RF620A	<p>Particularly compact antenna for applications in production, e.g. assembly lines or conveyor systems.</p> <ul style="list-style-type: none"> • Transmission frequency 865 ... 868 MHz (ETSI), 902 ... 928 MHz (FCC) • Linear polarization • Type of protection IP67 • Temperature range -25 ... +75 °C • Dimensions L x W x H (mm): 75 x 75 x 20
SIMATIC RF640A	<p>Universal and compact standard antenna for wide ranges.</p> <ul style="list-style-type: none"> • Transmission frequency 865 ... 928 MHz (ETSI, FCC) • Circular polarization • Type of protection IP65 • Temperature range -25 ... +75 °C • Dimensions L x W x H (mm): 185 x 185 x 45
SIMATIC RF642A	<p>Compact antenna with linear polarization for strongly reflective environments.</p> <ul style="list-style-type: none"> • Transmission frequency 865 ... 928 MHz (ETSI, FCC) • Linear polarization • Type of protection IP65 • Temperature range -25 ... +75 °C • Dimensions L x W x H (mm): 185 x 185 x 45
SIMATIC RF660A	<p>Antenna with increased degree of protection (IP67).</p> <ul style="list-style-type: none"> • Transmission frequency 865 ... 868 MHz (ETSI); 902 ... 928 MHz (FCC) • Circular polarization • Type of protection IP67 • Temperature range -25 ... +75 °C • Dimensions L x W x H (mm): 313 x 313 x 80

Additional Info

All current approvals can be found on the Internet at:

www.siemens.com/rfid-approvals

RFID system for the UHF frequency range

SIMATIC RF600 antennas

SIMATIC RF620A

Overview



The SIMATIC RF620A antenna is characterized by an especially compact enclosure. It is particularly suitable for use in production, e.g. on assembly lines or track-guided conveyor systems. The effects of reflections and overshooting can be reliably reduced thanks to the linear polarization and high degree of signal attenuation.

The antenna can be operated with the UHF readers of the SIMATIC RF600 range.

Technical specifications

Order No.	6GT2 812-1EA00	6GT2 812-1EA01
Product type designation	Antenna RF620A, ETSI	Antenna RF620A, FCC
Suitability for use	SIMATIC RF600	SIMATIC RF600
Wireless frequencies		
Transmission frequency	865 ... 868 MHz	902 ... 928 MHz
Electrical data		
Impedance	50 Ω	50 Ω
Polarization	Linear	Linear
Antenna gain compared to spherical radiator with linear radiation	-5 dB	-5 dB
Voltage standing wave ratio VSWR, max.	2	2
Opening angle of the antenna, horizontal	100°	130°
Opening angle of the antenna, vertical	75°	105°
Mechanical data		
Material	PA 12	PA 12
Color	Pastel turquoise	Pastel turquoise
Maximum tightening torque of the screw for securing the equipment	2 Nm	2 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	0 m	0 m
Type of connector	R-TNC	R-TNC
Permissible ambient conditions		
Ambient temperature		
• during operation	-20 ... +70 °C	-20 ... +70 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C
Degree of protection	IP67	IP67
Shock resistance	According to EN 60068-2-27	According to EN 60068-2-27
Shock acceleration	500 m/s ²	500 m/s ²
Oscillation acceleration	200 m/s ²	200 m/s ²
Design, dimensions and weights		
Width	75 mm	75 mm
Height	75 mm	75 mm
Depth	20 mm	20 mm
Net weight	100 g	100 g
Type of mounting	2 screws M5	2 screws M5

RFID system for the UHF frequency range

SIMATIC RF600 antennas

SIMATIC RF620A

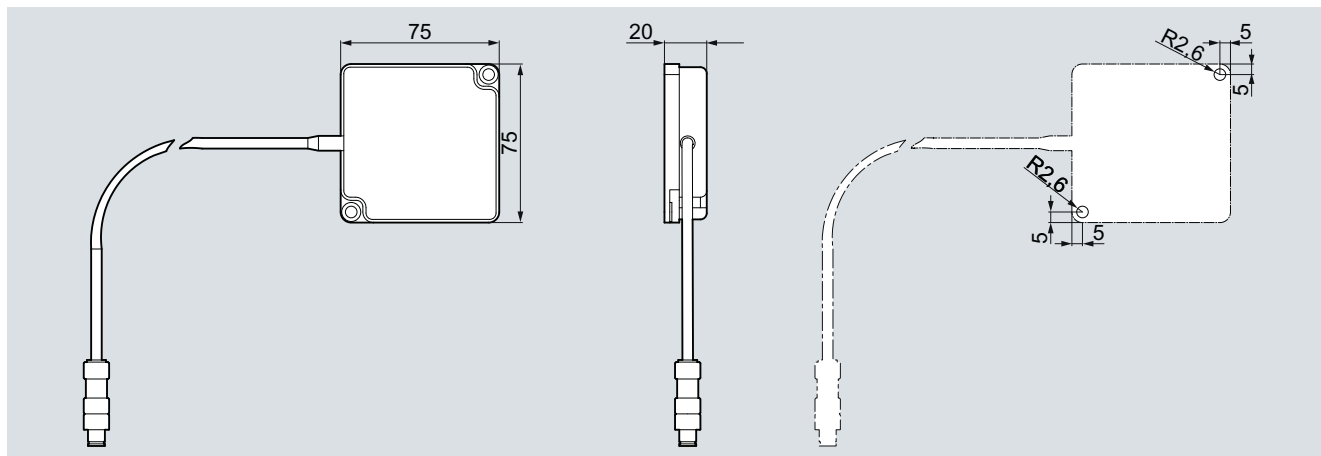
Order No.	6GT2 812-1EA00	6GT2 812-1EA01
Product type designation	Antenna RF620A, ETSI	Antenna RF620A, FCC
Product properties		
Product property „silicon-free“	Yes	Yes
Certificate of suitability	CE (ETSI EN 302208)	FCC (Title 47, Part 15.247), cULus

Selection and ordering data

	Order No.
Antenna SIMATIC RF620A (ETSI) Linear polarized UHF antenna for frequency range 865 to 868 MHz.	6GT2 812-1EA00
Antenna SIMATIC RF620A (FCC) Linear polarized UHF antenna for frequency range 902 to 928 MHz.	6GT2 812-1EA01

	Order No.
Accessories Note: To ensure optimal functioning of the antenna, it is recommended that a Siemens antenna cable is used.	
Antenna cable PE material, UV-resistant, halogen-free, 50 Ω impedance, reverse TNC, UL-certified. • Length 3 m, \varnothing 5 mm, attenuation 1 dB • Length 10 m, \varnothing 7.6 mm, attenuation 2 dB	6GT2 815-0BH30 6GT2 815-1BN10
PVC material, UV-resistant, 50 Ohm (wave) impedance, 5.5 mm cable sheath diameter, reverse TNC, UL-certified. • Length 5 m, attenuation 1.5 dB • Length 15 m, attenuation 4.5 dB	6GT2 815-2BH50 6GT2 815-2BN15

Dimensions



Antenna SIMATIC RF620A

RFID system for the UHF frequency range

SIMATIC RF600 antennas

SIMATIC RF640A, SIMATIC RF642A

Overview



The SIMATIC RF640A/RF642A are rugged and compact antennas for industrial applications in production and logistics.

- The SIMATIC RF640A is a universal antenna for numerous applications.
- The SIMATIC RF642A is, with its linear polarization, particularly suitable for severely metallic environments.

Both antennas can be used in Europe and the USA (broadband) and with the readers of the SIMATIC RF600 range.

Technical specifications

Order No.	6GT2 812-0GA08	6GT2 812-1GA08
Product type designation	Antenna RF640A	Antenna RF642A
Suitability for use	SIMATIC RF600	SIMATIC RF600
Wireless frequencies		
Transmission frequency	865 ... 928 MHz	865 ... 928 MHz
Electrical data		
Impedance	50 Ω	50 Ω
Polarization	Circular	Linear
Antenna gain compared to spherical radiator with linear radiation	-	4.3 dB
Antenna gain compared to spherical radiator with circular radiation	4 dB	-
Voltage standing wave ratio VSWR, max.	1.5	1.5
Opening angle of the antenna, horizontal	70°	70°
Opening angle of the antenna, vertical	70°	70°
Mechanical data		
Material	PA 12	PA 12
Color	Pastel turquoise	Pastel turquoise
Mounting distance with regard to metal surfaces (recommended minimum)	0 m	0 m
Type of connector	R-TNC	R-TNC
Permissible ambient conditions		
Ambient temperature		
• during operation	-25 ... +75 °C	-25 ... +75 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C
Degree of protection	IP65	IP65
Shock resistance	According to EN 60068-2-27	According to EN 60068-2-27
Shock acceleration	300 m/s ²	500 m/s ²
Oscillation acceleration	100 m/s ²	100 m/s ²
Design, dimensions and weights		
Width	185 mm	185 mm
Height	185 mm	185 mm
Depth	45 mm	45 mm
Net weight	600 g	600 g
Type of mounting	4 screws M4 according to Vesa 100, optionally with articulated arm furnished by antenna mounting kit	4 screws M4 according to Vesa 100, optionally with articulated arm furnishes by antenna mounting kit

RFID system for the UHF frequency range

SIMATIC RF600 antennas

SIMATIC RF640A, SIMATIC RF642A

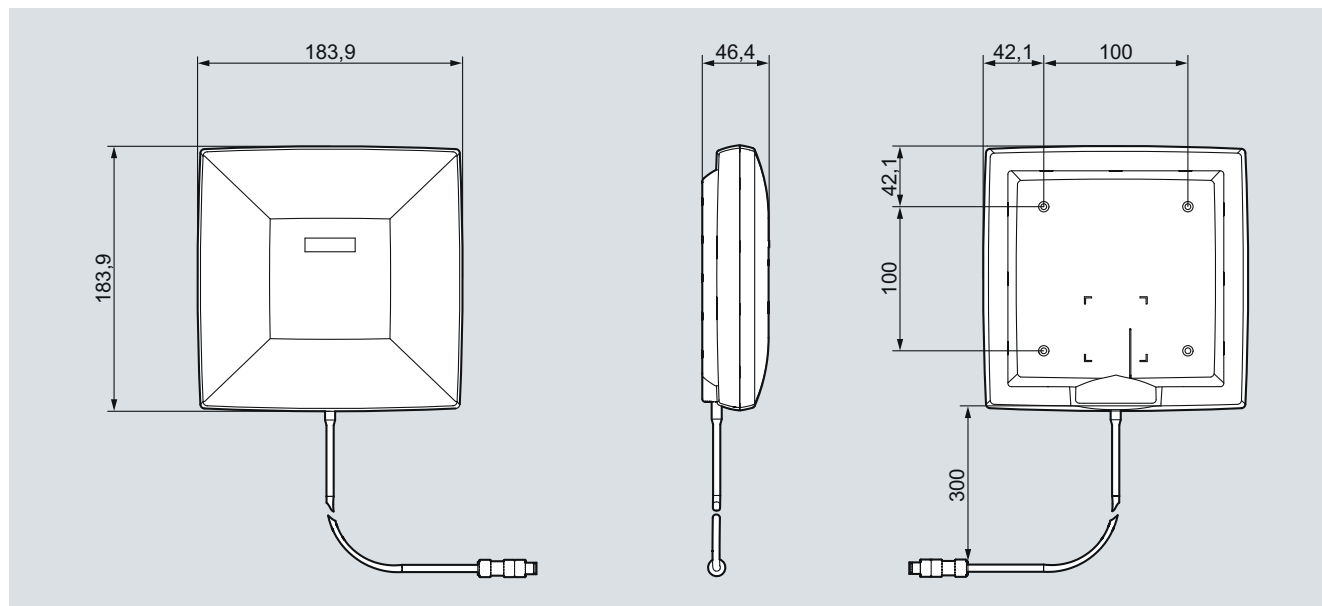
Order No.	6GT2 812-0GA08	6GT2 812-1GA08
Product type designation	Antenna RF640A	Antenna RF642A
Product properties		
Product property „silicon-free“	Yes	Yes
Certificate of suitability		
	CE (according to R&TTE), FCC (Title 47, Part 15.247), cULus	CE (according to R&TTE), FCC (Title 47, Part 15.247), cULus

Selection and ordering data

	Order No.
Antenna SIMATIC RF640A Circularly polarized antenna for UHF frequency 865 MHz to 928 MHz (ETSI, FCC).	6GT2 812-0GA08
Antenna SIMATIC RF642A Linearly polarized antenna for UHF frequency 865 MHz to 928 MHz (ETSI, FCC).	6GT2 812-1GA08

	Order No.
Accessories Note: To ensure proper functioning of the antennas, it is recommended that Siemens antenna cables are used.	
Antenna cable PE material, UV-resistant, halogen-free, 50 Ω impedance, reverse TNC, UL certified. <ul style="list-style-type: none"> Length 3 m, \varnothing 5 mm, attenuation 1 dB Length 10 m, \varnothing 5 mm, attenuation 4 dB Length 10 m, \varnothing 7.6 mm, attenuation 2 dB Length 20 m, \varnothing 7.6 mm, attenuation 4 dB PVC material, UV-resistant, 50 Ohm (wave) impedance, 5.5 mm cable sheath diameter, reverse TNC, UL-certified. <ul style="list-style-type: none"> Length 5 m, attenuation 1.5 dB Length 15 m, attenuation 4.5 dB 	6GT2 815-0BH30 6GT2 815-0BN10 6GT2 815-1BN10 6GT2 815-0BN20
Antenna mounting kit For flexible mounting, with articulated bracket.	6GT2 815-2BH50 6GT2 815-2BN15 6GT2 890-0AA00

Dimensions



SIMATIC RF640A

RFID system for the UHF frequency range

SIMATIC RF600 antennas

SIMATIC RF660A

Overview



The universal UHF antenna SIMATIC RF660A is suitable for numerous applications in production and logistics that require a greater range. Typical applications are conveyor systems in material handling and logistics systems as well as gates, such as in the incoming goods department.

Thanks to their rugged design and high degree of protection, the SIMATIC RF660A antennas are also suitable for harsh industrial environments. The antenna can be operated with the readers of the SIMATIC RF600 range.

Technical specifications

Order No.	6GT2 812-0AA00	6GT2 812-0AA01
Product type designation	Antenna RF660A 865-868 EU	Antenna RF660A 902-928 US
Suitability for use	SIMATIC RF600	SIMATIC RF600
Wireless frequencies		
Transmission frequency	865 ... 868 MHz	902 ... 928 MHz
Electrical data		
Impedance	50 Ω	50 Ω
Polarization	Circular	Circular
Antenna gain compared to spherical radiator with circular radiation	7 dB	6 dB
Voltage standing wave ratio VSWR, max.	2	2
Opening angle of the antenna, horizontal	60°	70°
Opening angle of the antenna, vertical	60°	70°
Mechanical data		
Material	PA 12	PA 12
Color	Pastel turquoise	Pastel turquoise
Mounting distance with regard to metal surfaces (recommended minimum)	0 m	0 m
Type of connector	R-TNC	R-TNC
Permissible ambient conditions		
Ambient temperature		
• during operation	-25 ... +75 °C	-25 ... +75 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C
Degree of protection	IP67	IP67
Shock resistance	According to EN 60068-2-27	According to EN 60068-2-27
Shock acceleration	300 m/s ²	300 m/s ²
Oscillation acceleration	1 m/s ²	1 m/s ²
Design, dimensions and weights		
Width	313 mm	313 mm
Height	313 mm	313 mm
Depth	80 mm	80 mm
Net weight	1.6 kg	1.6 kg
Type of mounting	4 screws M4 according to Vesa 100, optionally with articulated arm furnished by using antenna mounting kit	4 screws M4 according to Vesa 100, optionally with articulated arm furnished by using antenna mounting kit

RFID system for the UHF frequency range

SIMATIC RF600 antennas

SIMATIC RF660A

Order No.	6GT2 812-0AA00	6GT2 812-0AA01
Product type designation	Antenna RF660A 865-868 EU	Antenna RF660A 902-928 US
Product properties		
Product property „silicon-free“	Yes	Yes
Certificate of suitability	CE (ETSI EN 302208)	FCC (Title 47, Part 15.247), cULus

Selection and ordering data

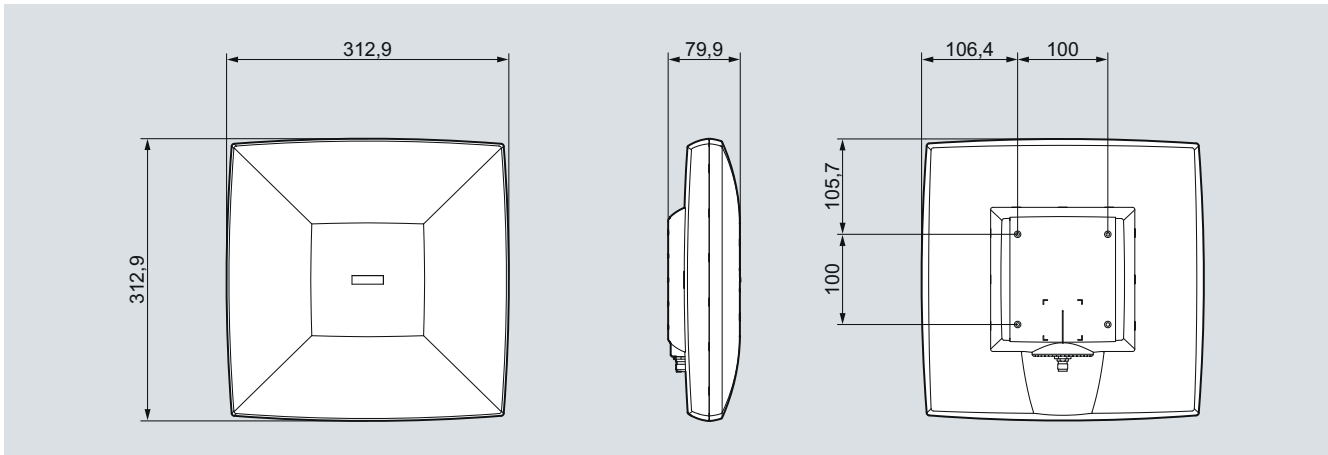
	Order No.
Antenna SIMATIC RF660A (ETSI) Circular polarized UHF antenna for frequency range 865 to 868 MHz.	6GT2 812-0AA00
Antenna SIMATIC RF660A (FCC) Circular polarized UHF antenna for frequency range 902 to 928 MHz.	6GT2 812-0AA01
Accessories Note: To ensure proper functioning of the SIMATIC RF660A antenna, it is recommended that Siemens antenna cables are used.	
Antenna cable PE material, UV-resistant, halogen-free, 50 Ω impedance, reverse TNC, UL certified. <ul style="list-style-type: none"> Length 3 m, \varnothing 5 mm, attenuation 1 dB Length 10 m, \varnothing 5 mm, attenuation 4 dB Length 10 m, \varnothing 7.6 mm, attenuation 2 dB Length 20 m, \varnothing 7.6 mm, attenuation 4 dB 	6GT2 815-0BH30 6GT2 815-0BN10 6GT2 815-1BN10 6GT2 815-0BN20
PVC material, UV-resistant, 50 Ohm (wave) impedance, 5.5 mm cable sheath diameter, reverse TNC, UL-certified <ul style="list-style-type: none"> Length 5 m, attenuation 1.5 dB Length 15 m, attenuation 4.5 dB 	6GT2 815-2BH50 6GT2 815-2BN15
Antenna mounting kit For flexible mounting, with articulated bracket.	6GT2 890-0AA00

RFID system for the UHF frequency range

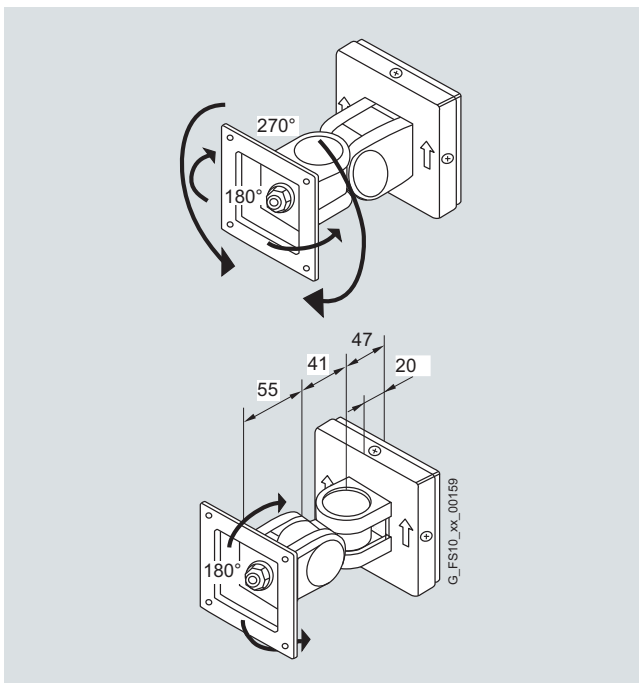
SIMATIC RF600 antennas

SIMATIC RF660A

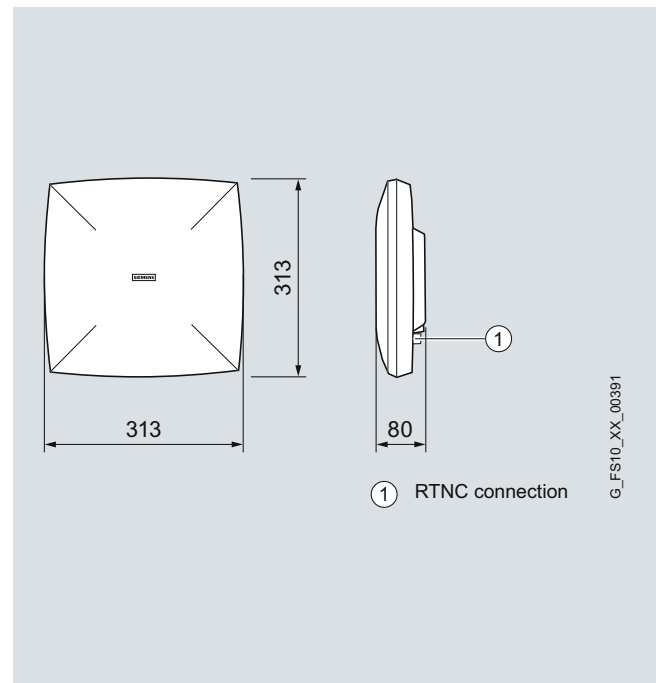
Dimensions



Antenna SIMATIC RF660A



Antenna mounting kit



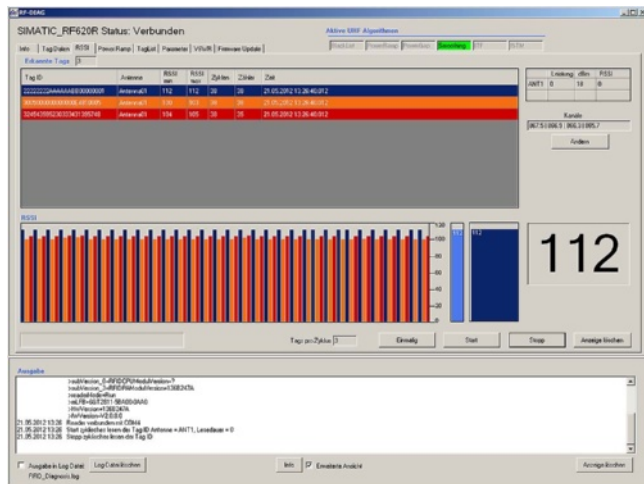
Antenna SIMATIC RF660A, position of connection

RFID system for the UHF frequency range

SIMATIC RF600 software

SIMATIC RF-DIAG

Overview



SIMATIC RF-DIAG is a software product for fast and simple commissioning and diagnostics of RF600 readers with connection to SIMATIC S7.

The scope of delivery includes a PC adapter for RF-DIAG which permits connection of the SIMATIC RF620R and RF630R readers to a PC. If the adapter is used in the communication cable between reader and communication module, it does not influence the function of the read point. As soon as a PC is connected to the adapter using a USB cable, reader communication to the PC is diverted; the reader power supply is still provided via the communication module. Power from an external power supply unit is possible for pure PC operation without communication module.

Application

SIMATIC RF-DIAG can determine the optimum orientation of antennas at the read points extremely quickly by means of the RSSI value (Received Signal Strength Indicator). The functionality of a read point can be verified using simple software functions.

All new functions of SIMATIC RF600 are supported.

Commissioning and diagnostics of the readers is greatly facilitated by the use of RF-DIAG, whatever the specific application.

Technical specifications

Order No.	6GT2 080-3GA00
Product type designation	SIMATIC RF-DIAG
General data	
Current version	V1.0
Supported devices	SIMATIC RF620R, RF630R, RF640R, RF670R
Target systems	Standard PC
Functions	Commissioning and diagnostics of RFID devices
Type of delivery	
Product CD	<ul style="list-style-type: none"> • Software SIMATIC RF-DIAG • Documentation as PDF
PC adapter for RF-DIAG	<ul style="list-style-type: none"> • PC adapter box (IP65) • IP68 protective cover for USB connector • Cable (2 m) between communication module and PC adapter • USB cable

Order No.	6GT2 080-3GA00
Product type designation	SIMATIC RF-DIAG
Languages	
Software	<ul style="list-style-type: none"> • German • English
Documentation	<ul style="list-style-type: none"> • German • English
Hardware prerequisites	
Processor	>1 GHz
Graphics	<ul style="list-style-type: none"> • minimum 1024 x 786 • recommended 1280 x 1024
Main memory	>1 GB
Memory requirements on hard disk	50 MB
Additional hardware	CD-ROM drive
Software prerequisites	
Operating system	<ul style="list-style-type: none"> • Windows XP Professional (from SP3) • Windows 7 Professional 32 bit (from SP1) • Windows 7 Professional 64 bit (from SP1)
Additional software	Microsoft .NET-Framework 2.0

Selection and ordering data

	Order No.
SIMATIC RF-DIAG	6GT2 080-3GA00
Software for commissioning and diagnostics of RF600 readers with connection to SIMATIC S7.	
Accessories	
Wide-range power supply	
Primary side: 100 ... 240 V AC, 120 ... 353 V DC, secondary side: 24 V DC, 3 A, with no-load protection and continuous short-circuit protection.	
<ul style="list-style-type: none"> • With EU plug • With UK plug • With US plug 	6GT2 898-0AA00 6GT2 898-0AA10 6GT2 898-0AA20
Adapter cable for wide-range power supply	6GT2 891-0PH50
For power supply of SIMATIC RF620R/RF630R for operation with PC adapter without communication module.	

RFID system for the microwave frequency range

4



4/2	MOBY U
4/4	<u>MOBY U transponders</u>
4/5	MDS U315 / MDS U525
4/7	MDS U589
4/10	<u>MOBY U readers</u>
4/10	SLG U92
4/14	STG U mobile handheld terminal
4/16	<u>MOBY U configuring notes</u>

RFID system for the microwave frequency range

MOBY U

Introduction

Overview



MOBY U is used to implement identification tasks with medium to high performance in the microwave range (2.4 ... 2.4835 GHz) that require particularly high ranges.

MOBY U takes appropriate technical measures to eliminate familiar sources of interference, such as reflections, electromagnetic interference and overreach. Measurement of the distance between reader and transponder as well as active range limiting make the system particularly resistant to interference, even in difficult ambient conditions.

Correspondingly constructed antennas ensure a homogeneous transmission field to guarantee reliable recognition of the transponders (MDS) even from unfavorable locations.

In addition, special coding procedures ensure that data transmission functions perfectly and data integrity is ensured. To achieve this, methods and algorithms that have been tried and tested in mobile radio technology (GSM, UMTS) have been transferred to the identification technology.

The MOBY U UHF identification system features:

- 2.4 GHz identification system with a read/write distance of up to 3 m.
- Designed for the upper and medium performance ranges.
- Extensive range of rugged transponders for a vast range of applications.
- Special heat-resistant transponders for use in the automobile industry (paint shops).
- Very high level of reliability even in the presence of contamination, temperature fluctuations, and electromagnetic interference.
- Simple integration in SIMATIC, PROFIBUS, PROFINET and TCP/IP with the help of tried and tested function blocks (FC/FB 45, FC/FB 55).
- Can be connected via serial interface to any system, e.g. PC with Windows NT/2000/XP.
- Mobile hand-held terminal available.
- High memory capacity.
- Innovative technology (GSM/UMTS technology) guarantees simple installation/migration and maintenance-free operation for many years:
 - Active suppression of overreach.
 - Automatic frequency hopping.
 - Homogeneous transmission field with circular polarization.
 - Multitag-capability, max. 12 transponders.
 - Automatic synchronization of up to 3 readers.
 - Service functions for fast error analysis.
- Extensive range of rugged transponders for a vast range of applications.

Benefits

get Designed for Industry

- Rugged transponders with large data memories (up to 32 KB) and high degree of protection (up to IP68) and thermal stability +220 °C with ATEX approval.
- Unlimited write/read cycles for the transponder thanks to RAM technology.
- Powerful read/write devices with high data transmission rates up to 8000 byte/s.
- Read/write distances of 0.15 to 3 m can be parameterized.
- Active suppression of overshoot; parameterizable write distances of 0.15 to 3 m.
- Parallel operation with WLAN and Bluetooth is possible.
- Simplified engineering, commissioning, diagnostics and maintenance through seamless integration into Totally Integrated Automation:
 - Integrated bus connection to an automation system, such as SIMATIC, SIMOTION or SINUMERIK via communication modules with PROFIBUS and PROFINET.
 - Simple S7 software integration via ready-to-use function blocks.
 - Extensive status and diagnostic functions.
- High degree of investment protection thanks to
 - Open standard ISO 18000-4.
 - Software compatibility between the RFID systems of Siemens.
 - Standardized communication interfaces.
- Openness through connection possibilities to different bus systems from different manufacturers and PC environments via communication modules.
- Worldwide Service and Support.

Application

The MOBY U identification system has been specially designed for applications in automobile production, logistics etc., where considerable demands are made, for example, in terms of immunity to noise, large read/write distances with moving transponders, fast and secure data transmission, simple installation and reliable functioning, even in harsh environments. It uses the globally approved ISM frequency band at 2.4 GHz.

MOBY U covers a transmission range from a few centimeters up to three meters and thus satisfies the requirement for an integrated identification solution, e.g. in automotive production.

Depending on the requirement, various transponders (max. 32 KB RAM) and readers are available for connection to SIMATIC, PROFIBUS, Industrial Ethernet and PCs/PLCs.

The main applications for MOBY U are:

- Main assembly lines in the automotive industry (body in white, surface and assembly).
- Vehicle identification/access control in transport companies, vehicle depots, etc.
- Container/carrier identification in transport logistics and distribution.
- Traffic control systems.
- Assembly lines.

Design

The MOBY U SLG U92 readers have an integrated antenna.

The high IP65 degree of protection of the reader enables it to be used in harsh industrial environments.

Two LEDs indicate the current status (e.g. transponders in the field) and make start-up easier.

The MOBY U readers can be connected to the automation level via communication modules. For quick and easy cabling, pre-assembled cables are available in various lengths.

MOBY U transponders with a rugged casing are used as the mobile data carriers – and are also heat-resistant up to 220 °C. The active transponders are equipped with a battery with a service life of between 3 and 8 years.

The transponders are attached to the object to be identified, e.g. by means of screws or pre-assembled spacers.

Function

The MOBY U readers are suitable for reliable reading and writing tasks with ranges up to 3 m and use the microwave band from 2.4 to 2.4835 GHz for transmission.

By selecting the right transmission frequency, rugged modulation procedure and appropriate test mechanisms, sources of electromagnetic interference can be disregarded, and fault-free data transmission and data integrity can be assured. The technology of MOBY U rules out common interference in UHF transmissions such as reflections, electromagnetic interference and overreach by actively measuring the respective distance between the reader and the transponder.

Appropriately constructed antennas provide a homogeneous transmission field and ensure that all transponders are detected (MDS). There is no need for time-consuming shielding measures and antenna alignment.

The antenna field of the reader can be activated or deactivated for the duration of communication with a transponder by means of a function call or automatically through triggering by proximity switches.

The following two possibilities exist for managing the data on the transponders:

- Byte-oriented addressing via absolute addresses (start address, length)
- Conveniently via a file management system (file handler). In file handler mode, the MOBY U reader always retrieves the required file management information directly from the transponder.

For easy start-up and diagnostics during normal operation, a separate service and diagnostics interface (RS232) is available. This interface can also be used by the service function "Load software in the reader" to integrate future function expansions into existing applications without replacing the reader.

The connection of the SLG U92 readers to the automation level (e.g. SIMATIC S7) via standard fieldbuses (e.g. PROFIBUS or PROFINET) is by means of communication modules, to which the readers can be connected via an RS422 interface.

In addition, there are readers with an RS232 interface option for connection to the PC.

User-friendly function blocks are available for the S7 programming. In the event of an error, the S7 application receives a detailed error message from the communication module via the function block..

Integration

A wide range of communication modules, function blocks, as well as high-performance drivers and function libraries permits easy and quick integration into the application.

And best of all: MOBY U is part of Totally Integrated Automation and can be integrated easily and cost-effectively into the SIMATIC world.

For more details on the connection possibilities, see chapter 6 „Communication Modules“.

Technical specifications

Contact-free UHF identification system for the medium to upper performance range	MOBY U
Transmission frequency	2.4 GHz
Range	max. 3 m
Protocol (air interface)	ISO 18000-4
Approvals	<ul style="list-style-type: none"> • CE • FCC • UL
Memory capacity	max. 32 Kbyte
Data transfer rate reader - transponder	
• Read	max. 4.8 kbyte/s
• Write	max. 8 kbyte/s
Bulk capability, multitag capability	Yes
Special features	<ul style="list-style-type: none"> • Active range limiting • High memory capacity

RFID system for the microwave frequency range

MOBY U

Transponders

Overview



MOBY U records the data of objects quickly and reliably. MOBY U thereby ensures efficient and cost-effective automation.

Type	Features
MDS U315	Universal mobile transponder (2 KB RAM) preferred for transport and logistics applications. <ul style="list-style-type: none"> • Enclosure dimensions (mm) 111 x 67 x 23.5 • IP65 degree of protection • Operating temperature -25 °C to +70 °C • With replaceable battery
MDS U525	Rugged and mobile transponder (32 KB RAM) for universal applications. <ul style="list-style-type: none"> • Enclosure dimensions (mm) 111 x 67 x 23.5 • IP68 degree of protection • Operating temperature -25 °C to +85 °C • With replaceable battery
MDS U589	Heat-resistant and rugged transponder (32 KB RAM) for use in paint shops (automotive industry, priming/finishing coats) or applications with similarly high temperature requirements. <ul style="list-style-type: none"> • Enclosure dimensions (mm) Ø 114 x 83 • IP68 degree of protection • Operating temperature -25 °C to +85 °C, up to +220 °C cyclically • Silicone-free Options: <ul style="list-style-type: none"> • Universal installation kit • Support for attachment to skid • Cover for support • Additional supports available on request

Benefits

get

Designed for Industry

Various battery-operated MOBY U transponders with long ranges facilitate the right solution for every requirement in production, logistics and transport:

- Large memory up to 32 KB.
- Heat-resistant transponders for high temperature ranges up to 220 degrees and media-resistant with ATEX approval for use in paint shops.
- Rugged, universal transponder for deployment in transport and logistics.

Technical specifications

Field data (all dimensions in mm)

Type	Features
	Transponder MDS U315, MDS U525, MDS U589
Reader SLG U92	Operating/limit distance 150 to 2100 / 3000, adjustable in 500 mm steps.

Note

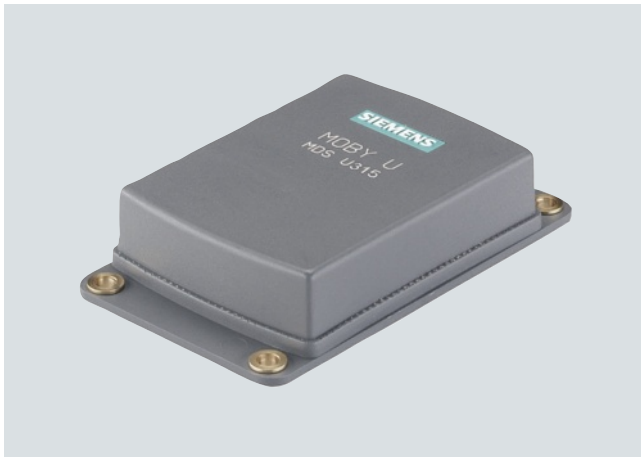
The listed field data are typical values and valid for a room temperature of +25 °C and a supply voltage of 24 V DC.

RFID system for the microwave frequency range

MOBY U transponders

MDS U315 / MDS U525

Overview



MDS U315

Universal transponder (2 KB RAM) for universal applications, preferably in transport and logistics applications, enclosure dimensions (mm) 111 x 67 x 23.5, IP65 degree of protection, operating temperature -25 °C to +70 °C, with replaceable battery.

MDS U525

Rugged and mobile transponder (32 KB RAM) for universal use, enclosure dimensions 111 mm x 67 mm x 23.5 mm, IP65 degree of protection, operating temperature -25 °C to +85 °C, with replaceable battery.

Design

Field data (all dimensions in mm) MDS U315 / MDS U525 to SLG U92

Ranges (S_g) of the reader can be limited in 500 mm steps up to 3500 mm.

	minimum	Standard	max.
Limit distance (S_g), approx.	500	2000	3000
Operating distance (S_a)	350	1400	2100
Transmission window at S_a length / width	700	2400	3000
	700 (with FCC approval)	2000 (with FCC approval)	2100 (with FCC approval)

Technical specifications

Order No.	6GT2 500-3BF10	6GT2 500-5CF10
Product type designation	Transponder MDS U315	Transponder MDS U525
Suitability for use	MOBY U	MOBY U
Wireless frequencies		
Operating frequency	2400 ... 2435 MHz	2400 ... 2435 MHz
Electrical data		
Maximum range	3 m	3 m
Protocol for wireless transmission	ISO 18000-4	ISO 18000-4
Maximum data transfer rate for wireless transmission	384 kbit/s	384 kbit/s
Product property „multitag-capable“	Yes	Yes
Polarization	Circular	Circular
Product constituent „backup battery“	Yes	Yes
Product property „replaceable battery“	Yes	Yes
Service life of battery, typical	5 a	8 a
Memory		
Type of memory	RAM	RAM
Capacity of user memory	2048 byte	32768 byte
Type of memory organization	UID (fixed code) 4 byte, OTP: 16 byte, user memory 2048 byte	UID (fixed code) 4 byte, OTP: 16 byte, user memory 32768 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ¹⁴	10 ¹⁴
Data retention time at ambient temperature < 40 °C, at least	5 a	8 a

RFID system for the microwave frequency range

MOBY U transponders

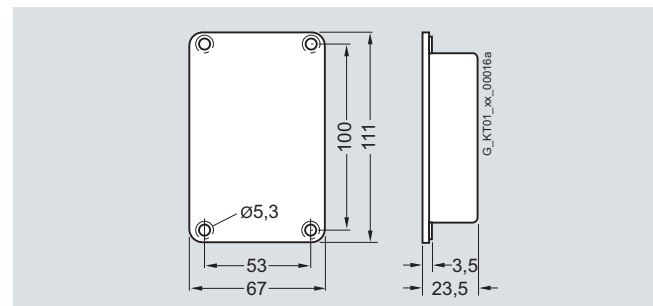
MDS U315 / MDS U525

Order No.	6GT2 500-3BF10	6GT2 500-5CF10
Product type designation	Transponder MDS U315	Transponder MDS U525
Mechanical data		
Material	PA 12 GF 25	PA 12 GF 25
Color	Anthracite	Anthracite
Maximum tightening torque of the screw for securing the equipment	0.8 Nm	0.8 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm	0 mm
Permissible ambient conditions		
Ambient temperature		
• during operation	-25 ... +70 °C	-25 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C
Degree of protection	IP65	IP65
Shock resistance	According to DIN EN 60721-3-7 class 7 M3	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	500 m/s ²	500 m/s ²
Oscillation acceleration	100 m/s ²	100 m/s ²
Resistance to mechanical stress	Drop height 1 m	Drop height 1 m
Design, dimensions and weights		
Width	67 mm	67 mm
Height	23.5 mm	23.5 mm
Depth	111 mm	111 mm
Net weight	100 g	100 g
Type of mounting	4 screws M4	4 screws M4
Product properties		
Product property „silicon-free“	Yes	Yes
Standards, specifications, approvals		
Certificate of suitability	RF: EN 300440-2, SAR: EN 50371, Safety: EN 60950-1, EMC: EN 301489-01, EN 301489-03, ENV 50204, FCC Part 15C (USA), cULus, safe for heart pacemakers	RF: EN 300440-2, SAR: EN 50371, Safety: EN 60950-1, EMC: EN 301489-01, EN 301489-03, ENV 50204, FCC Part 15C (USA), cULus, safe for heart pacemakers

Selection and ordering data

	Order No.
Transponder MDS U315 2 Kbyte RAM, replaceable battery.	6GT2 500-3BF10
Transponder MDS U525 32 Kbyte RAM, replaceable battery.	6GT2 500-5CF10

Dimensions



Transponder MDS U315 / MDS U525

RFID system for the microwave frequency range

MOBY U transponders

MDS U589

Overview



Heat-resistant, rugged transponder for use in paint shops (auto-mobile industry, primer/top coat) or applications with similar temperature requirements, memory capacity 32 KB RAM, temperature range -25 °C to +85 °C, up to +220 °C cyclically, IP68 degree of protection, enclosure dimensions (mm) Ø 114 x 83.

Design

Field data (all dimensions in mm) MDS U589 to SLG U92

Ranges (S_g) of the reader can be limited in 500 mm steps up to 3500 mm.

The field data apply for reading from and writing to the transponder.

	Minimum	Standard	Maximum
Limit distance (S_g), approx.	500	2000	3000
Operating distance (S_a)	350	1400	2100
Transmission window at S_a length / width	700 700 (with FCC approval)	2400 2000 (with FCC approval)	3000 2100 (with FCC approval)

Mode of operation

Cyclic operation of the transponder at temperatures > 85 °C

No cyclic operation is required at temperatures up to +85 °C. In other words, the transponder can be operated permanently up to this temperature.

Heating up		Cooling down	
Temperature	Time	Temperature	Time
220 °C	Momentary	25 °C	> 30 minutes
200 °C	1 h	25 °C	> 4 h
200 °C	0.5 h	25 °C	> 1 h
180 °C	1 h	25 °C	> 3 h

RFID system for the microwave frequency range

MOBY U transponders

MDS U589

Technical specifications

Order No.	6GT2 500-5JK10
Product type designation	Transponder MDS U589
Suitability for use	MOBY U
Wireless frequencies	
Operating frequency	2400 ... 2435 MHz
Electrical data	
Maximum range	3 m
Protocol for wireless transmission	ISO 18000-4
Maximum data transfer rate for wireless transmission	384 kbit/s
Product property „multitag-capable“	Yes
Polarization	Circular
Product constituent „backup battery“	Yes
Product property „replaceable battery“	No
Service life of battery, typical	3 a
Memory	
Type of memory	RAM
Capacity of user memory	32768 byte
Type of memory organization	UID (fixed code) 4 byte, OTP: 16 byte, user memory 32768 byte
Maximum number of read cycles at ambient temperature < 40 °C	10 ¹⁴
Maximum number of write cycles at ambient temperature < 40 °C	10 ¹⁴
Data retention time at ambient temperature < 40 °C, at least	3 a
Mechanical data	
Material	PPS
Color	Brown
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +220 °C
• during storage	-40 ... +85 °C
• during transport	-40 ... +85 °C
Degree of protection	IP68
Shock resistance	According to DIN EN 60721-3-7 class 7 M3
Shock acceleration	500 m/s ²
Oscillation acceleration	50 m/s ²
Resistance to mechanical stress	Drop height 1 m
Design, dimensions and weights	
Height	83 mm
Diameter	114 mm
Net weight	600 g
Type of mounting	Bracket (see accessories)

Order No.	6GT2 500-5JK10
Product type designation	Transponder MDS U589
Product properties	
Product property „silicon-free“	Yes
Standards, specifications Approvals	
Certificate of suitability	RF: EN 300440-2, SAR: EN 50371, Safety: EN 60950-1, EMC: EN 301489-01, EN 301489-03, ENV 50204, FCC Part 15C (USA), cULus, safe for heart pacemakers
Accessories	Skid support, shrouding cover , Universal support

Selection and ordering data

	Order No.
Transponder MDS U589	6GT2 500-5JK10
User memory: 32 KB RAM Operating temperature: Up to 220 °C cyclic.	
Accessories	
Skid support for MDS U589	
Short type.	6GT2 090-0QA00
Shrouding cover	
For skid support.	6GT2 090-0QB00
Universal support	6GT2 590-0QA00
For MDS U589, e.g. for attachment to the body with a customer-specific adapter.	

Technical drawing of the Siemens antenna assembly, showing top and side views with dimensions.

Top View:

- Mounting edge
- SIEMENS
- 114 ± 0.5
- 7

Side View:

- Antenna side
- 11 ± 1
- 11 ± 1
- 61 ± 1
- 83 ± 3

G_KT01_en_00049

Assembly

Antenna side of MDS

Hood, optional (6GT2090-0QB00)

27

51.5

G_KT01_XX_00195

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RFID system for the microwave frequency range

MOBY U readers

SLG U92

Overview



The compact and low-cost SLG U92 is a universal reader with integrated antenna for applications in which write/read distances of up to 3000 mm are required. Thanks to the automatic reader synchronization via cable, it is possible to install up to 3 readers in a very small space.

Two different interfaces are available for the connection to a wide variety of systems:

- **RS232**
Serial interface for connection to any system (PC/PLC).
- **RS422**
Serial interface to the PC/PLC or to the communication modules (SIMATIC RF160C, RF182C, RF170C, RF180C, ASM 475, ASM 456) for integration into SIMATIC S7, PROFIBUS, or Industrial Ethernet.

Software tools such as the SIMATIC S7 functions (FB/FC45 / FC46 / FC55 / FC56) and the C library MOBY API for applications under Windows NT/2000/XP allow for easy implementation in the respective application.

The integrated file management system (compatible with the familiar MOBY I file handler and supplemented with multitag-handling commands) ensures simple and user-friendly management of data on the transponder.

Type	Features
SLG U92	Compact and low-cost reader with integral antenna for universal applications, read/write distances of up to 3000 mm (adjustable by software in 500 mm steps to 3500 mm) incl. file handler, degree of protection IP65, enclosure dimensions (mm) 290 x 135 x 42.
SLG U92 with RS232	As above, but with RS232 interface for connection to PC/PLC.
SLG U92 with RS422	As above, but with RS422 interface for connection to communication modules (e.g. ASM 456, ASM 475, SIMATIC RF170C) or PC/PLC.

FCC model of the SLG U92

For use in the USA and Canada, a version with radio approval FCC Part 15C is available.

The FCC model of the SLG U92 functions with a very low transmitting power and has small antenna dimensions. The FCC model may also be used in ETSI countries. However, the ETSI model may not be operated in FCC countries for technical reasons concerning radio communication.

Function

The Reader SLG U92 operates with a transmission frequency in the ISM band between 2.4 and 2.4835 GHz. This supports transmission ranges from a few centimeters up to three meters with an extremely low transmit power of < 10 mW EIRP and high net transmission rates of up to 8 KB/s. Thanks to the selected transmission frequency, rugged modulation techniques and appropriate check mechanisms, sources of electromagnetic interference can be disregarded and fault-free data transmission and data integrity are assured. MOBY U technology blocks the types of fault sources familiar in UHF transmissions such as reflections, interference and overrange. Appropriately constructed antennas provide a homogeneous transmission field and ensure a 100% detection rate for transponders (MDS). There is no need for time-consuming shielding measures and antenna alignment.

The antenna field of the reader can be activated or deactivated for the duration of communication with a transponder by means of a function call or automatically through triggering by proximity switches.

To manage the data on the transponders, there are 2 possibilities:

- Byte-oriented addressing via absolute addresses (start address, length)
- Conveniently via a file management system (compatible with the MOBY I file handler)

In file handler mode, the MOBY U reader always fetches the required file management information directly from the transponder and it can be operated in three steps:

1. For existing system solutions with MOBY I, MOBY U can be operated with the default settings and unmodified file handler functions without the MOVE and LOAD commands that were previously required.
2. The default settings and requests for diagnostic data can be easily changed with just a few additional commands.
3. Utilization of all features including multitag processing. In this step, the commands and/or useful data can also be uniquely assigned to the particular transponder number.

Two LEDs indicate the current status (e.g. transponder in the field) and make start-up easier.

For easy start-up and diagnostics during normal operation, a separate service and diagnostics interface (RS232) is available. This interface can also be used by the service function "Load software in the reader" to integrate future function expansions into existing applications without replacing the reader.

The system interface (RS232 or RS422) can be used for serial connection to any other system (PC/PLC).

RFID system for the microwave frequency range

MOBY U readers

SLG U92

Technical specifications

Order No.	6GT2 501-0CA00	6GT2 501-0BA00	6GT2 501-1CA00	6GT2 501-1BA00
Product type designation	Reader SLG U92 ETSI	Reader SLG U92 FCC	Reader SLG U92 ETSI	Reader SLG U92 FCC
Suitability for use	MOBY U, for connecting to communication modules	MOBY U, for connecting to communication modules	MOBY U, for connecting to PC systems	MOBY U, for connecting to PC systems
Wireless frequencies				
Operating frequency	2400 ... 2483.5 MHz	2400 ... 2483.5 MHz	2400 ... 2483.5 MHz	2400 ... 2483.5 MHz
Equivalent isotropic radiated power				
• compliant with FCC	10 mW	0.7 mW	10 mW	0.7 mW
Electrical data				
Maximum range	3 m	3 m	3 m	3 m
Protocol for wireless transmission	ISO 18000-4	ISO 18000-4	ISO 18000-4	ISO 18000-4
Maximum data transfer rate for wireless transmission	384 kbit/s	384 kbit/s	384 kbit/s	384 kbit/s
Product property „multitag-capable“	Yes	Yes	Yes	Yes
Polarization	Circular	Circular	Circular	Circular
Data transfer rate of the point-to-point connection, serial, max.	115.2 kbit/s	115.2 kbit/s	115.2 kbit/s	115.2 kbit/s
Transmission time for user data				
• for write access, per byte, typical	0.13 ms	0.13 ms	0.13 ms	0.13 ms
• for read access per byte, typically	0.21 ms	0.21 ms	0.21 ms	0.21 ms
Interfaces				
Design of electrical connection	6-pin connector according to EN 175201-804	6-pin connector according to EN 175201-804	6-pin connector according to EN 175201-804	6-pin connector according to EN 175201-804
Standard for interfaces for communication	RS422	RS422	RS232	RS232
Design of electrical connection at the digital inputs/outputs	11-pin connector according to EN 175201-804	11-pin connector according to EN 175201-804	11-pin connector according to EN 175201-804	11-pin connector according to EN 175201-804
Number of digital inputs	2	2	2	2
Number of digital outputs	0	0	0	0
Mechanical data				
Material	PA 12 GF 25	PA 12 GF 25	PA 12 GF 25	PA 12 GF 25
Color	Anthracite	Anthracite	Anthracite	Anthracite
Maximum tightening torque of the screw for securing the reader	2 Nm	2 Nm	2 Nm	2 Nm
Mounting distance with regard to metal surfaces (recommended minimum)	0 mm	0 mm	0 mm	0 mm
Supply voltage, current consumption, power loss				
DC supply voltage				
• Rated value	24 V	24 V	24 V	24 V
• minimum	20 V	20 V	20 V	20 V
• max.	30 V	30 V	30 V	30 V
Current input at 24 V DC				
• typical	0.3 A	0.3 A	0.3 A	0.3 A
• max.	0.3 A	0.3 A	0.3 A	0.3 A

RFID system for the microwave frequency range

MOBY U readers

SLG U92

Order No.	6GT2 501-0CA00	6GT2 501-0BA00	6GT2 501-1CA00	6GT2 501-1BA00
Product type designation	Reader SLG U92 ETSI	Reader SLG U92 FCC	Reader SLG U92 ETSI	Reader SLG U92 FCC
Permissible ambient conditions				
Ambient temperature				
• during operation	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C	-25 ... +70 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Degree of protection	IP65	IP65	IP65	IP65
Shock resistance	EN 60721-3-7 class 7 M3	EN 60721-3-7 class 7 M3	EN 60721-3-7 class 7 M3	EN 60721-3-7 class 7 M3
Shock acceleration	300 m/s ²	300 m/s ²	300 m/s ²	300 m/s ²
Oscillation acceleration	15 m/s ²	15 m/s ²	15 m/s ²	15 m/s ²
Design, dimensions and weights				
Width	135 mm	135 mm	135 mm	135 mm
Height	42 mm	42 mm	42 mm	42 mm
Depth	290 mm	290 mm	290 mm	290 mm
Net weight	0.9 kg	0.9 kg	0.9 kg	0.9 kg
Type of mounting	4 screws M4	4 screws M4	4 screws M4	4 screws M4
Cable length				
• for RS 232 interface, maximum	-	-	30 m	30 m
• for RS 422 interface, maximum	1000 m	1000 m	-	-
Product properties				
Type of display	2 LEDs	2 LEDs	2 LEDs	2 LEDs
Product property „silicon-free“	Yes	Yes	Yes	Yes
Standards, specifications, approvals				
Certificate of suitability	RF: EN 300440-2, SAR: EN 50371, Safety: EN 60950-1, EMC: EN 301489-01, EN 301489-03, ENV 50204, FCC Part 15C (USA), cULus, safe for heart pace-makers	RF: EN 300440-2, SAR: EN 50371, Safety: EN 60950-1, EMC: EN 301489-01, EN 301489-03, ENV 50204, FCC Part 15C (USA), cULus, safe for heart pace-makers	RF: EN 300440-2, SAR: EN 50371, Safety: EN 60950-1, EMC: EN 301489-01, EN 301489-03, ENV 50204, FCC Part 15C (USA), cULus, safe for heart pace-makers	RF: EN 300440-2, SAR: EN 50371, Safety: EN 60950-1, EMC: EN 301489-01, EN 301489-03, ENV 50204, FCC Part 15C (USA), cULus, safe for heart pace-makers

RFID system for the microwave frequency range

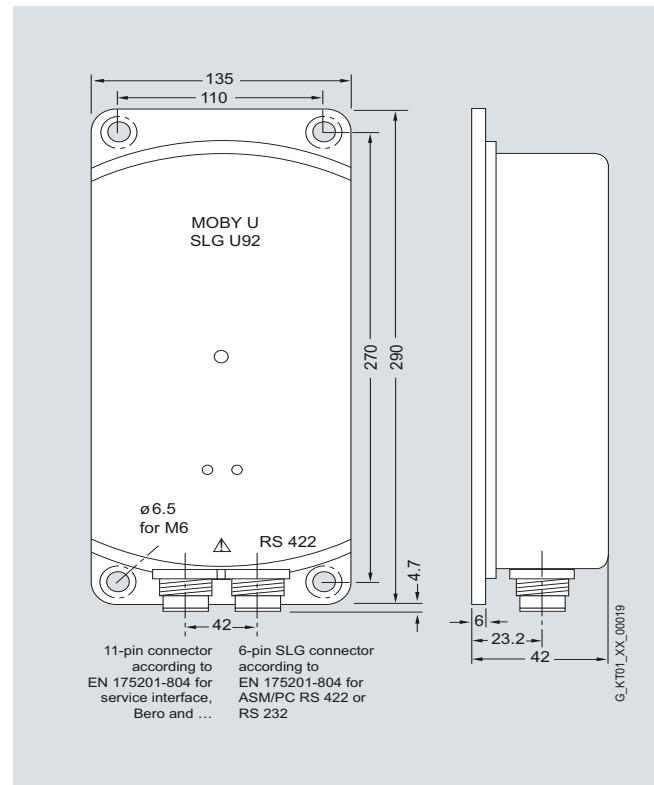
MOBY U readers

SLG U92

Selection and ordering data

	Order No.
Reader SLG U92 with RS422	
• Antenna integrated, for Europe.	6GT2 501-0CA00
• Antenna integrated, FCC approval, for USA, Europe.	6GT2 501-0BA00
Reader SLG U92 with RS232	
• Antenna integrated, for Europe.	6GT2 501-1CA00
• Antenna integrated, FCC approval, for USA, Europe.	6GT2 501-1BA00
Accessories	
RS232 connecting cable	
between the PC and SLG U92, with a connecting cable for a 24 V connector (M12 socket), angled connector, PUR, CMG approval, suitable for cable carriers, in the following lengths::	
5 m	6GT2 591-5CH50
20 m	6GT2 591-5CN20
RS 232 plug-in cable for service interface	6GT2 591-5AH50
between PC and 11-pin service interface connector, PUR, CMG approval, suitable for cable carriers, length 5 m.	
Connector for SLG U92 service interface	6GT2 590-0BA00
11-pin, with angled output	
Connector on reader side (MOBY U)	
6-pin DIN 43651 connector with female contacts for crimping:	
• With angled output, 1 unit	6GT2 090-0BA00
• With angled output, 10 units	6GT2 090-0BA10
• With straight output, 1 unit	6GT2 090-0UA00
Reader cable	
Without connector, between the communication module and reader; 6 x 0.25 mm ² , PUR, CMG approval, suitable for cable carriers, in the following lengths:	
50 m	6GT2 090-4AN50
120 m	6GT2 090-4AT12
800 m	6GT2 090-4AT80
Wide-range power supply	
Primary side: 100 ... 240 V AC, 120 ... 353 V DC, secondary side: 24 V DC, 3 A, with no-load protection, with continuous short-circuit protection.	
• With EU plug	6GT2 898-0AA00
• With UK plug	6GT2 898-0AA10
• With US plug	6GT2 898-0AA20
Cable for wide-range power supply	6GT2 491-1HH50
24 V DC, PUR, length 5 m.	
24 V connector (M12 socket)	6GT2 390-1AB00
For communication modules ASM 424/724/754, reader SLG Ux (over PC connecting cable).	
DVD „RFID Systems Software & Documentation“	6GT2 080-2AA20

Dimensions



Reader SLG U92

Additional Info

All current approvals can be found on the Internet at:

www.siemens.com/rfid-approvals

RFID system for the microwave frequency range

MOBY U readers

STG U mobile handheld terminal

Overview



The STG U is a powerful mobile hand-held terminal with integral read/write antenna for applications in the field of production, logistics and service. In addition, it is an indispensable tool for commissioning and testing.

Function

The supplied MOBY software (memory card) provides service and test functions for reading, writing, etc. of the MOBY U transponder:

- Reading data from the transponder
- Writing data to the transponder
- Reading and displaying the ID number of the transponder
- Reading MDS status
- Reading data from OTP memory
- Writing data to OTP memory
- Displaying and editing the data in hexadecimal, ASCII, decimal and binary formats
- Activate/deactivate password

On the basis of the optional C library, custom applications including a customized mask interface for the reading/writing of data memories can be very easily programmed. Various optional development tools for the PC and a wide selection of accessories are available directly from PSION. This is opening up new applications in the field of logistics and distribution, for example, the hand-held terminal enables commissioning data to be recorded or processed offline and forwarded to the PC/computer with a time delay.

Design

The STG U mobile handheld terminal comprises a basic unit (based on the PSION Workabout^{mx}) and an antenna of the MOBY U type. It has a splash-proof enclosure (IP 54), LCD display with 240 × 100 pixels, alphanumeric keypad and various interfaces (for EEPROM card, charging the battery, RS232/TTL for the MOBY U antenna, battery charger interface incl. RS232 for connecting to the PC, etc.).

RFID system for the microwave frequency range

MOBY U readers

STG U mobile handheld terminal

Technical specifications

Order No.	6GT2 503-0AA00
Product type designation	STG U mobile handheld terminal
Suitability for use	MOBY U transponders
Wireless frequencies	
Operating frequency	2400 MHz ... 2483.5 MHz
Equivalent isotropic radiated power	
• compliant with FCC	0.7 mW
Electrical data	
Range, maximum	3000 mm
Protocol for wireless transmission	ISO 18000-4
Maximum data transfer rate for wireless transmission	384 kbit/s
Product property „multitag-capable“	Yes
Polarization	Circular
Supply voltage, current consumption	
Type of power supply	Battery operation
Type of battery	Handheld terminal: NiCd battery pack with 2 type AA cells (0.85 Ah), fast-charging, antenna: Lithium-ion battery pack 2SIP CGR 18650 HG (1.8 Ah)
• Integrated back-up battery	CR1620
Battery capacity	1.8 Ah
Running time with standard rechargeable battery, typical	20 h
Permissible ambient conditions	
Ambient temperature	
• during operation	-20 ... +60 °C
• during storage	-25 ... +70 °C
Degree of protection	IP54
Maximum drop height	0.5 m
Design, dimensions and weights	
Width	235 mm
Height	282 mm
Depth	93 mm
Net weight	1.95 kg
Product properties	
Type of display	Graphic LCD screen with 240x100 pixels, gray scale, selectable backlighting
Type of operating elements	Alphanumeric with 57 keys
Type of acoustic signalling element	Piezo signal transmitter
Type of interface	LIF interface (low insertion force) for battery charging and communication with PC and printer, RS 232 interface for connection of a MOBY U antenna
Memory capacity	
• of RAM	2 Mibyte
• of data and program memory	2 Mibyte
• of usable data memory	2 Mibyte

Order No.	6GT2 503-0AA00
Product type designation	STG U mobile handheld terminal
Product functions „Management, configuration, engineering“	
Operating system pre-installed	EPOC 16 multitasking
Product function of software	MOBY service and test program
Type of programming	MOBY C library for SIBO C SDK
Certificate of suitability	RF: EN 300440-2, SAR: EN 50371, Safety: EN 60950-1, EMC: EN 301489-01, EN 301489-03, ENV 50204, FCC ID: NXWMOBYU-STGU, UL/CSA, safe for heart pacemakers
Accessories	Power supply STG U, replacement battery

Selection and ordering data

	Order No.
Mobiles Handterminal STG U	6GT2 503-0AA00
MOBY U handheld terminal STG U, complete (PSION Workabout [™]), antenna STG U, battery, EEPROM card. With MOBY software, operating instructions, without power pack for STG U.	
Antenna STG U	6GT2 503-1AA00
For basic unit (PSION Workabout [™]).	
STG U power supply unit	6GT2 503-1DA00
Wide-range power supply unit 90 V to 264 V AC, with cable switch, for the STG U antenna and the STG U mobile handheld terminal, with charging adapter.	
Spare rechargeable battery	6GT2 094-0AB01
NiMH battery pack Workabout [™] 2.4 V; 1800 mAh.	
STG software	6GT2 303-1CA00
For MOBY D, E, F and U, incl. operating instructions, 1 MB EEPROM card.	
DVD „RFID Systems Software & Documentation“	6GT2 080-2AA20

Additional Info

All current approvals can be found on the Internet at:

www.siemens.com/rfid-approvals

RFID system for the microwave frequency range

MOBY U

MOBY U configuring notes

Overview

Note

Detailed information (clearance from metal, reader - reader clearance, etc.) are shown in the "MOBY U Manual for Configuration, Assembly and Service".

Field characteristics (battery-saving mode)

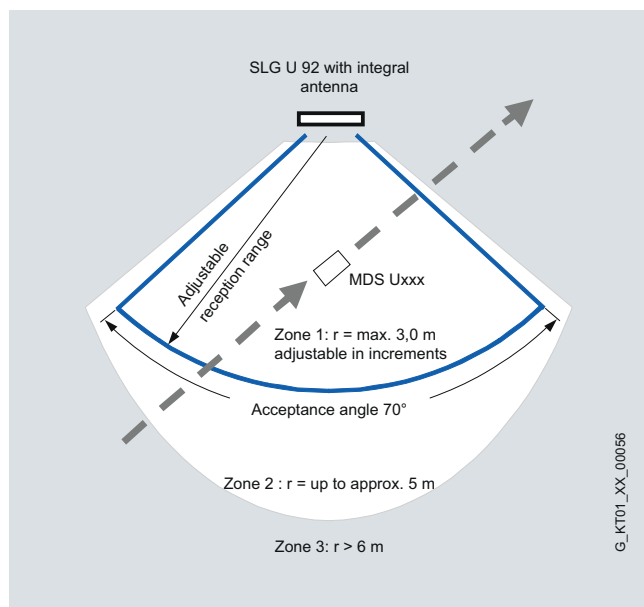
In contrast to the inductive RFID systems, UHF systems exhibit transmission behavior like electromagnetic waves. The wave length is approx. 13 cm. Metal surfaces reflect the waves and cannot be penetrated.

Despite a low radiation output, UHF systems have a relatively long range. The emission field has a directional characteristic which depends, however, on the antenna design. In order to keep the energy requirement low for the transponder and to make the determination of the location comprehensible, MOBY U has various function areas that are dependent on direction and distance. The three different zones of the transmission field are identified by different states and reactions of the components affected.

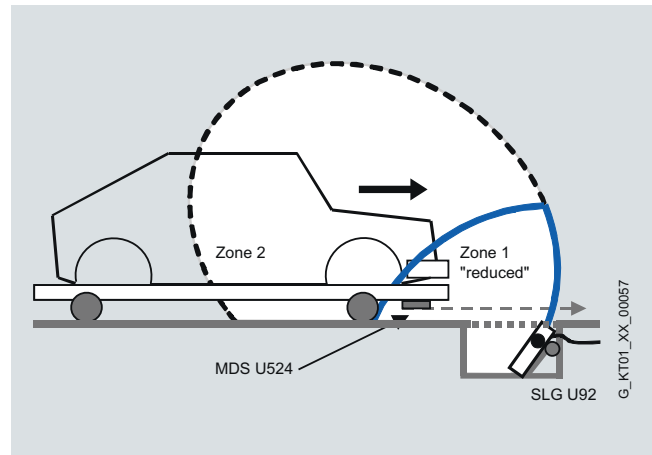
Put simply, Zone 3 is a reader-field-free area. The transponder "sleeps" and only listens momentarily every 0.5 s for a sign of life from a reader. This means that the power consumption is very low. If other UHF users in the vicinity are occupying the same frequency band, it has no effect on the transponder, as the latter requires a special code to wake it up. If the transponder in the vicinity of an active reader then receives this special code, it enters Zone 2 (see Fig.). It immediately accepts the reader and responds briefly with its own identification. The reader however ignores every transponder unless it is in Zone 1, whose radius parameter can be set in stages in the reader. The power consumption in Zone 2 is not significantly higher than in Zone 3.

If the transponder enters Zone 1, it is duly registered by the reader and the data exchange can begin. Now all read and write functions can be performed. However, as the transmission rate at the air interface is very high (80 Kbit/s), the overall communication time is very short. For example, all byte of the 32 KB memory are read in about 8 seconds. This means that the data exchange imposes hardly any load on the battery.

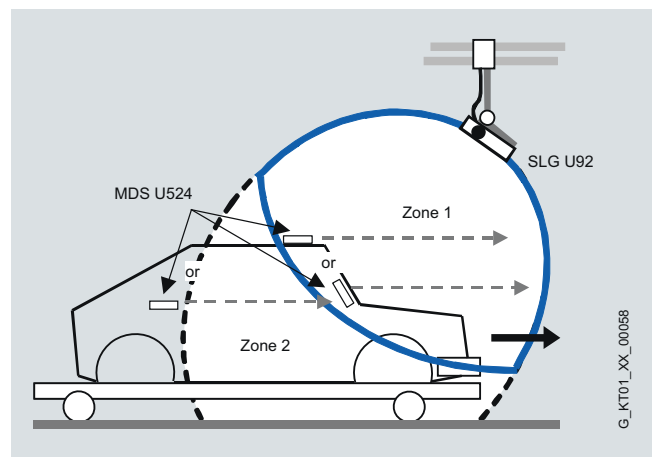
SLG U92 with integral antenna:



Example: Car body identification:



Example: Skid identification:



Code reading systems

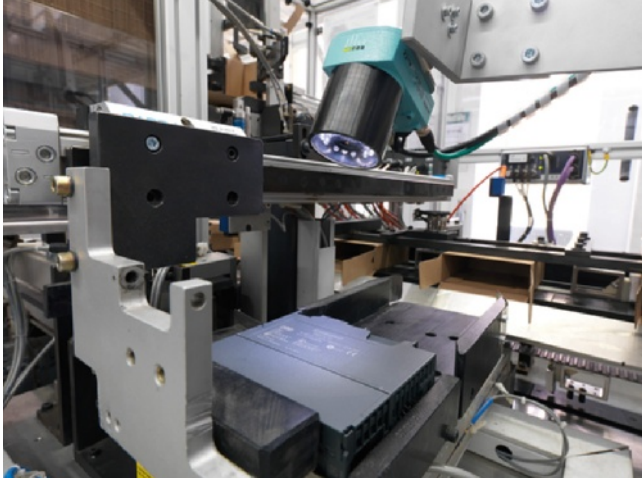


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5/5	Stationary code reading systems
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5/48	SIMATIC HawkEye 45/45T
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Code reading systems

Introduction

Overview



Code reading systems – Reading and verification of 1D/2D codes

For state-of-the-art production systems, tracing products and parts with machine-readable identification is a central requirement. A unique coding system permits the planning of each and every step of production for every part manufactured and changes within the production process or in the materials used. Direct marking of products also allows the implementation of specified legal requirements for tracing production batches throughout the production system.

What is Direct Part Marking (DPM)?

Direct Part Marking (DPM) is the application of a mark directly on the surface of a product without the use of a separate carrier material, such as an adhesive label. This makes it possible to identify products in production and tracing them after delivery as well.

With so-called 2D codes a coding method is available that meets these user requirements. 2D codes consist of easy to implement, point-shaped basic elements. Laser and needle marking technologies are outstanding regarding durability, marking speed and material independence. Despite mechanical deformations, e.g. with metallic workpieces, the 2D codes can still be read using 2D read devices even after multiple processing steps. 2D codes also provide the advantage of being able to encode data in more limited spaces than comparable barcodes or text.

Benefits



- Unique identification of products or product parts - Direct Part Marking is the key technology for product traceability.
- Flexible and economic solutions thanks to the complete and scalable portfolio of powerful stationary code reading systems.
- Simplified engineering, commissioning, diagnostics and maintenance through seamless integration into Totally Integrated Automation:
 - Integrated bus connection to an automation system, such as SIMATIC, SIMOTION or SINUMERIK via communication modules with PROFIBUS and PROFINET.
 - Simple S7 software integration via ready-to-use function blocks.
 - Extensive status and diagnostic functions.
- Greater security of investment due to support of all standard matrix and bar codes.
- Openness through connection possibilities to various bus systems from different manufacturers and PC environments via communication modules.

Integration

The product range of Siemens code reading systems

Stationary code reading systems



SIMATIC MV440 and MV420 stationary code reading systems



Stationary SIMATIC VS130-2 code reading system

The stationary code reading systems include compact basic and high-performance reading devices. The devices read various two-dimensional (2D) codes as well as one-dimensional (1D) barcodes. Some readers use data matrix print quality monitoring (verification) for process control.

The SIMATIC MV440 can also read plain text (Optical Character Recognition: OCR)

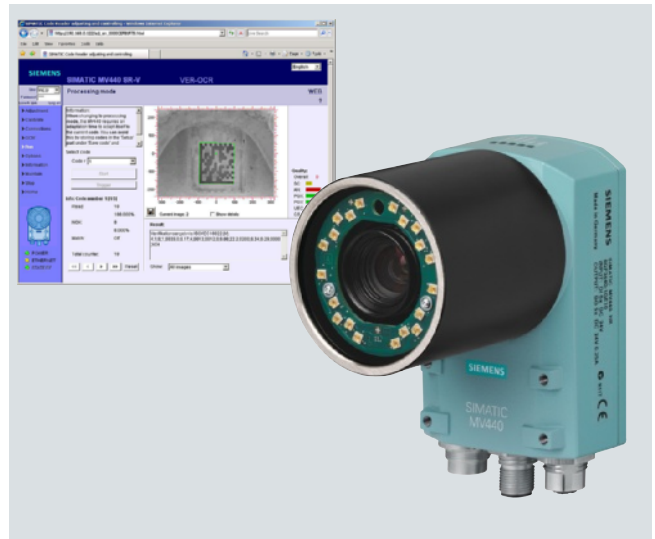
Handheld reading systems



SIMATIC HawkEye 40T and SIMATIC MV340 handheld reading systems

These handheld reading systems are powerful, high-resolution readers for either two-dimensional (2D) data matrix codes and/or one-dimensional bar codes (1D). The devices can communicate with a host via RS232, USB and Bluetooth, depending on the selected model.

Verification systems



By using verification systems, the readability of marks is guaranteed throughout the entire production process, regardless of any possible contamination or when using different readers. Moreover, the marking can continue to be read after the production process throughout the lifespan of the product.

In addition to reading 1D bar codes and 2D matrix codes, SIMATIC MV440 can be expanded at any time with verification functionality using the „Veri-Genius“ verification license. The license is supplied as a „Single License“ on a USB stick and can be copied to the SIMATIC MV440 with the SIMATIC Automation License Manager (ALM) using a plug-in. The license is executable on any SIMATIC MV440 as of firmware version 4.0.

Code reading systems

Introduction

Optical character recognition



With the „Text Genius“ OCR license, SIMATIC MV440 can also be used for optical character recognition (OCR) in addition to reading 1D bar codes and 2D matrix codes. It is also possible to read and compare plain text and machine-readable code in the same image field.

The license is supplied as a „Single License“ on a USB stick and can be copied to the device with the SIMATIC Automation License Manager (ALM) using a plug-in. The license can be installed on a SIMATIC MV440 with firmware version 3.0 or higher.

Code reading systems

Stationary code reading systems

Introduction

Overview



The stationary code reading systems read various two-dimensional (2D) codes and one-dimensional (1D) barcodes. Some readers also feature functions for measuring the marking quality (verification) for process control purposes, and for text recognition (optical character recognition, OCR). All devices can be easily and flexibly integrated into the automation system thanks to standardized, industry-compatible interfaces and function blocks.

SIMATIC MV420

The SIMATIC MV420 series is particularly suitable for close-up to mid-range reading distances (approx. 10 mm to 400 mm).

SIMATIC MV420 is an optical code reading system that has been specially designed for detecting and evaluating a variety of machine readable codes in the packaging industry (e.g. F&B, pharmaceuticals and tobacco) and industrial production (e.g. automotive, electronics and solar). The list of readable codes includes all standard matrix and bar codes which can be reliably detected - mostly independent of the printing technology and carrier medium used. One key feature of the unit is its ability to read data matrix codes (DMC). The SIMATIC MV420 device family is flexible, reliable and easy to use.

Besides this, two different lenses are available for the SIMATIC MV420 which can be adjusted to the required reading distances. In addition, various powerful integrated illumination systems are available. The models can be ordered as preconfigured or freely combinable. The particularly compact enclosures have a high IP67 degree of protection.

SIMATIC MV440

SIMATIC MV440 is an optical code reading system that has been specially designed for detecting and evaluating a number of machine readable codes in industrial production. The SIMATIC MV440 device family is characterized by very high reading reliability, high-speed reading and flexible process interfacing. The product is also rugged, has a high degree of protection and is easy to use. The professional decoding software is suitable for almost all types of marking, especially for sophisticated „direct part marking“, on a wide range of different carrier materials.

With the „Veri-Genius“ verification license, MV440 code readers are able to verify the marking quality of codes in accordance with the applicable standards. The device determines the quality of the applied code and helps you ensure the readability using the following process steps. Verification can be performed simultaneously with the other functions, e.g. 1D and 2D code reading.

With the „Text-Genius“ text recognition license, MV440 code readers can be used for text recognition (optical character recognition, OCR). Text recognition can be performed simultaneously with the other functions, e.g. 1D and 2D code reading.

SIMATIC VS130-2




The SIMATIC VS130-2 code reading system has been specially developed for reading ECC200 data matrix codes (DMC) and various 1D/2D codes in an industrial environment. The complete packages comprise lighting, signal evaluator, sensor and cables. Since the signal evaluator, sensor and lighting are available separately, a wide variety of sensor and lamp arrangements are feasible. The code reading system has PROFIBUS and PROFINET interfaces.

Code reading systems

Stationary code reading systems

Introduction

Major differences

Code reading system	SIMATIC MV420	SIMATIC MV440	SIMATIC VS130-2
			
Housing	Extremely compact design, IP67	Compact design, IP67	Modular design (signal evaluator, sensor head and light separately), IP65
Sensor / resolution	CMOS 640 x 480 pixels 752 x 480 pixels	CCD 640 x 480 pixels 1 024 x 768 pixels 1 600 x 1 200 pixels	CCD 640 x 480 pixels 1 024 x 768 pixels
Lens system	Freely selectable lenses (M12)	Freely selectable lenses due to C-Mount lens connection	Integrated fixed focus lens, or freely selectable lenses due to C-Mount lens connection
Lighting	Integrated lighting	Integrated or external lighting	External lighting
Commissioning and operation	<ul style="list-style-type: none"> • Integrated web server • Auto-optimizing of parameters • Languages: German / English / French / Italian / Spanish / Chinese 	<ul style="list-style-type: none"> • Integrated web server • Auto-optimizing of parameters • Languages: German / English / French / Italian / Spanish / Chinese 	<ul style="list-style-type: none"> • Integrated web server • Onboard operator controls • Auto-optimizing of parameters • Languages: German / English / French / Italian / Spanish / Chinese
Communication	<ul style="list-style-type: none"> • PROFIBUS (via communication module; M12) • PROFINET (on-board M12 or via communication module, various interfaces) • Ethernet (onboard, M12) • RS232 (onboard, M16) 	<ul style="list-style-type: none"> • PROFIBUS (via communication module, M12) • PROFINET (on-board M12 or via communication module, various interfaces) • Ethernet (onboard, M12) • RS232 (onboard, M16) 	<ul style="list-style-type: none"> • PROFIBUS (onboard; DB9) • PROFINET (onboard, RJ45) • Ethernet
Optical character recognition	–	Polyfont	–
Verification	–	<ul style="list-style-type: none"> • ISO/IEC 16022:2000 • ISO/IEC 15415:2004 • AS9132 Rev A, 2005 • ISO/IEC 15416:2000 • ANSI X3.182-1990 • Siemens DPM • AIM DPM-1-2006 	ISO16022 based

Application

- Automobile industry
 - Needle punched markings on various automotive power train components (cylinder heads, cylinder blocks, manifolds, etc.)
 - Laser markings on various automotive power train components (camshafts, crankshafts, pistons, connecting rods, transmission components, etc.)
 - Laser markings on electronic components, printed circuit boards, or enclosures
- Packaging industry (e.g. pharmaceuticals, F&B, tobacco)
 - Printed or laser markings on folded boxes, plastic containers, etc.
- Aerospace industry
 - Needle punched markings on gas turbine blades
 - Needle punched markings on various aluminium components of propulsion units
- Medical equipment
 - Laser markings on pacemakers and other implantable devices
 - Laser markings on various medical device components and enclosures
- Electronics
 - Laser markings on ESD sensitive hard drive components or even on printed labels
- Semiconductors
 - Laser markings on rigid and flexible circuit boards
 - Laser markings on packaged semiconductor devices, heat sinks or heat dissipators

Code reading systems

Stationary code reading systems

Introduction

Integration

The SIMATIC MV420/440 code readers have industry-standard PROFINET and communication module interfaces on the device. In addition, communications interfaces such as Ethernet and RS232 are directly available on the device.

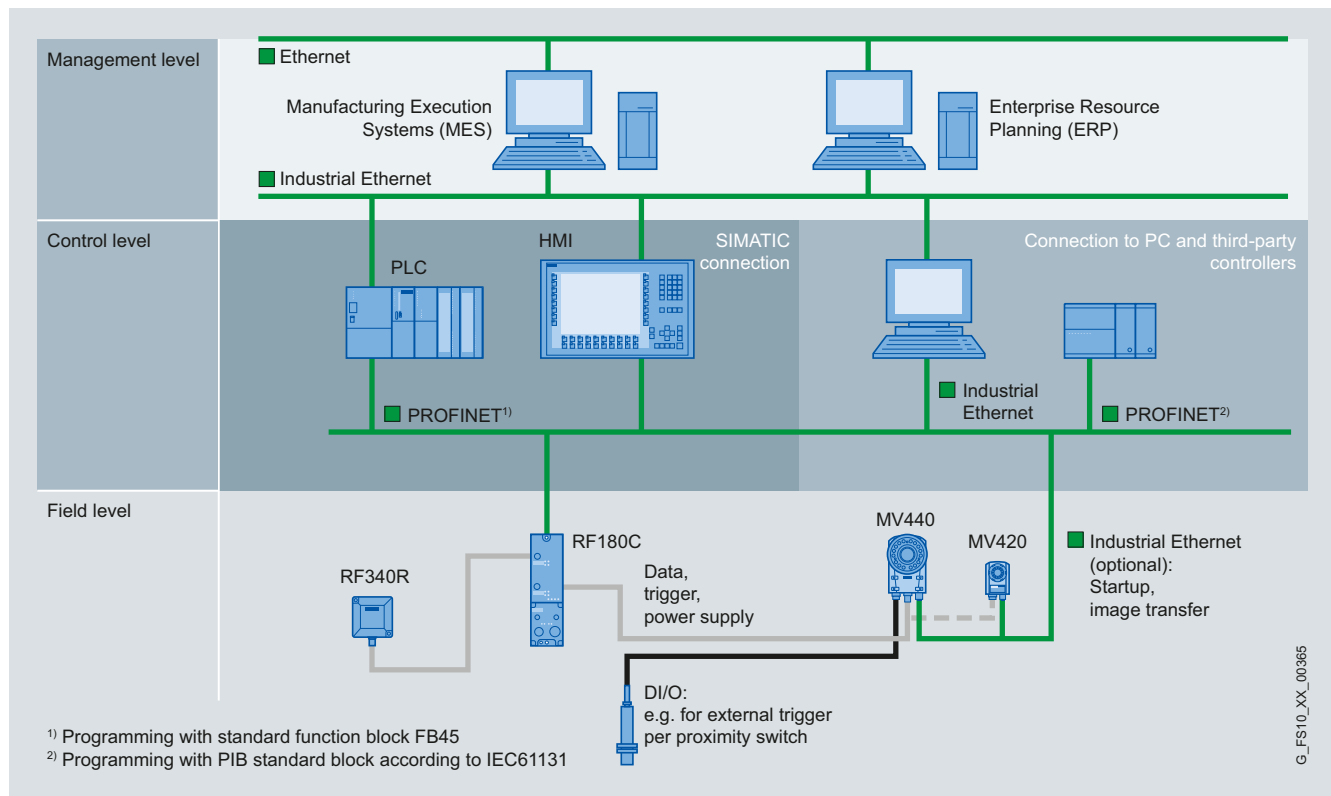
Via the specified interfaces, the following communication services can be used:

Usable communication services	Interface
PROFINET IO (FB79)	PROFINET interface onboard
PROFINET IO (FB45, PIB)	Via onboard communication module interface, using the RF180C communication module
PROFIBUS DP V0/1 (FB45, PIB)	Via onboard communication module interface, using the ASM 456 communication module
TCP/IP native	PROFINET interface onboard

Via the communication module interface, all communication modules can be used, e.g. for the PROFIBUS connection. The communication module interface is compatible with all available communication modules both electrically and with regard to protocol. Connection via a communication module makes it easy to switch between optical code reading with SIMATIC MV420/440 and RFID readers, simply by reconnection. The PLC programming is performed with the aid of function blocks that are available for SIMATIC and SIMOTION.

The advantage of connecting SIMATIC MV420/440 to a communication module is that a uniform programming interface is available for a wide variety of PLC types and fieldbus systems. In addition, the complete cable portfolio for the communication module interface is available.

At the same time as being connected via a communication module to the process (transmission of read result), the PROFINET interface on the device can also be used for a separate interface to HMI or a control desk.

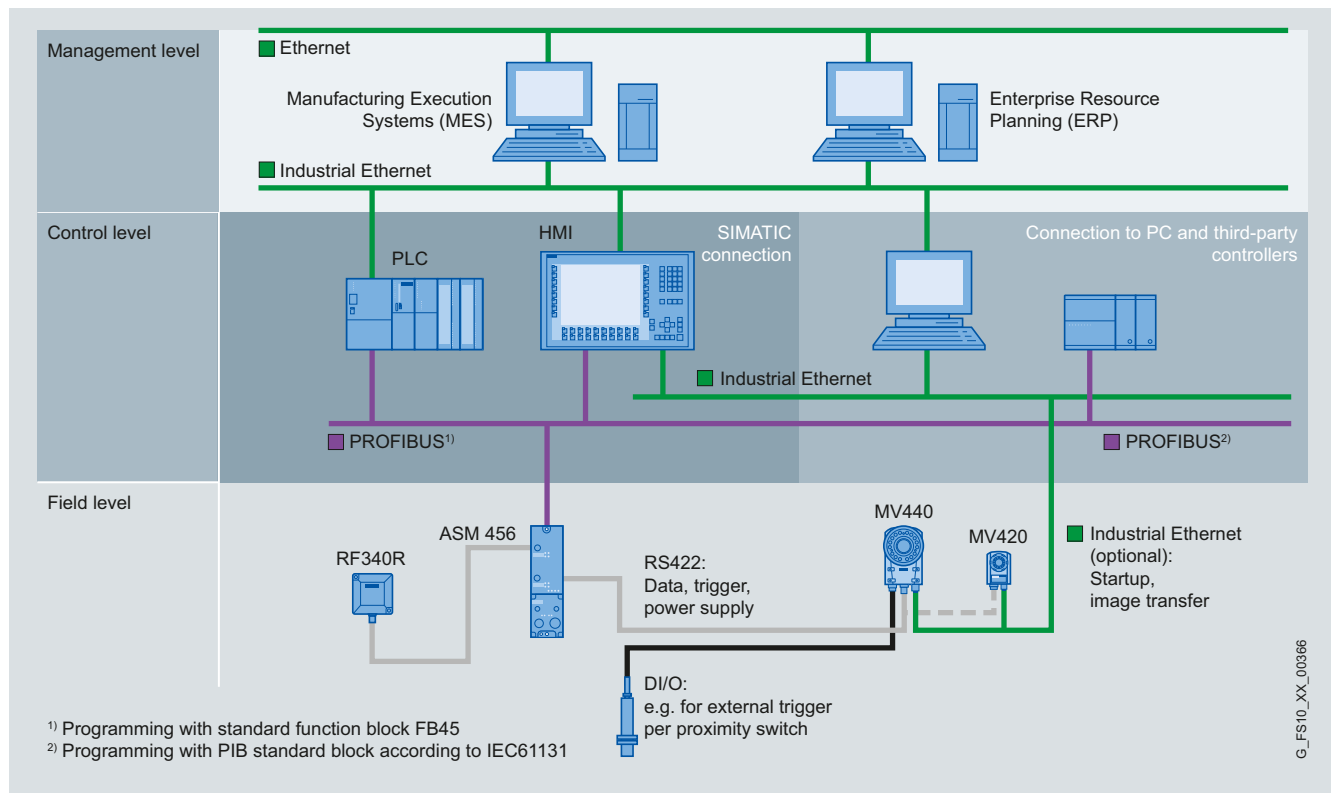


Integration of SIMATIC MV420/MV440 by means of the SIMATIC RF180C communication module

Code reading systems

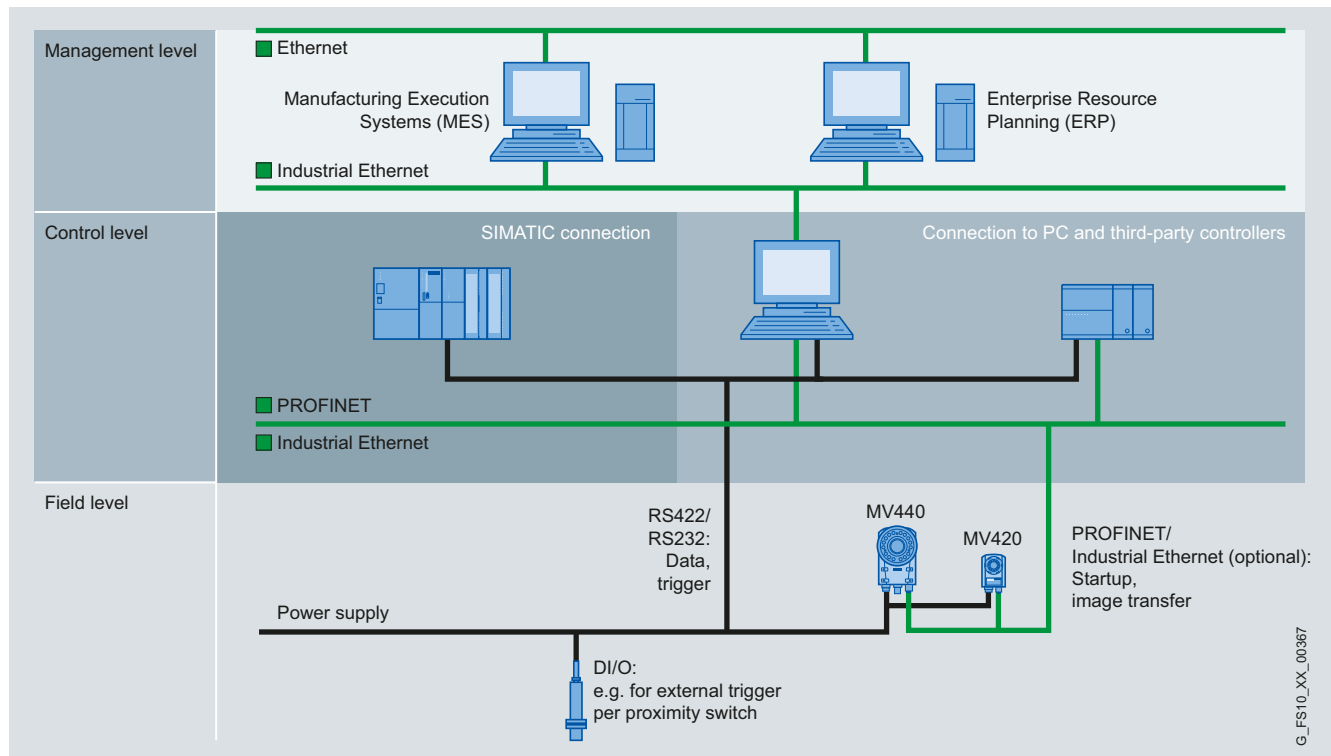
Stationary code reading systems

Introduction



Integration of SIMATIC MV420/MV440 by means of the ASM 456 communication module

5

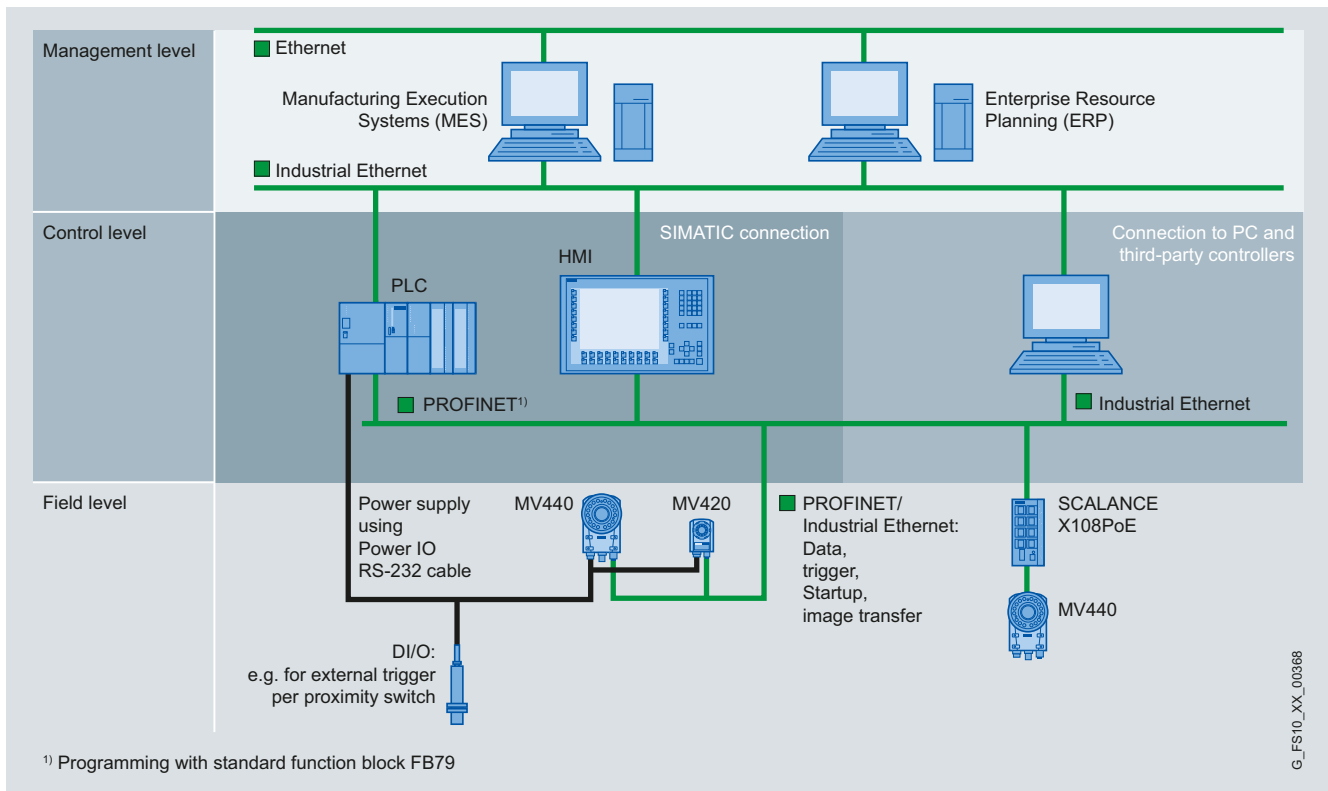


Integration of SIMATIC MV420/MV440 with connection via RS232

Code reading systems

Stationary code reading systems

Introduction



Integration of SIMATIC MV420/MV440 with a direct connection to PROFINET or Ethernet

Code reading systems

Stationary code reading systems

SIMATIC MV420

Overview



The SIMATIC MV420 is a particularly compact code reading system suitable for close-up to mid-range reading distances (approx. 10 mm to 400 mm).

SIMATIC MV420 has been specifically designed for detecting and evaluating a variety of machine readable codes in the packaging industry (e.g. F&B, pharmaceuticals, and tobacco) and industrial production (e.g. automotive, electronics, and solar). The list of readable codes includes all standard matrix codes and bar codes which can be reliably detected - mostly independent of the printing technology applied and carrier medium used. One key feature of the unit is its ability to read data matrix codes (DMC). The SIMATIC MV420 device family is flexible, reliable and easy to use.

Highlights at a glance:

- Compact design with IP67 degree of protection.
- Variety of lenses with variable reading distances.
- Integrated high-performance lighting.
- Web server technology: Parameterizable with regular Web browser.
- Interfaces: Ethernet, PROFINET, RS232, DI/DO, and direct connection to RFID communication modules (ASM).
- Exceptionally high reading speeds, depending on the model.

Further important product characteristics are:

- Excellent read algorithms based on the SIMATIC MV440 and VS130-2 code reading systems and many years of experience in industrial applications.
- No special knowledge required for reliable parameterization of reading features. Parameterization usually unnecessary, and is only required for difficult to read codes. „Setup“ is performed automatically by presenting a readable code pattern.
- Code quality evaluation: displays the key quality parameters of the code to be read.
- Customized user interface can be easily generated with SIMATIC WinCC flexible/WinCC.
- Web-based user interface; can run on a variety of platforms meeting the following requirements: Internet browser (IE 6.0 or higher), JAVA-VM (MS, SUN).
- Password protected user interface with integrated access rights administration.
- Web-based user interface available for easy integration with an HMI device. The browser and JAVA VM requirements previously mentioned also apply in this case.
- 6 language versions (operator interface, manual and online help are each available in German, English, French, Spanish, Italian, and Chinese).

In addition, SIMATIC MV420 SR-P offers the following highlights:

- Autotrigger mode: Automatic detection of a code without an external trigger signal
 - Saving of sensor technology and cabling
 - Reduced potential for error as there are fewer components
 - Solution for applications where proximity switches and light barriers cannot be used
- Multicode: reads multiple codes in one step within the same field of view.
 - ID-Genius: a high-performance code reading algorithm for poorly legible directly marked data matrix codes (DPM: Direct Part Marking)

Application

Key features of the SIMATIC MV420:

- Code reading
- Comparing the read result with a preset value
- Formatting of read results for further use

The range of application for the SIMATIC MV420 product family extends to practically all areas of industrial production. The possibilities for use range from identification of stationary parts to fast moving parts on conveyor systems. The high-performance integrated lighting allows for an extremely compact design. The unit is protected from environmental influences with a degree of protection IP67. The SIMATIC MV420 code readers are therefore suitable for all industrial applications, also for direct marking (Direct Part Marking - DPM). In addition to industrial production, thanks to its small size and flexibility, the SIMATIC MV420 code reader is also ideally suited to the packaging industry (e.g. F&B, pharmaceuticals and tobacco).

The MV420 code readers include all common communication interfaces, such as Ethernet or PROFINET, and can therefore be connected to a wide variety of systems. An integrated RS422 interface makes it possible to use all of the RFID communication modules, such those required for the PROFIBUS connection. In this case, the combination of code reader and RFID reader is also possible on one communication module.

The reading devices are particularly easy to use and commission despite the wide variety of options for use. Parameters are automatically configured for most applications. If reconfiguration is required, however, parameterization can be carried out without the need for pre-installed software via the integrated Web server using an Internet browser.

Code reading systems

Stationary code reading systems

SIMATIC MV420

Due to the properties and functions described, the emphasis for MV420 is on the following sectors and applications:

- Automobile industry:
 - Needle markings on various drive components (DPM), e.g. cylinder heads, cylinder blocks, manifolds.
 - Laser markings on various power train components (DPM), e.g. camshafts, crankshafts, cylinder piston, connecting rods, gearbox components.
 - Laser markings on electronic components, printed circuit boards, or enclosures.
- Pharmaceutical industry, food industry (F&B), tobacco industry:
 - Print or laser markings on medicines (DPM, OCR).
 - Recording the contents of cartons (up to 150 codes).
 - Read portal by linking several cameras.
- Aerospace industry:
 - Needle or laser markings on gas turbine blades (DPM).
 - Needle or laser markings on jet engine components (DPM).
- Medical equipment:
 - Laser markings on heart pacemakers and other implants (DPM).
 - Laser markings on medical devices (DPM).
- Electronics:
 - Needle or laser markings on hard disk components.
 - Lasered or etched markings on hard disk components (DPM).
- Semiconductors:
 - Laser markings on rigid and flexible circuit boards (DPM).
 - Laser markings on enclosed semiconductor components, heat sinks or heat exchangers (DPM).

More information is available in the accompanying manual.

Design

SIMATIC MV420 is a particularly compact code reading system. The device can be assembled from individual components or ordered as a ready-assembled unit. The MV420 is available in two versions:

- Basic model: SIMATIC MV420 SR-B
- Performance model: SIMATIC MV420 SR-P

For the individually configurable models the following individual components are available in addition to the basic units (body):

- Lenses
- Ring lights

The basic units include the protective barrel for the lens.

The preconfigured models include an integrated lens (6 mm, aperture 5.6) and a red ring light including protective barrel.

The following accessories are available for the connection and installation:

- Flexible mounting angle
- Power DIO RS232 cable (M16 connector on open end)
- M12 Ethernet cable (varying lengths)
- Ethernet cable (M12 to RJ45) for commissioning/lab operation; 2 m in length
- Special communication module cable for M16 connector (M16 to M12) for connecting to RFID communication modules (ASM). Can be expanded using standard communication module cables, if required.
- Plug-in power supply for demonstration and lab operation (for office environment only)
- CD with installation/operating instructions (supplied with unit)

Further information are shown in the supplied manual.

Function

Key features of the SIMATIC MV420:

- Code reading (refer to „Overview“ and „Range of application“)
- Formatting of read results for further use and/or comparison
- Comparing the read result with a preset value
 - Specification of a comparison string via one of the serial ports (PROFINET (ASM and onboard), PROFIBUS (ASM), RS232)
 - Comparison of the formatted read results with the comparison string

The functions can be used individually or they can be combined.

The SIMATIC MV420 reads the following codes:

- 1D codes (barcodes):
 - Int. 2/5 (no checksum)
 - Int. 2/5+CS (checksum included)
 - Code 128
 - Code 39 (no checksum)
 - Code 39+CS (checksum included)
 - EAN 13
 - EAN 8
 - UPC-A
 - UPC-E
 - GS1 Databar 14
 - GS1 Databar Stacked
 - GS1 Databar Limited
 - GS1 Databar Expanded
- 2D codes:
 - DMC
 - PDF417
 - QR
 - Vericode

The SIMATIC MV420 reads the codes found on a wide variety of components and surfaces, including:

- Paper or plastic labels
- Plastic parts
- Circuit boards
- Metallic objects

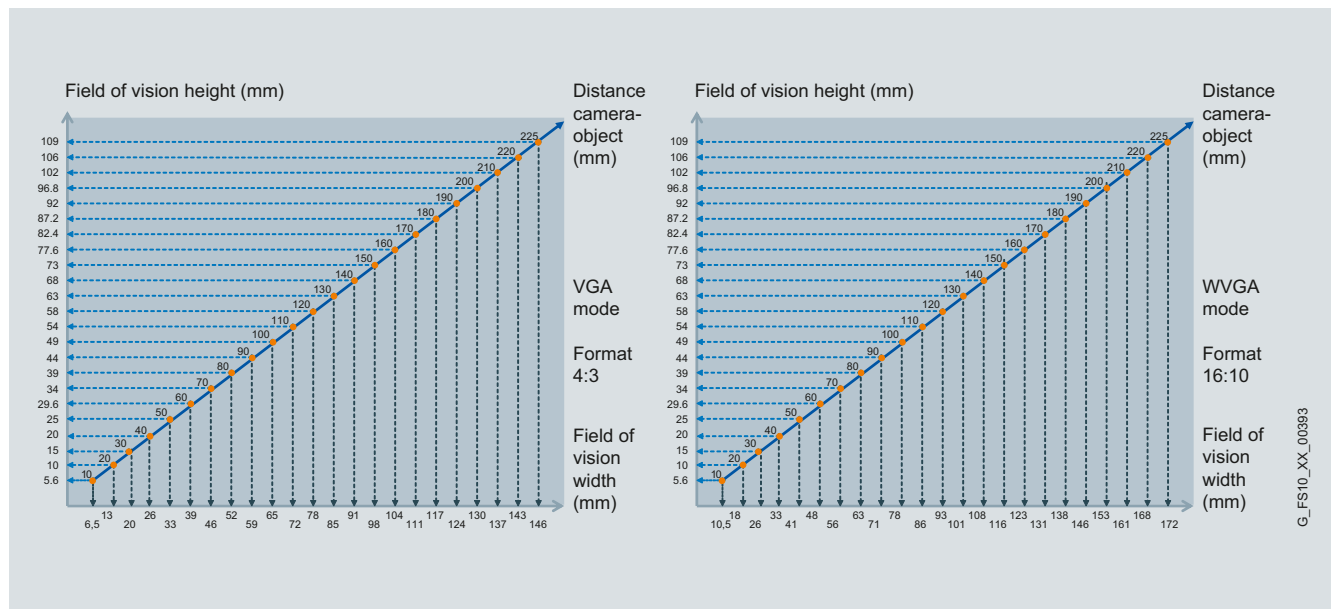
The SIMATIC MV420 reads codes of a wide variety of marking types, such as:

- Printed
- Dot peened
- Laser
- Stamped
- Drilled

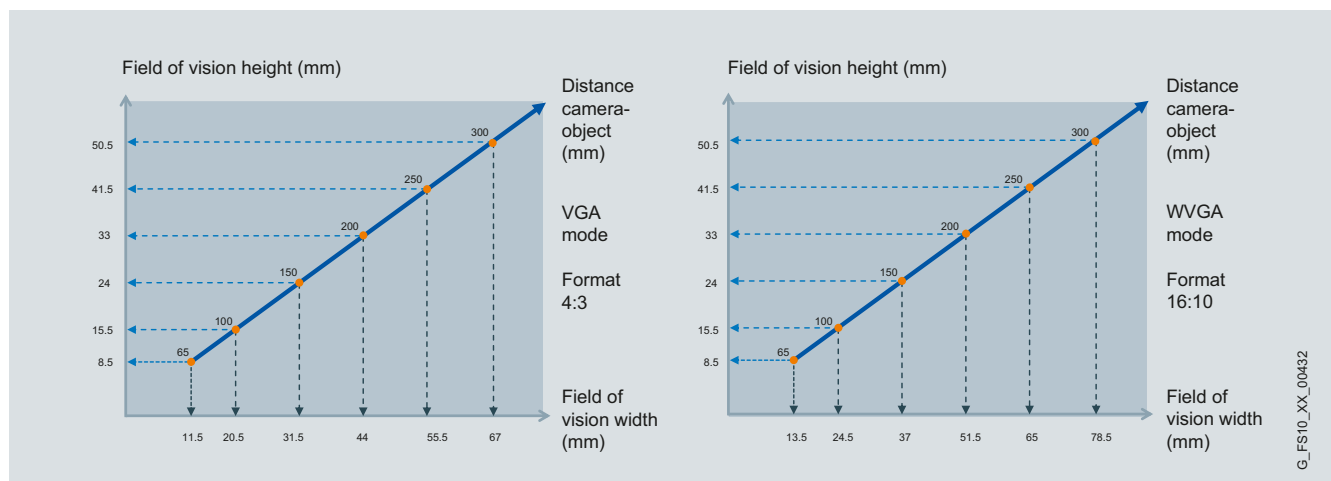
Code reading systems

Stationary code reading systems

SIMATIC MV420



SIMATIC MV420 field of view dimensions for the 6 mm lens



SIMATIC MV420 field of view dimensions for the 16 mm lens

Further information are shown in the manual accompanying the reader.

Integration

Various onboard connection options and convenient function blocks are available for the integration into the automation level.

In the case of SIMATIC MV420, direct connection via PROFINET, Ethernet or RS232 is possible.

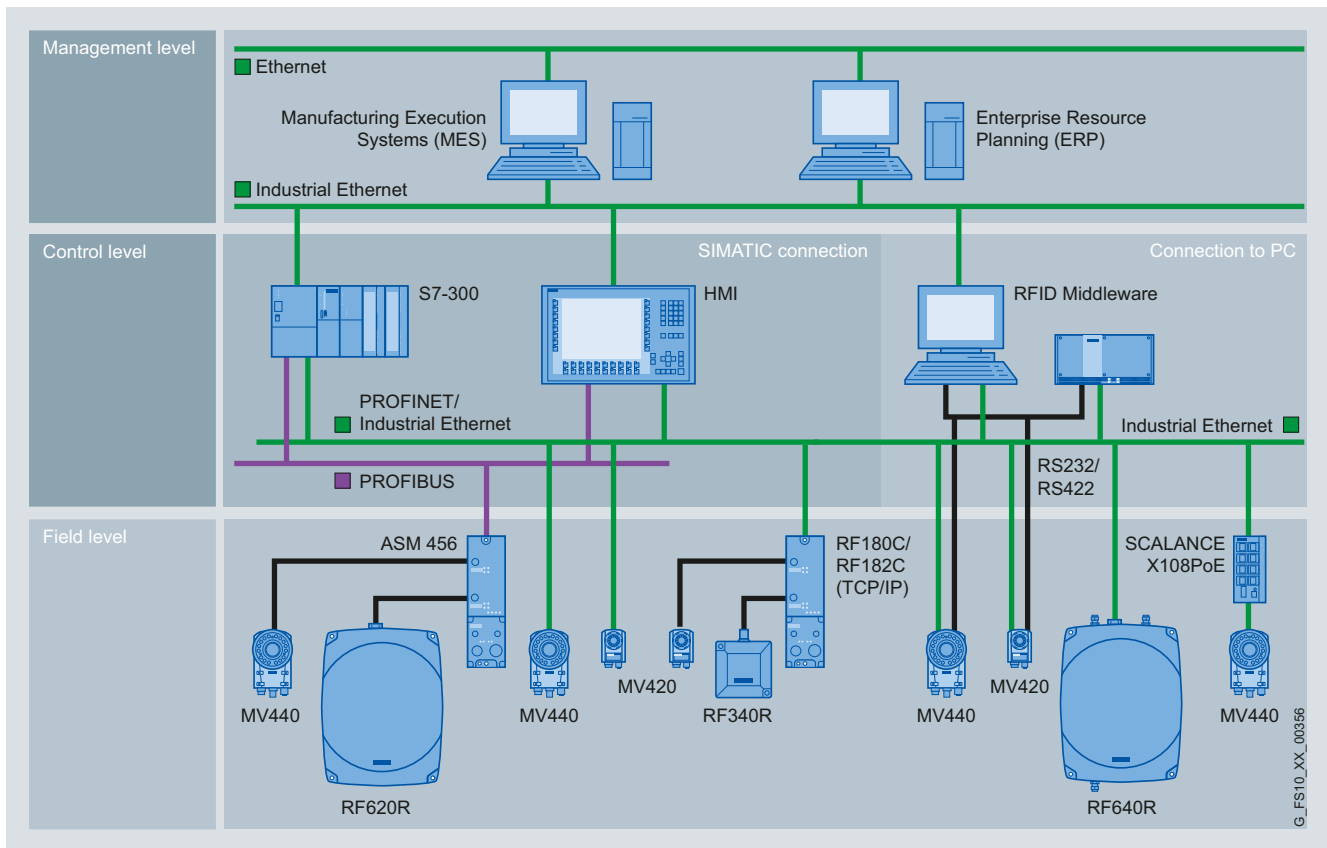
In addition, communication modules are available for connection to other bus systems or the shared interface with RFID readers.

For further details on the communication modules, see chapter 6 „Communication modules“.

Code reading systems

Stationary code reading systems

SIMATIC MV420



Integration of the SIMATIC MV420 in the automation environment

Technical specifications

Order No.	6GF3 420-0AA20	6GF3 420-0AA40
Product type designation	Code Reader MV420 SR-B	Code Reader MV420 SR-P
Suitability for use	1D codes: Int. 2/5, Code 128, Code 39, EAN 13, EAN 8, UPC-A, UPC-E, GS1 2D codes: DMC, PDF417 (without: Truncated, Micro and Macro), QR (without: Micro and Macro), Vericode	1D codes: Int. 2/5, Code 128, Code 39, EAN 13, EAN 8, UPC-A, UPC-E, GS1 2D codes: DMC, PDF417 (without: Truncated, Micro and Macro), QR (without: Micro and Macro), Vericode
Interfaces		
Design of electrical connection		
• of Industrial Ethernet interface	M12, 4-pin, d-coded	M12, 4-pin, d-coded
• of RS422 interface	M16, 12-pin	M16, 12-pin
• of RS232 interface	M16, 12-pin	M16, 12-pin
• for supply voltage	M16, 12-pin	M16, 12-pin
• at digital inputs and outputs	M16, 12-pin	M16, 12-pin
Number of digital inputs	1	1
Number of digital outputs	3	3
Type of digital inputs	One high-speed trigger input	One high-speed trigger input
Type of digital outputs	2 floating outputs 50 mA, 1 high-speed trigger input for external lighting	2 floating outputs 50 mA, 1 high-speed trigger input for external lighting
Optical data		
Design of picture sensor of camera	CMOS chip, VGA (640 x 480), WVGA (752 x 480)	CMOS chip, VGA (640 x 480), WVGA (752 x 480)
Type of image capture	Global shutter	Global shutter
Range	10 ... 400 mm	10 ... 400 mm
• Note	Adjustable within the range	Adjustable within the range
Type of lens mounting	Fixed (M12)	Fixed (M12)
Type of lamp	Integrated lighting or external lighting (see list of accessories)	Integrated lighting or external lighting (see list of accessories)

Code reading systems

Stationary code reading systems

SIMATIC MV420

Order No.	6GF3 420-0AA20	6GF3 420-0AA40
Product type designation	Code Reader MV420 SR-B	Code Reader MV420 SR-P
Picture recording frequency, max.	50 Hz	80 Hz
Type of focusing	Manual adjustment on the lens cover	Manual adjustment on the lens cover
Supply voltage, current consumption		
DC supply voltage		
• Rated value	24 V	24 V
• minimum	19.2 V	19.2 V
• maximum	28.8 V	28.8 V
Current input at 24 V DC		
• without connected devices, typical	0.17 A	0.17 A
• including connected devices, maximum	2 A	2 A
Buffer time upon power supply failure, min.	0.01 s	0.01 s
Mechanical data		
Material	Die-cast aluminum	Die-cast aluminum
Color	Petrol	Petrol
Permissible ambient conditions		
Ambient temperature		
• during operation	0 ... 50 °C	0 ... 50 °C
• during storage	-30 ... +70 °C	-30 ... +70 °C
• during transport	-30 ... +70 °C	-30 ... +70 °C
Maximum relative humidity at 25 °C, without condensation, during operation	95 %	95 %
Degree of protection	IP67	IP67
Shock resistance	According to IEC 60068-2	According to IEC 60068-2
Shock acceleration	150 m/s ²	150 m/s ²
Oscillation acceleration	10 m/s ²	10 m/s ²
Design, dimensions and weights		
Width	52.5 mm	52.5 mm
Height	70.7 mm	70.7 mm
Depth	39.5 mm	39.5 mm
Net weight	0.25 kg	0.25 kg
Type of mounting	2 screws M4	2 screws M4
Product properties		
Product property „silicon-free“	Yes	Yes
Type of display	4 LEDs	4 LEDs
Standards, specifications, approvals		
Certificate of suitability	CE, KCC, F&B suitable	CE, KCC, F&B suitable
Accessories		
	Mounting brackets, built-in ring lights, M12 lenses	Mounting brackets, built-in ring lights, M12 lenses

Code reading systems

Stationary code reading systems

SIMATIC MV420

Selection and ordering data

	Order No.		Order No.
SIMATIC MV420 SR-B Pre-configured basic model. Including lens (6 mm, aperture 5.6) and a red ring light, without multicode and ID-Genius algorithm.	6GF3 420-0AA20	IE connecting cable M12-180/M12-180 Pre-assembled IE FC TP Trailing Cable GP 2 x 2 (PROFINET Type C) with two 4-pin M12 plugs (D-coded) up to 85 m, IP65/IP67 degree of protection. Various lengths:	
SIMATIC MV420 SR-P Preconfigured performance model. Including lens (6 mm, aperture 5.6) and a red ring light, for very fast read rates, with multicode and ID-Genius algorithm.	6GF3 420-0AA40	0.3 m	6XV1 870-8AE30
SIMATIC MV420 SR-B Basic model body: Does not include multicode or the ID-Genius algorithm.	6GF3420-0AX20	0.5 m	6XV1 870-8AE50
SIMATIC MV420 SR-P Performance model body: For very high read rates; includes multicode reading and the ID-Genius algorithm.	6GF3 420-0AX40	1 m	6XV1 870-8AH10
Accessories Lenses		1.5 m	6XV1 870-8AH15
Lens Kit 6 mm Lens 6 mm, aperture 5.6, including protective barrel.	6GF3 420-0AC00-0LK0	2 m	6XV1 870-8AH20
Lens Kit 16 mm Lens 16 mm aperture 4, including protective barrel.	6GF3 420-0AC00-1LK0	3 m	6XV1 870-8AH30
Protective barrels for lenses		5 m	6XV1 870-8AH50
Protective barrel replacement set Contains: 2x protective barrel, 3x O-rings, 8x mounting screws, offset screw-driver.	6GF3 420-0AC00-2AA0	10 m	6XV1 870-8AN10
Built-in ring lights		15 m	6XV1 870-8AN15
Built-in ring light, red	6GF3 420-0AC00-1LT0	Industrial Ethernet FastConnect plug connector, 2x2, 180° cable outlet RJ45 plug connector (10/100 Mbit/s) with rugged metal enclosure and FastConnect technology, for Industrial Ethernet FastConnect cable 2x2. For further cables, see Catalog IK PI under „Passive network components“.	6GK1 901-1BB10-2AA0
Built-in ring light, white	6GF3 420-0AC00-2LT0	Power supply cable DIO-RS232 Power IO RS232 cable, M16 connector assembled on one end, open on other end. Various lengths:	
Built-in ring light, infrared	6GF3 420-0AC00-3LT0	10 m	6GF3 440-8BA2
Cables		30 m	6GF3 440-8BA4
IE connecting cable M12-180/IE FC RJ45 plug-145 for commissioning, service and installation Pre-assembled IE FC TP trailing cable GP 2 x 2 (PROFINET type C) with M12 plug (D-coded) and IE FC RJ45 plug, IP65/IP67 degree of protection, length: 2 m.	6XV1 871-5TH20	Adapter cable for RFID communication modules (ASM): M16 connector (MV420) to M12 connector (communication module); length: 2 m; expandable to any length with standard communication module cables.	6GF3 420-0AC00-2CB0
		Cable for communication module interface Standard communication module cable for installation, pre-assembled connecting cable for ASM 456, RF160C, RF170C, RF180C, and RF182C. Various lengths:	
		2 m	6GT2 891-4FH20
		5 m	6GT2 891-4FH50
		10 m	6GT2 891-4FN10
		20 m	6GT2 891-4FN20
		50 m	6GT2 891-4FN50

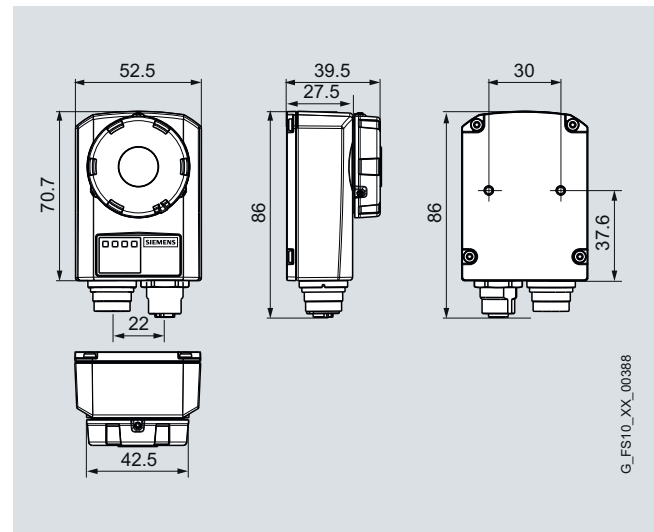
Code reading systems

Stationary code reading systems

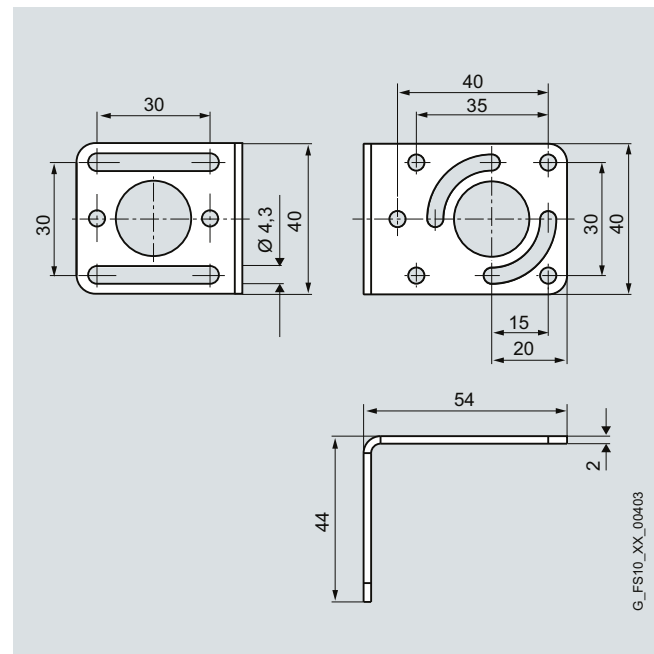
SIMATIC MV420

	Order No.
<p>Supports</p> <p>Mounting bracket for SIMATIC MV420</p> 	<p>6GF3 420-0AC00-1AA0</p>
<p>Additional accessories</p> <p>Industrial Ethernet Switch SCALANCE X204-2</p> <p>Industrial Ethernet switches with integral SNMP access, Web diagnostics, copper cable diagnostics, and PROFINET diagnostics for configuring line, star and ring topologies; with integrated redundancy manager.</p> <p>(Exception: SCALANCE X208PRO); including operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM.</p> <p>With electrical and optical ports for glass multimode FOC up to max. 5 km:</p> <p>Four 10/100 Mbit/s RJ45 ports and two fiber-optic cable ports</p> <p>Plug-in power supply (EU, US)</p> <p>For demo and lab operation (for office environment only).</p>	<p>6GK5 204-2BB10-2AA3</p> <p>6GF3 420-0AC00-1PS0</p>

Dimensions



Code reading system SIMATIC MV420



Mounting bracket for code reading system SIMATIC MV420

Code reading systems

Stationary code reading systems

SIMATIC MV440

Overview



SIMATIC MV440 with built-in ring light and D65 protective barrel in plastic (included in the scope of supply)



SIMATIC MV440 with built-in ring light and D65 protective barrel (protective barrel available as accessory)



SIMATIC MV440 with external ring light and D50 protective barrel

The SIMATIC MV440 readers have been specially developed for use in industrial production. The devices offer professional decoding algorithms for machine-readable codes and text recognition in one device for production and logistics. The SIMATIC MV440 device family is characterized by flexibility, reliability and ease of use.

The list of readable codes includes all common matrix and barcodes which, regardless of the printing technology and the carrier medium used, are recognized reliably. A special feature of this device is its ability to read data matrix code (DMC) which is frequently used, especially in production, for direct part marking (DPM) and places the highest demands on the readers.

The operating range of the devices extends from close range 70 mm to distant range 3000 mm. Due to the freely selectable lenses and lighting, the working range as well as implementation in applications with special requirements is almost unrestricted. Integration in industrial automation environments is via standardized fieldbus technology, but open interfaces are also supported.

Benefits

get Designed for Industry

Highlights at a glance:

- Compact design with IP67 degree of protection.
- Very high reading reliability and read rates thanks to Siemens decoding algorithms.
- Different screen resolutions can be selected specific to the application.
- Flexible adaptation to the application by means of freely selectable lenses and lighting.
- Option of integrated or external high-performance lighting
- Variety of interfaces: Ethernet (PoE), PROFINET (PoE), RS232, DI/DO, communication module interface.
- Wide range of connector technology can be used by means of communication modules.
- Function block for PROFINET/PROFIBUS can be used with SIMATIC and SIMOTION.
- Web-based user interface can be used for parameter assignment and monitoring, without the need for installation.

Further important product characteristics are:

- No special knowledge required for reliable parameterization of reading features. Automatic „setup“ by presenting a readable code pattern.
- Autotrigger mode: automatic detection of a code without an external trigger signal
 - Savings in sensor technology and cabling.
 - Reduced potential for error as there are fewer components.
 - Solution for applications in which proximity switches and light barriers cannot be used.
- Multicode: Reads multiple codes in one step within the same field of view.
- ID-Genius: a high-performance code reading algorithm for poorly legible directly marked data matrix codes (DPM: Direct Part Marking).
- Code quality evaluation: Displays the key quality parameters of the code to be read.
- Customized user interface can be generated with SIMATIC WinCC flexible/WinCC
- Web-based user interface; can run on a variety of platforms meeting the following requirements: Internet browser (IE 6.0 or higher), JAVA-VM (MS, SUN).
- Extensive diagnostics functions ensure operation at the maximum read rate.
- User/password-protected operator interface with integrated management of access rights.
- 6 language versions (operator interface, manual and online help are each available in English, German, French, Spanish, Italian and Chinese).

Code reading systems

Stationary code reading systems

SIMATIC MV440

Application

The main functions of SIMATIC MV440 are:

- Reading 1D and 2D codes.
- Optical character recognition (OCR).
- Verification (measuring the code quality).
- Comparing the read result with a preset value.
- Formatting of read results for further use.

The application range of the SIMATIC MV440 product family covers all sectors and areas of industrial production and logistics. The possible applications include the identification of stationary parts through to extremely fast moving parts on a conveyor belt. The powerful integrated lighting allows a very compact design. The device has IP67 degree of protection and is therefore equipped for harsh industrial environments.

Due to its particularly powerful lighting, lenses and sensor technology, MV440 specializes in direct part marking (DPM) applications. Due to the high picture quality, MV440 recommends itself for measuring the marking quality (verification) in the area of DPM.

Due to the properties and functions described, the emphasis for MV440 is on the following sectors and applications:

- Automobile industry:
 - Needle markings on various drive components (DPM), e.g. cylinder heads, cylinder blocks, manifolds.
 - Laser markings on various power train components (DPM), e.g. camshafts, crankshafts, cylinder piston, connecting rods, gearbox components.
 - Laser markings on electronic components, printed circuit boards, or enclosures.
- Pharmaceutical industry, food industry (F&B), tobacco industry:
 - Print or laser markings on medicines (DPM, OCR).
 - Recording the contents of cartons (up to 150 codes).
 - Read portal by linking several cameras.
- Aerospace industry:
 - Needle or laser markings on gas turbine blades (DPM).
 - Needle or laser markings on jet engine components (DPM).
- Medical equipment:
 - Laser markings on heart pacemakers and other implants (DPM).
 - Laser markings on medical devices (DPM).
- Electronics:
 - Needle or laser markings on hard disk components.
 - Lasered or etched markings on hard disk components (DPM).
- Semiconductors:
 - Laser markings on rigid and flexible circuit boards (DPM).
 - Laser markings on enclosed semiconductor components, heat sinks or heat exchangers (DPM).

Further information is included in the supplied manual.

Design

SIMATIC MV440 is a compact, stationary code reading system. It consists of one basic unit, which can be configured with other individual components (lens, ring light and protective barrel). This allows the MV440 to be optimally adapted to the application conditions.

The SIMATIC MV440 basic unit is available in three versions that differ only with regard to the resolution of the CCD sensor and the associated recording speed mode and read rate. All three versions of the basic unit have identical functionality:

- SIMATIC MV440 SR
640 pixels x 480 pixels, 50 full screens/s
- SIMATIC MV440 HR
1024 pixels x 768 pixels, 20 full screens/s
- SIMATIC MV440 UR
1600 pixels x 1200 pixels, 15 full screens/s

Using the following accessories, the SIMATIC MV440 basic units can be tailored to the requirements of the application. For a detailed listing of the individual accessories, please refer to the section entitled „Accessories“:

- Lenses
- Protective barrel for lens
- Ring lights

The following accessories are available for the connection and installation:


- Flexible mounting plate
- Power DIO RS232 cable (M16 connector on open end)
- M12 Ethernet cable (varying lengths)
- Ethernet cable (M12 to RJ45) for commissioning/lab operation; 2 m in length
- Special communication module cable for M16 connector (M16 to M12) for connecting to RFID communication modules (ASM). Can be expanded using standard communication module cables if required.
- Plug-in power supply for demonstration and lab operation (for office environment only)
- CD with installation/operating instructions (supplied with unit)


Code reading systems

Stationary code reading systems

SIMATIC MV440

The following configurations are recommended for the close or distant ranges:

Configuration for close range	Lenses	Ring lights	Protective barrel for lens
	Mini lens 8.5 mm	The built-in ring light cannot be used (alternative: external mounting of a ring light).	D65 protective barrels for lenses can be used.
	Mini lens 12 mm	Built-in ring lights can be used.	
	Mini lens 16 mm		
	Mini lens 25 mm		
	Mini lens 35 mm		
	Mini lens 50 mm		
	Mini lens 75 mm		Protective barrel cannot be used for lens.

Configuration for distant range	Lenses	Ring lights	Protective barrel for lens
	Mini lens 8.5 mm	External ring lights can be used.	D50 protective barrels for lenses can be used.
	Mini lens 12 mm		
	Mini lens 16 mm		
	Mini lens 25 mm		
	Mini lens 35 mm		
	Mini lens 50 mm		
	Mini lens 75 mm		

Function

The main functions of SIMATIC MV440 are:

- Reading 1D and 2D codes
- Optical character recognition (OCR)
- Verification (measuring the code quality)
- Comparing the read result with a preset value
- Formatting the read result for forwarding

All the functions can be used individually or they can be combined.

The SIMATIC MV440 reads the following 1D and 2D codes (detailed information are shown in the manual):

- 1D codes (barcodes):
 - Int. 2/5 (with/without checksum)
 - Code 128
 - Code 93
 - Code 39 (with/without checksum)
 - Code 32
 - EAN 13
 - EAN 8
 - UPC-A
 - UPC-E
 - CodaBar
 - GS1 DataBar (Omnidirectional, Stacked, Limited, Expanded)
 - Pharmacode (0° and 180°)
 - Postnet
- 2D codes:
 - Data Matrix Code (ECC 0 - 200)
 - PDF417 (without: Truncated, Micro and Macro)
 - QR (without: Micro and Macro)
 - Vericode (demo mode/VeriCode license)

Code verification is the term used for measuring the marking quality of 1D and 2D codes. This additional functionality is subject to license and is available for every SIMATIC MV440 by installing the „Veri-Genius license“. The following verification methods are supported:

- AIM DPM-1-2006 (in future: ISO IEC TR29158)
- Siemens DPM
- ISO/IEC 15415
- AS9132 Rev. A (previously IAQG)
- ISO/IEC 15416 (previously ANSI X3.182-1990)

If the license is not installed, the verification function is available in demo mode. For more detailed information, refer to the section „Verification systems“, page 5/54.

Text recognition is used to detect plain text (Optical Character Recognition: OCR). This additional functionality is subject to license and is available for every SIMATIC MV440 by installing the „Text-Genius license“. The text recognition function is able, without training, to recognize characters of almost any font. Particularly suitable fonts are:

- OCR-A
- Semifont M13
- and similar fonts

If the license is not installed, the verification function is available in demo mode. For additional information, refer to the section „Text recognition“, page 5/56.

Note: In demo mode, the full functionality of the devices is available. Testing of a licensed function is therefore possible at any time. However, the output result is unusable, because one or more characters of the result will be randomly replaced by the character '?'. Binary results are completely suppressed.

Code reading systems

Stationary code reading systems

SIMATIC MV440

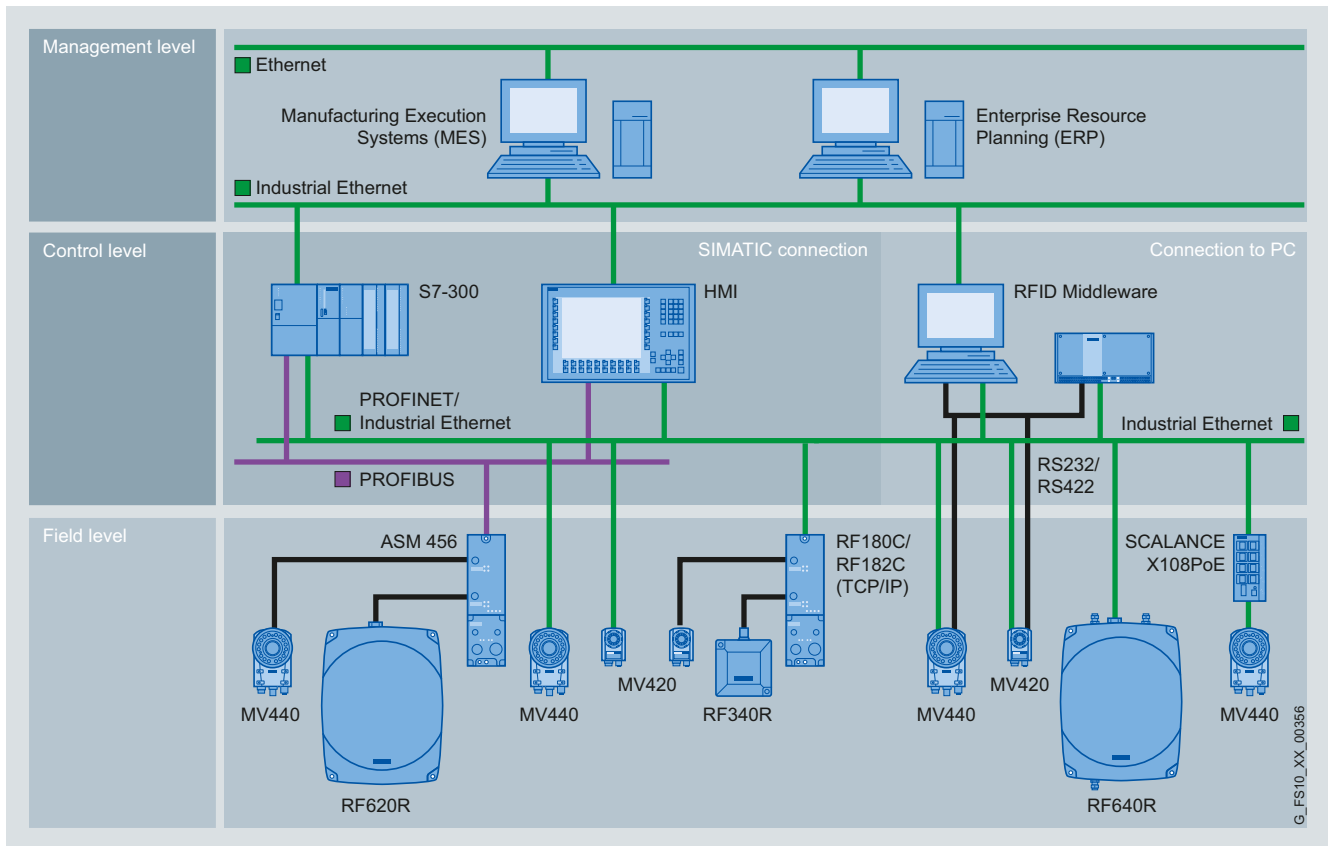
Integration

Various onboard connection options and convenient function blocks are available for the integration into the automation level.

In the case of SIMATIC MV440, for example, direct connection via PROFINET, Ethernet or RS232 is possible.

In addition, communication modules are available for connection to other bus systems or the shared interface with RFID readers.

Further information are shown in chapter 6 „Communication modules“.



Code reading systems

Stationary code reading systems

SIMATIC MV440

Technical specifications

Order No.	6GF3 440-1CD10	6GF3 440-1GE10	6GF3 440-1LE10
Product type designation	Code reader MV440 SR	Code Reader MV440 HR	Code Reader MV440 UR
Suitability for use	1D codes: Int. 2/5, Code 128, Code 93, Code 39, Code 32, EAN 13, EAN 8, UPC-A, UPC-E, GS1, Pharmacode, Postnet 2D codes: DMC, PDF417 (without: Truncated, Micro and Macro), QR (without: Micro and Macro), Vericode Text recognition: OCR-A, Semifont M13, similar fonts, Code verification: <ul style="list-style-type: none"> • AIM DPM-1-2006 • Siemens DPM • ISO/IEC 15415 • AS9132 Rev. A (previously IAQG) • ISO/IEC 15416 (previously ANSI X3.182-1990) 	1D codes: Int. 2/5, Code 128, Code 93, Code 39, Code 32, EAN 13, EAN 8, UPC-A, UPC-E, GS1, Pharmacode, Postnet 2D codes: DMC, PDF417 (without: Truncated, Micro and Macro), QR (without: Micro and Macro), Vericode Text recognition: OCR-A, Semifont M13, similar fonts, Code verification: <ul style="list-style-type: none"> • AIM DPM-1-2006 • Siemens DPM • ISO/IEC 15415 • AS9132 Rev. A (previously IAQG) • ISO/IEC 15416 (previously ANSI X3.182-1990) 	1D codes: Int. 2/5, Code 128, Code 93, Code 39, Code 32, EAN 13, EAN 8, UPC-A, UPC-E, GS1, Pharmacode, Postnet 2D codes: DMC, PDF417 (without: Truncated, Micro and Macro), QR (without: Micro and Macro), Vericode Text recognition: OCR-A, Semifont M13, similar fonts, Code verification: <ul style="list-style-type: none"> • AIM DPM-1-2006 • Siemens DPM • ISO/IEC 15415 • AS9132 Rev. A (previously IAQG) • ISO/IEC 15416 (previously ANSI X3.182-1990)
Interfaces			
Design of electrical connection			
• of Industrial Ethernet interface	M12, 4-pin, d-coded, PoE	M12, 4-pin, d-coded, PoE	M12, 4-pin, d-coded, PoE
• of RS422 interface	M12, 8-pin	M12, 8-pin	M12, 8-pin
• of RS232 interface	M16, 12-pin	M16, 12-pin	M16, 12-pin
• for supply voltage	M16, 12-pin	M16, 12-pin	M16, 12-pin
• at the digital inputs/outputs	M16, 12-pin	M16, 12-pin	M16, 12-pin
Number of digital inputs	5	5	5
Number of digital outputs	5	5	5
Type of digital inputs	<ul style="list-style-type: none"> • 4 opto isolated inputs (NPN, PNP capability), optionally usable as output • One fast trigger input 	<ul style="list-style-type: none"> • 4 opto isolated inputs (NPN, PNP capability), optionally usable as output • One fast trigger input 	<ul style="list-style-type: none"> • 4 opto isolated inputs (NPN, PNP capability), optionally usable as output • One fast trigger input
Type of digital outputs	4 floating outputs optionally as input, short-circuit-proof, max. 50 mA, 1 high-speed trigger input for external lighting	4 floating outputs optionally as input, short-circuit-proof, max. 50 mA, 1 high-speed trigger input for external lighting	4 floating outputs optionally as input, short-circuit-proof, max. 50 mA, 1 high-speed trigger input for external lighting
Optical data			
Design of picture sensor of camera	CCD chip 1/3", 640 x 480	CCD chip 1/3", 1024 x 769	CCD chip 1/1.8", 1600 x 1200
Type of image capture	Global shutter with manual or automatic exposure time	Global shutter with manual or automatic exposure time	Global shutter with manual or automatic exposure time
Range	70 ... 3000 mm	70 ... 3000 mm	70 ... 3000 mm
• Note	Using C-mount lenses and lens accessories, the range can be exactly matched to the application (see page 5/38)	Using C-mount lenses and lens accessories, the range can be exactly matched to the application (see page 5/38)	Using C-mount lenses and lens accessories, the range can be exactly matched to the application (see page 5/38)
Type of lens mounting	C-mount lens connection with Plexiglas lens protection, 65 mm diameter	C-mount lens connection with Plexiglas lens protection, 65 mm diameter	C-mount lens connection with Plexiglas lens protection, 65 mm diameter
Type of lamp	Integrated lighting or external lighting (see list of accessories)	Integrated lighting or external lighting (see list of accessories)	Integrated lighting or external lighting (see list of accessories)
Picture recording frequency, max.	80 Hz	30 Hz	25 Hz
Type of focusing	Manual adjustment on the lens	Manual adjustment on the lens	Manual adjustment on the lens
Supply voltage, current consumption			
DC supply voltage			
• Rated value	24 V	24 V	24 V
• minimum	19.2 V	19.2 V	19.2 V
• maximum	28.8 V	28.8 V	28.8 V

Code reading systems

Stationary code reading systems

SIMATIC MV440

Order No.	6GF3 440-1CD10	6GF3 440-1GE10	6GF3 440-1LE10
Product type designation	Code reader MV440 SR	Code Reader MV440 HR	Code Reader MV440 UR
Current input at 24 V DC			
• without connected devices, typical	0.27 A	0.27 A	0.27 A
• including connected devices, maximum	2 A	2 A	2 A
Buffer time upon power supply failure, min.	0.01 s	0.01 s	0.01 s
Mechanical data			
Material	Die-cast aluminum	Die-cast aluminum	Die-cast aluminum
Color	Petrol	Petrol	Petrol
Permissible ambient conditions			
Ambient temperature			
• during operation	0 ... 50 °C	0 ... 50 °C	0 ... 50 °C
• during storage	-30 ... +70 °C	-30 ... +70 °C	-30 ... +70 °C
• during transport	-30 ... +70 °C	-30 ... +70 °C	-30 ... +70 °C
Maximum relative humidity at 25 °C, without condensation, during operation	95 %	95 %	95 %
Degree of protection	IP67	IP67	IP67
Shock resistance	According to IEC 60068-2	According to IEC 60068-2	According to IEC 60068-2
Shock acceleration	100 m/s ²	100 m/s ²	100 m/s ²
Oscillation acceleration	10 m/s ²	10 m/s ²	10 m/s ²
Design, dimensions and weights			
Width	65 mm	65 mm	65 mm
Height	122 mm	122 mm	122 mm
Depth	55 mm	55 mm	55 mm
Net weight	0.55 kg	0.55 kg	0.55 kg
Type of mounting	4 screws M4	4 screws M4	4 screws M4
Product properties			
Product property „silicon-free“	Yes	Yes	Yes
Type of display	5 LEDs	5 LEDs	5 LEDs
Standards, specifications, approvals			
Certificate of suitability	CE, KCC	CE, KCC	CE, KCC
Accessories	Licenses (verification and text recognition), mounting brackets, built-in ring lights, external ring lights, C-mount lenses, protective barrels for lenses	Licenses (verification and text recognition), mounting brackets, built-in ring lights, external ring lights, C-mount lenses, protective barrels for lenses	Licenses (verification and text recognition), mounting brackets, built-in ring lights, external ring lights, C-mount lenses, protective barrels for lenses

Code reading systems

Stationary code reading systems

SIMATIC MV440

Selection and ordering data

	Order No.
SIMATIC MV440 SR For one-dimensional and two-dimensional codes, optional: Text recognition (OCR) and verification (see page 5/54), variable image field and distance. Resolution: 640 x 480 pixels. PoE; IP67 using protective barrel for lens and sealing caps, otherwise IP40; package comprises reader, CD and plastic protective barrel for lens.	6GF3 440-1CD10
SIMATIC MV440 HR For one-dimensional and two-dimensional codes, optional: Text recognition (OCR) and verification (see page 5/54), variable image field and distance. Resolution: 1024 x 768 pixels. PoE; IP67 using protective barrel for lens and sealing caps, otherwise IP40; package comprises reader, CD and plastic protective barrel for lens.	6GF3 440-1GE10
SIMATIC MV440 UR For one-dimensional and two-dimensional codes, optional: Text recognition (OCR) and verification (see page 5/54), variable image field and distance. Resolution: 1600 x 1200 pixels PoE; IP67 using protective barrel for lens and sealing caps, otherwise IP40; package comprises reader, CD and plastic protective barrel for lens.	6GF3 440-1LE10
Optional software modules Text recognition module „Text-Genius“ License for the module „Text-Genius“, supplied on USB flash drive; executable on SIMATIC MV440 firmware V3.0 and higher (MV440 not included in the scope of supply). Description see page 5/58.	6GF3 400-0SL01
Verification module „Veri-Genius“ License for the module „Veri-Genius“, supplied on USB flash drive; executable on SIMATIC MV440 firmware V4.0 and higher (MV440 not included in the scope of supply). Description see page 5/54.	6GF3 400-0SL02

Accessories Lenses

Mini lenses with fixed focal length, adjustable aperture and focus (see also „Lenses“ section on page 5/38).



- Mini lens 8.5 mm, 1:1.5 PENTAX C815B (TH)
D = 42 mm, L = 47 mm, not suitable in combination with built-in ring lights.
- Mini lens 12 mm, 1:1.4 PENTAX H1214-M (KP)
D = 29.5 mm, L = 35,7 mm.
- Mini lens 16 mm, 1:1.4 PENTAX C1614-M (KP)
D = 29.5 mm, L = 37.2 mm.
- Mini lens 25 mm, 1:1.4 PENTAX C2514-M (KP)
D = 29.5 mm, L = 38.9 mm.
- Mini lens 35 mm, 1:1.6 PENTAX C3516-M (KP)
D = 29.5 mm, L = 41.4 mm.
- Mini lens 50 mm, 1:2.8 PENTAX C5028-M (KP)
D = 29.5 mm, L = 38 mm.
- Mini lens 75 mm, 1:2.8 PENTAX C7528-M (KP)
D = 34 mm, L = 63.6 mm, not suitable in combination with protective barrel for lens D65, suitable in combination with protective barrel for lens D50.

6GF9 001-1BE01**6GF9 001-1BL01****6GF9 001-1BF01****6GF9 001-1BG01****6GF9 001-1BH01****6GF9 001-1BJ01****6GF9 001-1BK01**

Protective barrels for lenses

Protective barrel for lens D65
made of metal, for built-in ring lights, internal diameter 57 mm, max. lens length 57 mm, IP67 degree of protection.

- Glass front pane
- Plastic front pane

6GF3 440-8AC11**6GF3 440-8AC21**

Code reading systems

Stationary code reading systems

SIMATIC MV440



	Order No.
<p>Protective barrel D65 for lenses made of plastic; to achieve IP67 degree of protection; suitable for all variants of MV440 and for use with built-in ring lights; max. internal diameter 55 mm, max. lens length 48 mm.</p> 	6GF3 440-8AC12
<p>Protective barrel D50 for lenses made of metal, for external ring lights, internal diameter 41 mm, length from joint 65 mm, IP65 degree of protection. With 3 cm extension piece for particularly long lenses.</p> 	
<ul style="list-style-type: none"> • Glass front pane • Plastic front pane 	6GF9 002-7AA 6GF9 002-7AA01
<p>Built-in ring lights</p> <p>Light source: Red LED, range of illumination 800 mm, mounting materials included, IP67 degree of protection when using protective barrel D65 for lens.</p> <ul style="list-style-type: none"> • Built-in ring light, red Light source: LED red (630 nm) • Built-in ring light, white Light source: LED white (440 nm ... 650 nm) • Built-in ring light, green Light source: LED green (500 nm ... 570 nm) 	6GF3 440-8DA11 6GF3 440-8DA21 6GF3 440-8DA31
<p>External ring lights</p> <p>LED ring light made of metal Dimensions B x H x T (mm) 116 x 116 x 42, suitable for D50 protective barrel for lens. Two small mounting brackets included.</p> 	


	Order No.
<ul style="list-style-type: none"> • Ring light, metal, infrared, diffuse Light source LED infrared light source 850 nm, range of illumination 75 mm ... 250 mm, degree of protection IP67. • Ring light, metal, infrared, clear Light source LED infrared, light source 850 nm, range of illumination 500 mm ... 3000 mm, degree of protection IP65. • Ring light, metal, red, diffuse Light source LED rot range of illumination 75 mm ... 250 mm, degree of protection IP67. • Ring light, metal, red, clear Light source LED rot, Range of illumination 150 mm ... 2000 mm, degree of protection IP67. • Ring light, metal, red, clear Light source LED rot, range of illumination 500 mm ... 3000 mm, degree of protection IP67. 	6GF9 004-7AA01 6GF9 004-7BA01 6GF9 004-8BA01 6GF9 004-8CA01 6GF9 004-8DA01
<p>Cables</p> <p>IE connecting cable M12-180/IE FC RJ45 plug-145 for commissioning, service and installation</p> <p>Pre-assembled IE FC TP trailing cable GP 2 x 2 (PROFINET type C) with M12 plug (D-coded) and IE FC RJ45 plug, IP65/IP67 degree of protection. Length: 2 m</p>	6XV1 871-5TH20
<p>IE connecting cable M12-180/M12-180</p> <p>Pre-assembled IE FC TP trailing cable GP 2 x 2 (PROFINET type C) with two 4-pin M12 connectors (D-coded) up to max. 85 m, IP65/IP67 degree of protection, RJ45 assembly possible with plug-in connector 6 GK1 901-1BB10-2AA0 (see below).</p> <p>Various lengths:</p> <p>0.3 m</p> <p>0.5 m</p> <p>1 m</p> <p>1.5 m</p> <p>2 m</p> <p>3 m</p> <p>5 m</p> <p>10 m</p> <p>15 m</p>	6XV1 870-8AE30 6XV1 870-8AE50 6XV1 870-8AH10 6XV1 870-8AH15 6XV1 870-8AH20 6XV1 870-8AH30 6XV1 870-8AH50 6XV1 870-8AN10 6XV1 870-8AN15
<p>Industrial Ethernet FastConnect plug connector, 2x2, 180° cable outlet</p> <p>RJ45 plug connector (10/100 Mbit/s) with rugged metal enclosure and FastConnect connection method. For Industrial Ethernet FastConnect cable 2x2.</p> <p>For further cables, see Catalog IK PI under „Passive network components“.</p>	6GK1 901-1BB10-2AA0

Code reading systems

Stationary code reading systems

SIMATIC MV440

	Order No.
Cable for communication module interface Communication module cable for connection to communication modules, e.g. ASM 456, RF160C, RF170C, RF180C, and RF182C. Plug-in cable pre-assembled for SIMATIC MV440. Available in the following lengths: 2 m 5 m 10 m 20 m 50 m	6GT2 891-4FH20 6GT2 891-4FH50 6GT2 891-4FN10 6GT2 891-4FN20 6GT2 891-4FN50
Cable power supply DIO RS232 Power IO RS232 cable, M16 pre-assembled at one end, other end unconnected. Various lengths: 10 m 30 m	6GF3 440-8BA2 6GF3 440-8BA4
Cable for external ring lights suitable for 6GF9 004-7AA01, ... -7BA01, ... -8BA01, ... -8CA01, ... -8DA01, M12, open end, 4-pole, non-trailing type, length 10 m.	6GF3 440-8BC4
Cable for external ring lights suitable for 6GF9 004-7AA01, ... -7BA01, ... -8BA01, ... -8CA01, ... -8DA01, M12-90 male connector / M12-180 female connector, 4-pole, trailing type, can be linked, length 10 m.	6GF9 002-8CG
Mounting accessories Mounting plate for reader Dimensions W x H x D (mm) 80 x 80 x 60, plate thickness: 4 mm.	6GF3 440-8CA
	
Mounting plate for external ring lights Dimensions W x H x D (mm) 92 x 79 x 42, plate thickness: 4 mm	6GF3 440-8CD
	

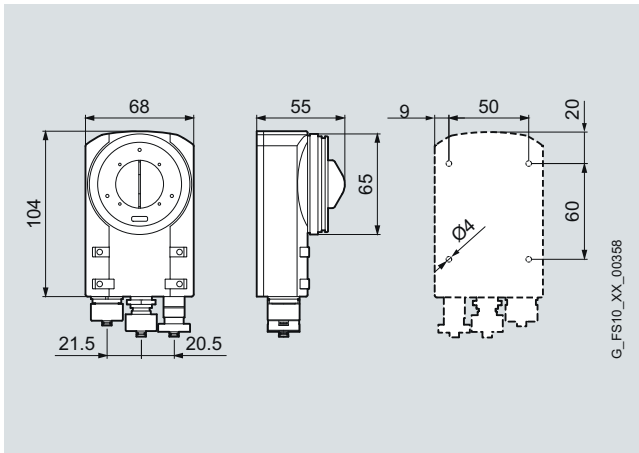
	Order No.
Support system, tri-plate Dimensions W x H x D (mm) 80 x 80 x 60, plate thickness: 4 mm	6GF9 002-7AD
	
Additional Accessories Industrial Ethernet Switch SCALANCE X108PoE Industrial Ethernet Switch for 10/100 Mbit/s, including operating instructions, Industrial Ethernet network manual and configuration software on CD-ROM; 6 x 10/100 Mbit/s RJ45 ports, electrical 2 x 10/100 Mbit/s RJ45 PoE ports, electrical. For more information about SCALANCE switches for PoE: See Catalog IK PI.	6GK5 108-0PA00-2AA3
Rail-mounted power supply for external ring lights suitable for 6GF9 004-7AA01, ... -7BA01, ... -8BA01, ... -8CA01, ... -8DA01, input voltage 110 V ... 230 V AC, output voltage 16.5 V DC.	6GF9 002-8PS

Code reading systems

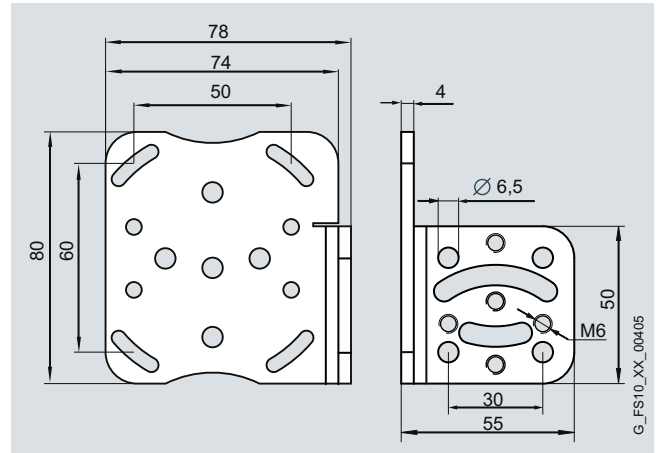
Stationary code reading systems

SIMATIC MV440

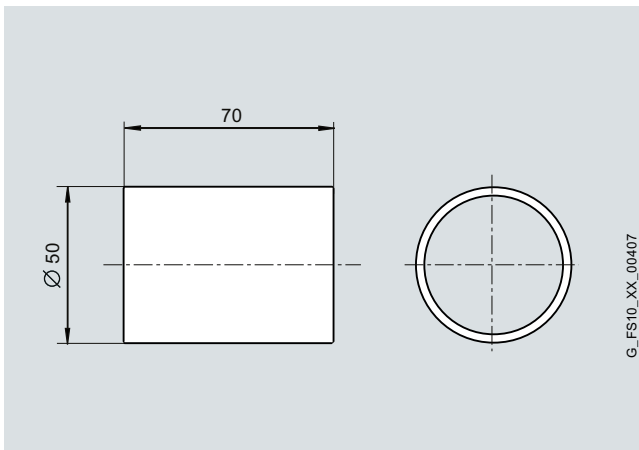
Dimensions



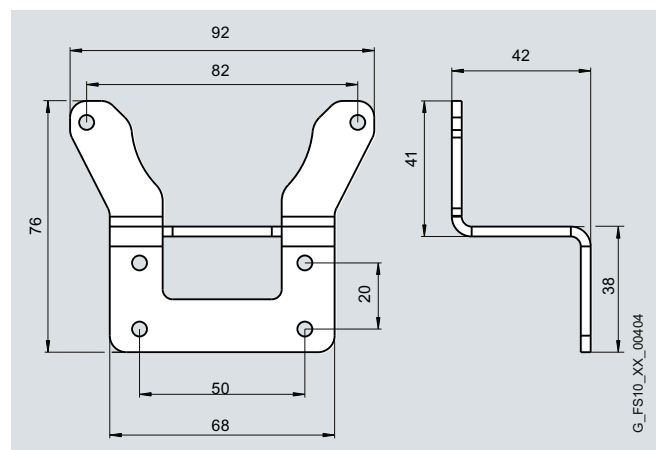
Stationary code reading system SIMATIC MV440



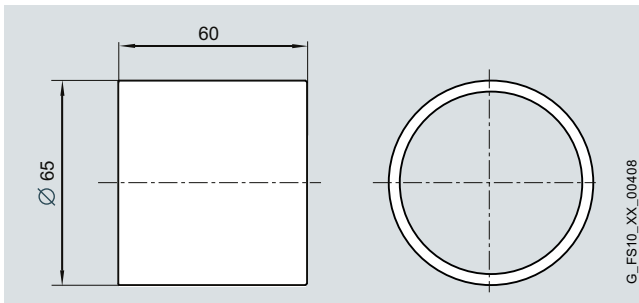
Mounting bracket for code reading system SIMATIC MV440



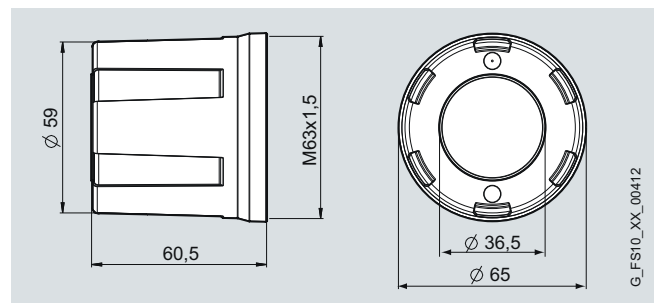
Protective barrel for lens D50 (without the 3 cm extension piece)



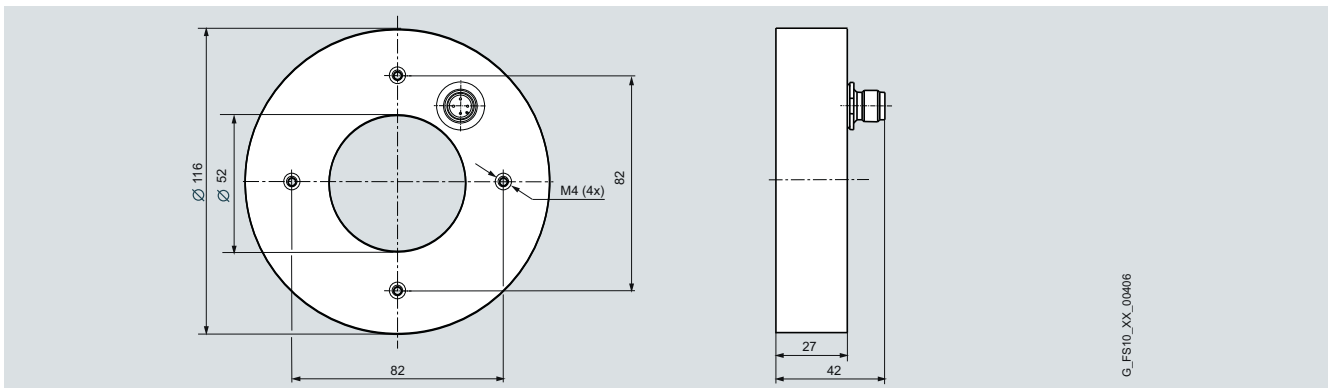
Mounting bracket for external ring light



Protective barrel for lens D65



Plexiglas protective barrel



External ring light

Code reading systems

Stationary code reading systems

SIMATIC VS130-2

Overview



The SIMATIC VS130-2 has been specially developed for reading Data Matrix Codes (DMC) ECC200 in industrial environments. It can, however, also read other 2D codes and 1D codes.

The SIMATIC VS130-2 combines industry-standard code reading with industry-standard communication – PROFIBUS and PROFINET (optionally). The reader is perfectly integrated into the SIMATIC S7 automation environment using a standardized function block.

The SIMATIC VS130-2 reads codes on many different components and surfaces, such as paper or plastic labels, plastic parts, printed circuit boards, metallic objects.

The SIMATIC VS130-2 reads codes of marked using different methods, e.g. printed, punched, lasered, drilled.

No parameters have to be entered by the user for adapting to the different carrier materials and marking types. „Training“ is performed automatically by presenting a readable code pattern. Programming and parameterization are not required.

The user parameterizes the SIMATIC VS130-2 by means of a web-based user interface which runs on various platforms with the following requirements: Browser (IE5.5 and higher), JAVA-VM (MS, SUN).

The web-based operator interface is also used for controlling the device from an HMI device. The specified conditions also apply in this case regarding the browser and JAVA-VM.

The SIMATIC VS130-2

- offers a remote maintenance concept via a web-based user interface
- can be remote-controlled via integrated digital inputs, PROFIBUS or PROFINET IO
- is available as a complete package in several variants for different code sizes
- is available in 6 language versions (operator interface, manual and online help are available in German, English, French, Spanish, Italian, and Chinese).

Readable codes

1D codes (barcodes)

- Code 39,
- Code 128,
- Interleave 2/5,
- EAN13.

2D-Codes

- Data matrix code (DMC) according to ECC200,
- QR (alphanumeric characters; without sub-variants: truncated, macro, micro),
- PDF417 (without subvariants: macro, micro).

Application

The SIMATIC VS130-2 can be generally used for the following applications:

- Coded information can be read out.
- Comparing the coded information with a defined character sequence.
- Measurement of the code quality (exclusively DMC).

Barcodes

The SIMATIC VS130-2 reads the barcodes (Code 39, Code 128, Interleave 2/5, EAN13) in different sizes:

- Fixed focus sensor head (640 x 480): up to 60 mm code width,
- C/CS sensor head (640 x 480 or 1024 x 768): Code width depends on the selected lens.

The main condition for reading is that the smallest code structure element (the thinnest line) has to be at least 3 pixels wide to ensure good readability.

Data matrix code

The SIMATIC VS130-2 can decode data matrix codes of the following matrices in various sizes:

- Square: 10 x 10 dots up to 72 x 72 dots
- Rectangular: 8 x 18 dots up to 16 x 48 dots

The parameter „Dot size“ and the reading distance are defined by the optics selected and can vary over a wide range:

- Readable dot size 0.1 mm to >3 mm.
- Reading distance 80 mm to 3000 mm.

PDF417

The SIMATIC VS130-2 can decode PDF417 (except: truncated, micro and macro) in various sizes:

- Fixed focus / C/CS sensor head (640 x 480): Up to 50 lines of code, up to 7 columns of code
- C/CS sensor head (1024 x 768): Up to 80 lines of code, up to 15 columns of code.

QR

The SIMATIC VS130-2 can decode QR (except: micro and macro) in various sizes:

- Fixed focus / C/CS sensor head (640 x 480): Up to 89 x 89 dots
- C/CS sensor head (1024 x 768): Up to 145 x 145 dots.

Common properties

Code readability is basically not connected to the type of marking or support material, as long as the marked structure and the background are different optically.

Possible marking systems include, for example:

- Laser inscription systems
- Inkjet printers

Examples of possible surfaces and materials are:

- Different types of PCB.
- Plastic parts of various colors.
- Labels of various colors.
- Electronic components.
- Metallic objects, etc.

Code reading systems

Stationary code reading systems

SIMATIC VS130-2

Design

The following components are necessary when using the SIMATIC VS130-2 and are included in the scope of supply of a fixed-focus complete package (working distance approx. 100 mm):

- Fixed focus sensor head (3 image field sizes selectable)
- Incident light in the form of a ring lamp, matched to the application and sensor head
- Processing unit
- Plug-in cables
- CD with mounting/operating instructions

„C/CS-Mount complete packages“ are available for working distances between 80 mm and 3000 mm:

- C/CS-Mount sensor head (standard resolution 640 x 480 pixels, high-resolution 1024 x 768 pixels)
- Processing unit
- Plug-in cables
- CD with mounting/operating instructions

The core of this package is a C/CS-Mount sensor head with a suitable C/CS-Mount lens. The lens is not a component part of the package and can be selected under accessories. The lighting (including cables) must also be selected in accordance with the working distance and is not included in the „C/CS-Mount complete package“.

For commissioning, the following items are also required (not included in the scope of supply):

- Ethernet cable (see accessories) for connecting the processing unit to any preferred web client. The web client, e.g. PC with installed web browser, is used to adjust the sensor head and the lighting.

Sensor head

The sensor head is equipped with:

- Aluminum profile housing to IP65 degree of protection.
- CCD chip (640 x 480 square pixels, 1024 x 768 square pixels).
- Lens, permanently installed (possible image field sizes: 70 x 50 mm, 40 x 30 mm, 20 x 15 mm for 640 x 480 pixels in each case) or prepared for C/CS-Mount lens (freely selectable image field size with 640 x 480 pixels or 1024 x 768 pixels)
- Interface for digital transmission of the image data to the processing unit.

The fixed focus sensor head offers IP65 degree of protection. Even when C/CS-Mount lenses are used, IP65 degree of protection can be achieved by means of the optional protective enclosure.

Processing unit

The processing unit has:

- Plastic enclosure designed for cabinet-free installation (IP40).
- Connections for:
 - 24 V DC power supply
 - Lighting
 - Sensor head
 - Digital inputs and outputs
 - PROFIBUS DP
 - Ethernet (DHCP client, DHCP server, fixed IP address)
- Operator prompting on the device (4-line text display, 6 keys).
- User guidance in web-based user interface (HTML, JAVA VM)
- Access protection using password

The following communication services are included:

- PROFINET IO (slave)
- PROFIBUS DP V0 (slave)
- TCP/IP native

Incident lighting

- Designed as ring lamp, pushed onto the sensor head or protective lens enclosure
- Can be removed and fixed at a different angle on the machine
- Housing to IP65 degree of protection
- Equipped with different LEDs for different applications:
 - Unfocussed, for short reading distances (0.08 m to 0.5 m)
 - Focussed, for long reading distances (0.5 m to 3 m)
 - Infrared LED for operation without daylight
 - Red LED to generate high light levels
 - Operation in flash mode
 - Energy control for the flash integrated into the lamp.

Function

The following functions are available:

- „Training“ the SIMATIC VS130-2 on the basis of a code (DMC) pattern.
- Reading out the coded information.
- Comparing the coded information with a defined character sequence.
- Measuring the code quality.
- Processing code on moving or stationary objects.
- Output of the decoding results on three control outputs:
 - READ: Code is being decoded.
 - MATCH: Decoded contents of the code matches the reference exactly.
 - N_OK: Code cannot be decoded.
- The decoded DMC information is output over PROFIBUS DP or Ethernet or via a converter on the RS232 interface.
- Formatting the output.
- Integrated digital inputs and outputs, e.g. for „stand-alone“ operation without additional controller.
- Remote control capability over PROFIBUS DP, PROFINET IO, DI/O or Ethernet.
- Remote maintenance capability over web-based Intranet or Internet user interface:
 - Monitoring (live image in reading mode).
 - Diagnostics (fault descriptions, log information, etc.).
 - System administration (software update, etc.).
 - Fault analysis for searching for the causes of failed reads.
- Activation of the ring lighting

Mode of operation

The following steps are necessary for using the SIMATIC VS130-2:

- Mounting the SIMATIC VS130-2 and lighting.
- Manual alignment of the camera, checking the light level:

The web server integrated into the device complete with a web-based user interface is available for this purpose. The user interface displays the camera image and the decoded result. The sensor head can be aligned in the alignment phase on the basis of the live image in the user interface. The user interface is executable on any PC with Microsoft Internet Explorer and a JAVA VM installation. If the sensor head is correctly aligned, the VS130-2 automatically continues with the subsequent procedure:

 - Optimization of the lighting control.
 - „Training“ the image processing parameters by presenting a code pattern. The image processing parameters are saved for the current code (carrier material, type of marking, dot size, matrix size, etc.). No other parameters have to be entered.
- Evaluation mode (RUN mode) starts using the training results and the start of a read:

The Data Matrix Code can be fed manually or over a conveyor. The Data Matrix Code must lie within the inspection window at the moment of triggering (start of reading) and can move at a maximum speed of 5000 mm/s. Any angle of rotation is permitted within the inspection window of the sensor head.

SIMATIC VS130-2 has three basic operating modes which can also be combined:

- Operating mode 1 „Code decoding“:

The character string is transferred to the controller filtered or unfiltered. The filters that can be used are separators, start position and length of the character string or company-specific identification numbers.
- Operating mode 2 „Comparing decoded information with any preferred character string“:

The comparison can refer to the decoded character string or only a specific part of it. Partial comparison is possible using one of the above-mentioned filter functions.
- Operating mode 3 „Measuring the code quality“:

Absolute or relative measuring is possible. With the relative method, a reference pattern is presented during the training phase to calibrate the reading system. Quality values measured in this mode relate to the reference pattern. VS130-2 can also be used for absolute measurements. In this case, neither a calibration procedure nor reference pattern is required.
- Set the digital control outputs READ, MATCH or N_OK according to the operating mode and evaluation result.
- Output the decoded information over PROFIBUS DP, PROFIBUS IO, Ethernet or serial interface (converter required) as required and on the device display.

Programming

The SIMATIC VS130-2 is not programmed or parameterized in the same manner as conventional vision systems. It configures the lighting and trains the algorithms without the need for user entries on the basis of a code pattern or during the first read.

Training is possible with the conveyor running. Self-parameterization can be started externally via the control keys on the device or remote-controlled from the user interface. Self-parameterization can also start during reading if a read attempt fails. The reliability of reading is maximized due to the lack of user input and due to automatic self-parameterization.

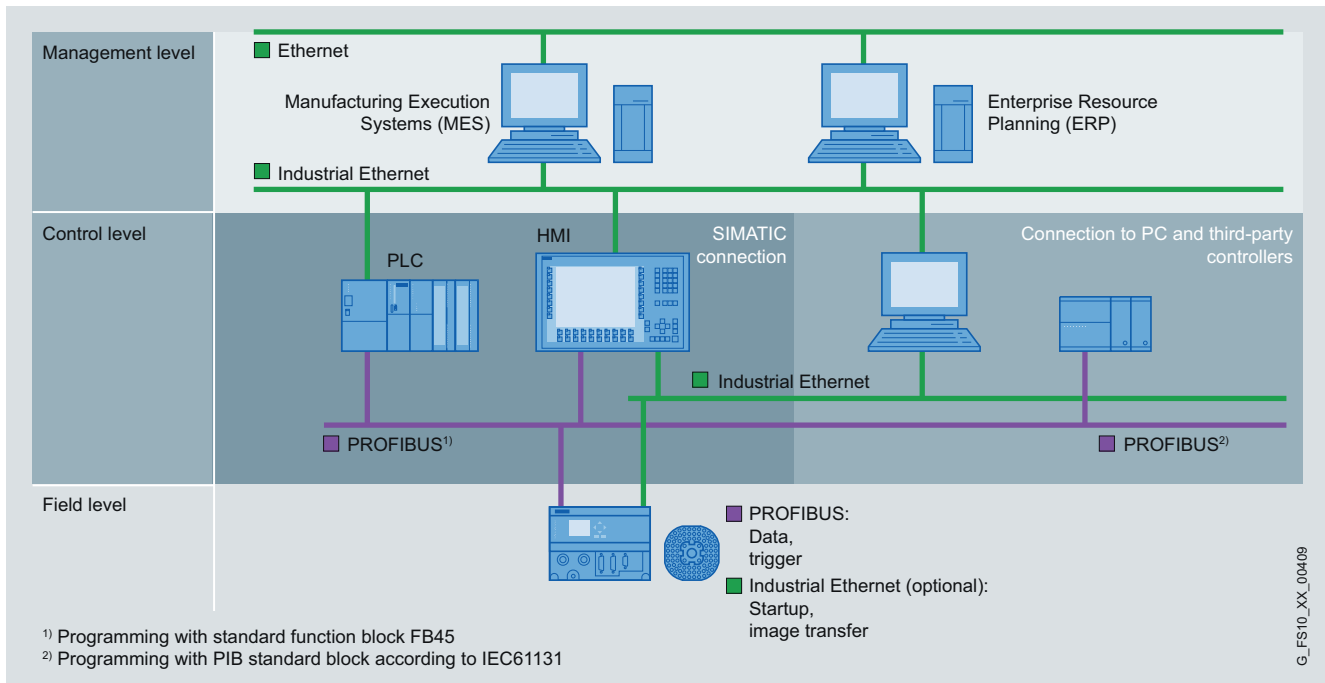
Up to 15 different parameter sets can be saved in the device. These can be called up by the operator or from an external controller at any time and can be used for code reading or for another training phase.

Code reading systems

Stationary code reading systems

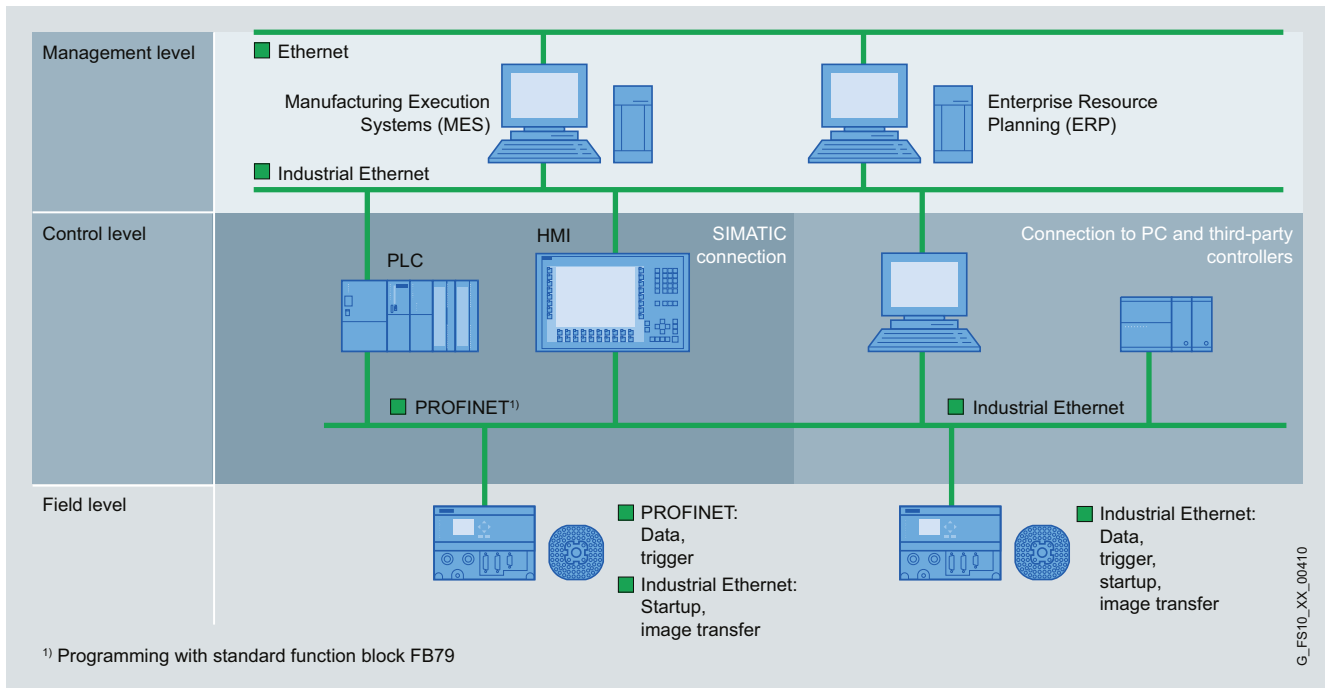
SIMATIC VS130-2

Integration



Integration of the SIMATIC VS130-2 with direct connection to PROFIBUS

5



Integration of the SIMATIC VS130-2 with a direct connection to PROFINET or Industrial Ethernet

Code reading systems

Stationary code reading systems

SIMATIC VS130-2

Technical specifications

Order No.	6GF1 130-1BA	6GF1 130-2BA	6GF1 130-4BA
Product type designation	Code reader VS130-2	Code reader VS130-2	Code reader VS130-2
Suitability for use	1D codes Int. 2/5, Code 128, Code 39, EAN 13 2D codes: DMC, PDF417 (without: Truncated, Micro and Macro), QR (without: Micro and Macro)	1D codes: Int. 2/5, Code 128, Code 39, EAN 13 2D codes: DMC, PDF417 (without: Truncated, Micro and Macro), QR (without: Micro and Macro)	1D codes: Int. 2/5, Code 128, Code 39, EAN 13 2D codes: DMC, PDF417 (without: Truncated, Micro and Macro), QR (without: Micro and Macro)
Interfaces			
Design of electrical connection			
• Industrial Ethernet interface	RJ 45	RJ 45	RJ 45
• PROFIBUS interface	9-pin sub-D socket connector	9-pin sub-D socket connector	9-pin sub-D socket connector
• Sensor head interface	26-pin sub-D socket connector	26-pin sub-D socket connector	26-pin sub-D socket connector
• for supply voltage	M12, 4-pin	M12, 4-pin	M12, 4-pin
• At digital inputs and outputs	15-pin sub-D socket connector	15-pin sub-D socket connector	15-pin sub-D socket connector
Number of digital inputs	8	8	8
Number of digital outputs	6	6	6
Type of digital inputs	7 standard PLC inputs, one fast trigger input	7 standard PLC inputs, one fast trigger input	7 standard PLC inputs, one fast trigger input
Type of digital outputs	Max. 500 mA per DO, total of all DOs max. 1.5 A	Max. 500 mA per DO, total of all DOs max. 1.5 A	Max. 500 mA per DO, total of all DOs max. 1.5 A
Optical data			
Design of picture sensor of camera	CCD chip 1/3", VGA (640 x 480), image field 70 x 50 mm	CCD chip 1/3", VGA (640 x 480), image field 40 x 30 mm	CCD chip 1/3", VGA (640 x 480), image field 20 x 15 mm
Type of image capture	Global shutter	Global shutter	Global shutter
Range	100 mm	90 mm	75 mm
Note on range	Fixed distance, range tolerance dependent on code type and size	Fixed distance, range tolerance dependent on code type and size	Fixed distance, range tolerance dependent on code type and size
Type of lens mounting	Fixed	Fixed	Fixed
Type of lamp	Enclosed red LED ring lamp, diffused, plastic 75 - 500 mm or ring lamp according to accessories list	Enclosed red LED ring lamp, diffused, plastic 75 - 500 mm or ring lamp according to accessories list	Enclosed red LED ring lamp, diffused, plastic 75 - 500 mm or ring lamp according to accessories list
Picture recording frequency, max.	30 Hz	30 Hz	30 Hz
Type of focusing	Based on mounting	Based on mounting	Based on mounting
Supply voltage, current consumption			
DC supply voltage			
• Rated value	24 V	24 V	24 V
• minimum	19.2 V	19.2 V	19.2 V
• maximum	28.8 V	28.8 V	28.8 V
Current input at 24 V DC			
• without connected devices, typical	2 A	2 A	2 A
• including connected devices, maximum	4 A	4 A	4 A
Buffer time upon power supply failure, minimum	0.01 s	0.01 s	0.01 s
Mechanical data			
Material	Processing unit: plastic, sensor head: aluminum profile enclosure	Processing unit: plastic, sensor head: aluminum profile enclosure	Processing unit: plastic, sensor head: aluminum profile enclosure
Color	Processing unit: anthracite, sensor head: black	Processing unit: anthracite, sensor head: black	Processing unit: anthracite, sensor head: black

Code reading systems

Stationary code reading systems

SIMATIC VS130-2

Order No.	6GF1 130-1BA	6GF1 130-2BA	6GF1 130-4BA
Product type designation	Code reader VS130-2	Code reader VS130-2	Code reader VS130-2
Permissible ambient conditions			
Ambient temperature			
• during operation	0 ... 50 °C	0 ... 50 °C	0 ... 50 °C
• during storage	-30 ... +70 °C	-30 ... +70 °C	-30 ... +70 °C
• during transport	-30 ... +70 °C	-30 ... +70 °C	-30 ... +70 °C
Maximum relative humidity at 25 °C, without condensation, during operation	95 %	95 %	95 %
Degree of protection	Processing unit: IP40, sensor head and lamp unit: IP65	Processing unit: IP40, sensor head and lamp unit: IP65	Processing unit: IP40, sensor head and lamp unit: IP65
Shock resistance	According to IEC 60068-2	According to IEC 60068-2	According to IEC 60068-2
Shock acceleration	700 m/s ²	700 m/s ²	700 m/s ²
Oscillation acceleration	10 m/s ²	10 m/s ²	10 m/s ²
Design, dimensions and weights			
Width	170 mm	170 mm	170 mm
Height	140 mm	140 mm	140 mm
Depth	76 mm	76 mm	76 mm
Net weight	0.9 kg	0.9 kg	0.9 kg
Type of mounting	Processing unit: 4 x M5 screws, sensor head: M6 screw, lamp unit: Integrated mounting bracket or coaxial ring lamp holder (see accessories)	Processing unit: 4 x M5 screws, sensor head: M6 screw, lamp unit: Integrated mounting bracket or coaxial ring lamp holder (see accessories)	Processing unit: 4 x M5 screws, sensor head: M6 screw, lamp unit: Integrated mounting bracket or coaxial ring lamp holder (see accessories)
Product properties			
Product property „silicon-free“	Yes	Yes	Yes
Type of display	4-line text display with 6 keys	4-line text display with 6 keys	4-line text display with 6 keys
Standards, specifications, approvals			
Certificate of suitability	CE	CE	CE
Accessories			
	Lenses, lens guard tubes, LED ring lights, IP65 protective enclosures for processing unit	Lenses, lens guard tubes, LED ring lights, IP65 protective enclosures for processing unit	Lenses, lens guard tubes, LED ring lights, IP65 protective enclosures for processing unit

Order No.	6GF1 130-3BB	6GF1 130-3BC
Product type designation	Code reader VS130-2	Code reader VS130-2
Suitability for use	1D codes: Int. 2/5, Code 128, Code 39, EAN 13 2D codes: DMC, PDF417 (without: Truncated, Micro and Macro), QR (without: Micro and Macro)	1D codes: Int. 2/5, Code 128, Code 39, EAN 13 2D codes: DMC, PDF417 (without: Truncated, Micro and Macro), QR (without: Micro and Macro)
Interfaces		
Design of electrical connection		
• Industrial Ethernet interface	RJ 45	RJ 45
• PROFIBUS interface	9-pin sub-D socket connector	9-pin sub-D socket connector
• Sensor head interface	26-pin sub-D socket connector	26-pin sub-D socket connector
• for supply voltage	M12, 4-pin	M12, 4-pin
• At digital inputs and outputs	15-pin sub-D socket connector	15-pin sub-D socket connector
Number of digital inputs	8	8
Number of digital outputs	6	6
Type of digital inputs	7 standard PLC inputs, one fast trigger input	7 standard PLC inputs, one fast trigger input
Type of digital outputs	Max. 500 mA per DO, total of all DOs max. 1.5 A	Max. 500 mA per DO, total of all DOs max. 1.5 A
Optical data		
Design of picture sensor of camera	CCD chip 1/3", VGA (640 x 480), image field dependent on lens (see accessories)	CCD chip 1/3", VGA (1024 x 768), image field dependent on lens (see accessories)
Type of image capture	Global shutter	Global shutter

Code reading systems

Stationary code reading systems

SIMATIC VS130-2

Order No.	6GF1 130-3BB	6GF1 130-3BC
Product type designation	Code reader VS130-2	Code reader VS130-2
Range	—	—
• Note	Using C-mount lenses and lens accessories, the range can be exactly matched to the application (see under „Lenses“, page 5/38)	Using C-mount lenses and lens accessories, the range can be exactly matched to the application (see under „Lenses“, page 5/38)
Type of lens mounting	C-Mount and CS-Mount for lenses	C-Mount and CS-Mount for lenses
Type of lamp	Ring light according to accessories list	Ring light according to accessories list
Picture recording frequency, max.	30 Hz	30 Hz
Type of focusing	Manual adjustment on the lens	Manual adjustment on the lens
Supply voltage, current consumption		
DC supply voltage		
• Rated value	24 V	24 V
• minimum	19.2 V	19.2 V
• maximum	28.8 V	28.8 V
Current input at 24 V DC		
• without connected devices, typical	2 A	2 A
• including connected devices, maximum	4 A	4 A
Buffer time upon power supply failure, minimum	0.01 s	0.01 s
Mechanical data		
Material	Processing unit: plastic, sensor head: aluminum profile enclosure	Processing unit: plastic, sensor head: aluminum profile enclosure
Color	Processing unit: anthracite, sensor head: black	Processing unit: anthracite, sensor head: black
Permissible ambient conditions		
Ambient temperature		
• during operation	0 ... 50 °C	0 ... 50 °C
• during storage	-30 ... +70 °C	-30 ... +70 °C
• during transport	-30 ... +70 °C	-30 ... +70 °C
Maximum relative humidity at 25 °C, without condensation, during operation	95 %	95 %
Ambient conditions for operation	—	—
Degree of protection	Processing unit: IP40, sensor head and lamp unit: IP65	Processing unit: IP40, sensor head and lamp unit: IP65
Shock resistance	According to IEC 60068-2	According to IEC 60068-2
Shock acceleration	700 m/s ²	700 m/s ²
Oscillation acceleration	10 m/s ²	10 m/s ²
Design, dimensions and weights		
Width	170 mm	170 mm
Height	140 mm	140 mm
Depth	76 mm	76 mm
Net weight	0.9 kg	0.9 kg
Type of mounting	Processing unit: 4 x M5 screws, sensor head: M6 screw, lamp unit: Integrated mounting bracket or coaxial ring lamp holder (see accessories)	Processing unit: 4 x M5 screws, sensor head: M6 screw, lamp unit: Integrated mounting bracket or coaxial ring lamp holder (see accessories)
Product properties		
Product property „silicon-free“	Yes	Yes
Type of display	4-line text display with 6 keys,	4-line text display with 6 keys,
Standards, specifications, approvals		
Certificate of suitability	CE	CE
Accessories		
	LED ring lights, lenses, cables, supports, IP65 protective enclosures for processing unit	LED ring lights, lenses, cables, supports, IP65 protective enclosures for processing unit

Code reading systems

Stationary code reading systems

SIMATIC VS130-2

Selection and ordering data

SIMATIC VS130-2

Complete package for object inspection; comprising sensor head, LED incident light (ring lamp 6GF9 004-8BA), processing unit and the following cables:

- Cable between processing unit and sensor head, for lengths see below
- Cable between lighting and processing unit (except for reading system with variable field of view), for length see below
- Cable for power supply, length 10 m
- Cable for connecting digital I/O devices, length 10 m

Incl. documentation package for SIMATIC VS130-2.

- Field of view 70 x 50 mm
 - With cable length 2.5 m
 - With cable length 10 m
- Field of view 40 x 30 mm
 - With cable length 2.5 m
 - With cable length 10 m
- Field of view 20 x 15 mm
 - With cable length 2.5 m
 - With cable length 10 m
- Variable field of view with 640 x 480 pixels and prepared for IP65 protective housing (Note: Delivery without light and light cable).
 - With cable length 2.5 m
 - With cable length 10 m
- Variable field of view with 1024 x 768 pixels and prepared for IP65 protective housing (Note: Delivery without light and light cable).
 - With cable length 2.5 m
 - With cable length 10 m

Order No.

6GF1 130-1BA
6GF1 130-1BA01

6GF1 130-2BA
6GF1 130-2BA01

6GF1 130-4BA
6GF1 130-4BA01

6GF1 130-3BB
6GF1 130-3BB01

6GF1 130-3BC
6GF1 130-3BC01

Order No.

Accessories

Lenses

Mini lenses with fixed focal length, adjustable aperture and focus (see also „Lenses“ section on page 5/38).



- Mini lens 8.5 mm, 1:1.5 PENTAX C815B (TH)
D = 42 mm, L = 47 mm, not suitable in combination with built-in ring lights.
- Mini lens 12 mm, 1:1.4 PENTAX H1214-M (KP)
D = 29.5 mm, L = 35.7 mm.
- Mini lens 16 mm, 1:1.4 PENTAX C1614-M (KP)
D = 29.5 mm, L = 37.2 mm.
- Mini lens 25 mm, 1:1.4 PENTAX C2514-M (KP)
D = 29.5 mm, L = 38.9 mm.
- Mini lens 35 mm, 1:1.6 PENTAX C3516-M (KP)
D = 29.5 mm, L = 41.4 mm.
- Mini lens 50 mm, 1:2.8 PENTAX C5028-M (KP)
D = 29.5 mm, L = 38 mm.
- Mini lens 75 mm, 1:2.8 PENTAX C7528-M (KP)
D = 34 mm, L = 63.6 mm, not suitable in combination with protective barrel for lens D65, suitable in combination with protective barrel for lens D50.

6GF9 001-1BE01

6GF9 001-1BL01

6GF9 001-1BF01

6GF9 001-1BG01

6GF9 001-1BH01




6GF9 001-1BJ01


6GF9 001-1BK01

Code reading systems

Stationary code reading systems

SIMATIC VS130-2



Order No.	
Protective barrels for lenses	
Protective barrel D50 for lenses Made of metal, for external ring lights, internal diameter 41 mm, length from joint 65 mm, IP65 degree of protection. With 3 cm extension piece for particularly long lenses.	
	
<ul style="list-style-type: none"> Glass front pane Plastic front pane 	6GF9 002-7AA 6GF9 002-7AA01
External ring lights	
LED ring light made of plastic Dimensions W x H x D (mm) 102 x 102 x 26.5, not suitable for D50 protective barrel for lens.	
	
Picture includes sensor head	
<ul style="list-style-type: none"> Ring light, red, diffuse Light source LED rot Range of illumination 75 mm ... 5000 mm, Type of protection IP65. 	6GF9 004-8BA
LED ring light made of metal Dimensions B x H x T (mm) 116 x 116 x 42, suitable for D50 protective barrel for lens. Two small mounting brackets included.	
	
<ul style="list-style-type: none"> Ring light, metal, infrared, diffuse Light source LED infrared, light source: 850 nm, Range: 75 mm to 250 mm, Type of protection: IP65. 	6GF9 004-7AA01
<ul style="list-style-type: none"> Ring light, metal, infrared, clear Light source LED infrared, light source: 850 nm, Range: 500 mm to 3000 mm, Type of protection: IP65. 	6GF9 004-7BA01


Order No.	
<ul style="list-style-type: none"> Ring light, metal, red, diffuse Light source LED red, Range: 75 mm to 250 mm, Type of protection: IP67. 	
6GF9 004-8BA01	
<ul style="list-style-type: none"> Ring light, metal, red, clear Light source LED red, Range: 150 mm to 2000 mm, Type of protection: IP67. 	
6GF9 004-8CA01	
<ul style="list-style-type: none"> Ring light, metal, red, clear Light source LED rot Range: 500 mm to 3000 mm, Type of protection: IP67. 	
6GF9 004-8DA01	
Cables	
Power supply cable Length 10 m, VS-side plug-in, one free end. This cable is included in the VS130-2 complete package.	
6GF9 002-8CA	
Digital communication cable Length 10 m, VS-side plug-in, one free end. This cable is included in the VS130-2 complete package.	
6GF9 002-8CB	
Sensor cable for sensor head connection Both sides plug-in, suitable for trailing cable.	
2.5 m	
6GF9 002-8CD	
10 m	
6GF9 002-8CF	
Crossed twisted pair connecting cables 4x2 with RJ45 connectors, length 2 m	
6XV1 870-3RH20	
IE TP Cord RJ45/RJ45 TP cable 4x2, with two RJ45 connectors, length 2 m	
6XV1 870-3QH20	
Cable for LED ring light M12-90 plug / M12-180 socket, trailing type, suitable for: 6GF9 004-7AA01, ...-7BA01, ...-8BA01, ...-8CA01, ...-8DA01; M12, 4-pin.	
Available in the following lengths:	
2.5 m	
6GF9 002-8CE	
10 m	
6GF9 002-8CG	
Supports	
Ring light support, coaxial, solid For connecting the sensor head to the ring light and for fixing and adjusting it at the mounting location, 2 pcs.	
	
6GF9 002-7AB	

Code reading systems

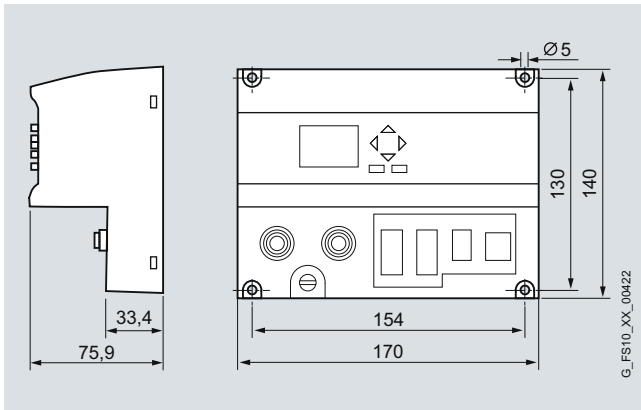
Stationary code reading systems

SIMATIC VS130-2

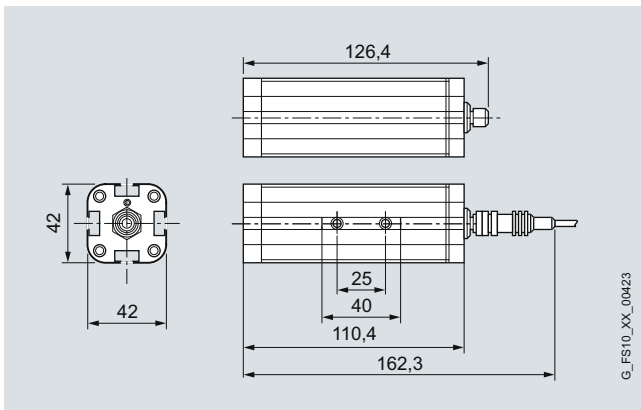
	Order No.
Support system, tri-plate Dimensions W x H x D (mm) 80 x 80 x 60, plate thickness: 4 mm. 	6GF9 002-7AD
Standard rail mounting For mounting the VS130-2 processing unit on a standard rail support.	6GF9 002-7AD
Mounting plate for external ring lights Dimensions W x H x D (mm) 92 x 79 x 42, plate thickness: 4 mm. 	6GF3 440-8CD

	Order No.
IP65 protective enclosure for processing units  <p>Contains DIN rail (TH35 according to EN 60715), IP65 degree of protection, ambient temperature (0 ... 50 °C), dimensions W x H x D (mm) 300 x 400 x 210</p> <p>Possible built-in components (example):</p> <ul style="list-style-type: none"> 1 VS130-2 processing unit (6GF1 018-3BA), 1 Industrial Ethernet switch (6GK1 08-0BA00), 1 power supply 230 V/120 V AC 1.3/2.2 A; 24 V DC/5 A (6ES7307-1EA00-0AA0) <p>Cable glands (example):</p> <ul style="list-style-type: none"> 1 VS100 power supply cable, D = 5.4 mm (6GF9 002-8CA), 1 sensor cable D = 6.8 mm (6GF9 002-8CD or 6GF9 002-8CF), 4 lighting cables D = 4.5 mm (6GF9 002-8CE or 6GF9 002-8CG) 1 digital communication cable D = 7.4 mm (6GF9 002-8CB), 1 serial communication cable D = 5.0 mm (6ES7 90-1BF00-0XA0), 3 Ethernet cables with 2 RJ45 connectors (e.g.: 6XV1 850-2GH20). 	6GF9 002-7CA

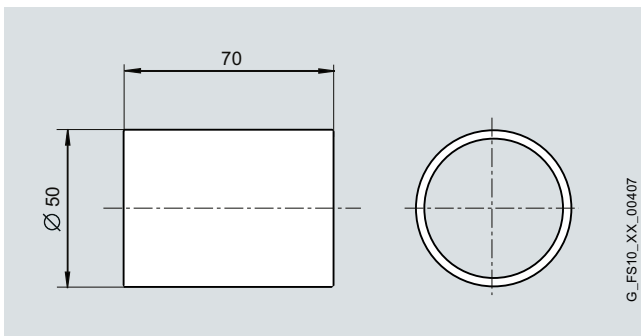
Dimensions



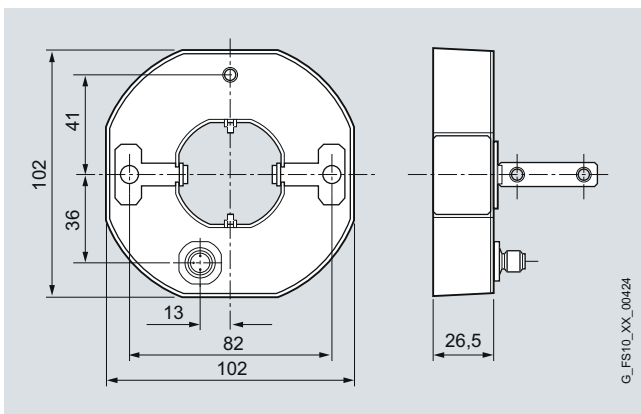
SIMATIC VS130 processing unit



SIMATIC VS130 fixed focus sensor head



Protective barrel D50 for lenses



External ring light

Code reading systems

Stationary code reading systems

Lenses

Overview



With a lens suitable for the respective image evaluation task, the size of the image field is determined for the camera image for the required operating distance.

High light intensity and the geometry of the image are extremely important for image evaluation (code reading, form recognition and position detection). High light intensity permits short shutter speeds and consequently a reduction of the blurring due to motion as well as maximizing the range.

Fault-free image geometry optimizes the fault tolerance of image analysis with regard to perspective and unevenness of the surface of the depicted object.

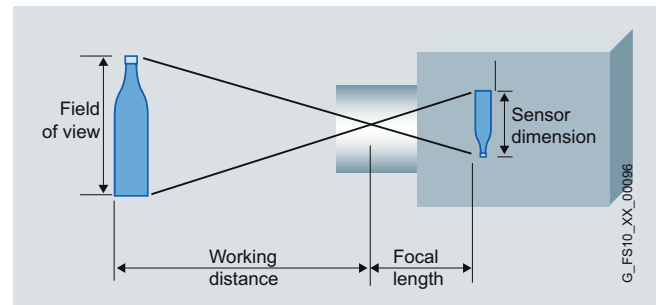
Lenses with fixed focal length and a settable aperture and focus are ideal for this purpose and are therefore preferred.

Function

Image types

The optical path of the lens is defined by its construction.

For **spherical lenses** the solid angle depends on the focal length, focus adjustment and aperture; all rays run through the focal point of the lens (central projection). Objects that are further away from the lens are depicted smaller; objects that are closer to the lens are depicted larger:



The required image field size (height and width of the image), the size of the sensor chip and the focal length of the lens determine the operating distance:

$$d = (f \times IS) / b$$

d = Operating distance (distance from lens to test object) in mm

f = Focal length of the lens in mm

IS = Size of image in the plane of the test object in mm

b = effective dimensions of the sensor in mm

In the case of lenses used in image processing systems, the focal length is fixed, the aperture and focus settings can be fixed. The focal length, the maximum focal aperture and the focusing range are normally specified on the lenses.

Focal distance

The focal length makes a statement about the angle of the image field or magnification of the lens.

The focal length of the lens is determined by the size of the required image field and the size of the camera chip when a specific distance has to be maintained. The most common chip sizes in cameras today are 1/2", 1/3" and 1/4". If the distance to the object lies below the adjustable focusing range of the lens, i.e. at close range, the focus can be adjusted using intermediate rings.

If the back focal length for this camera is dimensioned for CS-Mount lenses, as for VS 130-2, a C-Mount lens can also be focused if a 5 mm extension tube is used.

Aperture

Reduction of the light intensity by interrupting the optical path.

Focus

Setting the focus of the lens to a specific distance.

Depth of field

Depth of field is the area within which (in front of and behind the object) that is displayed with sufficient sharpness of focus. The larger the aperture (the smaller the aperture number), the smaller the depth of field.

Lenses with a larger focal length have a smaller depth of field, the effect is considerable for images at close range.

Application

Code- and text recognition

The algorithms of code and text recognition tolerate variations in form and size of the marking. In many applications, code readers must tolerate the influence of perspective distortion. Geometric errors resulting from the imaging often reduce the reading performance of the overall system.

Important selection criteria for the lenses of code readers are fast shutter speeds which guard against blurring due to motion, as well as maximization of the reading distance.

All lenses in this accessories list meet the requirements for code reading and text recognition. In addition, lens accessories (e.g. filters) are available which in conjunction with the accessories of the readers support project-specific configurations.

Form recognition and position location

For form recognition with high reproducibility, is a format-filling high-resolution image is required. Geometric errors resulting from the imaging often reduce the reading performance of the overall system.

Important selection criteria for the lenses of code readers are a fast shutter speed which guards against blurring due to motion, as well as maximization of the range. It is particularly important to maximize the range, since the stability of image analysis rises as the angle of the image field reduces. This is why a large distance from the test object is advantageous.

All lenses in this accessories list meet the requirements for shape recognition. In addition, lens accessories (e.g. filters) are available that in conjunction with the accessories of the readers support project-specific configurations.

Code reading systems

Stationary code reading systems

Lenses

Types of lenses

Lenses with smaller focal length are called wide-angle lenses, they can also be used at short operating distances, but produce intense distortion of the image. At a suitable distance, they have a large image field.

Lenses with a long focal length are called telephoto lenses; they have a large magnification but cannot be focused at close range, so macro lenses are used that can be focused by means of large telescopic extensions or intermediate rings. At a suitable distance, they have a small image field.

In the case of telecentric lenses, at least the optical path at the object end is almost parallel (parallel projection). This means

that objects at different distances are depicted in the same size. Objects can, however, only be displayed that are smaller than the diameter of the lens. It is not possible to adjust the range of focus with these lenses.

The optical characteristics can be restricted by means of optical filter glasses to counteract distortion in the image. Colored filters limit the spectral range, gray filters limit the light intensity and polarization filters restrict the transmission plane. Filters of this type can be attached either by using the internal thread or the flange on the front of the lens. The holder for the filter glass is designed to fit the lens.

Selection and ordering data

	Order No.
Lenses for SIMATIC MV440 and VS130-2, for reading code and plain text and for parts recognition With fixed focal length, adjustable aperture and focus, with locking screw.	
• Mini lens 8.5 mm, 1:1.4 D = 42 mm, L = 47 mm; successor type for 6GF9 001-1BE; MOD = 0.2 m ¹⁾	6GF9 001-1BE01
• Mini lens 12 mm, 1:1.4 D = 29.5 mm, L = 35.7 mm; MOD = 0.25 m ¹⁾	6GF9 001-1BL01
• Mini lens 16 mm, 1:1.4 D = 29.5 mm, L = 37.2 mm; successor type for 6GF9 001-1BF; MOD = 0.25 m ¹⁾	6GF9 001-1BF01
• Mini lens 25 mm, 1:1.4 D = 29.5 mm, L = 38.9 mm; successor type for 6GF9 001-1BG; MOD = 0.25 m ¹⁾	6GF9 001-1BG01
• Mini lens 35 mm, 1:1.6 D = 29.5 mm, L = 41.4 mm; MOD = 0.35 m ¹⁾	6GF9 001-1BH01
• Mini lens 50 mm, 1:2.8 D = 29.5 mm, L = 38.0 mm; successor type for 6GF9 001-1AH; MOD = 0.9 m ¹⁾	6GF9 001-1BJ01
• Mini lens 75 mm, 1:2.8 D = 34.0 mm, L = 63.6 mm; MOD = 0.7 m ¹⁾ Not for use in combination with a ring light.	6GF9 001-1BK01
CS-Mount to C-Mount adapter ring 5 mm	6GF9 001-1AP02
Accessories for utilizing mini lenses at close range	
Set of extension rings With 0.5 mm, 1.0 mm, 5.0 mm, 10.0 mm, 20.0 mm, 40 mm rings with 31 mm diameter C thread, to be screwed in between the lens and the camera body for image capture in the macro range.	6GF9 001-1BU
Accessories for utilizing mini lenses in the telephoto range	
Focal length doubler D = 30.5 mm, L = 17.9 mm, with C-thread to be screwed in between the lens and camera to extend the focal length by a factor of 2. Suitable lenses: 6GF9 001-1BE01, ...-1BL01, ...-1BF01, ...-1BG01, ...-1BH01, ...-1BJ01, ...-1BK01	6GF9 001-1BV

	Order No.
Filter for utilizing the mini lenses in the limited field of view	
Infrared filter Function: Visible light is largely or completely filtered out, infrared light can pass through. Application: When used with infrared lamps, it is possible to achieve independence from daylight. Suitable lenses: 6GF9 001-1BL01, ...-1BF01, ...-1BG01, ...-1BH01, ...-1BJ01	6GF9 001-2AD
Blue filter Function: Blue light can pass through. Application: e.g. to improve the visualization of structures. Suitable lenses: 6GF9 001-1BL01, ...-1BF01, ...-1BG01, ...-1BH01, ...-1BJ01	6GF9 001-2AE
Polarization filter Function: Filters out light which is directed at right angles to the polarization direction of the filter. Application: e.g. to reduce reflections from metal. Suitable lenses: 6GF9 001-1BL01, ...-1BF01, ...-1BG01, ...-1BH01, ...-1BJ01	6GF9 001-2AF

¹⁾ MOD = Minimum object distance

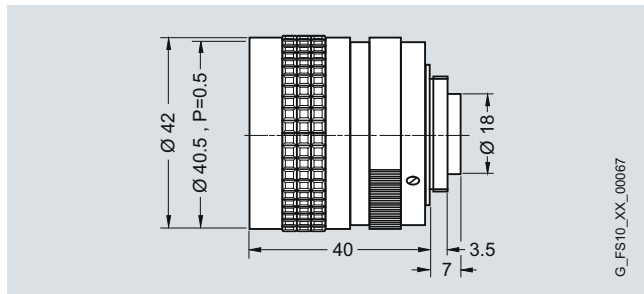
Code reading systems

Stationary code reading systems

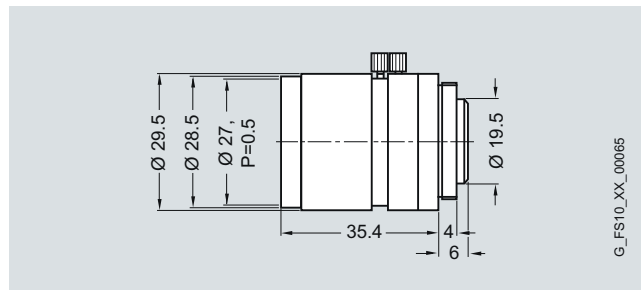
Lenses

Dimensions

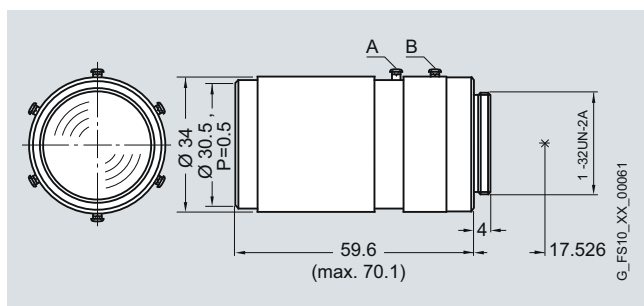
Lenses for reading code and plain text and parts recognition



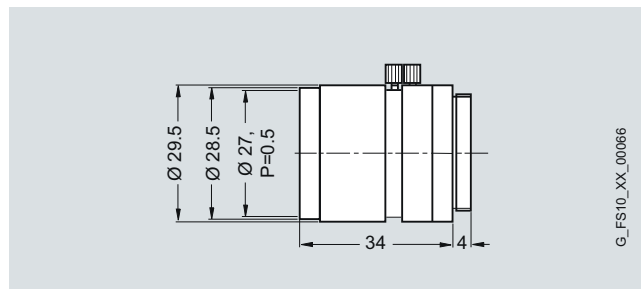
Lens 6GF9 001-1BE01



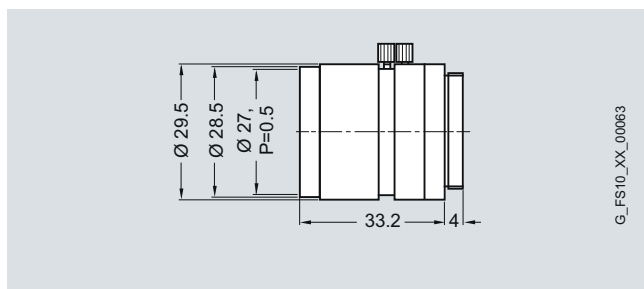
Lens 6GF9 001-1BH01



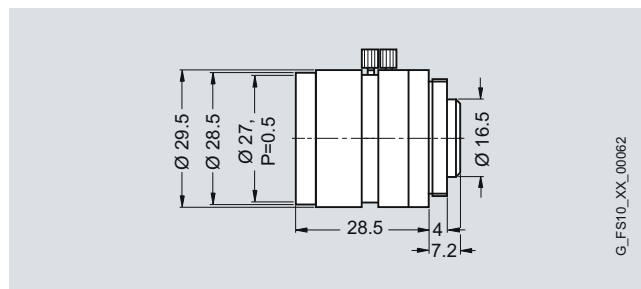
Lens 6GF9 001-1BK01



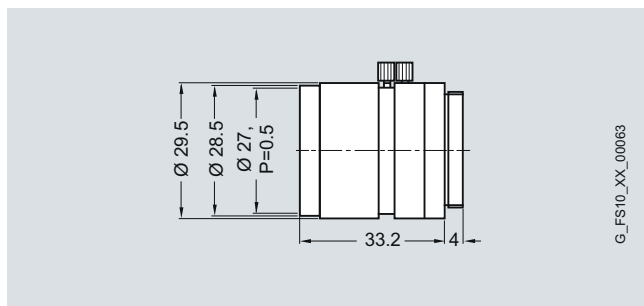
Lens 6GF9 001-1BJ01



Lens 6GF9 001-1BF01

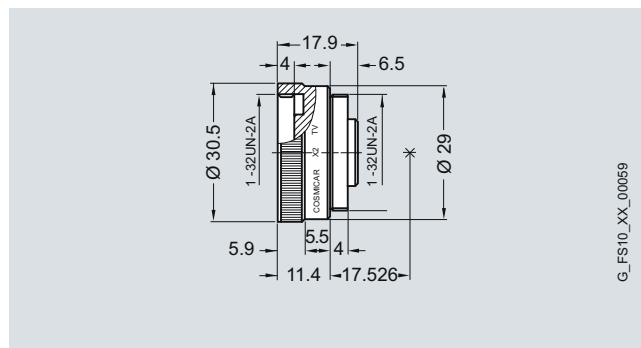


Lens 6GF9 001-1BL01

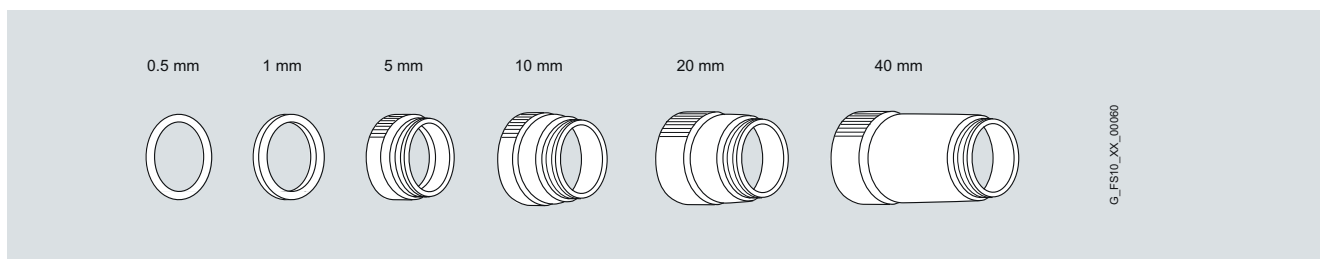


Lens 6GF9 001-1BG01

Accessories for lenses



Focal range doubler 6GF9 001-1BV



Pentax intermediate ring set 6GF9 001-1BU

Overview



Handheld reading systems are suitable for portable reading of two-dimensional (2D) data matrix codes and one-dimensional (1D) barcodes. The integrated complex image processing functions and illumination technologies permit codes to be read on different surfaces. Code readers of different performance classes are available for this purpose. The range extends from devices for simple reading tasks such as printed barcodes up to models for demanding, weak-contrast markings such as dot-peened or lasered codes.

Major differences

Type	SIMATIC HawkEye 40/45	SIMATIC HawkEye 40T/45T	SIMATIC MV340
Graphic display	– / •	– / •	–
Read quality of low-contrast codes	+	++	+++
Operating distance			
• Minimum (code-dependent)	50 mm (1.9")	50 mm (1.9")	0 mm (0.0")
• Maximum (code-dependent)	375 mm (14.8")	375 mm (14.8")	50 mm (2.0")
Image field			
• Near	25 mm x 15 mm (0.98" x 0.6") at 50 mm (1.9") distance	25 mm x 15 mm (0.98" x 0.6") at 50 mm (1.9") distance	36 mm x 29 mm (1.4" x 1.1") at 0 mm (0.0") distance
• Distant	150 mm x 90 mm (5.9" x 3.5") at 375 mm (14.8") distance	150 mm x 90 mm (5.9" x 3.5") at 375 mm (14.8") distance	71 mm x 57 mm (2.8" x 2.2") at 51 mm (2.0") distance
Decoding capability	1D codes: Code 39, Code 93, Code 128, Int I2 of 5, Codabar, UPC/EAN/JAN, RSS, Composite, Postal, Codablock F, Code 11, Matrix 2 of 5, MSI Plessey, NEC 2 of 5, Pharmacode, Telepen 2D codes: Data Matrix, PDF417, Micro PDF 417, QR Code, MicroQR Code, Maxicode, Aztec, GoCode	1D codes: Code 39, Code 93, Code 128, I2 of 5, Codabar, UPC/EAN, UPC-E, UPC Supplementals 2D codes: Data Matrix, PDF417, QR Code	1D codes: Code 39, Code 93, Code 128, I2 of 5, Codabar, UPC/EAN, Pharmacode, BC 412 2D codes: Data Matrix, QR Code, MicroQR Code, PDF417, GS1 Databar, Aztec
Department of Defense Unique Identifier String Validator	–	•	•
Code creation	Laser, printing	Laser, printing	Laser, printing, Dot Peen
Interfaces	USB, RS232, Bluetooth Class 1 (90 m, 300 ft)	USB, RS232, Bluetooth Class 1 (90 m, 300 ft)	USB, RS232

Different types of code can be read by devices with the same device configuration. Furthermore, they are approved as a „Department of Defense Unique Identifier (UID) String Validator“. This function allows the Handheld reader systems to compare the contents of a string with a corresponding control document. Typical applications include e.g. the checking of UID codes which have been applied by the supplier. A further function, the conversion of UID into „Unique Item Identifier“ (UUI), makes it possible to use the code reader in UID logistics.

SIMATIC HawkEye 40/40T/45/45T

The SIMATIC HawkEye 40 is the starter model. HawkEye 40/45 are suitable for labels with higher contrasts. SIMATIC HawkEye 40T/45T are designed for codes with lower contrasts. The HawkEye 45/45T variants are equipped with a display. All HawkEyes are available as hard-wired (RS232, USB) or wireless variants. The devices are designed for a distance of up to 375 mm.

SIMATIC MV340

The SIMATIC MV340 is the most powerful device and is particularly suitable for demanding applications such as low-contrast and damaged codes. It has a high reading speed when decoding data matrix symbols. The special integrated lighting works equally well on smooth, reflective or wavy surfaces. The MV340 can be connected via RS232 or USB. The device is designed for close ranges and records codes at a distance of up to 50 mm.

Code reading systems

Handheld reading systems

Introduction

Benefits



- Industry leading reading performance for Data Matrix codes, also for hard-to-read DPMs.
- Rugged design, for production environment.
- Supports multiple communication protocols, e.g. RS232, USB and wireless.
- Can read barcodes, data matrix codes, and other symbols.
- Can be used as a replacement device for existing barcode readers.

Application

The handheld reader systems are suitable for optical identification of objects using 1D or 2D codes in the production, logistics, quality control, and maintenance and servicing fields. Application examples:

- Automotive industry
 - Markings on various drive components (cylinder heads, cylinder blocks, elbow joints, etc.)
 - Laser markings on various drive components (cam shafts, crankshafts, pistons, piston rods, gearbox components, etc.)
 - Laser markings on electronic components, PCBs or enclosures
- Mechanical engineering
 - Markings on different types of component
- Tobacco industry
 - Printed or laser markings on boxes
- Food industry
 - Printed or laser markings on cartons
 - Laser markings on production machines

Design

All handheld readers are equipped with a handle. The handles are equally suitable for right-handed or left-handed persons. The read process is triggered by a switch on the handle. The handle can be removed. For the hard-wired connection via RS232 or USB, data transfer and power supply are directly via a single cable; in the wireless versions a battery is integrated in the handle.

Code reading systems

Handheld reading systems

SIMATIC HawkEye 40, 40T

Overview

SIMATIC HawkEye 40 and SIMATIC HawkEye 40T are powerful handheld readers suitable for high resolutions. Both handheld readers can read two-dimensional (2D) data matrix codes and one-dimensional barcodes. The readers possess complex image processing functions and illumination technology in order to read codes on many different surfaces.

The HawkEye 40 series includes models for cable-based and wireless communications standards. This permits simple integration into your applications.

The HawkEye 40 and 40T models are modular packages containing the reader, the handle and a connection cable (RS232 models also contain a power supply). The wireless versions include a Bluetooth transmitter (integrated in the reader) and an integral battery in the handle.

SIMATIC HawkEye 40

The SIMATIC HawkEye 40 is a rugged industrial barcode and data matrix reader which can read data matrix codes with medium to high contrasts. The cell size should be larger than 0.13 mm. Barcodes can be read if the width of a bar is larger than 0.12 mm.

SIMATIC HawkEye 40T

Compared to the HawkEye 40, the SIMATIC HawkEye 40T achieves a significantly higher reading reliability for code templates which have a low contrast and/or are damaged. The HawkEye 40T is therefore particularly suitable for reading direct part mark (DPM) codes which have been applied by laser or ink-jet.

Design



Rugged ergonomic handle with integral battery, for wireless and batch mode

Both handheld readers are equipped with a removable handle. The handles are equally suitable for right-handed or left-handed persons. The read process is triggered by a switch on the handle. For wireless operation without the handle, a separately available battery must be inserted in the reader.

The SIMATIC HawkEye 40 is the starter model. The SIMATIC HawkEye 40T has the same hardware design as the HawkEye 40, but operates with a more powerful image processing algorithm.

In the wireless versions, a Bluetooth transmitter is integrated into the reader. The reader is supplied with power from a battery integrated into the handle. The Bluetooth modem, which is available as an accessory, receives the data from the Bluetooth transmitter in the reader and transfers it to the host computer.

The handles are also available individually as accessories, with or without batteries. The handles with batteries are available in two versions: with 1950 mAh lithium ion (Li-Ion) battery or with 3900 mAh lithium ion (Li-Ion) battery.

Two different chargers are available as accessories for charging the batteries:

- Charging station for ergonomic handle with integral battery and power supply for the Bluetooth modem
- Battery charger for individual batteries

Integration

The SIMATIC HawkEye 40/40T can communicate with a host computer via RS232, USB or Bluetooth. No special software is required, since the SIMATIC HawkEye 40/40T are configured by reading the supplied data matrix codes.

In addition to direct transfer of the codes to the host computer via RS232, USB or Bluetooth, the reader can also be operated in a batch mode. This is important if the connection to the host computer is not available. Codes read in during operation in batch mode are saved in a buffer memory. As soon as the connection to the host computer is available again, the codes are transmitted either manually or automatically. A battery is required for batch mode.

Code reading systems

Handheld reading systems

SIMATIC HawkEye 40, 40T

Technical specifications

Order No.	6GF3 020-1HE40-0XX0	6GF3 020-1HE40-0XX4	6GF3 020-1HE40-2BT0
Product type designation	Hand-held reading system HawkEye 40	Hand-held reading system HawkEye 40	Hand-held reading system HawkEye 40
Suitability for use	1D codes: Int. 2/5, Code 128, Code 93, Code 39, EAN/UPC/JAN, Pharmacode, Postal, Codabar, RSS, Composite, Codablock F, Code 11, Matrix 2 of 5, MSI Plessey, NEC 2 of 5, Telepen 2D codes: DMC, PDF417, QR, Micro PDF417, Micro QR, Maxicode, Aztec, GoCode	1D codes: Int. 2/5, Code 128, Code 93, Code 39, EAN/UPC/JAN, Pharmacode, Postal, Codabar, RSS, Composite, Codablock F, Code 11, Matrix 2 of 5, MSI Plessey, NEC 2 of 5, Telepen 2D codes: DMC, PDF417, QR, Micro PDF417, Micro QR, Maxicode, Aztec, GoCode	1D codes: Int. 2/5, Code 128, Code 93, Code 39, EAN/UPC/JAN, Pharmacode, Postal, Codabar, RSS, Composite, Codablock F, Code 11, Matrix 2 of 5, MSI Plessey, NEC 2 of 5, Telepen 2D codes: DMC, PDF417, QR, Micro PDF417, Micro QR, Maxicode, Aztec, GoCode
Interfaces	USB	RS232	USB, Bluetooth
Optical data			
Design of picture sensor of camera	CMOS 1280 x 1024, max. image resolution 1024 x 640	CMOS 1280 x 1024, max. image resolution 1024 x 640	CMOS 1280 x 1024, max. image resolution 1024 x 640
Range	50 ... 375 mm	50 ... 375 mm	50 ... 375 mm
• Note	Code-dependent, near/far image field selection	Code-dependent, near/far image field selection	Code-dependent, near/far image field selection
Type of lens mounting	Integrated	Integrated	Integrated
Type of lamp	Integrated, collimator ray: Visible LED laser light 630 nm, sunlight up to 96890 Lux	Integrated, collimator ray: Visible LED laser light 630 nm, sunlight up to 96890 Lux	Integrated, collimator ray: Visible LED laser light 630 nm, sunlight up to 96890 Lux
Picture recording frequency, max.	1 Hz	1 Hz	1 Hz
Type of focusing	Fixed focus	Fixed focus	Fixed focus
Supply voltage, battery			
Type of power supply	Over USB	European power supply unit	Battery operation or USB
Type of battery	–	–	Lithium-ion rechargeable battery
Battery capacity	–	–	1.95 Ah
Running time with standard rechargeable battery, typical	–	–	8 h
Permissible ambient conditions			
Ambient temperature			
• during operation	0 ... 40 °C	0 ... 40 °C	0 ... 40 °C
• during storage	-20 ... +60 °C	-20 ... +60 °C	-20 ... +60 °C
Maximum relative humidity at 25 °C, without condensation, during operation	95 %	95 %	95 %
Maximum drop height	2 m	2 m	2 m
Design, dimensions and weights			
Width	97 mm	97 mm	97 mm
Height	116 mm	116 mm	116 mm
Depth	49 mm	49 mm	49 mm
Net weight	0.2 kg	0.2 kg	0.22 kg
Accessories	Elastomer jacket, metal stand	Elastomer jacket, metal stand	Elastomer jacket, metal stand, Ergonomic handle with 3.9 Ah battery, Bluetooth modem, ext. charging station incl. power supply unit

Code reading systems

Handheld reading systems

SIMATIC HawkEye 40, 40T

Order No.	6GF3 020-1HT40-0XX0	6GF3 020-1HT40-2BT0
Product type designation	Hand-held reading system HawkEye 40T	Hand-held reading system HawkEye 40T
Suitability for use	1D codes: Int. 2/5, Code 128, Code 93, Code 39, EAN/UPC, UPC E, UPC Supplementals 2D codes: DMC, PDF417, QR	1D codes: Int. 2/5, Code 128, Code 93, Code 39, EAN/UPC, UPC E, UPC Supplementals 2D codes: DMC, PDF417, QR
Interfaces	USB	USB, Bluetooth Class 1
Optical data		
Design of picture sensor of camera	CMOS 1280 x 1024, max. image resolution 1024 x 640	CMOS 1280 x 1024, max. image resolution 1024 x 640
Range	50 ... 375 mm	50 ... 375 mm
• Note	Code-dependent, near/far image field selection	Code-dependent, near/far image field selection
Type of lens mounting	integrated	integrated
Type of lamp	Integrated, collimator ray: Visible LED laser light 630 nm, sunlight up to 96890 Lux	Integrated, collimator ray: Visible LED laser light 630 nm, sunlight up to 96890 Lux
Picture recording frequency, max.	1 Hz	1 Hz
Type of focusing	Fixed focus	Fixed focus
Supply voltage, battery		
Type of power supply	Over USB	Battery operation or USB
Type of battery	–	Lithium-ion rechargeable battery
Battery capacity	–	1.95 Ah
Running time with standard rechargeable battery, typical	–	8 h
Permissible ambient conditions		
Ambient temperature		
• during operation	0 ... 40 °C	0 ... 40 °C
• during storage	-20 ... +60 °C	-20 ... +60 °C
Maximum relative humidity at 25 °C, without condensation, during operation	95 %	95 %
Maximum drop height	2 m	2 m
Design, dimensions and weights		
Width	97 mm	97 mm
Height	116 mm	116 mm
Depth	49 mm	49 mm
Net weight	0.2 kg	0.22 kg
Accessories	Elastomer jacket, metal stand	Elastomer jacket, metal stand, Ergonomic handle with 3.9 Ah battery, Bluetooth modem, ext. charging station incl. power supply unit

Code reading systems

Handheld reading systems

SIMATIC HawkEye 40, 40T

Order No.	6GF3 020-1HT40-0XX3	6GF3 020-1HT40-0XX4	6GF3 020-1HT40-0XX5
Product type designation	Hand-held reading system HawkEye 40T	Hand-held reading system HawkEye 40T	Hand-held reading system HawkEye 40T
Suitability for use	1D codes: Int. 2/5, Code 128, Code 93, Code 39, EAN/UPC, UPC E, UPC Supplementals 2D codes: DMC, PDF417, QR	1D codes: Int. 2/5, Code 128, Code 93, Code 39, EAN/UPC, UPC E, UPC Supplementals 2D codes: DMC, PDF417, QR	1D codes: Int. 2/5, Code 128, Code 93, Code 39, EAN/UPC, UPC E, UPC Supplementals 2D codes: DMC, PDF417, QR
Interfaces	RS232	RS232	RS232
Optical data			
Design of picture sensor of camera	CMOS 1280 x 1024, max. image resolution 1024 x 640	CMOS 1280 x 1024, max. image resolution 1024 x 640	CMOS 1280 x 1024, max. image resolution 1024 x 640
Range	50 ... 375 mm	50 ... 375 mm	50 ... 375 mm
• Note	Code-dependent, near/far image field selection	Code-dependent, near/far image field selection	Code-dependent, near/far image field selection
Type of lens mounting	integrated	integrated	integrated
Type of lamp	Integrated, collimator ray: Visible LED laser light 630 nm, sunlight up to 96890 Lux	Integrated, collimator ray: Visible LED laser light 630 nm, sunlight up to 96890 Lux	Integrated, collimator ray: Visible LED laser light 630 nm, sunlight up to 96890 Lux
Picture recording frequency, max.	1 Hz	1 Hz	1 Hz
Type of focusing	Fixed focus	Fixed focus	Fixed focus
Supply voltage, current consumption, power loss			
Type of power supply	USA power supply	European power supply unit	UK power supply
Permissible ambient conditions			
Ambient temperature			
• during operation	0 ... 40 °C	0 ... 40 °C	0 ... 40 °C
• during storage	-20 ... +60 °C	-20 ... +60 °C	-20 ... +60 °C
Maximum relative humidity at 25 °C, without condensation, during operation	95 %	95 %	95 %
Maximum drop height	2 m	2 m	2 m
Design, dimensions and weights			
Width	97 mm	97 mm	97 mm
Height	116 mm	116 mm	116 mm
Depth	49 mm	49 mm	49 mm
Net weight	0.2 kg	0.2 kg	0.2 kg
Accessories	Elastomer jacket, metal stand	Elastomer jacket, metal stand	Elastomer jacket, metal stand

Code reading systems

Handheld reading systems

SIMATIC HawkEye 40, 40T

Selection and ordering data

	Order No.
SIMATIC HawkEye 40	
Rugged industrial barcode and data matrix reader, with handle and cable:	
• With USB interface	6GF 3020-1HE40-0XX0
• With RS232 interface, power supply for Europe.	6GF3 020-1HE40-0XX4
• With Bluetooth and USB, battery.	6GF3 020-1HE40-2BT0
SIMATIC HawkEye 40T	
Rugged industrial barcode and data matrix reader, with ergonomic handle and cable:	
• With USB interface	6GF3 020-1HT40-0XX0
• With RS232 interface, power supply for USA.	6GF3 020-1HT40-0XX3
• With RS232 interface, power supply for Europe.	6GF3 020-1HT40-0XX4
• With RS232 interface, power supply for UK.	6GF3 020-1HT40-0XX5
• With Bluetooth and USB, with battery (integrated in handle).	6GF3 020-1HT40-2BT0
Accessories	
Ergonomic handle	6GF3 020-0AC40-0AB3
With integrated Li-ion battery (1950 mAh).	
Ergonomic handle	6GF3 020-0AC40-0AB4
With integrated Li-ion battery (3900 mAh).	
Ergonomic handle	6GF3 020-0AC40-0AH2
For use with cable. Incompatible with the 1950 mAh Li-ion battery module.	
RS232 cable	
• 2438 mm long, spiraled	6GF3 020-0AC40-0AC1
• 2438 mm long, spiraled, with power supply for USA	6GF3 020-0AC40-0AC3
• 2438 mm long, spiraled, with power supply for Europe/South America	6GF3 020-0AC40-0AC4
• 2438 mm long, spiraled, with power supply for UK	6GF3 020-0AC40-0AC5
USB cable	6GF3 020-0AC40-0AC0
1828 mm long, not spiraled.	
PS2 cable for accessories	6GF3 020-0AC40-0AC6
For HawkEye handheld readers, 2428 mm long.	
Replacement battery insert	6GF3 020-0AC40-0AB0
Cannot be used in conjunction with the ergonomic handle.	
Rechargeable battery	6GF3 020-0AC40-0AB2
Lithium- ion, 1950 mAh, w/o handle, cannot be used in conjunction with ergonomic handles.	

	Order No.
Battery charger	
For the 1950 mAh battery, with 2 charging bays.	
• For 2 batteries, with power supply for USA.	6GF3 020-0AC40-0AA2
• For 2 batteries, with power supply for EU.	6GF3 020-0AC40-0AA3
• For 2 batteries, with power supply for UK.	6GF3 020-0AC40-0AA4
Charging station	
For battery handle, suitable only for ergonomic handle with integrated battery.	
• Battery charging station with power supply for USA.	6GF3 020-0AC40-0AA5
• Battery charging station with power supply for EU.	6GF3 020-0AC40-0AA6
• Battery charging station with power supply for UK.	6GF3 020-0AC40-0AA7
HawkEye 40 Elastomer jacket	6GF3 020-0AC40-0AV3
Cannot be used with HawkEye 45/45T, 4xT ergonomic handles without batteries.	
Power supply	
• For USA	6GF3 020-0AC40-0AP1
• For Europe/South America	6GF3 020-0AC40-0AP2
Metal stand	6GF3 020-0AC40-0AS1
For HawkEye handheld readers	
Bluetooth modem	
Note: It is also possible to operate the Bluetooth modem with a USB interface. Order modem (6GF3 020-0AC00-2BT0) and USB cable (6GF3 020-0AC40-0AC0) for this configuration.	
Configuration with matrix code label.	
• With PS2 cable.	6GF3 020-0AC00-2BT0
• With RS232 interface, Power supply for USA.	6GF3 020-0AC10-3BT0
• With RS232 interface, Power supply for Europe/South America.	6GF3 020-0AC10-4BT0
• With RS232 interface, Power supply for UK.	6GF3 020-0AC10-5BT0

Code reading systems

Handheld reading systems

SIMATIC HawkEye 45, 45T

Overview

The SIMATIC HawkEye 45 and SIMATIC HawkEye 45T combine powerful image processing technology with a graphic display and rugged keypad. The HawkEye 45 and HawkEye 45T can read large linear and highly-compressed data matrix codes. The devices continuously adapt the resolution, illumination and image field to various codes and reading surfaces, character size and ambient lighting.

The HawkEye 45 series includes models for cable-based and wireless communication standards. This permits simple integration into your applications.

The HawkEye 45 and 45T models are modular packages containing the reader, the handle and a connection cable (RS232 models also contain a power supply). The wireless versions include a Bluetooth transmitter (integrated in the reader) and an integral battery in the handle.

SIMATIC HawkEye 45

The SIMATIC HawkEye 45 is a rugged industrial barcode and data matrix reader which can read data matrix codes with medium to high contrasts. The cell size should be larger than 0.13 mm. Barcodes can be read if the width of a bar is larger than 0.12 mm. The integral display outputs the read data and the settings of the reader.

SIMATIC HawkEye 45T

Compared to the HawkEye 45, the SIMATIC HawkEye 45T achieves a significantly higher reading reliability for code templates which have a low contrast and/or are damaged. The HawkEye 45T is therefore particularly suitable for reading direct part mark (DPM) codes which have been applied by laser or ink-jet.



Design

Both handheld readers are equipped with a removable handle. The handles are equally suitable for right-handed or left-handed persons. The read process is triggered by a switch on the handle. For wireless operation without the handle, a separately available battery must be inserted in the reader.

The SIMATIC HawkEye 45 is suitable for use with high-contrast patterns. The SIMATIC HawkEye 45T has an identical hardware construction to the HawkEye 45, but operates with the top-class Siemens image processing algorithm.

The readers are made of hard-wearing plastic.

In the wireless versions, a Bluetooth transmitter is integrated into the reader. The reader is supplied with power from a battery integrated into the handle. The Bluetooth modem, which is available as an accessory, receives the data from the Bluetooth transmitter and transfers it to the host computer.

The handles are also available individually as accessories, with or without batteries. The handles with batteries are available in two versions: with 1950 mAH lithium ion (Li-Ion) battery or with 3900 mAH lithium ion (Li-Ion) battery.

Two different chargers are available as accessories for charging the batteries:

- Charging station for ergonomic handle with integral battery and power supply for the Bluetooth modem.
- Battery charger for individual batteries.

Integration

The SIMATIC HawkEye 45/45T can communicate with a host computer via RS232, USB and Bluetooth. No special software is required, since the SIMATIC HawkEye devices are configured by reading the supplied data matrix codes.

In addition to direct transfer of the codes to the host computer via RS232, USB or Bluetooth, the reader can also be operated in a batch mode. This is important if the connection to the host computer is not available. Codes read in during operation in batch mode are saved in a buffer memory. As soon as the connection to the host computer is available again, the codes are transmitted either manually or automatically. A battery is required for batch mode.

Code reading systems

Handheld reading systems

SIMATIC HawkEye 45, 45T

Technical specifications

Order No.	6GF3 020-1HE45-0XX0	6GF3 020-1HE45-0XX4	6GF3 020-1HE45-2BT0
Product type designation	Hand Lese-System HawkEye 45	Hand Lese-System HawkEye 45	Hand Lese-System HawkEye 45
Suitability for use	1D codes: Int. 2/5, Code 128, Code 93, Code 39, EAN/UPC/JAN, Pharmacode, Postal, Codabar, RSS, Composite, Codablock F, Code 11, Matrix 2 of 5, MSI Plessey, NEC 2 of 5, Telepen 2D codes: DMC, PDF417, QR, Micro PDF417, Micro QR, Maxicode, Aztec, GoCode	1D codes: Int. 2/5, Code 128, Code 93, Code 39, EAN/UPC/JAN, Pharmacode, Postal, Codabar, RSS, Composite, Codablock F, Code 11, Matrix 2 of 5, MSI Plessey, NEC 2 of 5, Telepen 2D codes: DMC, PDF417, QR, Micro PDF417, Micro QR, Maxicode, Aztec, GoCode	1D codes: Int. 2/5, Code 128, Code 93, Code 39, EAN/UPC/JAN, Pharmacode, Postal, Codabar, RSS, Composite, Codablock F, Code 11, Matrix 2 of 5, MSI Plessey, NEC 2 of 5, Telepen 2D codes: DMC, PDF417, QR, Micro PDF417, Micro QR, Maxicode, Aztec, GoCode
Interfaces	USB	RS232	USB, Bluetooth Class 1
Optical data			
Design of picture sensor of camera	CMOS 1280 x 1024, max. image resolution 1024 x 640	CMOS 1280 x 1024, max. image resolution 1024 x 640	CMOS 1280 x 1024, max. image resolution 1024 x 640
Range	50 ... 375 mm	50 ... 375 mm	50 ... 375 mm
• Note	Code-dependent, near/far image field selection	Code-dependent, near/far image field selection	Code-dependent, near/far image field selection
Type of lens mounting	Integrated	Integrated	Integrated
Type of lamp	Integrated, collimator ray: Visible LED laser light 630 nm, sunlight up to 96890 Lux	Integrated, collimator ray: Visible LED laser light 630 nm, sunlight up to 96890 Lux	Integrated, collimator ray: Visible LED laser light 630 nm, sunlight up to 96890 Lux
Picture recording frequency, max.	1 Hz	1 Hz	1 Hz
Type of focusing	Fixed focus	Fixed focus	Fixed focus
Supply voltage, current consumption, power loss			
Type of power supply	over USB	European power supply unit	Battery operation or USB
Type of battery	–	–	Lithium-ion rechargeable battery
Battery capacity	–	–	1.95 Ah
Running time with standard rechargeable battery, typical	–	–	8 h
Permissible ambient conditions			
Ambient temperature			
• during operation	0 ... 40 °C	0 ... 40 °C	0 ... 40 °C
• during storage	-20 ... +60 °C	-20 ... +60 °C	-20 ... +60 °C
Maximum relative humidity at 25 °C, without condensation, during operation	95 %	95 %	95 %
Maximum drop height	1.2 m	1.2 m	1.2 m
Design, dimensions and weights			
Width	97 mm	97 mm	97 mm
Height	116 mm	116 mm	116 mm
Depth	49 mm	49 mm	49 mm
Net weight	0.24 kg	0.24 kg	0.26 kg
Accessories	Elastomer jacket, metal stand	Elastomer jacket, metal stand	Elastomer jacket, metal stand, Ergonomic handle with 3.9 Ah battery, Bluetooth modem, ext. charging station incl. power supply unit

Code reading systems

Handheld reading systems

SIMATIC HawkEye 45, 45T

Order No.	6GF3 020-1HT45-0XX0	6GF3 020-1HT45-0XX4	6GF3 020-1HT45-2BT0
Product type designation	Hand Lese-System HawkEye 45T	Hand Lese-System HawkEye 45T	Hand Lese-System HawkEye 45T
Suitability for use	1D codes: Int. 2/5, Code 128, Code 93, Code 39, EAN/UPC, UPC E, UPC Supplementals 2D codes: DMC, PDF417, QR	1D codes: Int. 2/5, Code 128, Code 93, Code 39, EAN/UPC, UPC E, UPC Supplementals 2D codes: DMC, PDF417, QR	1D codes: Int. 2/5, Code 128, Code 93, Code 39, EAN/UPC, UPC E, UPC Supplementals 2D codes: DMC, PDF417, QR
Interfaces	USB	RS232	USB, Bluetooth
Optical data			
Design of picture sensor of camera	CMOS 1280 x 1024, max. image resolution 1024 x 640	CMOS 1280 x 1024, max. image resolution 1024 x 640	CMOS 1280 x 1024, max. image resolution 1024 x 640
Range	50 ... 375 mm	50 ... 375 mm	50 ... 375 mm
• Note	Code-dependent, near/far image field selection	Code-dependent, near/far image field selection	Code-dependent, near/far image field selection
Type of lens mounting	integrated	integrated	integrated
Type of lamp	Integrated, collimator ray: Visible LED laser light 630 nm, sunlight up to 96890 Lux	Integrated, collimator ray: Visible LED laser light 630 nm, sunlight up to 96890 Lux	Integrated, collimator ray: Visible LED laser light 630 nm, sunlight up to 96890 Lux
Picture recording frequency, max.	1 Hz	1 Hz	1 Hz
Type of focusing	Fixed focus	Fixed focus	Fixed focus
Supply voltage, battery			
Type of power supply	over USB	European power supply unit	Battery operation or USB
Type of battery	–	–	Lithium-ion rechargeable battery
Battery capacity	–	–	1.95 Ah
Running time with standard rechargeable battery, typical	–	–	8 h
Permissible ambient conditions			
Ambient temperature			
• during operation	0 ... 40 °C	0 ... 40 °C	0 ... 40 °C
• during storage	-20 ... +60 °C	-20 ... +60 °C	-20 ... +60 °C
Maximum relative humidity at 25 °C, without condensation, during operation	95 %	95 %	95 %
Maximum drop height	1.2 m	1.2 m	1.2 m
Design, dimensions and weights			
Width	97 mm	97 mm	97 mm
Height	116 mm	116 mm	116 mm
Depth	49 mm	49 mm	49 mm
Net weight	0.24 kg	0.24 kg	0.26 kg
Accessories	Elastomer jacket, metal stand	Elastomer jacket, metal stand	Elastomer jacket, metal stand, Ergonomic handle with 3.9 Ah battery, Bluetooth modem, ext. charging station incl. power supply unit

Code reading systems

Handheld reading systems

SIMATIC HawkEye 45, 45T

Selection and ordering data

	Order No.
SIMATIC HawkEye 45	
Rugged industrial barcode and data matrix reader, with integral display, with handle and cable:	
• With USB interface.	6GF3 020-1HE45-0XX0
• With RS232 interface, Power supply for Europe.	6GF3 020-1HE45-0XX4
• With Bluetooth and USB, battery.	6GF3 020-1HE45-2BT0
SIMATIC HawkEye 45T	
Rugged industrial barcode and data matrix reader, with integral display, with ergonomic handle and cable.	
• With USB interface .	6GF3 020-1HT45-0XX0
• With RS232 interface, Power supply for Europe.	6GF3 020-1HT45-0XX4
• With Bluetooth and USB, battery integrated in handle.	6GF3 020-1HT45-2BT0
Accessories	
Ergonomic handle	6GF3 020-0AC40-0AB3
With integrated Li-ion battery (1950 mAh).	
Ergonomic handle	6GF3 020-0AC40-0AB4
With integrated Li-ion battery (3900 mAh).	
Ergonomic handle	6GF3 020-0AC40-0AH2
For use with cable. Incompatible with the 1950 mAh Li-ion battery module.	
RS232 cable	
• 2438 mm long, spiraled.	6GF3 020-0AC40-0AC1
• 2438 mm long, spiraled, with power supply for USA.	6GF3 020-0AC40-0AC3
• 2438 mm long, spiraled, with power supply for Europe/South America.	6GF3 020-0AC40-0AC4
• 2438 mm long, spiraled, with power supply for UK.	6GF3 020-0AC40-0AC5
USB cable	6GF3 020-0AC40-0AC0
1828 mm long, not spiraled.	
PS2 cable for accessories	6GF3 020-0AC40-0AC6
For HawkEye handheld readers, 2428 mm long.	
Plastic housing for rechargeable battery	6GF3 020-0AC40-0AB0
for use with reader.	
Rechargeable battery	6GF3 020-0AC40-0AB2
Lithium- ion, 1950 mAh, w/o handle, cannot be used in conjunction with ergonomic handles.	
Battery charger	
for 1950 mAh battery, with 2 charging bays:	
• For 2 batteries, with power supply for USA.	6GF3 020-0AC40-0AA2
• For 2 batteries, with power supply for EU.	6GF3 020-0AC40-0AA3
• For 2 batteries, with power supply for UK.	6GF3 020-0AC40-0AA4

	Order No.
Charging station for battery handle	
Suited only for ergonomic handle with integrated battery:	
• Battery charging station with power supply for USA.	6GF3 020-0AC40-0AA5
• Battery charging station with power supply for Europe.	6GF3 020-0AC40-0AA6
• For 2 batteries, with power supply for UK.	6GF3 020-0AC40-0AA7
Power supply	
• For USA	6GF3 020-0AC40-0AP1
• For Europe/South America	6GF3 020-0AC40-0AP2
Metal stands	6GF3 020-0AC40-0AS1
For HawkEye handheld readers.	
Bluetooth modem	
Note:	
It is also possible to operate the Bluetooth modem with a USB interface. Order modem (6GF3 020-0AC00-2BT0) and USB cable (6GF3 020-0AC40-0AC0) for this configuration.	
Configuration with matrix code label.	
• With PS2 cable.	6GF3 020-0AC00-2BT0
• With RS232 interface, power supply for USA.	6GF3 020-0AC10-3BT0
• With RS232 interface, power supply for Europe/South America.	6GF3 020-0AC10-4BT0
• With RS232 interface, power supply for UK.	6GF3 020-0AC10-5BT0

Code reading systems

Handheld reading systems

SIMATIC MV340

Overview



SIMATIC MV340 is one of the most powerful handheld readers in the world and is thus particularly suitable for demanding applications. It reads a wide range of direct part markings (DPM), from linear barcodes up to 2D symbols. Different codes can be read without having to reconfigure the device.

The device is designed for close ranges and records codes at a distance of up to 50 mm. The optimum reading distance is 6 mm. The special integrated lighting is ideal for a wide variety of surfaces and increases the contrast with stamped codes. Reading despite fluctuating lighting conditions, low contrast, and twisted or damaged codes are the strengths of the MV340.

The MV340 is connected via a USB or RS232 interface to the IT system. The USB cable is included in the delivery as standard, the RS232 cable can be ordered separately as an accessory.

Design

The MV340 is a fully integrated device that combines a powerful reader unit and lighting in a rugged housing with an ergonomically shaped handle. The read process is triggered by a switch on the handle. Feedback from the read process can be optical via a multi-color LED, acoustic, or by means of a vibrating alarm.

The special integrated lighting unit can switch automatically between different lighting types to always provide optimal lighting conditions for a wide range of code and surface types. Even low-contrast codes or dot peen markings are therefore no longer a problem.

The device is supplied with a USB cable as standard. An RS232 cable can be ordered separately as an accessory.

Integration

The SIMATIC MV340 is connected via USB or RS232. Free ESP software is available for user-friendly set-up of the device. As an alternative, the device can be installed and operated without special software since it can also be configured by reading supplied data matrix codes.

The power supply is solely via cable. If the device is connected via USB to the host computer, the supply voltage is applied directly via the USB port. If the connection is via RS232, an additional power supply unit is required which is coupled to the RS232 connector via Y-cable. The power supply unit is available in three variants: EU, UK, and USA.

Technical specifications

Order No.	6GF3 340-0HT01
Product type designation	Hand-held reading system MV340
Suitability for use	1D codes: Int. 2/5, Code 128, Code 93, Code 39, EAN/UPC, Codabar, BC 412, 2D codes: DMC, PDF417, QR, GS1 Databar
Interfaces	USB, RS232
Optical data	
Design of picture sensor of camera	CMOS 1280 x 1024
Range	0 ... 50 mm
Note on range	Code-dependent
Type of lens mounting	Integrated
Type of lamp	Lighting system comprising diffuse incident light (red, blue) and dark field (red)
Picture recording frequency, max.	10 Hz
Type of focusing	Fixed focus, optimum focal point at 6.3 mm
Power supply	
Type of power supply	Via USB or external plug-type power supply unit (RS232), 5 V, 410 mA
Permissible ambient conditions	
Ambient temperature	
• during operation	0 ... 50 °C
• during storage	-20 ... +65 °C
Maximum relative humidity at 25 °C, without condensation, during operation	95 %
Maximum drop height	1.8 m
Design, dimensions and weights	
Width	180 mm
Height	63 mm
Depth	114 mm
Net weight	0.2 kg
Accessories	RS232 cable with power supply

Selection and ordering data

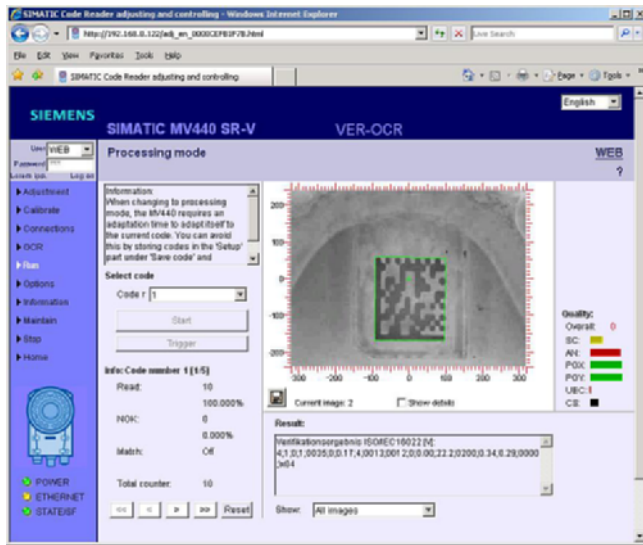
	Order No.
SIMATIC MV340 Rugged industrial barcode and data matrix handheld reader with USB cable.	6GF3340-0HT01
Accessories	
RS232 cable <ul style="list-style-type: none"> • 2438 mm long, spiraled. • 2438 mm long, spiraled, with power supply for USA. • 2438 mm long, spiraled, with power supply for Europe/South America. • 2438 mm long, spiraled, with power supply for UK. 	6GF3 020-0AC40-0AC1 6GF3 020-0AC40-0AC3 6GF3 020-0AC40-0AC4 6GF3 020-0AC40-0AC5
USB cable 1828 mm long, not spiraled.	6GF3 020-0AC40-0AC0

Code reading systems

Verification systems

Veri-Genius for MV440

Overview



With the verification license „Veri-Genius“, devices of the SIMATIC MV440 family can be used for checking the marking quality of codes (verification) in addition to reading 1D barcodes and 2D matrix codes.

The license is supplied as a „Single License“ on a USB flash drive and can be installed via the SIMATIC Automation License Manager (ALM) on any reader of the SIMATIC MV440 series. The license is executable on a SIMATIC MV440 as of firmware version 4.0.

Benefits



Support for all important sectors and code types through the following verification standards:

- AIM DPM-1-2006 (future ISO standard)
 - Code type: Data Matrix Code
 - Type of marking: All - focus on DPM, e.g. dot-peened and lasered markings
 - Sectors: All - focus on DPM, e.g. dot-peened and lasered markings
- Siemens DPM
 - Code type: Data Matrix Code
 - Type of marking: All - focus on DPM, e.g. dot-peened and lasered markings
 - Sectors: All
- SO/IEC 15415
 - Code type: Data Matrix Code
 - Type of marking: Printed
 - Sectors: All - focus: Pharmaceutical industry
- AS9132 Rev. A (previously IAQG)
 - Code type: Data Matrix Code
 - Type of marking: Printed
 - Sectors: All - focus: Aerospace
- ISO/IEC 15416 (previously ANSI X3.182-1990)
 - Code type: Barcode
 - Type of marking: Printed
 - Sectors: All - printed labels

Further highlights

- Different resolutions are available (640 x 480 pixels, 1024 x 768 pixels and 1600 x 1200 pixels).
- License includes calibration card.
- Simultaneous reading and verifying in one image field.
- Flexible retrofitting of the license to each device of the SIMATIC MV440 series via the Automation License Manager of SIMATIC - advantage: Savings in stocking of spare parts.
- Simple integration of verification in the automation environment via SIMATIC MV440 using a function block (FB79 and FB45).

Application

Applications for verification span across almost all sectors. To maximize read rates in production and logistics and to make them predictable, it is essential to measure the marking quality.

The following sectors and applications are a particular focus for MV440 verification systems:

Automobile industry

- Needle marking (DPM): e.g. cylinder heads, cylinder blocks, etc.
- Laser marking (DPM): Cylinder pistons, gearbox components, etc.
- Laser markings on electronic components, printed circuit boards, or enclosures.

Pharmaceutical industry

- Print or laser markings on medicines (DPM, OCR).
- Aerospace industry.
- Needle or laser markings on gas turbine blades (DPM).
- Needle or laser markings on jet engine components (DPM).

Medical equipment

- Laser markings on implants (DPM).
- Laser markings on medical devices (DPM).

Electronics

- Needle or laser markings on hard disk components.
- Lasered or etched markings on hard disk components (DPM).

Semiconductors

- Laser markings on rigid and flexible circuit boards (DPM).
- Laser markings on enclosed semiconductor components, heat sinks or heat exchangers (DPM).

„Veri-Genius“ can be used anywhere where environmental conditions permit the use of MV440 code readers - for details, see SIMATIC MV440. Standard ring lights and lenses are designed to achieve IP67 degree of protection by means of the protective barrel, and for glass-free use in the food and beverages industry. If light sources or lenses are used outside the protective barrel, they must be used in compliance with their specification.

Any host and HMI systems required must be selected sector-specifically and project-specifically. The range of application of the selected test method is defined in the specification of the test method and compliance is essential if universally valid results are to be obtained.

Design

All SIMATIC MV440 stationary code readers are basic units under the terms of the license. The verification functionality is enabled by transferring the license key from the USB flash drive on which it is supplied to the MV440 code reader by means of SIMATIC License Manager.

Verification with MV440 verification systems is suitable for both inline and offline measurements. In both cases, the specification of the verification standard used must be observed to ensure a robust measurement result. This means, for example, that the lighting and alignment of the light source, camera and test object must be in accordance with the definitions of the respective standard.

If only one light source is used, the MV440 can control an external light source using the existing image-synchronized digital output, or the external light source can be operated continuously.

If more lighting directions are required, an external controller can be used to activate the desired lighting and to start each individual measurement by means of triggering. The result from the quality measurement or the relevant partial measurement is output directly by the MV440 after completion of the measurement. In the case of more than one measurement, it is the task of the external controller to combine the partial results into an overall result and to visualization this.

If the test method requires calibration, the calibration card included in the scope of supply can be used in most cases. In cases with extreme imaging requirements (e.g. with very small or very large codes), the task of calibration must be resolved application-specifically.

Code reading systems

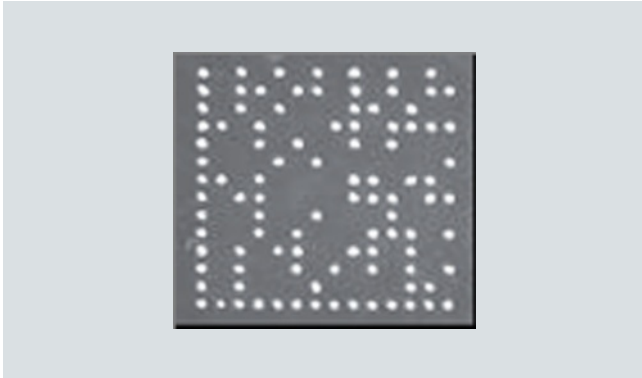
Verification systems

Veri-Genius for MV440

Function

Verification of code quality is an additional function subject to a license that can be activated on any SIMATIC MV440 by installing the „Veri-Genius license“. The functionality is available without a license in demo mode.

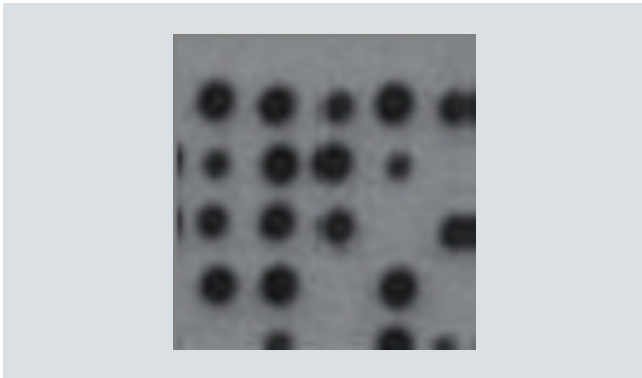
The following typical types of fault can be detected by measuring the marking quality - the following pictures show examples of correct code and faults in the marking quality:



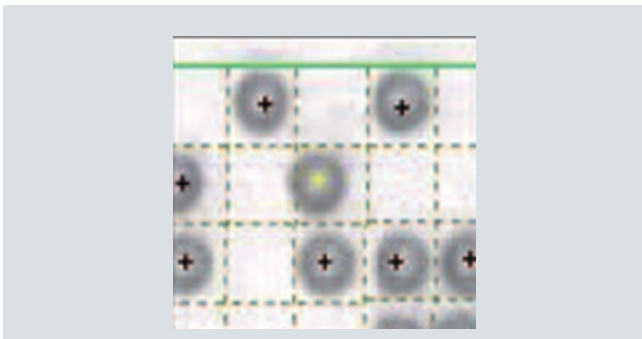
Correct code



Incorrect or non-uniform cell size in the marking



Incorrect or non-uniform cell position in the marking



Incorrect or non-uniform cell position in the marking



Incorrect overall geometry of the marking



Damaged surface of the marking or part



Very little or non-uniform contrast in the marking



Very little or non-uniform contrast in the marking

The following measuring procedures/standards are available for the purposes of inspection:

- AIM DPM-1-2006
- Siemens DPM
- ISO/IEC 15415
- AS9132 Rev. A (previously IAQG)
- ISO/IEC 15416 (previously ANSI X3.182-1990)

The measurement result is output as an overall result in 5 stages, which are named using letters or numbers:

Overall result as a digit	Overall result as letters	Overall result as text
4	A	Top quality
3	B	Good quality
2	C	Satisfactory quality
1	D	Adequate quality
	E	(not used)
0	Fault	Marking quality inadequate

The components of a measurement result and calculation of the overall result are dependent on the test method used.

The overall result and the components of a measurement result can be output after a test, and are then available for further processing on an external system, e.g. for archiving or creating a test report.

Integration

The MV440 verification systems can use all communication services that the basic units of the SIMATIC MV440 family offer:

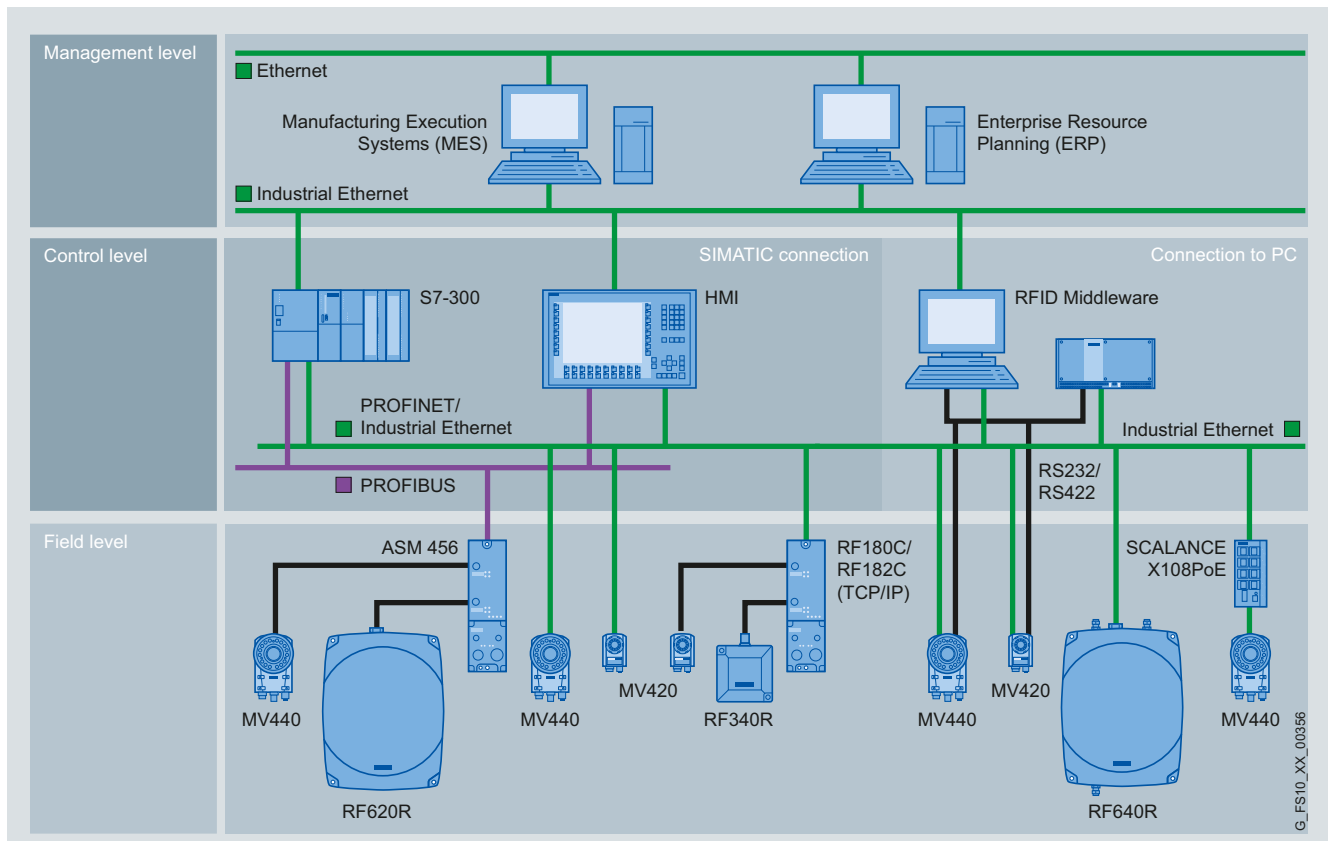
Usable communication services

PROFINET IO (FB79)	Onboard MV440 PROFINET interface.
PROFINET IO (FB45, PIB)	Via the MV440 ASM interface using the ASM module RF180C.
PROFIBUS DP V0/1 (FB45, PIB)	Via the MV440 ASM interface using the ASM module ASM 456.
TCP/IP native	Onboard MV440 PROFINET interface.

The most important types of interface in the automation environment are shown in the overview below. For further details, refer to the section on SIMATIC MV440, page 5/17.

Selection and ordering data

	Order No.
Verification module Veri-Genius	6GF3 400-0SL02
Software license for verification of machine-readable 1D bar codes and Data Matrix Codes.	
The license is supplied on a USB flash drive; executable on all SIMATIC MV440 code reading systems as of firmware V4.0 (SIMATIC MV440 not included in the scope of delivery).	
The scope of supply includes the calibration card.	
Calibration card	6GF3 440-8CE
Spare part	



Code reading systems

Optical character recognition (OCR)

Text-Genius for MV440

Overview



With the OCR license „Text Genius“ SIMATIC MV440 can also be used for text recognition in addition to reading 1D bar codes and 2D matrix codes. This is also known as OCR (Optical Character Recognition). It is also possible to read and compare plain text and machine-readable code in the same image field.

The license is supplied as a „Single License“ on a USB stick and can be copied to the device with the SIMATIC Automation License Manager (ALM) using a plug-in. The license can be installed on a SIMATIC MV440 with firmware version 3.0 and higher.

Benefits



The highlights at a glance

- Flexible reading of numerous font types without time-consuming teach-in.
- Fast and reliable reading (up to 1000 reads per minute) for high-speed applications.
- Reading and comparison of plain text and machine-readable code in the same image field.
- Automatic text localization without the use of predefined areas means that text can be read even when its position varies.
- Automatic line detection for max. 5 freely definable image regions with max. 15 lines each.
- Automatic character height recognition between 15 and 55 pixels.
- Individual parameter settings can be stored for max. 5 freely definable image regions.
- Reading of mirrored, rotated and inverted text.
- A number of filter and comparison functions return a stable read result.
- Flexible retrofitting of the text recognition function via the SIMATIC Automation License Manager.
- Simple integration in the automation environment, e.g. via function block of the SIMATIC MV440 devices.

Application

Applications for text recognition span across almost all sectors. The application areas can be generally divided in two tasks areas:

- Comparison of the result of text recognition with the content of the adjacent machine-readable identification - e.g. Data Matrix Code (DMC)
- The text recognition result is used to record and check a plain text identification

Applications for different sectors are listed below. The list is incomplete and only serves to illustrate the wide range of possible applications.

Application areas of OCR include the pharmaceuticals industry (serialization/expiry date on packaging), the automobile/electronics industry (e.g. production number on PCBs), the solar industry (serial numbers on thin-layer modules), or food and beverages (e.g. best-before date on packaging).

Automobile industry, aerospace industry

- Detection and checking of plain text identifiers for type identification of components
- Pharmaceutical industry
- Comparison of DMC and plain text
- Acquisition of a unique ID of a product - serialization
- Acquisition and checking the expiry date

Medical equipment

- Laser markings on implants (DPM)
- Laser markings on medical devices (DPM).

Electronics

- Detection of a unique plain text identifier for identification of devices, e.g. electricity meters
- Detection and checking of plain text identifiers for type identification of PCBs
- Solar industry
- Acquisition of a unique plain text identifier on thin-layer modules - serialization

„Text-Genius“ can be used anywhere where environmental conditions permit the use of MV440 code readers - for details, see SIMATIC MV440. Standard ring lights and lenses are designed to achieve IP67 degree of protection by means of the protective barrel, and for glass-free use in the food and beverages industry. If light sources or lenses are used outside the protective barrel, they must be used in compliance with their specification.

The text recognition function can be implemented in applications without the need to consider the type of font used for marking (Polyfont) or the marking method. In the „Function“ chapter, the fonts which enable a maximum read rate to be achieved are listed. Similarly, no marking methods are excluded. The read rate improves when the font varies only minimally and there is a good contrast between the background and marking.

Design

All SIMATIC MV440 stationary code readers are basic units under the terms of „Text-Genius“ license. The text recognition functionality is enabled by transferring the license key from the USB flash drive on which it is supplied to the MV440 code reader by means of SIMATIC License Manager.

If a light source is used from the range of accessories of SIMATIC MV440, the MV440 must be configured accordingly and text recognition must be started by triggering the reader. The measurement result is output immediately after measurement on the predefined process interface. Special sources of light can be used at any time. Their connection is described in the chapter „MV440“. A decisive factor in the selection of lighting is the required homogeneity of the illumination and contrast obtained

Function

The outstanding feature of Text Genius is that it is easy to set up. To achieve stable read results for text recognition, it is only necessary to set a few, simple parameters. The Text-Genius uses a generic approach for text recognition, so no individual training is required for most fonts and the characters (letters and digits) of the ASCII character set. There are also no complex settings required for optimizing recognition performance.

The following fonts are ideal for recognition of the text:

- OCR-A
- Semifont M13
- and similar fonts

Arial, OCR-B and similar fonts also produce good reading results.

Integration

The MV440 verification systems can use all communication services that the basic units of the SIMATIC MV440 family offer:

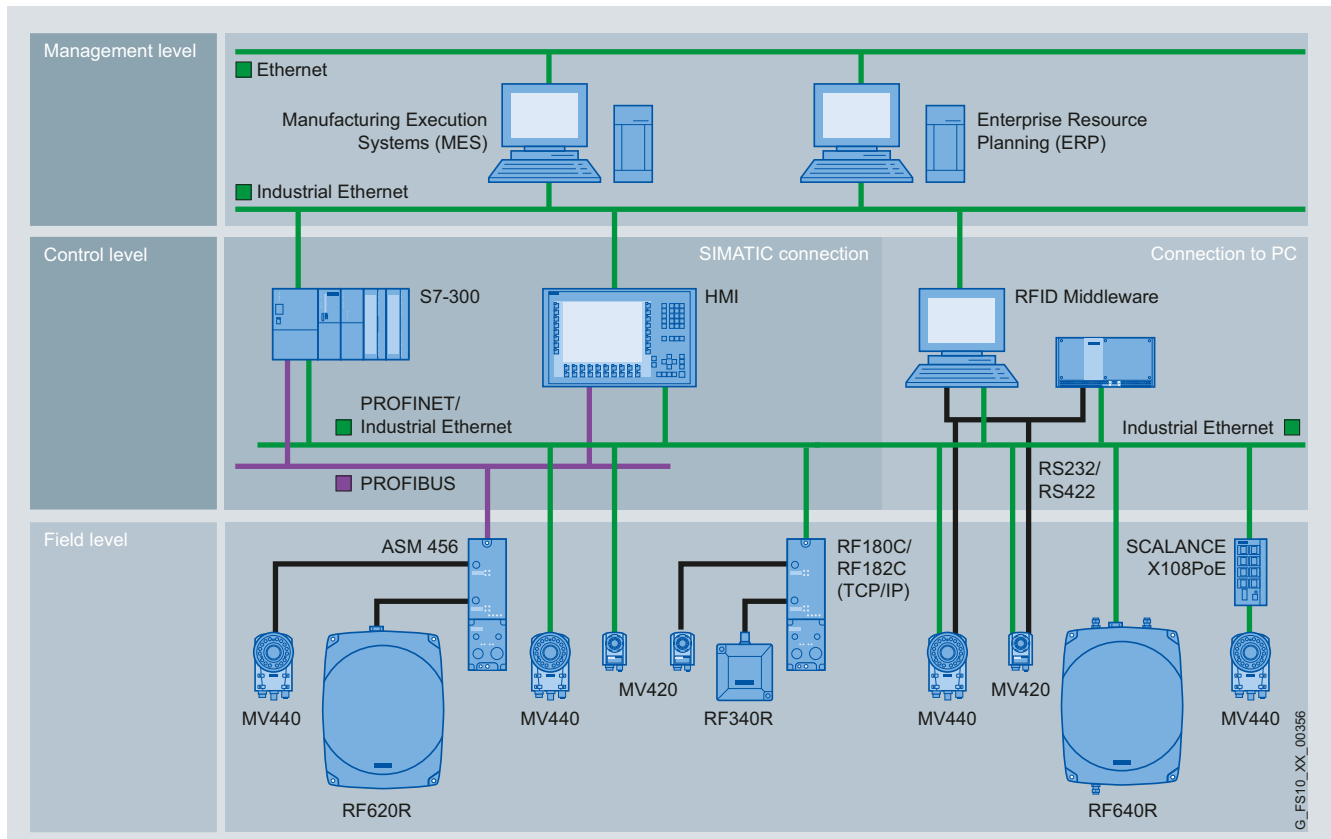
Usable communication services

PROFINET IO (FB79)	Onboard MV440 PROFINET interface.
PROFINET IO (FB45, PIB)	Via the MV440 ASM interface using the ASM module RF180C.
PROFIBUS DP V0/1 (FB45, PIB)	Via the MV440 ASM interface using the ASM module ASM 456.
TCP/IP native	Onboard MV440 PROFINET interface.

The most important types of interface in the automation environment are shown in the overview below. For further details, refer to the section on SIMATIC MV440, page 5/17.

Selection and ordering data

	Order No.
OCR module Text-Genius	6GF3400-0SL01
Software license for reading machine-readable 1D bar codes and 2 D matrix codes, as well as for optical character recognition.	
License is supplied on a USB flash drive; executable on SIMATIC MV440 code reading system as of firmware V3.0 (SIMATIC MV440 not included in the scope of supply).	



Code reading systems

Notes

5

Communication modules RFID standard cables

**6/2****Communication modules for
RFID systems and
code reading systems**

6/4

ASM 456, SIMATIC RF160C

6/9

SIMATIC RF180C / RF182C /
RFID 181EIP

6/16

SIMATIC RF170C

6/20

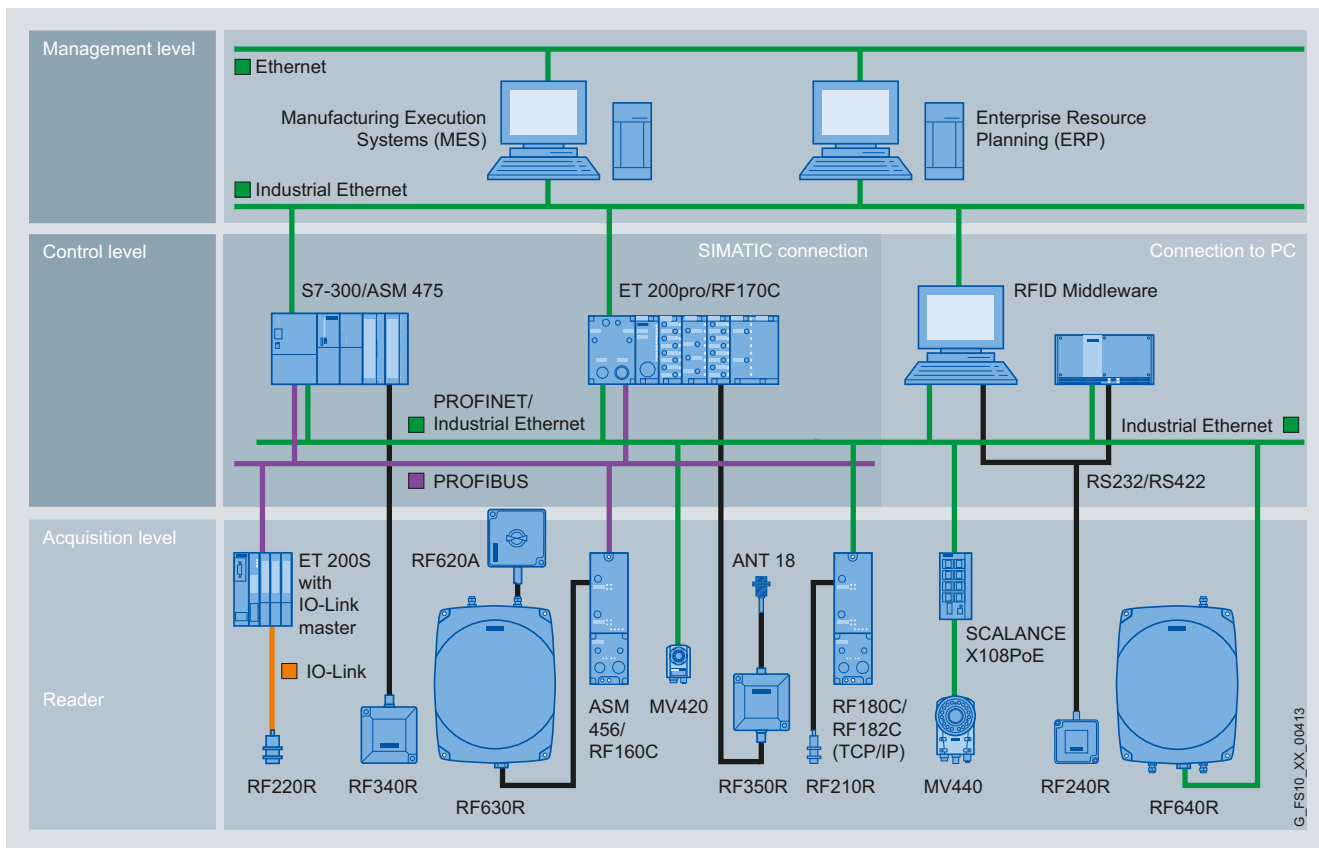
ASM 475

6/23**RFID standard cables**

Communication modules

Introduction

Overview



There are various powerful communication modules (ASM) for integrating SIMATIC RFID, SIMATIC MV and MOBY identification systems in SIMATIC, SINUMERIK, SIMOTION, PROFIBUS and PROFINET.

Selection aid for communication modules and software

System	Communication modules without file handler	Identification system	Available software
SIMATIC S7-300 (direct), S7-300/400, PC with SIMATIC WinAC via ET 200M, SINUMERIK 840D/810D	ASM 475	RF200, RF300, RF600, MV400, MOBY U/D	FB45, FB55 (multitag)
Serial link to PC, PLC or any other system ¹⁾	Direct via SLG Dx,	MOBY D	MOBY D MDWAPI, MOBY API, C library incl. drivers for Windows NT/2000/XP
	Direct via SLG U92	MOBY U	
	Direct via RF2xxR, RF3xxR (RS422 / RF232)	RF200, RF300	
PROFIBUS DP (SIMATIC S7, PC, any other system ¹⁾)	RF160C	RF200, RF300, RF600, MOBY U/D	FC44 for S7-300/400, PC with SIMATIC WinAC
SIMATIC S7-300/-400, PC with SIMATIC WinAC, via ET 200pro	RF170C	RF200, RF300, RF600, MV400, MOBY U/D	FB45, FB55 (multitag)
PROFIBUS DP-V1 (SIMATIC S7, SIMOTION SCOUT, PC, any other system ¹⁾)	ASM 456	RF200, RF300, RF600, MV400, MOBY U/D	FB45 for S7-300/400, PC with SIMATIC WinAC, FB55 (multitag), FB101/116/132
PROFINET IO	RF180C	RF200, RF300, RF600, MV400, MOBY U/D	FB45, FB55
Ethernet TCP/IP	RF182C	RF200, RF300, RF600, MOBY U/D	XML application examples
Ethernet/IP	RFID 181EIP	RF200, RF300, RF600, MOBY U/D	Programming via implicit/explicit messages

System	Communication modules with file handler	MOBY system	Available software
SIMATIC S7, PC, any other system, SIMOTION SCOUT	ASM 456	RF300, MOBY U	FC56/ FB101/116/132
SIMATIC S7-300 (direct), SIMATIC S7-300/400, via ET 200M	ASM 475	MOBY U	FC56
Ethernet/IP	RFID 181EIP	RF300, MOBY U	Programming via implicit/explicit messages

Function

Corresponding software blocks (FB, FC, libraries, examples) ensure simple and quick integration into the application.

1 or 2 readers can be connected to a communication module (ASM) with a maximum cable length of 1000 m (depending on the ASM, reader, etc.). Corresponding procedures guarantee a very high reliability of data transmission.

The following option exists for the serial connection of SIMATIC RFID to any system (PC, PLC, etc.):

- Directly via a reader with serial interface (SLG Ux, SLG Dx, SIMATIC RF240R, SIMATIC RF260R, SIMATIC RF380R).

Note regarding FC45/55

The FC45/55 can still be used in existing applications. With new applications, however, the FB45/55 blocks are recommended since only these blocks contain all functions.

Notes regarding software and licensing

When purchasing a communication module or reader, no software or documentation is supplied. The DVD "RFID Systems Software & Documentation" contains all the FBs/FCs available for SIMATIC, C libraries for Windows 95/98/NT/2000/XP operating systems, demo programs, etc. and must be ordered separately. In addition, the DVD contains the complete RFID documentation (German and English) in PDF format.

The purchase of a communication module or reader includes a payment for use of the software, including documentation, on the DVD "RFID Systems Software & Documentation" and the purchaser acquires the right to make copies (copy license), insofar as they are required as part of the project for the plant.

The contract pertaining to the use of software products against a one-off payment shall apply.

¹⁾ The programming interface is described for connecting to any system.

Communication modules

ASM 456, SIMATIC RF160C

Overview



Communication modules ASM 456, SIMATIC RF160C

The cost-efficient ASM 456 and SIMATIC RF160C communication modules are stand-alone PROFIBUS DP slaves used to operate the RFID systems MOBY D/U and SIMATIC RF200 / RF300 / RF600 as well as the MV400 code reading systems via PROFIBUS DP:

- SIMATIC S7 (including FB/FC software)
- SINUMERIK
- PC, IPC, non-Siemens PLC
- SIMOTION (with integrated software library)

Thanks to their high degree of protection and ruggedness, they are particularly suitable for machine-level use. The modular structure with different PROFIBUS connection systems allows them to be used in all applications. The uniform plug-in connection system ensures rapid commissioning.

Benefits

get Designed for Industry

- Two parallel MOBY channels ensure real-time mode at dynamic read points.
- Modular design with different bus interfacing possibilities ensures universal implementation.
- Reader connection using an 8-pin M12 connector for quick mounting of all components.
- High-performance hardware ensures fast data exchange with the reader. Consequently, data is available for the application even faster.
- Very easy downloading of firmware via the SIMATIC MANAGER for function expansions and error rectification ensure high availability of the identification system.
- The parameterizable identification-system-specific PROFIBUS diagnostics facilitate start-up and troubleshooting.
- A wide selection of pre-assembled PROFIBUS connecting cables can be ordered for the communication modules. This saves time and money during installation and assures better quality.

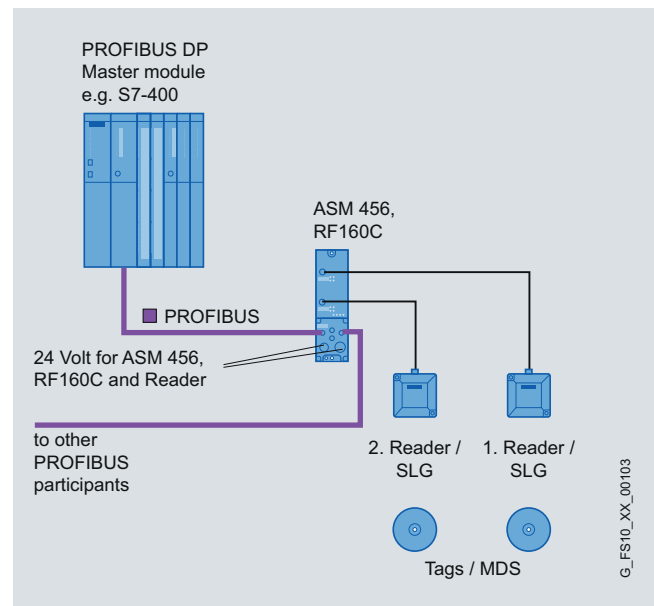
Application

The ASM 456 and SIMATIC RF160C communication modules have been specifically designed for a wide range of applications in industrial automation and logistics. Thanks to the high IP67 degree of protection, the ASM 456 and RF160C can be installed in the process without a control cabinet.

Main application areas for ASM 456 and RF160C:

- Mechanical engineering, automation systems, conveyor systems.
- Ancillary assembly lines in the automobile industry/suppliers.
- Small assembly lines.
- Production, packaging, textile, plastics and printing machines SIMOTION.

Design



Function

The ASM 456 and the RF160C comprise a basic module and a connection block that must be ordered separately. When connecting PROFIBUS, the customer can choose between ECOFAST connections and M12, 7/8" connections.

A pre-assembled reader cable is used to connect one or two readers/SLGs to the communication module. The standard length of the cable is 2 m. If other cable lengths to the reader are required, an extension cable measuring between 2 m and 50 m can be used. The cable can also be assembled by the customer as required.

The PROFIBUS DP procedure according to EN 50170 Vol. 2 PROFIBUS for communication between the communication module and SIMATIC S7 (or any PROFIBUS master) and the MOBY-specific procedures for communication between ASM and reader are implemented on the communication modules.

The data in the transponder can be accessed as follows:

- Direct addressing via absolute addresses
- Conveniently via the MOBY file handler (MOBY U, RF300 only) using file names (for ASM 456 only)

On the PROFIBUS DP, the communication module occupies a node address on the bus that is set on the connection block. The communication module is integrated into the hardware configuration by means of a device master (GSD) file. Then the communication module can be configured by means of the software tool HW_Config of the SIMATIC Manager or another PROFIBUS tool.

Error messages and operating states (MDS in the field, transmission, etc.) are indicated additionally by means of LEDs and simplify commissioning and service.

The ASM 456 and RF160C have two reader interfaces which also provides the readers with power. In the communication module, the power supply of the readers has an electronic fuse.

ASM 456

The ASM directly accesses the data in the transponder or in the data matrix code by means of absolute addresses (FB/FC45, FC55) or more conveniently using the MOBY file handler (FC56) and file names. The communication module is operated in non-cyclic mode over PROFIBUS DP V1. Consequently, a very large amount of data can be transferred to/from the communication module without overloading the PROFIBUS cycle. This has advantages when transferring large volumes of data. In addition, the communication module can process concatenated transponder commands very quickly in this mode.

Function blocks FB101/116/132 in the SIMATIC S7 are available for the "RFID standard profile" mode. The data in the transponder can be addressed either via absolute addresses or via the file handler. This mode additionally integrates the communication module in SIMOTION.

SIMATIC RF160C

The data in the transponder is accessed via absolute addresses. The FC44 function block is available for SIMATIC S7 for this purpose. The RF160C is operated in cyclic mode over PROFIBUS DP-V0. This ensures a deterministic response in data communication in every case. Where large volumes of data are transferred in large-scale bus configurations, the data throughput should be tested with a tool which is provided on the DVD "RFID Systems, Software and Documentation". The programming interface to RF160C is extremely easy to use and can be programmed efficiently in any controller. The RF160C is therefore particularly suitable for use with non-Siemens controllers and older PROFIBUS masters.

Technical specifications

Order No.	6GT2 002-0ED00	6GT2 002-0EF00
Product type designation	Communication module ASM 456	Communication module RF160C
Suitability for use	PROFIBUS network according to DP-V1 together with RF200 / RF300 / RF600, MOBY D/E/U/MV	PROFIBUS network according to DP-V0 together with RF200 / RF300 / RF600, MOBY D/U
Data transfer rate		
• for PROFIBUS	9.6 kbit/s ... 12 Mbit/s	9.6 kbit/s ... 12 Mbit/s
Data transfer rate of the point-to-point connection (serial, max.)	115.2 kbit/s	115.2 kbit/s
Interfaces		
Type of interface for point-to-point connection	RS422	RS422
Number of connectable readers	2	2
Design of electrical connection		
• of PROFIBUS interface	(according to the connection block)	(according to the connection block)
• for supply voltage	(according to the connection block)	(according to the connection block)
Design of reader interface for communication purposes	M12, 8-pin	M12, 8-pin
Mechanical data		
Material	Thermoplastic (fiberglass reinforced)	Thermoplastic (fiberglass reinforced)
Color	IP Basic 714	IP Basic 715
Maximum tightening torque of the screw for securing the equipment	3 Nm	3 Nm

Communication modules

ASM 456, SIMATIC RF160C

Order No.	6GT2 002-0ED00	6GT2 002-0EF00
Product type designation	Communication module ASM 456	Communication module RF160C
Supply voltage, current consumption		
DC supply voltage		
• Rated value	24 V	24 V
• minimum	20 V	20 V
• max.	30 V	30 V
Current input at 24 V DC		
• without connected devices, typical	0.08 A	0.08 A
• including connected devices, maximum	0.8 A	0.8 A
Permissible ambient conditions		
Ambient temperature		
• during operation	0 ... 55 °C	0 ... 55 °C
• during storage	-40 ... +70 °C	-40 ... +70 °C
• during transport	-40 ... +70 °C	-40 ... +70 °C
Degree of protection	IP67	IP67
Shock resistance	acc. to IEC 61131-2	acc. to IEC 61131-2
Shock acceleration	300 m/s ²	300 m/s ²
Oscillation acceleration	100 m/s ²	100 m/s ²
Design, dimensions and weights		
Width	60 mm	60 mm
Height	30 mm	30 mm
Depth	210 mm	210 mm
Net weight	0.21 kg	0.21 kg
Type of mounting	2 screws M5	2 screws M5
Cable length for RS422 interface, max.	1000 m	1000 m
Product properties		
Type of display	4 LED per reader interface, 4 LED for device status	4 LED per reader interface, 4 LED for device status
Product function		
• Transponder file handler addressable	Yes	No
Supported protocols		
• PROFIBUS DP-V0 protocol	No	Yes
• PROFIBUS DP-V1 protocol	Yes	No
Product functions „Management, configuration, engineering		
Type of parameter assignment	GSD	GSD
Type of programming	FB45, FB55, FC56, RFID standard profile, (FC45/55 with limited functionality)	FC44
Type of computer-mediated communication	Acyclic communication	Cyclic communication
Standards, specifications, approvals		
Certificate of suitability	CE, FCC, cULus	CE, FCC, cULus
Accessories		
	Connection block for ECOFAST system or M12, 7/8"	Connection block for ECOFAST system or M12, 7/8"

Selection and ordering data

	Order No.
Communication module ASM 456 For connecting 2 readers to PROFIBUS DP-V1.	6GT2 002-0ED00
Communication module SIMATIC RF160C For connecting 2 readers to PROFIBUS DP-V0.	6GT2 002-0EF00
Accessories for ECOFAST connection	
ECOFASST connection block	6ES7 194-3AA00-0AA0
PROFIBUS ECOFAST HYBRID plug 180 • With pin insert (5-pack) • With socket insert (5-pack)	6GK1 905-0CA00 6GK1 905-0CB00
PROFIBUS ECOFAST termination plug With terminating resistors.	6GK1 905-0DA10
PROFIBUS ECOFAST Hybrid Cable - Cu Trailing-type cable (PUR casing) with two shielded copper cables for PROFIBUS DP and four copper cores of 1.5 mm ² each. Sold by the meter Max. delivery unit 1000 m, mini- mum ordering quantity 20 m. Pre-assembled With ECOFAST plug and socket connector, fixed length:	6XV1 830-7AH10
0.5 m	6XV1 830-7BH05
1 m	6XV1 830-7BH10
1.5 m	6XV1 830-7BH15
3 m	6XV1 830-7BH30
5 m	6XV1 830-7BH50
10 m	6XV1 830-7BN10
15 m	6XV1 830-7BN15
20 m	6XV1 830-7BN20
25 m	6XV1 830-7BN25
30 m	6XV1 830-7BN30
35 m	6XV1 830-7BN35
40 m	6XV1 830-7BN40
45 m	6XV1 830-7BN45
50 m	6XV1 830-7BN50
Accessories M12, 7/8" connection	
M12 connection block, 7/8"	6ES7 194-3AA00-0BA0
M12 terminating resistor for PROFIBUS Pack with 5 units, minimum order- ing quantity 1 pack.	6GK1 905-0EC00
PROFIBUS M12 cable with plugs Pre-assembled, with 5-pin M12 connector and socket, max. length 100 m.	
0.3 m	6XV1 830-3DE30
0.5 m	6XV1 830-3DE50
1 m	6XV1 830-3DH10

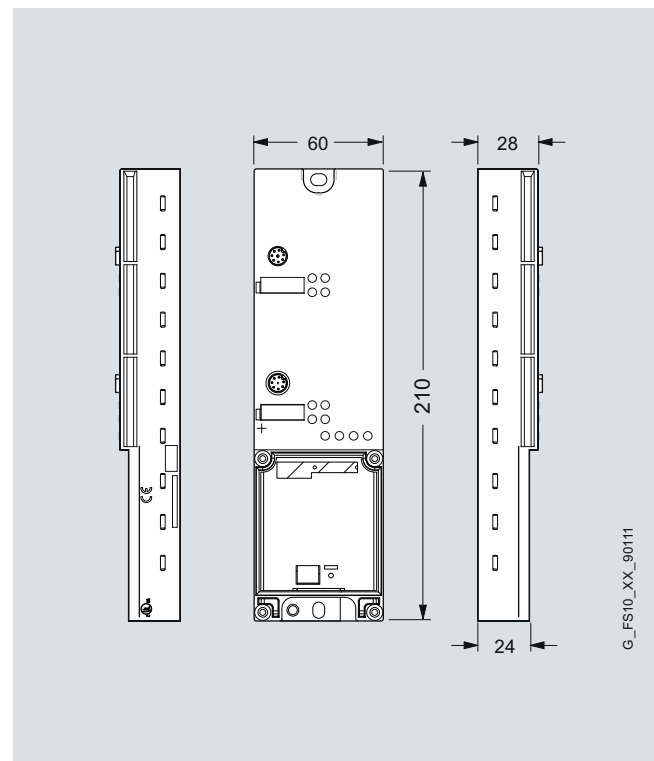
	Order No.
1.5 m	6XV1 830-3DH15
2 m	6XV1 830-3DH20
3 m	6XV1 830-3DH30
5 m	6XV1 830-3DH50
10 m	6XV1 830-3DN10
15 m	6XV1 830-3DN15
Other special lengths with 90° or 120° cable connection see: http://support.automation.siemens.com/WW/view/de/26999294	
7/8" connecting cable Pre-assembled, with 5-pin 7/8" connector and socket, max. length 50 m.	
0.3 m	6XV1 822-5BE30
0.5 m	6XV1 822-5BE50
1 m	6XV1 822-5BH10
1.5 m	6XV1 822-5BH15
2 m	6XV1 822-5BH20
3 m	6XV1 822-5BH30
5 m	6XV1 822-5BH50
10 m	6XV1 822-5BN10
15 m	6XV1 822-5BN15
Other special lengths with 90° or 120° cable connection see: http://support.automation.siemens.com/WW/view/de/26999294	
PROFIBUS FC standard cable Standard type with special design for quick mounting, 2-core, shielded, sold by the meter; maximum ordering quantity unit 1000 m, minimum ordering quantity 20 m.	6XV1 830-0EH10
PROFIBUS M12 connector Pack with 5 units, minimum ordering quantity 1 pack. • With pin insert • With socket insert	6GK1 905-0EA00 6GK1 905-0EB00
7/8" cable connector for voltage Pack with 5 units, minimum order- ing quantity 1 pack. • With pin insert • With socket insert	6GK1 905-0FA00 6GK1 905-0FB00
Sealing caps 7/8" For unused 24 V cable extension, pack of 10, minimum ordering quantity 1 pack.	6ES7 194-3JA00-0AA0
Power lead 5-core, 5 x 1.5 mm ² , trailing type; sold by the meter; maximum ordering quantity 1000 m, mini- mum ordering quantity 20 m.	6XV1 830-8AH10
General accessories	
Stainless steel screws for connection blocks Optional screws made of V4A steel for securing the connection blocks on the basic module. For use in wet areas. Pack with 40 units is sufficient for 10 connec- tion blocks.	6GT2 090-0VB00

Communication modules

ASM 456, SIMATIC RF160C

	Order No.
Accessories RFID	
Reader cable for MOBY U PUR material, CMG-approved, suitable for cable carriers.	
2 m	6GT2 091-4FH20
5 m	6GT2 091-4FH50
Reader cable for MOBY D PUR material, CMG-approved, suitable for cable carriers, 2 m.	
	6GT2 691-4FH20
Reader cable for SIMATIC RF200 / RF300 / RF600 / MV400 or extension cable MOBY U/D and SIMATIC RF200 / RF300 / RF600 / MV400, PUR material, CMG approval, suitable for cable carriers, straight connector	
2 m	6GT2 891-4FH20
5 m	6GT2 891-4FH50
10 m	6GT2 891-4FN10
20 m	6GT2 891-4FN20
50 m	6GT2 891-4FN50
2 m, plug angled at reader	6GT2 891-4JH20
Sealing caps M12 for unused reader connections Minimum order quantity 10 units.	
	3RX9 802-0AA00
DVD "RFID Systems Software & Documentation"	
	6GT2 080-2AA20

Dimensions



Communication modules ASM 456, SIMATIC RF160C

SIMATIC RF180C / RF182C / RFID 181EIP

Overview



SIMATIC RF180C / RF182C and RFID 181EIP are communication modules for direct connection of SIMATIC identification systems to PROFINET IO/Ethernet and Ethernet/IP. The readers (SLGs) of the RFID systems MOBY D/U, SIMATIC RF200 / RF300 / RF600 as well as the MV400 code reading systems (RF180C and RFID 181EIP only) can be operated on the communication modules.

Due to their high degree of protection and ruggedness, the SIMATIC RF180C / RF182C and RFID 181EIP are ideally suitable for use at the machine level. The uniform plug-in connection system ensures rapid commissioning.

Benefits



- Two parallel reader channels ensure real-time mode at dynamic read points.
- Reader connection using an 8-pin M12 connector for fast installation of all components.
- Different connection systems to suit any application:
 - M12, 7/8", the well-proven round connectors.
 - Push-pull connectors for quick assembly with RJ45 data connectors and 24 V connectors.
- Easy changeover from PROFIBUS applications to PROFINET with SIMATIC RF180C thanks to software compatibility.
- The integrated switch allows several PROFINET/Ethernet modules to be installed in a star or bus topology. Each application can then be set up quickly and inexpensively.
- Powerful hardware ensures rapid data communication with the reader (SLG). Consequently, data is available for the application even faster.
- Simple firmware downloading in the case of function expansions and error rectification ensures high availability of the identification system.
- Adjustable and parameterizable identification-system-specific diagnostics facilitate easy commissioning and troubleshooting.
- A broad selection of pre-assembled connecting cables can be ordered for connecting PROFINET/Ethernet and readers to SIMATIC RF180C/RF182C. This saves time and money during installation and assures better quality.

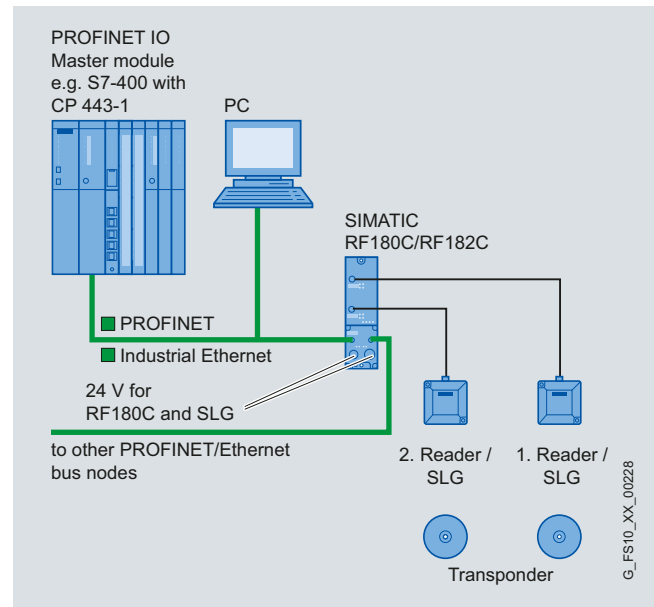
Application

The Ethernet-based communication modules have been specially designed for a wide range of applications in industrial automation and logistics. Due to their high IP67 degree of protection, the SIMATIC RF180C/RF182C and RFID 181EIP can be installed in the process outside the control cabinet.

Main applications for SIMATIC RF180C/RF182C and RFID 181EIP:

- Mechanical engineering, automation systems, conveyor systems
- Ancillary assembly lines in the automotive industry / suppliers
- Small assembly lines

Design



SIMATIC RF180C / RF182C / RFID 181EIP

Function

The SIMATIC RF180C / RF182C and RFID 181EIP communication modules consist of a basic module and a connection block that must be ordered separately.

The connection block is available in three versions:

- M12, 7/8" (5-pole):
PROFINET/Ethernet is connected by means of an M12 connector, the power supply is connected by means of a 5-pole 7/8" connector. There are 2 connections each for PROFINET/Ethernet as well as for the power supply. This ensures that the SIMATIC RF180C/RF182C can be connected to additional bus nodes without the need for external distributors. The removable connection block allows a base module to be replaced without interrupting the supply voltage to other bus stations.
- Push-pull connector (according to IEC 61918):
PROFINET/Ethernet and the power supply are connected by means of a push-pull connector. There are 2 connections each for PROFINET/Ethernet as well as for the power supply. This ensures that the SIMATIC RF180C/RF182C can be connected to additional bus nodes without the need for external distributors. The supply voltage connectors can conduct currents of up to 12 A (1L+ and 2L+). The removable connection block allows a base module to be replaced without interrupting the supply voltage to other bus stations.
- M12, 7/8" (4-pole; not recommended for RF180C):
Ethernet is connected by means of an M12 connector, the power supply is connected by means of a 4-pole 7/8" connector. There are 2 connections for Ethernet and one connection is available for the power supply. This connection block can be used in applications where the 5-pole 7/8" connector is already being used for other functions and therefore cannot be used for the power supply.

A pre-assembled reader cable is used to connect one or two readers to the communication module. The standard cable length is 2 m. If other reader cable lengths are required, an extension cable from 2 to 50 m in length can be used. The cable can also be assembled by the customer as required.

The data in the transponder can be accessed as follows: Direct addressing via absolute addresses.

Error messages and operating states (transponder in the field, transmission, etc.) are indicated additionally by means of LEDs and simplify commissioning and service.

SIMATIC RF180C/RF182C and RFID 181EIP have two reader interfaces from which the readers are also supplied with voltage. In the communication module, the power supply of the readers has an electronic fuse. The maximum permissible current per communication module for the readers is 1 A. It is of no importance here whether the current is drawn by 1 or 2 readers.

SIMATIC RF180C

The SIMATIC RF180C is designed for use in PROFINET networks. SIMATIC RF180C is integrated in SIMATIC STEP 7 via the GSDML file. SIMATIC RF180C can then be configured via the SW tool HW Config of SIMATIC Manager or another PROFINET tool.

The application accesses the tag via FB45. FB45 accesses the tag/Data Matrix Code via absolute addresses. For large volumes of data and complex tag operations, the FB45 can process chained commands.

Data is exchanged between SIMATIC RF180C and the application by means of acyclic data records. This ensures that a large quantity of data can be transferred from/to SIMATIC RF180C without loading the bus cycle. This is advantageous when large volumes of data are being transferred. SIMATIC RF180C can also process chained tag commands in this mode extremely quickly.

SIMATIC RF182C

The SIMATIC RF182C is designed for use in Ethernet networks based on TCP/IP. The IP address of the SIMATIC RF182C is set using the "Primary Setup Tool". The RF182C is then ready for operation. This tool can be downloaded from

<http://support.automation.siemens.com/WW/view/en/19440762>

Communication with the SIMATIC RF182C is implemented using XML commands. XML commands have a very simple structure. This makes programming of the RF182C under any operating system very easy. The simple command command set of the RF182C can also be programmed easily in any Ethernet-capable controller.

RFID 181EIP

The communication module RFID 181EIP is for use in Ethernet/IP networks. A DHCP server automatically assigns an IP address to the RFID 181EIP. Alternatively, the user can assign static IP addresses on the DHCP server. The standard tool for assigning IP addresses is called the BOOTP/DHCP server and is included in the RSLinx software package.

The RFID 181EIP communicates with the reader by means of implicit and explicit messages. Commands and results are transferred with explicit messages. The user sets up the commands directly in the application program.

Technical specifications

Order No.	6GT2 002-0JD00	6GT2 002-0JD10	6GT2 002-0JD20
Product type designation	RF180C communication module	Communication module RF182C	Communication module RFID 181EIP
Suitability for use	PROFINET network, in conjunction with RF200 / RF300 / RF600, MOBY D/E/I/U, MV	Industrial Ethernet network, in conjunction with RF200 / RF300 / RF600, MOBY D/U	Ethernet/IP network, in conjunction with RF200 / RF300 / RF600, MOBY D/E/I/U, MV
Data transfer rate			
• for Industrial Ethernet	10 ... 100 Mbit/s	10 ... 100 Mbit/s	10 ... 100 Mbit/s
Data transfer rate of the point-to-point connection (serial, max.)	115.2 kbit/s	115.2 kbit/s	115.2 kbit/s
Interfaces			
Design of interface of point-to-point connection	RS422	RS422	RS422
Number of connectable readers	2	2	2
Design of electrical connection			
• of Industrial Ethernet interface	(according to the connection block)	(according to the connection block)	(according to the connection block)
• for supply voltage	(according to the connection block)	(according to the connection block)	(according to the connection block)
Design of reader interface for communication purposes	M12, 8-pin	M12, 8-pin	M12, 8-pin
Mechanical data			
Material	Thermoplastic (fiberglass reinforced)	Thermoplastic (fiberglass reinforced)	Thermoplastic (fiberglass reinforced)
Color	IP Basic 714	IP Basic 714	IP Basic 714
Maximum tightening torque of the screw for securing the equipment	3 Nm	3 Nm	3 Nm
Supply voltage, current consumption			
DC supply voltage			
• Rated value	24 V	24 V	24 V
• minimum	20 V	20 V	20 V
• max.	30 V	30 V	30 V
Current input at 24 V DC			
• excluding connected devices, typical	0.1 A	0.1 A	0.1 A
• including connected devices, maximum	1.1 A	1.1 A	1.1 A
Permissible ambient conditions			
Ambient temperature			
• during operation	0 ... 60 °C	0 ... 60 °C	0 ... 60 °C
• during storage	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C
• during transport	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C
Degree of protection	IP67	IP67	IP67
Shock resistance	acc. to IEC 61131-2	acc. to IEC 61131-2	acc. to IEC 61131-2
Shock acceleration	300 m/s ²	300 m/s ²	300 m/s ²
Oscillation acceleration	100 m/s ²	100 m/s ²	100 m/s ²
Design, dimensions and weights			
Width	60 mm	60 mm	60 mm
Height	30 mm	30 mm	30 mm
Depth	210 mm	210 mm	210 mm
Net weight	0.21 kg	0.21 kg	0.21 kg
Type of mounting	2 screws M5	2 screws M5	2 screws M5
Cable length for RS422 interface, max.	1000 m	1000 m	1000 m
Product properties			
Type of display	4 LED per reader interface, 4 LED for device status	4 LED per reader interface, 4 LED for device status	4 LED per reader interface, 4 LED for device status

Communication modules

SIMATIC RF180C / RF182C / RFID 181EIP

Order No.	6GT2 002-0JD00	6GT2 002-0JD10	6GT2 002-0JD20
Product type designation	RF180C communication module	Communication module RF182C	Communication module RFID 181EIP
Product function			
• Redundancy procedure MRP	No	No	No
• Transponder file handler, addressable	Yes	No	Yes
The following protocols are supported			
• LLDP	Yes	No	No
• PROFINET IO-protocol	Yes	No	No
• TCP/IP	No	Yes	No
• EtherNet/IP-protocol	No	No	Yes
Product functions „Management, configuration, engineering“			
Type of parameter assignment	GSDML	XML	EDS file
Type of programming	FB45, FB55	XML commands	Data records via implicit/explicit messages
Type of computer-mediated communication	Acyclic communication	XML	Implicite / explicite messaging
Standards, specifications, approvals			
Certificate of suitability	CE, FCC, cULus, PNO: Conformance Class B	CE, FCC, cULus	CE, FCC, cULus
Accessories	Connection block M12 D-coded, 7/8" 5-pin or Push Pull	Connection block M12 D-coded, 7/8" 5-pin or Push Pull or M12 D-coded, 7/8" 4-pin	Connection block M12 D-coded, 7/8" 5-pin or Push Pull or M12 D-coded, 7/8" 4-pin

Order No.	6GT2 002-1JD00	6GT2 002-2JD00	6GT2 002-4JD00
Product type designation	Connection block for RF18xC, M12, 7/8" 5-pin	Connection block for RF18xC, Push Pull	Connection block for RF18xC, M12, 7/8" 4-pin
Suitability for use	Connection block for RF180C, RF182C, RFID 181EIP	Connection block for RF180C, RF182C, RFID 181EIP	Connection block for RF180C, RF182C, RFID 181EIP
Data transfer rate			
• for Industrial Ethernet	10 ... 100 Mbit/s	10 ... 100 Mbit/s	10 ... 100 Mbit/s
Interfaces			
Design of electrical connection			
• of Industrial Ethernet interface	M12, D-coded	Push Pull, RJ 45	M12, D-coded
• for supply voltage	7/8" 5-pin	Push Pull, 5-pin	7/8" 4-pin
Mechanical data			
Material	Die-cast zinc	Thermoplastic (fiberglass reinforced)	Die-cast zinc
Color	silver	IP Basic 718	silver
Maximum tightening torque of the screw for securing the equipment	1.3 Nm	1 Nm	1.3 Nm
Supply voltage, current consumption			
DC supply voltage			
• Rated value	24 V	24 V	24 V
• minimum	20 V	20 V	20 V
• max.	30 V	30 V	30 V
Constant current for forwarding to other bus stations for DC, max.	8 A	12 A	8 A
Permissible ambient conditions			
Ambient temperature			
• during operation	0 ... 60 °C	0 ... 60 °C	0 ... 60 °C
• during storage	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C
• during transport	-40 ... +70 °C	-40 ... +70 °C	-40 ... +70 °C

SIMATIC RF180C / RF182C / RFID 181EIP

Order No.	6GT2 002-1JD00	6GT2 002-2JD00	6GT2 002-4JD00
Product type designation	Connection block for RF18xC, M12, 7/8" 5-pin	Connection block for RF18xC, Push Pull	Connection block for RF18xC, M12, 7/8" 4-pin
Degree of protection	IP67	IP67	IP67
Shock resistance	acc. to IEC 61131-2	acc. to IEC 61131-2	acc. to IEC 61131-2
Shock acceleration	300 m/s ²	300 m/s ²	300 m/s ²
Oscillation acceleration	100 m/s ²	100 m/s ²	100 m/s ²
Design, dimensions and weights			
Width	60 mm	60 mm	60 mm
Height	24 mm	70 mm	24 mm
Depth	79 mm	85 mm	79 mm
Net weight	0.23 kg	0.12 kg	0.23 kg
Type of mounting	4 screws are included	4 screws are included	4 screws are included
Product properties			
Type of display	4 LEDs for Ethernet status	4 LEDs for Ethernet status	4 LEDs for Ethernet status
Accessories	See selection and ordering data	See selection and ordering data	See selection and ordering data

Communication modules

SIMATIC RF180C / RF182C / RFID 181EIP

Selection and ordering data

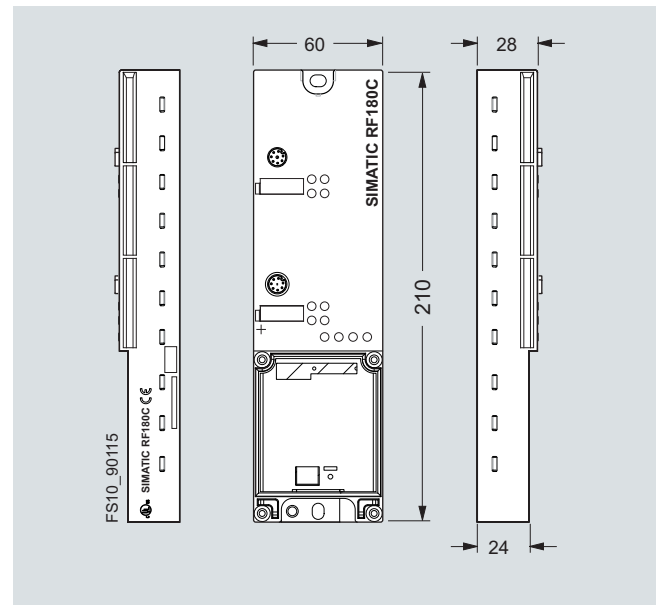
	Order No.
Communication module SIMATIC RF180C For PROFINET, for connecting 2 readers, without a connection block.	6GT2 002-0JD00
Communication module SIMATIC RF182C For Ethernet, for connecting 2 readers, without a connection block.	6GT2 002-0JD10
Communication module SIMATIC RFID 181EIP For Ethernet/IP, for connecting 2 readers, without a connection block.	6GT2 002-0JD20
PROFINET connection block For SIMATIC RF180C/RF182C, M12 D-coded, 7/8" (5-pin).	6GT2 002-1JD00
PROFINET connection block For SIMATIC RF180C/RF182C, Push Pull RJ45.	6GT2 002-2JD00
PROFINET connection block For SIMATIC RF182C, RFID 181EIP, M12 D-coded, 7/8" (4-pin).	6GT2 002-4JD00
Accessories for network connection M12, 7/8" (5-pin) IE connecting cable M12-180/M12-180 Pre-assembled IE FC TP trailing cable GP 2x2 (PROFINET Type C), with two 4-pin M12 plugs (D-coded), maximum length 85 m, IP65/IP67 degree of protection. Lengths:	
0.3 m	6XV1 870-8AE30
0.5 m	6XV1 870-8AE50
1 m	6XV1 870-8AH10
1.5 m	6XV1 870-8AH15
2 m	6XV1 870-8AH20
3 m	6XV1 870-8AH30
5 m	6XV1 870-8AH50
10 m	6XV1 870-8AN10
15 m	6XV1 870-8AN15
7/8" connecting cable to power supply Pre-assembled with two 5-pin 7/8" male and female connectors. Lengths:	
0.3 m	6XV1 822-5BE30
0.5 m	6XV1 822-5BE50
1 m	6XV1 822-5BH10
1.5 m	6XV1 822-5BH15
2 m	6XV1 822-5BH20
3 m	6XV1 822-5BH30
5 m	6XV1 822-5BH50
10 m	6XV1 822-5BN10
15 m	6XV1 822-5BN15

	Order No.
PROFINET M12 plug-in connectors Rugged metal housing; axial cable outlet; D-coded.	6GK1901-0DB20-6AA0
7/8" cable connector, for voltage Pack with 5 units, minimum order- ing quantity 1 pack. <ul style="list-style-type: none"> • With pin insert • With socket insert 	6GK1 905-0FA00 6GK1 905-0FB00
IE M12 control cabinet bushing For conversion from M12 (D-coded) to RJ45, pack with 5 units, minimum order- ing quantity 1 pack.	6GK1 901-0DM20-2AA5
IE connecting cable M12-180/IE FC RJ45 Plug-145 Pre-assembled IE FC TP trailing cable GP 2 x 2 (PROFINET type C) with M12 plug (D-coded) and IE FC RJ45 plug, IP65/IP67 degree of protection, length 2 m.	6XV1 871-5TH20
IE FC RJ45 PLUG 180 RJ45 plug With rugged metal housing and FC connection system, straight cable outlet.	6GK1 901-1BB10-2AA0
Sealing caps 7/8" Pack with 10 units, minimum ordering quantity 1 pack.	6ES7 194-3JA00-0AA0
Accessories for push pull RJ45 network connection Push-pull cable connector for 1L+/2L+ Unassembled.	6GK1 907-0AB10-6AA0
Push-pull cable connector for RJ45 Unassembled.	6GK1 901-1BB10-6AA0
Cover caps for push-pull sockets (1L+/ 2L+), pack of 5.	6ES7 194-4JA50-0AA0
Cover caps for push-pull sockets RJ45, pack of 5.	6ES7 194-4JD50-0AA0
Accessories for network con- nection M12, 7/8" (4-pin) Network wiring with M12 Power supply with 7/8" (4-pin)	Accessories as for M12, 7/8" (5-pin) No cables and connec- tors from Siemens

Order No.	
Accessories for PROFINET bus components	
Industrial Ethernet Switch SCALANCE X204-2 Industrial Ethernet switches with integral SNMP access, Web diagnostics, copper cable diagnostics, and PROFINET diagnostics for configuring line, star and ring topologies, with integrated redundancy manager (exception: SCALANCE X208PRO), including operating instructions, Industrial Ethernet network manual, and configuration software on CD-ROM. With electrical and optical ports for glass multi-mode fiber-optic cable up to 5 km: four 10/100 Mbit/s RJ45 ports and two fiber-optic ports.	6GK5 204-2BB10-2AA3
Industrial Ethernet Switch SCALANCE X204IRT PRO Managed Industrial Ethernet switch, isochronous real-time, LED diagnostics, fault signaling contact with SET button, redundant power supply, incl. operating instructions, Industrial Ethernet network manual, and configuration software on CD-ROM. Four 10/100 Mbit/s RJ45 push-pull ports.	6GK5204-0JA00-2BA6
IE FC TP standard cable GP 2x2 4-core, shielded TP installation cable for connection to IE, FC outlet RJ45/IE FC RJ45 plug, PROFINET-compatible, with UL approval, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m.	6XV1 840-2AH10
Power lead 5-core, 5 x 1.5 mm ² , trailing type, sold by the meter, minimum ordering quantity 20 m, maximum ordering quantity 1000 m.	6XV1 830-8AH10
General accessories	
Stainless steel screws for connection blocks Optional screws made of V4A steel for securing the connection blocks on the basic module. For use in wet areas. Pack with 40 units is sufficient for 10 connection blocks.	6GT2 090-0VB00

Order No.	
Accessories for RFID	
Reader cable for MOBY U PUR material, CMG-approved, suitable for cable carriers. Lengths: 2 m 5 m	6GT2 091-4FH20 6GT2 091-4FH50
Reader cable for MOBY D PUR material, CMG-approved, suitable for cable carriers, 2 m.	6GT2 691-4FH20
Reader cable for SIMATIC RF200 / RF300 / RF600 / MV420 / MV440 Or extension cable MOBY U/D and SIMATIC RF200 / RF300 / RF600 / MV400, PUR material, CMG approval, suitable for cable carriers, straight connector. Lengths: 2 m 5 m 10 m 20 m 50 m 2 m, plug angled at reader	6GT2 891-4FH20 6GT2 891-4FH50 6GT2 891-4FN10 6GT2 891-4FN20 6GT2 891-4FN50 6GT2 891-4JH20
Sealing caps M12 for unused reader connections Minimum order quantity 10 units.	3RX9 802-0AA00
DVD „RFID Systems Software & Documentation“	6GT2 080-2AA20

Dimensions



Communication module SIMATIC RF180C

Communication modules

SIMATIC RF170C

Overview



The SIMATIC RF170C is a communication module for connecting the SIMATIC identification systems to the ET 200pro distributed I/O system. The readers (SLGs) of all RFID systems as well as the MV400 code-reading systems can be operated on the SIMATIC RF170C.

Thanks to its high degree of protection and ruggedness, ET 200pro is particularly suitable for machine-level use. The modular structure with PROFIBUS and PROFINET connection systems allows them to be used in all applications. The uniform plug-in connection system ensures rapid commissioning.

Benefits



- Two parallel reader channels ensure real-time mode at dynamic read points.
- By selecting the relevant header module, the RFID systems can be connected via PROFIBUS or PROFINET.
- The modular design with interface modules for PROFIBUS and PROFINET supports universal implementation.
- Reader connection using an 8-pin M12 connector for fast installation of all components.
- Powerful hardware ensures maximum data exchange speed with the SLG (reader) so that data is made available to the application even faster.
- Very easy downloading of firmware via the SIMATIC Manager for function expansions and error rectification ensure high availability of the identification system.
- Adjustable and parameterizable identification-system-specific diagnostics facilitate commissioning and troubleshooting.
- A wide selection of pre-assembled connecting cables can be ordered for ET 200pro and SIMATIC RF170C. This saves time and money during installation and assures better quality.

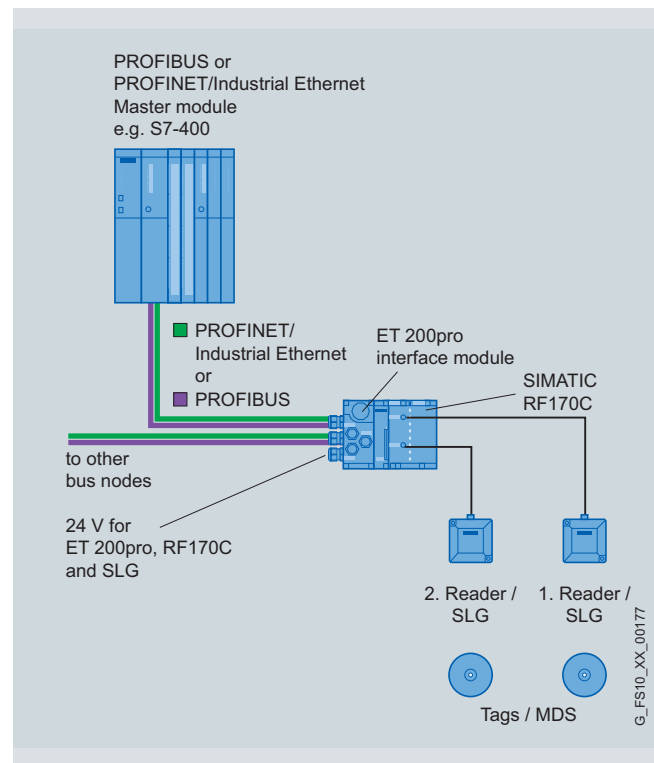
Application

The ET 200pro distributed I/O system with the SIMATIC RF170C communication module has been specially designed for a wide range of applications in industrial automation and logistics. Thanks to the high degree of protection of IP67, the SIMATIC RF170C can be installed without a control cabinet.

Used primarily for the SIMATIC RF170C:

- Mechanical engineering, automation systems, conveyor systems.
- Ancillary assembly lines in the automobile industry/suppliers.
- Small assembly lines.

Design



SIMATIC RF170C

Function

The SIMATIC RF170C comprises an electronics module and a connection block that must be ordered separately. The interface module is available in the PROFIBUS or PROFINET variants. For the PROFIBUS connection, you can choose from the connection systems of ECOFAST, M12, 7/8", or screwed cable gland. For the PROFINET interface module, M12, 7/8" connection is available.

Integration of SIMATIC RF170C into SIMATIC STEP 7 is achieved by means of an object manager (OM). The GSD file of the ET 200pro system is available for integration into non-Siemens systems. Then the SIMATIC RF170C can be configured by means of the software tool HW_Config of the SIMATIC Manager or another PROFIBUS/PROFINET tool.

A pre-assembled reader cable is used to connect one or two readers to the communication module. The standard length of the cable is 2 m. If other cable lengths to the reader are required, an extension cable measuring between 2 m and 50 m can be used. The cable can also be assembled by the customer as required.

The data in the transponder can be accessed in the following manner: Direct addressing via absolute addresses.

Error messages and operating states (transponder in the field, transmission, etc.) are indicated additionally by means of LEDs and simplify commissioning and service.

The SIMATIC RF170C has two reader interfaces from which the readers are also supplied with power. In the SIMATIC RF170C, the power supply for the readers has an electronic fuse. The maximum permissible current per SIMATIC RF170C for the readers is 0.8 A. It is of no importance here whether the current is drawn by one or two readers.

The data in the transponder or in the Data Matrix Code can be directly accessed by means of absolute addresses (FB/FC45, FB/FC55) or more conveniently using the MOBY file handler (FC56) by means of the file names. When the ET 200pro is operated with a PROFINET interface, use of the FB (FB45, FB55) is mandatory.

Communication between the SIMATIC RF170C and the controller is acyclic. Consequently, a very large amount of data can be transferred to/from the SIMATIC RF170C without overloading the bus cycle. This has advantages when transferring large volumes of data. The SIMATIC RF170C can also process concatenated transponder commands very quickly in this mode.

Notice: When connecting high-speed RFID systems (e.g. RF300), the data throughput can decrease due to the distributed configuration of the ET 200pro. Therefore use the data throughput calculation tool when configuring. You can find the tool on the DVD 6GT2080-2AA20.

Technical specifications

Order No.	6GT2 002-0HD00
Product type designation	Communication module RF170C
Suitability for use	ET 200pro distributed IO together with RF200/300/600, MOBY D/E/I/U, MV
Data transfer rate	
Data transfer rate of the point-to-point connection (serial, max.)	115.2 kbit/s
Interfaces	
Design of interface of point-to-point connection	RS422 via connection block
Number of connectable readers	2
Design of electrical connection	
• of the backplane bus	ET 200pro backplane bus
• of PROFIBUS interface	(according to the head module)

Order No.	6GT2 002-0HD00
Product type designation	Communication module RF170C
• of Industrial Ethernet interface	(according to the head module)
• for supply voltage	ET 200pro backplane bus
Design of reader interface for communication purposes	Internal plug to the connection block
Mechanical data	
Material	Thermoplastic (fiberglass reinforced)
Color	IP Basic 714
Maximum tightening torque of the screw for securing the equipment	1.5 Nm
Supply voltage, current consumption	
DC supply voltage	
• Rated value	24 V
• minimum	20 V
• max.	30 V
Current consumed at 24 V DC	
• without connected devices, typical	0.13 A
• including connected devices, maximum	1 A
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +55 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Degree of protection	IP67
Shock resistance	acc. to IEC 61131-2
Shock acceleration	300 m/s ²
Oscillation acceleration	100 m/s ²
Design, dimensions and weights	
Width	90 mm
Height	130 mm
Depth	35 mm
Net weight	0.27 kg
Type of mounting	ET 200pro rack
Cable length for RS422 interface, max.	1000 m
Product properties	
Type of display	(see connection block)
Product function	
• Transponder file handler addressable	No
Supported protocols	
• S7 communication	Yes
Product functions „Management, configuration, engineering“	
Type of parameter assignment	HSP
Type of programming	FB45, FB55 (FC45/55 with limited functionality)
Type of computer-mediated communication	Acyclic communication
Standards, specifications Approvals	
Certificate of suitability	CE, FCC, cULus
Accessories	Connection block for RF170C

Communication modules

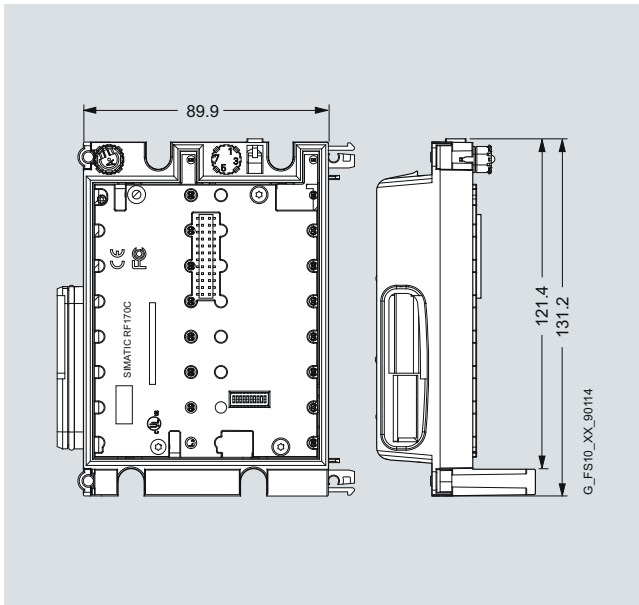
SIMATIC RF170C

Order No.	6GT2 002-1HD00
Product type designation	Connection block for RF170C
Suitability for use	Connection block for RF170C
Interfaces	
Design of interface of point-to-point connection	RS422
Number of connectable readers	2
Mechanical data	
Material	Die-cast zinc
Color	silver
Maximum tightening torque of the screw for securing the equipment	1.5 Nm
Supply voltage, current consumption	
Supply voltage, rated value	24 V DC
Voltage range	20 ... 30 V DC
Permissible ambient conditions	
Ambient temperature	
• during operation	-25 ... +55 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Degree of protection	IP67
Shock resistance	acc. to IEC 61131-2
Shock acceleration	300 m/s ²
Oscillation acceleration	100 m/s ²
Design, dimensions and weights	
Width	90 mm
Height	130 mm
Depth	25 mm
Net weight	0.5 kg
Type of mounting	4 screws are included
Product properties	
Type of display	4 LED per reader interface, 1 LED for device status
Accessories	See selection and ordering data

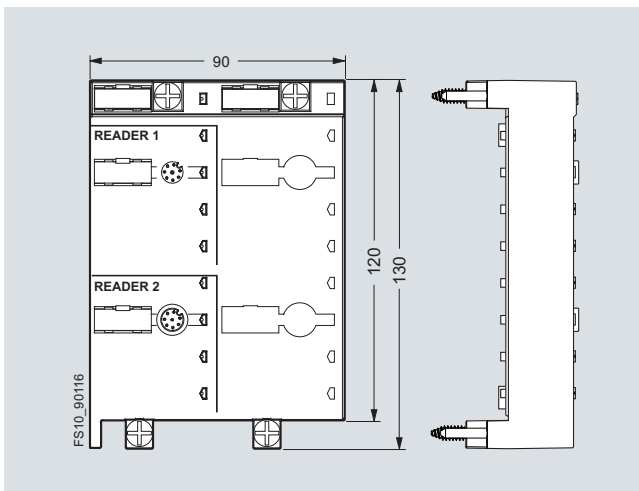
Selection and ordering data

	Order No.
Communication module SIMATIC RF170C	6GT2 002-0HD00
For connecting to the distributed I/O system ET 200pro.	
Accessories	
Connection block for SIMATIC RF170C	6GT2 002-1HD00
For connecting 2 readers via an M12 connector	
Reader cable for MOBY U PUR material, CMG-approved, suitable for cable carriers.	
2 m	6GT2 091-4FH20
5 m	6GT2 091-4FH50
Reader cable for MOBY D PUR material, CMG-approved, suitable for cable carriers, 2 m.	6GT2 691-4FH20
Reader cable for SIMATIC RF200 / RF300 / RF600 / MV400 Or extension cable MOBY U/D and SIMATIC RF200 / RF300 / RF600 / MV400, PUR material, CMG approved, suitable for cable carriers, straight connector.	
2 m	6GT2 891-4FH20
5 m	6GT2 891-4FH50
10 m	6GT2 891-4FN10
20 m	6GT2 891-4FN20
50 m	6GT2 891-4FN50
2 m, plug angled at reader.	6GT2 891-4JH20
Sealing caps M12 for unused reader connections Minimum order quantity 10 units.	3RX9 802-0AA00
DVD „RFID Systems Software & Documentation“	6GT2 080-2AA20

Dimensions



Communication module SIMATIC RF170C



Connection block for SIMATIC RF170C

Communication modules

ASM 475

Overview



The ASM 475 is a low-cost module for connecting the MOBY D, U, SIMATIC RF200, RF300, RF600 and SIMATIC MV400 identification systems to the S7-300 and ET 200M.

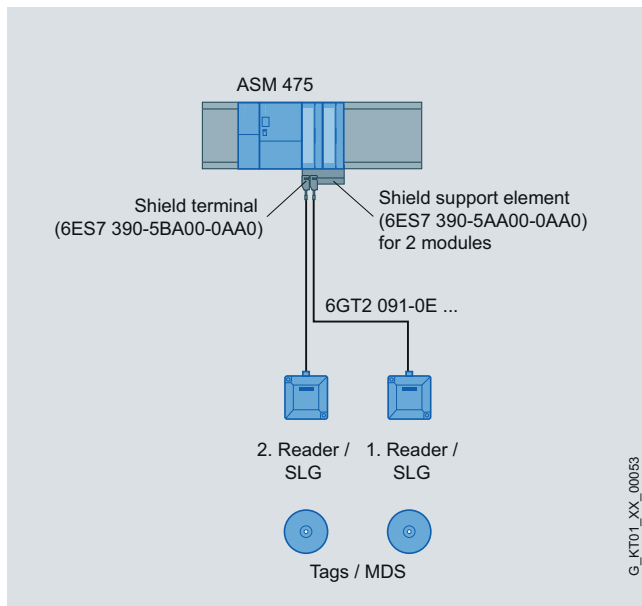
Application

The ASM 475 communication module integrates the identification systems into the following automation systems:

- SIMATIC S7-300
- S7-400, PC (CP5412 (A2)) over ET 200M
- SINUMERIK 840D/810D

A maximum of two readers can be connected in parallel and operated in parallel mode.

Design



Configuration

Function

As many as 8 ASM 475 communication modules can be plugged into one SIMATIC S7-300 rack and operated. In a configuration with several racks (max. 4), the ASM 475s can be plugged into and operated on any rack. This means that as many as 32 ASM 475s can be operated in the maximum configuration of a SIMATIC S7-300. The electrical isolation between the reader and SIMATIC S7-300 bus ensures a noise-resistant setup.

Error messages and operating states (transponder in field, command active, etc.) are indicated using LEDs.

Communication between the ASM 475 and S7-CPU takes place by means of acyclic P-bus message frames so that the useful data (max. 238 byte) is transmitted very quickly and effectively. The ASM 475 is fully integrated into the diagnostics of the SIMATIC Manager by means of an Object Manager (OM). Depending on the PROFIBUS master, as many as 126 ET 200M modules can be operated on one PROFIBUS line.

The data in the transponder or Data Matrix Code is accessed direct by means of physical addresses using the ASM 475. The data is transferred between FC/FB45, FC55 and ASM at great speed and without placing a great load on the CPU. In the MOBY U mode, the ASM 475 can also be operated with the FC56 (file handler).

Technical specifications

Order No.	6GT2 002-0GA10
Product type designation	Communication module ASM 475
Suitability for use	SIMATIC S7-300, ET 200M together with RF200/300/600, MOBY D/E/I/U, MV
Data transfer rate	115.2 kbit/s
Data transfer rate of the point-to-point connection, serial, max.	
Interfaces	
Design of interface of point-to-point connection	RS422
Number of connectable readers	2
Design of electrical connection	
• of backplane bus	S7-300 backplane bus
• of PROFIBUS interface	(according to the head module)
• of Industrial Ethernet interface	(according to the head module)
• for supply voltage	Screw-type or spring-loaded terminals
Design of reader interface for communication purposes	Screw-type or spring-loaded terminals
Mechanical data	
Material	Noryl
Color	Anthracite
Supply voltage, current consumption	
DC supply voltage	
• Rated value	24 V
• minimum	20 V
• max.	30 V
Current consumed at 24 V DC	
• excluding connected devices, typical	0.1 A
• including connected devices, maximum	1 A

Order No.	6GT2 002-0GA10
Product type designation	Communication module ASM 475
Permissible ambient conditions	
Ambient temperature	
• during operation	0 ... 60 °C
• during storage	-40 ... +70 °C
• during transport	-40 ... +70 °C
Degree of protection	IP 20
Shock resistance	acc. to IEC 61131-2
Shock acceleration	150 m/s ²
Oscillation acceleration	10 m/s ²
Design, dimensions and weights	
Width	40 mm
Height	125 mm
Depth	120 mm
Net weight	0.2 kg
Type of mounting	S7-300 rack
Cable length for RS 422 interface, maximum.	1000 m
Product properties	
Type of display	4 LED per reader interface, 2 LED for device status
Product function	
• Transponder file handler addressable	Yes
Supported protocols	
• S7 communication	Yes
Product functions „Management, configuration, engineering“	
Type of parameter assignment	Object Manager, GSD
Type of programming	FB45, FB55, FC56, (FC45/55 with limited functionality)
Type of computer-mediated communication	Acyclic communication
Standards, specifications, approvals	
Certificate of suitability	CE, FCC, UL/CSA
Accessories	Front connector with screw-type or spring-loaded terminals

Selection and ordering data

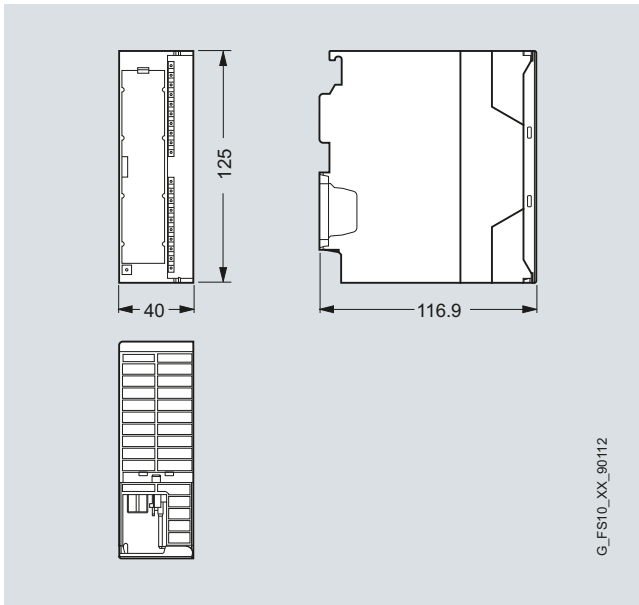
	Order No.
Communication module ASM 475	6GT2 002-0GA10
For SIMATIC S7-300 and ET 200M, parameterizable	
Accessories	
Front connector (1 x per ASM 475)	
• With screw terminals	6ES7 392-1AJ00-0AA0
• With spring-loaded terminals	6ES7 392-1BJ00-0AA0
MOBY U connecting cable Pre-assembled, between the ASM 475 and reader, angled connector, PUR material, in the following lengths:	
2 m	6GT2 091-4EH20
5 m	6GT2 091-4EH50
10 m	6GT2 091-4EN10
20 m	6GT2 091-4EN20
50 m	6GT2 091-4EN50
MOBY D connecting cable Pre-assembled, between ASM 475 and reader D1xS, 9-pole Sub-D plug, PUR material, CMG approved, suitable for cable carriers, in the following lengths:	
5 m	6GT2 491-4EH50
20 m	6GT2 491-4EN20
50 m	6GT2 491-4EN50
SIMATIC RF200 / RF300 / RF600 / MV400 connecting cable Pre-assembled, between the ASM 475 and RF200 / RF300 / RF600 / MV400, IP65, straight connector, PUR material, suitable for cable carriers, CMG approval, in the following lengths ¹⁾ :	
2 m	6GT2 891-4EH20
5 m	6GT2 891-4EH50
Extension cable SIMATIC RF200 / RF300 / RF600 / MV400, PUR material, CMG approval, suitable for cable carriers, straight connector	
2 m	6GT2 891-4FH20
5 m	6GT2 891-4FH50
10 m	6GT2 891-4FN10
20 m	6GT2 891-4FN20
50 m	6GT2 891-4FN50
DVD „RFID Systems Software & Documentation“	6GT2 080-2AA20

¹⁾ The connecting cables can be extended using RF300 connecting cables of type 6GT2 891-4Fxxx. These connecting cables are available in the lengths 2 m, 5 m, 10 m, 20 m and 50 m.

Communication modules

ASM 475

Dimensions



Communication module ASM 475

Communication modules

RFID standard cables

RFID standard cables

Overview



RFID standard cable that is used with SIMATIC RFID systems preassembled in various lengths.

Benefits



Due to the cETLus certification with CMG test and marking, the cable can also be installed in fire protection critical building parts (e.g. vertical installation in a cable duct).

The SIMATIC RFID standard cable can also be used in dynamic applications such as tow chains with a minimum bending radius of 75 mm.

Application

In addition to the normal areas of application in industry, the cable can also be laid:

- in areas subject to high heat
- for highly flexible applications; e.g. in tow chains
- in oily industrial environments
- in outdoor applications under solar radiation (UV radiation).

Technical specifications

Product type designation	SIMATIC RFID standard cable
Product description	Highly flexible communication line (6-wire)
Also suitable for use	In continuous motion applications, such as with drag chains
Cable designation	L-YC11Y 6x1x0.25 6x24AWG CMG
Electrical data	
Loop resistance per length/maximum	160 Ω/km
Mechanical data	
Number of electrical wires	6
Type of screen	Tin-plated braided shield made of copper wires with 0.13 mm diameter (36 AWG)
Wire diameter of the AWG24 wire	0.70 mm
Outer diameter	
• of the inner conductor	0.70 mm
• of the wire insulation	1.2 mm
• of the cable sheath	5.4 mm
Symmetrical tolerance of the outer diameter/of the cable sheath	0.2 mm
Material	
• of the wire insulation	PVC
• of the cable sheath	PUR

Product type designation	SIMATIC RFID standard cable
Color	
• of the data wire insulation	White / yellow / gray / pink / brown / green
• of the cable sheath	Black
Bending radius	
• for one-off bending / minimum permissible	21.6 mm
• for repeated bending / minimum permissible	43 mm
• with continuous bending	75 mm
Number of bending cycles	3 million
Number of bending cycles / note	Suitable as trailing cable for 3 million bending cycles with a bending radius of 75 mm
Tensile load / maximum	200 N
Permitted ambient conditions	
Ambient temperature	
• during operation	-30 °C ... 80 °C
• during storage	-30 °C ... 80 °C
• during transport	-30 °C ... 80 °C
• during installation	-30 °C ... 80 °C
Ambient temperature / comment	Electrical properties measured at 20 °C
Behavior in fire	Flame-retardant acc. to IEC 60332-1-2
Resistance	
• to mineral oil	Resistant
• to grease	Resistant
• Radiological resistance / to UV radiation	Resistant
Product properties, functions, components / general	
• Halogen-free	No
• Silicon-free	Yes
Standards, specifications, approvals	
• UL listing / at 300 V rating	Yes: CMG
• UL listing / at 600 V rating	No

Communication modules

RFID standard cables

RFID standard cables

Selection and ordering data

	Order No.
Connecting cable communication module - reader, without connectors	
50 m	6GT2 090-4AN50
120 m	6GT2 090-4AT12
800 m	6GT2 090-4AT80
MOBY U, connecting cable 470/475 communication module - reader	
2 m	6GT2 091-4EH20
5 m	6GT2 091-4EH50
10 m	6GT2 091-4EN10
20 m	6GT2 091-4EN20
50 m	6GT2 091-4EN50
With straight reader connector, 2 m	6GT2 091-6EH20
With straight reader connector, 5 m	6GT2 091-6EH50
With straight reader connector 10 m	6GT2 091-6EN10
With straight reader connector, 50 m	6GT2 091-6EN50
MOBY U, connecting cable ASM 456, RF160C, RF170C, RF180C, RF182C - reader	
2 m	6GT2 091-4FH20
5 m	6GT2 091-4FH50
MOBY D, connecting cable ASM 475 - SLG D1xS	
5 m	6GT2 491-4EH50
20 m	6GT2 491-4EN20
50 m	6GT2 491-4EN50
MOBY D, connecting cable PC (RS232) - SLG D1x	
5 m	6GT2 691-4BH50
20 m	6GT2 691-4BN20
MOBY D, connecting cable ASM 456, RF160C, RF170C, RF180C, RF182C - SLG D1xS	
2 m	6GT2 691-4FH20
RF200 / RF300 / RF600, connecting cable ASM 475 - reader	
2 m	6GT2 891-4EH20
5 m	6GT2 891-4EH50
RF200/300/600, M12 connecting cable ASM 456, RF160C, RF170C, RF180C, RF182C - reader; angled reader connector	
2 m	6GT2 891-4JH20

	Order No.
RF200/300/600, connecting cable ASM 456, RF160C, RF170C, RF180C, RF182C - reader, code reading systems	
Can also be used as RF200/300/600, MOBY D/U extension cable to ASM 456, RF160C, RF170C, RF180C, RF182C, straight connector.	
2 m	6GT2 891-4FH20
5 m	6GT2 891-4FH50
10 m	6GT2 891-4FN10
20 m	6GT2 891-4FN20
50 m	6GT2 891-4FN50
RF300, connecting cable PC (RS232) - RF380R	
5 m	6GT2 891-4KH50
MOBY U, connecting cable PC (RS232) - SLG U92 and power supply unit	
5 m	6GT2 591-5CH50
20 m	6GT2 591-5CN20
MOBY U, connecting cable PC (RS232) - service interface SLG U92	
5 m	6GT2 591-5AH50

Appendix



7/2	Training
7/3	Siemens Automation Cooperates with Education
7/3	applicable practical know-how
7/5	Partners at Industry Automation and Drive Technologies
7/5	Siemens Solution Partner
7/6	Online services
7/6	Information and ordering in the Internet and on DVD
7/7	Social Media
7/7	Mobile Media
7/8	Siemens Industry Online Support
7/8	Unmatched complete service for the entire life cycle
7/10	Knowledge base on DVD
7/10	Automation value card
7/11	Software licenses
7/13	Index
7/15	Order number index
7/18	Catalog improvement suggestions
7/22	Terms and conditions of sale and delivery

Appendix

Training

Faster and more applicable know-how: Hands-on training from the manufacturer

SITRAIN® – Training for Industry – provides you with comprehensive support in solving your tasks.

Training by the market leader in the industry enables you to make independent decisions with confidence. Especially where the optimum and efficient use of products and plants are concerned. You can eliminate deficiencies in existing plants, and exclude expensive faulty planning right from the beginning.



First-class know-how directly pays for itself: In shorter startup times, high-quality end products, faster troubleshooting and reduced downtimes. In other words, increased profits and lower costs.

Achieve more with SITRAIN

- Shorter times for startup, maintenance and servicing
- Optimized production operations
- Reliable configuration and startup
- Minimization of plant downtimes
- Flexible plant adaptation to market requirements
- Compliance with quality standards in production
- Increased employee satisfaction and motivation
- Shorter familiarization times following changes in technology and staff

Contact

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<http://www.siemens.com/sitrain>

or let us advise you personally.

SITRAIN Customer Support Germany:

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Fax: +49 (911) 895-7576

E-Mail: info@sitrain.com

SITRAIN highlights

Top trainers

Our trainers are skilled teachers with direct practical experience. Course developers have close contact with product development, and directly pass on their knowledge to the trainers.

Practical experience

The practical experience of our trainers enables them to teach theory effectively. But since theory can be pretty drab, we attach great importance to practical exercises which can comprise up to half of the course time. You can therefore immediately implement your new knowledge in practice. We train you on state-of-the-art methodically/didactically designed training equipment. This training approach will give you all the confidence you need.

Wide variety

With a total of about 300 local attendance courses, we train the complete range of Siemens Industry products as well as interaction of the products in systems.

Tailor-made training

We are only a short distance away. You can find us at more than 50 locations in Germany, and in 62 countries worldwide. You wish to have individual training instead of one of our 300 courses? Our solution: We will provide a program tailored exactly to your personal requirements. Training can be carried out in our Training Centers or at your company.

The right mixture: Blended learning

"Blended learning" is a combination of various training media and sequences. For example, a local attendance course in a Training Center can be optimally supplemented by a teach-yourself program as preparation or follow-up. Additional effect: Reduced traveling costs and periods of absence.



Siemens Automation Cooperates with Education

Applicable practical know-how

Comprehensive teaching support for educational institutions

Cooperates
with Education

Automation

SIEMENS

Siemens Automation Cooperates with Education (SCE)

offers a global system for sustained support of technical skills. SCE supports educational institutions in their teaching assignment in the industrial automation sector and offers added value in the form of partnerships, technical expertise, and know-how. As the technological leader, our comprehensive range of services can support you in the transfer of industrial knowledge.

Our services at a glance

- Training curriculums for your lessons
- Trainer packages for hands-on learning
- Courses convey up-to-date, specialist knowledge
- Support for your projects/textbooks
- Complete didactic solutions from our partners
- Personal contact for individual support

Training curriculums for your lessons

Use our profound industrial know-how for practice-oriented and individual design of your course. We offer you more than 90 didactically prepared training documents on the topics of automation and drives technology free of charge. These materials are perfectly matched to your curricula and syllabuses, and optimally suited for use with our trainer packages. This takes into account all aspects of a modern industrial solution: installation, configuration, programming, and commissioning. All documents, including projects, can be individually matched to your specific requirements.

Particular highlight: the new SIMATIC PCS 7 curriculums and trainer packages. Using plant simulation, you can pass on basic, practice-oriented PCS 7 knowledge at universities within about 60 hours (= 1 semester).

www.siemens.com/sce/documents

Trainer packages for hands-on learning

Our SCE trainer packages offer a specific combination of original industrial components which are perfectly matched to your requirements and can be conveniently used in your course. These price reduced bundles available exclusively to schools include innovative and flexible hardware and software packages. SCE can currently offer more than 80 SCE trainer packages including related equipment. These cover both the factory and process automation sectors. You can use them to impart the complete course contents on industrial automation at a very low cost.

Trainer packages are available for:

- Introduction to automation technology with LOGO! logic module and SIMATIC S7-1200 compact controller
- PLC engineering with SIMATIC S7 hardware and STEP 7 software
- Operator control and monitoring with SIMATIC HMI
- Industrial networking over bus systems with SIMATIC NET
- Sensor systems with VISION, RFID, and SIWAREX
- Process automation with SIMATIC PCS 7
- Networked drive and motion technologies with SINAMICS and SIMOTION
- CNC programming with SinuTrain

Important ordering notes:

Only the following institutions are authorized to obtain trainer packages: vocational schools, Colleges and Universities, in-house vocational training departments, non commercial research institutions and non commercial training departments.

To purchase a trainer package, you require a specific end-use certificate, which you can obtain from your regional sales office.

www.siemens.com/sce/tp

Appendix

Siemens Automation Cooperates with Education

Applicable practical know-how

Comprehensive teaching support for educational institutions (continued)

Courses convey up-to-date specialist knowledge



Profit from our excellent know-how as the leader in industrial technologies. We offer you specific courses for automation and drive technology worldwide. These support you in the practice-oriented transferring of product and system know-how, are in conformance with curriculums, and derived from the training fields. Compact technical courses especially for use at universities are also available.

Our range of courses comprises a wide variety of training modules based on the principle of Totally Integrated Automation (TIA). The focus is on the same subject areas as with the SCE trainer packages.

Every PLC and drive course is oriented on state-of-the-art technology. Your graduates can thus be prepared optimally for their future professional life.

In some countries we are offering classes based on our training documents. Please inquire with your SCE contact partner:

www.siemens.com/sce/contact

Support for your projects/textbooks



Automation and drive technology is characterized by continuous and rapid developments. Service and Support therefore play an important role.

We can provide you with consulting for selected projects and support from your personal SCE contact as well as our web based and regional Customer Support.

As a particular service, SCE supports technical authors with our know-how as well as with intensive technical consulting. Siemens library of special textbooks covering the industrial automation sector provides an additional resource for you and your students. These can be found at the SCE web site.

www.siemens.com/sce/contact
www.siemens.com/sce/books

Complete didactic solutions



Our partners for learning systems offer a wide range of training systems and solutions for use in your courses or laboratory.

These models have been designed based on our trainer packages and thus save you the time and cost of self-construction of individual components. The Partner systems provide you with simple and effective help in the fulfillment of your teaching assignment.

www.siemens.com/sce/partner

Contact for individual support

You can find your personal SCE contact on our Internet site. Your local SCE Promoter will answer all your questions concerning the complete SCE offering, and provide you with timely and competent information about innovations. When you encounter challenges, you can profit from our global team of excellence.

If a direct SCE contact is not listed for your country, please contact your local Siemens office.

www.siemens.com/sce/contact

SCE Support Finder for your Internet request

You are an educator and need support on the topic of industry automation? Send us your request now:

www.siemens.com/sce/supportfinder

Scan the QR
code for further
information
(SCE homepage)



Partners at Industry Automation and Drive Technologies

Siemens solution partner

Overview

Siemens Solution Partner Automation

Solution Partner: Highest quality - guaranteed

The products and systems from Siemens Industry Automation and Drive Technologies offer the ideal platform for all automation applications.

Under the name of Siemens Solution Partner Automation, selected system integrators around the world act as uniformly qualified solution providers for the Siemens range of products and services in the fields of automation and drives. Day after day, they utilize their qualified product and system know-how as well as their excellent industry expertise to your advantage – for all requirements.

The partner emblem is the guarantee and indicator of proven quality. The basis for this are defined quality features that identify Solution Partners as reliable and competent solution providers:

- Solution quality
Always a good result with tried and tested solutions expertise.
- Expert quality
Certified technical competence ensures maximum efficiency.
- Project quality
With proven project experience straight to the target.
- Portfolio quality
Comprehensive portfolio for state-of-the-art solutions from a single source.

Solution Partner Finder

 The screenshot shows the Siemens Solution Partner Finder web interface. At the top is the Siemens logo and a navigation bar with "Solution Partner", "Language", and "Contact". Below the navigation bar is a breadcrumb trail: "> Home > Solution Partner Finder". The main heading is "Solution Partner Finder and reference projects". The text asks if the user is looking for a qualified Solution Partner or reference projects. It mentions that selection criteria can be used for specific searches and that contact can be established via an "Inquiry" form. There are two tabs: "Partner search" (active) and "References and Partner search". The "Partner search" tab contains a form with fields for Technology (Please select), Industry (Please select), Country (worldwide), and Company/ZIP code (Search word | Zip code). A note on the right states: "Please note that the search criteria entered are linked with and." A "Find" button is at the bottom right. A small text at the bottom of the form says "Partially qualified search possibly with *".

The Siemens Solution Partner Program helps you to find the optimum partner for your specific requirements.

Support is provided by the Solution Partner Finder, a comprehensive online platform that showcases the profiles of all our solution partners. You can convince yourself of the competence of the respective Solution Partner by means of the references provided. Various search criteria are available for this purpose.

Once you have located a partner, you are only one small step away from contacting them.

Find the right partner here for your specific task and convince yourself of the solution competence provided:

www.siemens.com/automation/partnerfinder

Additional information on the Siemens Solution Partner Program is available online at:

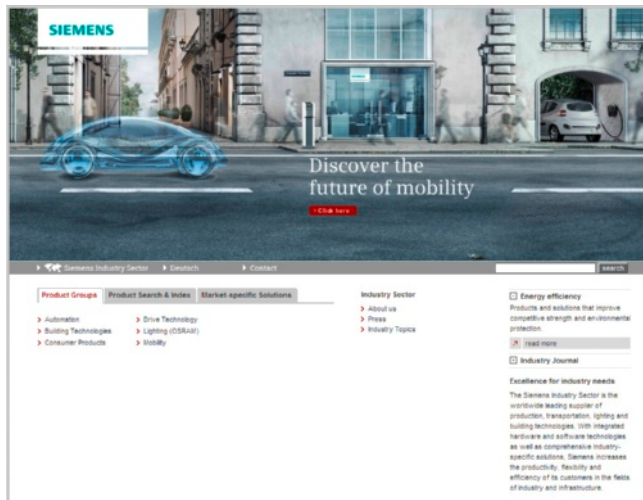
www.siemens.com/automation/solutionpartner

Appendix

Online services

Information and ordering
in the Internet and on DVD

Siemens Industry Automation and Drive Technologies in the WWW



A detailed knowledge of the range of products and services available is essential when planning and configuring automation systems. It goes without saying that this information must always be fully up-to-date.

Siemens Industry Automation and Drive Technologies has therefore built up a comprehensive range of information in the World Wide Web, which offers quick and easy access to all data required.

Under the address

www.siemens.com/industry

you will find everything you need to know about products, systems and services.

Product Selection Using the Interactive Catalog CA 01 of Industry



Detailed information together with convenient interactive functions:

The interactive catalog CA 01 covers more than 80 000 products and thus provides a full summary of the Siemens Industry Automation and Drive Technologies product base.

Here you will find everything that you need to solve tasks in the fields of automation, switchgear, installation and drives. All information is linked into a user interface which is easy to work with and intuitive.

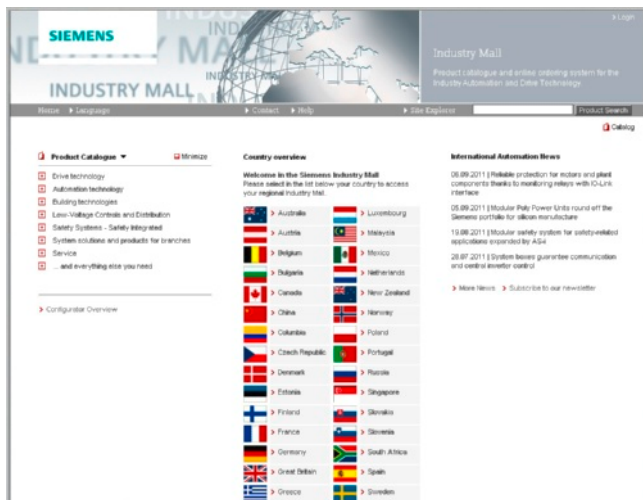
After selecting the product of your choice you can order at the press of a button, by fax or by online link.

Information on the interactive catalog CA 01 are shown in the Internet under

www.siemens.com/automation/ca01

or on DVD.

Easy Shopping with the Industry Mall



The Industry Mall is the virtual department store of Siemens AG in the Internet. Here you have access to a huge range of products presented in electronic catalogs in an informative and attractive way.

Data transfer via EDIFACT allows the whole procedure from selection through ordering to tracking of the order to be carried out online via the Internet.

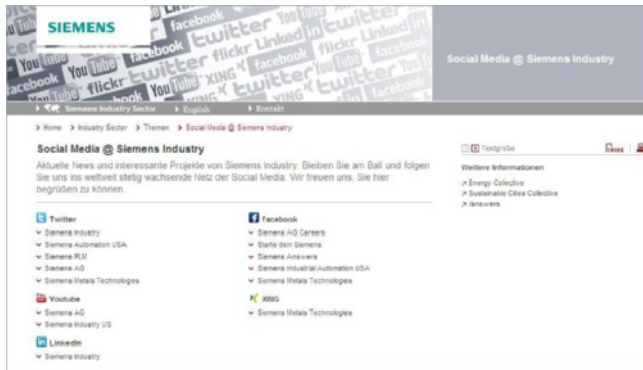
Numerous functions are available to support you.

For example, powerful search functions make it easy to find the required products, which can be immediately checked for availability. Customer-specific discounts and preparation of quotes can be carried out online as well as order tracking and tracing.

Please visit the Industry Mall on the Internet under:

www.siemens.com/industrymall

Social Media



Connect with Siemens through social media: visit our social networking sites for a wealth of useful information, demos on products and services, the opportunity to provide feedback, to exchange information and ideas with customers and other Siemens employees, and much, much more. Stay in the know and follow us on the ever-expanding global network of social media.

Connect with Siemens Industry at our central access point:

www.siemens.com/industry/socialmedia

Or via our product pages at:

www.siemens.com/automation

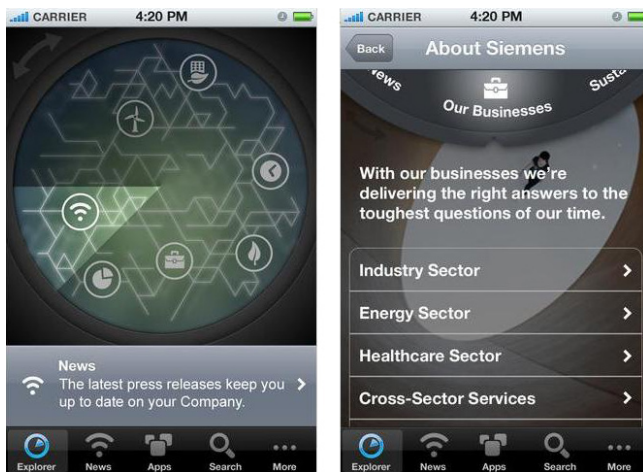
or

www.siemens.com/drives

To find out more about Siemens' current social media activities visit us at:

www.siemens.com/socialmedia

Mobile Media

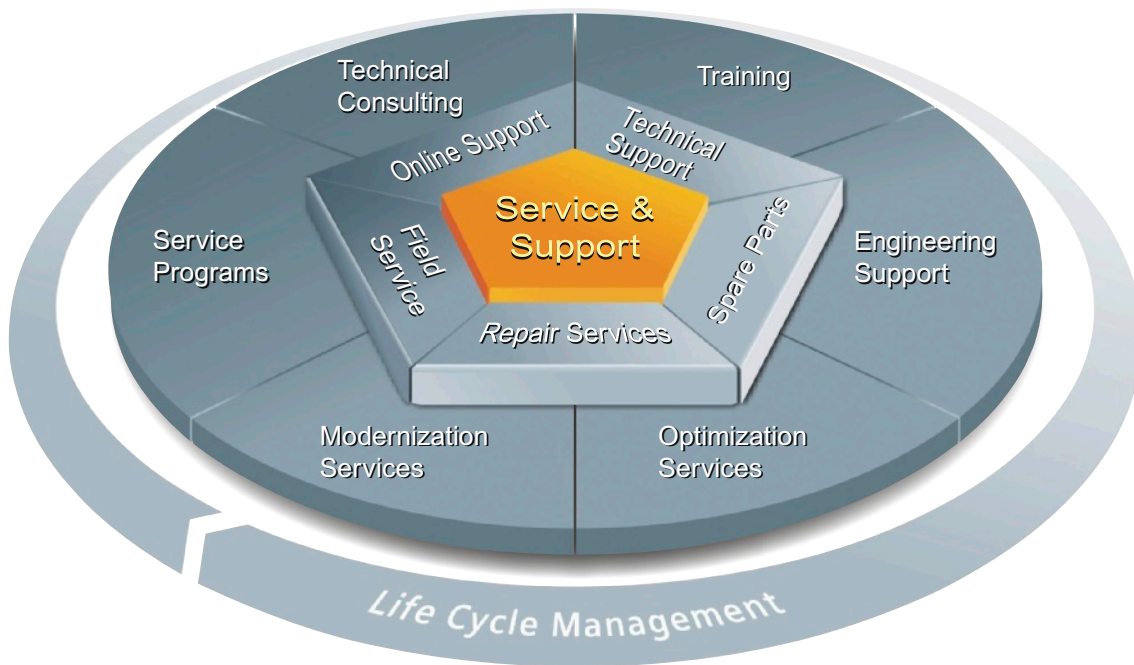


We are also constantly expanding our offering of cross-platform apps for smart phones and tablets. You will find the current Siemens apps at your app store.

Appendix

Siemens Industry Online Support

Unmatched complete service
for the entire life cycle



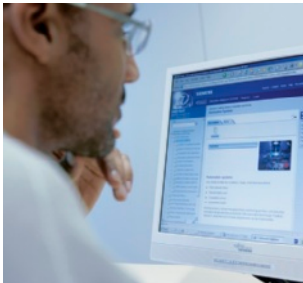
For machine constructors, solution providers and plant operators: The service offering from Siemens Industry, Automation and Drive Technologies includes comprehensive services for a wide range of different users in all sectors of the manufacturing and process industry

To accompany our products and systems, we offer integrated and structured services that provide valuable support in every phase of the life cycle of your machine or plant - from planning and implementation through commissioning as far as maintenance and modernization.

Our Service & Support accompanies you worldwide in all matters concerning automation and drives from Siemens. We provide direct on-site support in more than 100 countries through all phases of the life cycle of your machines and plants.

You have an experienced team of specialists at your side to provide active support and bundled know-how. Regular training courses and intensive contact among our employees - even across continents - ensure reliable service in the most diverse areas.

Online Support



The comprehensive online information platform supports you in all aspects of our Service & Support at any time and from any location in the world.

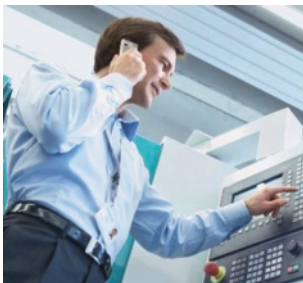
www.siemens.com/automation/service&support

Technical Consulting



Support in planning and designing your project: From detailed actual-state analysis, definition of the goal and consulting on product and system questions right through to the creation of the automation solution.

Technical Support



Expert advice on technical questions with a wide range of demand-optimized services for all our products and systems.

www.siemens.com/automation/support-request

Training



Extend your competitive edge - through practical know-how directly from the manufacturer.

www.siemens.com/sitrain

Contact information is available in the Internet at:
www.siemens.com/automation/partner

Engineering Support



Support during project engineering and development with services fine-tuned to your requirements, from configuration through to implementation of an automation project.

Modernization



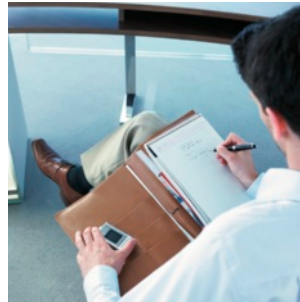
You can also rely on our support when it comes to modernization - with comprehensive services from the planning phase all the way to commissioning

Field Service



Our Field Service offers you services for commissioning and maintenance - to ensure that your machines and plants are always available.

Service programs



Our service programs are selected service packages for an automation and drives system or product group. The individual services are coordinated with each other to ensure smooth coverage of the entire life cycle and support optimum use of your products and systems.

The services of a Service Program can be flexibly adapted at any time and used separately.

Spare Parts



In every sector worldwide, plants and systems are required to operate with constantly increasing reliability. We will provide you with the support you need to prevent a standstill from occurring in the first place: with a worldwide network and optimum logistics chains

In Deutschland:
Tel.: + 49 (911) 895-7448

Examples of service programs:

- Service contracts
- Plant IT Security Services
- Life Cycle Services for Drive Engineering
- SIMATIC PCS 7 Life Cycle Services
- SINUMERIK Manufacturing Excellence
- SIMATIC Remote Support Services

Advantages at a glance:

- Reduced downtimes for increased productivity
- Optimized maintenance costs due to a tailored scope of services
- Costs that can be calculated and therefore planned
- Service reliability due to guaranteed response times and spare part delivery times
- Customer service personnel will be supported and relieved of additional tasks

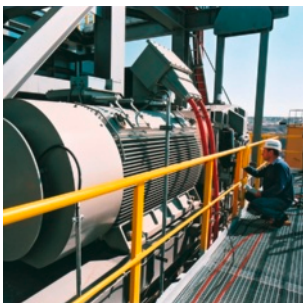
Comprehensive service from a single source, fewer interfaces and greater expertise

Repairs



Downtimes cause problems in the plant as well as unnecessary costs. We can help you to reduce both to a minimum - with our worldwide repair facilities.

Optimization



During the service life of machines and plants, there is often a great potential for increasing productivity or reducing costs. To help you achieve this potential, we are offering a complete range of optimization services.

Appendix

Siemens Industry Online Support

Knowledge Base auf DVD



For locations without online connections to the Internet there are excerpts of the free part of the information sources available on DVD (Service & Support Knowledge Base). This DVD contains all the latest product information at the time of production (FAQs, Downloads, Tips and Tricks, Updates) as well as general information on Service & Support.

The DVD also includes a full-text search and our Knowledge Manager for targeted searches for solutions. The DVD will be updated every 4 months.

Just the same as our online offer in the Internet, the Service & Support Knowledge Base on DVD comes complete in 5 languages (German, English, French, Italian, Spanish).

You can order the **Service & Support Knowledge Base** DVD from your Siemens contact.

Order no. **6ZB5310-0EP30-0BA2**

Automation Value Card



Small card - great support

The Automation Value Card is an integral component of the comprehensive service concept with which Siemens Drive Automation and Drive Technologies will accompany you in each phase of your automation project.

It doesn't matter whether you want just specific services from our Technical Support or want to purchase something on our Online portal, you can always pay with your Automation Value Card. No invoicing, transparent and safe. With your personal card number and associated PIN you can view the state of your account and all transactions at any time.

Services on card. This is how it's done.

Card number and PIN are on the back of the Automation Value Card. When delivered, the PIN is covered by a scratch field, guaranteeing that the full credit is on the card.

By entering the card number and PIN you have full access to the Service & Support services being offered. The charge for the services procured is debited from the credits on your Automation Value Card.

All the services offered are marked in currency-neutral credits, so you can use the Automation Value Card worldwide.

Order your Automation and Value Card easily and comfortably like a product with your sales contact.

Automation Value Card order numbers

Credits	Order no.
200	6ES7 997-0BA00-0XA0
500	6ES7 997-0BB00-0XA0
1 000	6ES7 997-0BC00-0XA0
10 000	6ES7 997-0BG00-0XA0

Detailed information on the services offered is available on our Internet site at:

www.siemens.com/automation/service&support

Service & Support à la Card: Examples

Technical Support

"Priority"	Priority processing for urgent cases
"24 h"	Availability round the clock
"Extended"	Technical consulting for complex questions
"Mature Products"	Consulting service for products that are not available any more

Support Tools in the Support Shop

Tools that can be used directly for configuration, analysis and testing

Übersicht

Software types

Software requiring a license is categorized into types. The following software types have been defined:

- Engineering software
- Runtime software

Engineering software

This includes all software products for creating (engineering) user software, e.g. for configuring, programming, parameterizing, testing, commissioning or servicing.

Data generated with engineering software and executable programs can be duplicated for your own use or for use by third parties free-of-charge.

Runtime software

This includes all software products required for plant/machine operation, e.g. operating system, basic system, system expansions, drivers, etc.

The duplication of the runtime software and executable programs created with the runtime software for your own use or for use by third-parties is subject to a charge.

You can find information about license fees according to use in the ordering data (e.g. in the catalog). Examples of categories of use include per CPU, per installation, per channel, per instance, per axis, per control loop, per variable, etc.

Information about extended rights of use for parameterization/configuration tools supplied as integral components of the scope of delivery are shown in the readme file supplied with the relevant product(s).

License types

Siemens Industry Automation & Drive Technologies offers various types of software license:

- Floating license
- Single license
- Rental license
- Rental floating license
- Trial license
- Demo license
- Demo floating license

Floating license

The software may be installed for internal use on any number of devices by the licensee. Only the concurrent user is licensed. The concurrent user is the person using the program. Use begins when the software is started.

A license is required for each concurrent user.

Single license

Unlike the floating license, a single license permits only one installation of the software per license.

The type of use licensed is specified in the ordering data and in the Certificate of License (CoL). Types of use include for example per instance, per axis, per channel, etc.

One single license is required for each type of use defined.

Rental license

A rental license supports the "sporadic use" of engineering software. Once the license key has been installed, the software can be used for a specific period of time (the operating hours do not have to be consecutive).

One license is required for each installation of the software.

Rental floating license

The rental floating license corresponds to the rental license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

Trial license

A trial license supports "short-term use" of the software in a non-productive context, e.g. for testing and evaluation purposes. It can be transferred to another license.

Demo license

The demo license support the "sporadic use" of engineering software in a non-productive context, for example, use for testing and evaluation purposes. It can be transferred to another license. After the installation of the license key, the software can be operated for a specific period of time, whereby usage can be interrupted as often as required.

One license is required per installation of the software.

Demo floating license

The demo floating license corresponds to the demo license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

Certificate of license (CoL)

The CoL is the licensee's proof that the use of the software has been licensed by Siemens. A CoL is required for every type of use and must be kept in a safe place.

Downgrading

The licensee is permitted to use the software or an earlier version/release of the software, provided that the licensee owns such a version/release and its use is technically feasible.

Delivery versions

Software is constantly being updated.

The following delivery versions

- PowerPack
- Upgrade

can be used to access updates.

Existing bug fixes are supplied with the ServicePack version.

PowerPack

PowerPacks can be used to upgrade to more powerful software. The licensee receives a new license agreement and CoL (Certificate of License) with the PowerPack. This CoL, together with the CoL for the original product, proves that the new software is licensed.

A separate PowerPack must be purchased for each original license of the software to be replaced.

Upgrade

An upgrade permits the use of a new version of the software on the condition that a license for a previous version of the product is already held.

The licensee receives a new license agreement and CoL with the upgrade. This CoL, together with the CoL for the previous product, proves that the new version is licensed.

A separate upgrade must be purchased for each original license of the software to be upgraded.

Appendix

Software licenses

Overview

ServicePack

ServicePacks are used to debug existing products. ServicePacks may be duplicated for use as prescribed according to the number of existing original licenses.

License key

Siemens Industry Automation & Drive Technologies supplies software products with and without license keys.

The license key serves as an electronic license stamp and is also the "switch" for activating the software (floating license, rental license, etc.).

The complete installation of software products requiring license keys includes the program to be licensed (the software) and the license key (which represents the license).

Software Update Service (SUS)

As part of the SUS contract, all software updates for the respective product are made available to you free of charge for a period of one year from the invoice date. The contract will automatically be extended for one year if it is not canceled three months before it expires.

The possession of the current version of the respective software is a basic condition for entering into an SUS contract.

You can download explanations concerning license conditions from www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

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Catalog improvement suggestions

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Siemens AG
I IA CC PRI 1
Hr. Fregien
Gleiwitzer Str. 555
90475 Nürnberg

Fax: +49 (911) 895-154830

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Notes



Appendix

Notes

Appendix

Terms and conditions of sale and delivery

1. General Provisions

By using this catalog you can acquire hardware and software products described therein from Siemens AG subject to the following Terms and Conditions of Sale and Delivery (hereinafter referred to as "T&C"). Please note! The scope, the quality and the conditions for supplies and services, including software products, by any Siemens entity having a registered office outside of Germany, shall be subject exclusively to the General Terms and Conditions of the respective Siemens entity. The following T&C apply exclusively for orders placed with Siemens Aktiengesellschaft, Germany.

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It shall be debited separately at the respective rate according to the applicable legal regulations.

Prices are subject to change without prior notice. We will debit the prices valid at the time of delivery.

Surcharges will be added to the prices of products that contain silver, copper, aluminium, lead and/or gold, if the respective basic official prices for these metals are exceeded. These surcharges will be determined based on the official price and the metal factor of the respective product.

The surcharge will be calculated on the basis of the official price on the day prior to receipt of the order or prior to the release order.

The metal factor determines the official price as of which the metal surcharges are charged and the calculation method used. The metal factor, provided it is relevant, is included with the price information of the respective products. An exact explanation of the metal factor can be downloaded at:

www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

3. Additional Terms and Conditions

The dimensions are in mm. In Germany, according to the German law on units in measuring technology, data in inches only apply to devices for export.

Illustrations are not binding.

Insofar as there are no remarks on the corresponding pages, - especially with regard to data, dimensions and weights given - these are subject to change without prior notice.

4. Export regulations

We shall not be obligated to fulfill this agreement if such fulfillment is prevented by any impediments arising out of national or international foreign trade or customs requirements or any embargoes or other sanctions.

Export of goods listed in this catalog may be subject to license. We shall indicate in the delivery details whether licenses are required under German, European and US export lists. Goods labeled with "AL" not equal to "N" are subject to European or German export authorization when being exported out of the EU. Goods labeled with "ECCN" not equal to "N" are subject to US re-export authorization.

The export label is made available with the information of the respective goods on Industry Mall, our online-catalog-system, additionally. The deciding factors are the export label "AL" or "ECCN" indicated on order confirmations, delivery notes and invoices.

Even without a label, or with label "AL:N" or "ECCN:N", authorization may be required due to the final whereabouts and purpose for which the goods are to be used.

If you transfer goods (hardware and/or software and/or technology as well as corresponding documentation, regardless of the mode of provision) delivered by us or works and services (including all kinds of technical support) performed by us to a third party worldwide, you shall comply with all applicable national and international (re-) export control regulations.

If required to conduct export control checks, you, upon request by us, shall promptly provide us with all information pertaining to particular end customer, destination and intended use of goods, works and services provided by us, as well as any export control restrictions existing.

Errors excepted and subject to change without prior notice.

1) The text of the Comprehensive Terms and Conditions of Sale and Delivery can be downloaded at:

www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

Industry Automation, Drive Technologies and Low-Voltage Power Distribution

Further information can be obtained from our branch offices listed in the appendix or at www.siemens.com/automation/partner

Interactive Catalog on DVD		<i>Catalog</i>	
for Industry Automation, Drive Technologies and Low Voltage Distribution		CA 01	
Drive Systems			
<u>Variable-Speed Drives</u>			
SINAMICS G130 Drive Converter Chassis Units	D 11		
SINAMICS G150 Drive Converter Cabinet Units			
SINAMICS GM150, SINAMICS SM150	D 12		
Medium-Voltage Converters			
ROBICON Perfect Harmony	D 15.1		
Medium-Voltage Air-Cooled Drives			
Germany Edition			
SINAMICS S120 Chassis Format Units and Cabinet Modules	D 21.3		
SINAMICS S150 Converter Cabinet Units			
SINAMICS DCM Converter Units	D 23.1		
SINAMICS and Motors for Single-Axis Drives	D 31		
<u>Three-phase Induction Motors</u>	D 84.1		
• H-compact			
• H-compact PLUS			
Asynchronous Motors Standardline	D 86.1		
Synchronous Motors with Permanent-Magnet Technology, HT-direct	D 86.2		
DC Motors	DA 12		
SIMOREG DC MASTER 6RA70 Digital Chassis Converters	DA 21.1		
SIMOREG K 6RA22 Analog Chassis Converters	DA 21.2		
<i>PDF: SIMOREG DC MASTER 6RM70 Digital Converter Cabinet Units</i>	DA 22		
SIMOVERT PM Modular Converter Systems	DA 45		
SIEMOSYN Motors	DA 48		
MICROMASTER 420/430/440 Inverters	DA 51.2		
MICROMASTER 411/COMBIMASTER 411	DA 51.3		
SIMOVERT MASTERDRIVES Vector Control	DA 65.10		
SIMOVERT MASTERDRIVES Motion Control	DA 65.11		
Synchronous and asynchronous servomotors for SIMOVERT MASTERDRIVES	DA 65.3		
SIMODRIVE 611 universal and POSMO	DA 65.4		
SIMOTION, SINAMICS S120 and Motors for Production Machines	PM 21		
SINUMERIK, SIMODRIVE and Motors for Machine Tools	NC 60		
SINUMERIK, SINAMICS S120 and Motors for Machine Tools	NC 61		
<u>Low-Voltage Three-Phase-Motors</u>			
IEC Squirrel-Cage Motors	D 81.1		
MOTOX Geared Motors	D 87.1		
<u>Mechanical Driving Machines</u>			
FLENDER Standard Couplings	MD 10.1		
FLENDER SIG Standard industrial gear unit	MD 30.1		
Low-Voltage Power Distribution and Electrical Installation Technology			
SENTRON Protection, Switching, Measuring and Monitoring Devices	LV 10.1		
SIVACON · ALPHA Switchboards and Distribution Systems	LV 10.2		
SIVACON 8PS Busbar Trunking Systems	LV 70		
GAMMA Building Control	ET G1		
<i>PDF: DELTA Switches and Socket Outlets</i>	ET D1		
Motion Control		<i>Catalog</i>	
SINAMICS and Motors for Single-Axis Drives		D 31	
SINUMERIK & SIMODRIVE		NC 60	
Automation Systems for Machine Tools			
SINUMERIK & SINAMICS		NC 61	
Equipment for Machine Tools			
SINUMERIK 808D, SINAMICS V60 and G120 and SIMOTICS 1FL5 and 1LE1 motors		NC 81.1	
SINUMERIK 828D BASIC T/BASIC M, SINAMICS S120 Combi and 1FK7/1PH8 motors		NC 82	
SIMOTION, SINAMICS S120 and Motors for Production Machines		PM 21	
Drive and Control Components for Cranes		CR 1	
Power Supply and System Cabling			
Power supply SITOP		KT 10.1	
System cabling SIMATIC TOP connect		KT 10.2	
Process Instrumentation and Analytics			
Field Instruments for Process Automation		FI 01	
SIREC Recorders and Accessories		MP 20	
SIPART, Controllers and Software		MP 31	
Products for Weighing Technology		WT 10	
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<i>PDF: Process Analytics, Components for the System Integration</i>		PA 11	
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Safety Technology for Factory Automation		SI 10	
SIMATIC HMI/PC-based Automation			
Human Machine Interface Systems/PC-based Automation		ST 80/ST PC	
SIMATIC Ident			
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SIMATIC Industrial Automation Systems			
Products for Totally Integrated Automation and Micro Automation		ST 70	
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<i>PDF: Migration solutions with the SIMATIC PCS 7 Process Control System</i>		ST PCS 7.2	
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Industrial Communication		IK PI	
SINVERT Photovoltaics			
Inverters and Components for Photovoltaic Installations		RE 10	
SIRIUS Industrial Controls			
SIRIUS Industrial Controls		IC 10	
SIRIUS Industrial Controls (selected content from catalog IC 10)		IC 90	
System Solutions			
Applications and Products for Industry are part of the interactive catalog CA 01			

Siemens AG
Industry Sector
Sensors and Communication
Postfach 48 48
90026 NÜRNBERG
GERMANY

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