SIEMENS

SIMATIC Ident

RFID systems
ASCII protocol for RF200

Operating Manual

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Introduction

1

Purpose of this operating manual

This manual describes the communications procedure of the SIMATIC RF200 readers with the ASCII protocol (article numbers: 6GT2821-xAC40).

With the ASCII protocol, you can connect RF200 readers to any control systems with an RS-232 interface quickly and easily. This document describes not only the protocol definition and the possible interface parameters but also the command frames of the RF200 ASCII readers (e.g. read and write from/to transponders). The section "Transponders" lists the ISO15693 transponders of the RF200 portfolio along with their memory configuration.

Target group

This manual is intended for application developers who want to operate the RFID system “RF200” on controllers or host systems with the RS-232 serial interface.

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Additional information

You will find more information in "RF200 system manual (http://support.automation.siemens.com/WW/view/en/43906324)".

Reference

The following editions of the operating manual ASCII Protocol for RF200 have been published:

Edition	Remarks
06/2013	First edition
09/2013	Expansion of the documentation with the addition of the "ANW-MELD" message frame and reader ordering data.
10/2013	Error corrected in the "ANW-MELD" message frame
11/2016	Corrected and revised edition Expansion of the documentation with the addition of “scan mode”

1.1 Properties of the protocol

This protocol represents a simple communications procedure for a point-to-point connection. The communications parameters of the serial interface are set as follows in the factory:

- Data frame with 8 data bits [1)]
- 1 stop bit [1)]
- Odd parity
- Transmission speed: 19.2 kBd

[1)] This value cannot be changed in RF200 readers.

Full duplex data transfer is possible. Since no handshake is defined, both stations can send at the same time.

The net data is transferred with the ASCII characters '0' to '9' and 'A' to 'F'. Other characters are not permitted. For the frame, two uniquely recognizable control characters are used, "STX [02]" for the start of the frame and "ETX [03]" for the end of the frame.

With the ASCII protocol, a third optional control character "LF [0A] = new line" (before ETX) is possible. The reader understands this control character, configuration on the reader is unnecessary. A frame is uniquely identified by the control characters for the start and end, the procedure has no other reliability mechanisms or length information. The amount of data to be transferred is restricted by the monitoring time and by the length byte in the frame.

Receipt of the frame is monitored with a monitoring time of 300 ms. If the host does not manage to send the next character to the reader within this time until "ETX" is reached, the frame is ignored.

Note

Restrictions resulting from the ASCII protocol

The ASCII protocol has no data consistency mechanisms. You should take this into account in your application (e.g. checksum).

The ASCII protocol has no line monitoring mechanisms. Execute the "SLG-STATUS" command (mode 0) at regular intervals, to ensure that the reader is reachable.

Table 1- 1 Structure of a LAUF protocol frame

STX	Net data	{optional: LF}	ETX
0x02	ASCII values (two bytes for 1 net byte)	{0x0A}	0x03

Table 1- 2 ASCII table with the corresponding hexadecimal values

ASCII value	'0'	'1'	'2'	'3'	'4'	'5'	'6'	'7'	'8'	'9'	'A'	'B'	'C'	'D'	'E'	'F'
Hex value	30	31	32	33	34	35	36	37	38	39	41	42	43	44	45	46

1.2 Interface parameters

You can select the following interface parameters:

- Transmission speed:
  - 19.2 kBd (default),
  - 57.6 kBd,
  - 115.2 kBd
- Parity:
  - without,
  - even,
  - odd (default)
- Stop bits:
  - 1 (default),
  - 2

The reader stores these parameters retentively. You can modify these parameters using the "SET RS232" command and read them out using the "SLG-STATUS" command.

NOTICE
Documenting changes to the interface parameters Document all changes that you make to the interface parameters. You can only read out data when the interface parameters set in the driver and on the reader match.

If you cannot use the reader with the default settings, follow the steps below to change settings of the serial interface:

1. Connect the reader to a PC.
2. Send the interface frame "SET RS232" using a standard PC tool (e.g. HyperTerminal).

The reader can then be deployed in the target environment.

Note

Run "SET-RS232" before the first "RESET"

To change the interface parameters, the "SET RS-232" command must be sent before the first "RESET" command. The acknowledgement of the command is still made with the original interface parameters; following this the reader is ready for operation with the new parameters.

Make sure that you perform this procedure when necessary with all readers since all readers ship with the default transmission speed 19.2 kBd.

1.3 Specifications for data transmission

The data transfer must meet the following specification:

With each byte, first the high nibble and then the low nibble are transferred.

e.g. in the case of 0x87: first character → 0x38; second character → 0x37.

"Words" represented in the frame structure are transferred first with the MSB. These "words" contain, for example, the length and address information for write/read commands. The net data is treated as bytes.

To ensure that the handling remains simple, the chaining of commands was dispensed with in the ASCII protocol. A command is always followed by the corresponding acknowledgement that must arrive before new commands can be sent. This means that interface communication remains simple.

Only one command can ever be active on the reader. This rule does not apply to the following commands:

- The "RESET" command can be sent at any time to re-initialize the reader.
- The "SLG-STATUS" command can be queried at any time.

Since the sender of an ASCII frame has no information as to whether the frame has arrived at the other node, the new command "SLG-STATUS" (mode 0) was defined with which the reader can be queried to establish whether a command is active or not or whether a transponder is located in the antenna field or not.

Over and above this, the command can also be used to implement line monitoring.

Command and message frames 2

2.1 Overview of commands

The ASCII protocol supports the single tag mode with normal addressing. The following modes can be selected:

- with presence (MDS_Control On)
- without presence (MDS_Control Off)
- without presence including command-dependent antenna on/off (MDS_Control, HF Off)

If the presence check is active "with presence", transponders entering the antenna field are displayed. The presence of a transponder is signaled by the reader LED being lit yellow. The presence of the transponder is signaled to the host system using the presence frame. You will find more information on this in the section ""ANW-MELD" message (Page 19)".

With the passive presence check "without presence", the presence of a transponder is also indicated by the yellow reader LED lighting up, however no frame is sent to the host system. In this mode, presence can be queried on the reader by the host with the "SLG-STATUS" command (mode 0).

Table 2- 1 The following commands are supported:

Command	Description
READ	Read transponder data
WRITE	Write transponder data
SLG-STATUS (mode 0)	Query reader status/data
SLG-STATUS (mode 1)	Query reader status/data
MDS-STATUS (mode 3)	Query transponder status/data
SET-ANT	Switch antenna on/off
SET-RS232	Set interface parameters
RESET	Reset reader / clear errors
ANW-MELD [1)]	Asynchronous presence alarm

1) “ANW-MELD” is a message, not a command.

The following commands or functionalities* are not supported and are rejected with the error “error_Moby” (0x05):

- INIT
- REPEAT
- OTP*

The following messages are not generated by the reader:

- Startup

Note
"RESET" after startup

The reader does not generate a startup message. Following the startup, execute a "RESET" so that the reader can receive further commands.

2.2 "READ" command

Table 2- 2 "READ" command

Address	Designation	Value	Description
Byte 0	Frame length	0x30	Net data length of the frame - 1 byte
Byte 1		0x36	
Byte 2	Command	0x30	--
Byte 3		0x32	
Byte 4	Status	0x30	--
Byte 5		0x30	
Byte 6	User data address	high byte, high nibble	Read UID: 46 46 46 30 hex The max. permitted address corresponds to the memory size -1 byte Infineon: 0x30, 0x33, 0x44, 0x46 NXP: 0x30, 0x30, 0x36, 0x46 Fujitsu: 0x30, 0x37, 0x43, 0x46 TI, ST.: 0x30, 0x30, 0x46, 0x46
Byte 7		high byte, low nibble	
Byte 8		low byte, high nibble	
Byte 9		low byte, low nibble	
Byte 10	User data length	high nibble	Length of user data to be read: min: 0x30, 0x31 max: 0x46, 0x38
Byte 11		low nibble	

Table 2- 3 "READ" acknowledgment

Address	Designation	Value	Description
Byte 0	Frame length	high nibble	Net data length of the frame - 1 byte (depending on data length)
Byte 1		low nibble	
Byte 2	Command	0x30	--
Byte 3		0x32	
Byte 4	Status	high nibble	Error code "error_Moby"
Byte 5		low nibble	

Address	Designation	Value	Description
Byte 6	User data address	--	Value from command
Byte 7		--	
Byte 8	User data address	--	Value from command
Byte 9		--	
Byte 10	User data length	--	Value from command
Byte 11		--	
Byte 12	User data	lowest byte, high nibble	max. 248 bytes net data (496 bytes)
Byte 13		lowest byte, low nibble	
...		...	
Byte n-1		highest byte, high nibble	
Byte n		highest byte, low nibble	

2.3 "WRITE" command

Table 2- 4 "WRITE" command

Address	Designation	Value	Description
Byte 0	Frame length	high nibble	Net data length of the frame - 1 byte (depending on data length)
Byte 1		low nibble	
Byte 2	Command	0x30	--
Byte 3		0x31	
Byte 4	Status	0x30	--
Byte 5		0x30	
Byte 6	User data address	0x30	The max. permitted address corresponds to the memory size -1 byte Infineon: 0x30, 0x33, 0x44, 0x46 NXP: 0x30, 0x30, 0x36, 0x46 Fujitsu: 0x30, 0x37, 0x43, 0x46 TI, ST.: 0x30, 0x30, 0x46, 0x46
Byte 7		high byte, low nibble	
Byte 8		low byte, high nibble	
Byte 9		low byte, low nibble	
Byte 10	User data length	high nibble	Length of user data to be written: min: 0x30, 0x31 max: 0x46, 0x38
Byte 11		low nibble	
Byte 12	User data	lowest byte, high nibble	max. 248 bytes net data (496 bytes)
Byte 13		lowest byte, low nibble	
...		...	
Byte n-1		highest byte, high nibble	
Byte n		highest byte, low nibble	

Table 2- 5 "WRITE" acknowledgment

Address	Designation	Value	Description
Byte 0	Frame length	0x30	Net data length of the frame - 1 byte
Byte 1		0x32	
Byte 2	Command	0x30	--
Byte 3		0x31	
Byte 4	Status	high nibble	Error code “error_Moby”
Byte 5		low nibble	

2.4 SLG STATUS (mode 0) command

Table 2- 6 “SLG STATUS” (mode 0) command

Address	Designation	Value	Description
Byte 0	Frame length	0x30	Net data length of the frame - 1 byte
Byte 1		0x36	
Byte 2	Command	0x30	--
Byte 3		0x34	
Byte 4	Status	0x30	--
Byte 5		0x30	
Byte 6	Mode	0x30	Mode 0
Byte 7		0x30	
Byte 8	Reserve	0x30	--
Byte 9		0x30	
Byte 10	Reserve	0x30	--
Byte 11		0x30	
Byte 12	Reserve	0x30	--
Byte 13		0x30	

Table 2- 7 "SLG STATUS" (mode 0) acknowledgment

Address	Designation	Value	Description
Byte 0	Frame length	0x30	Net data length of the frame - 1 byte
Byte 1		0x35	
Byte 2	Command	0x30	--
Byte 3		0x34	
Byte 4	Status	high nibble	Error code "error_Moby"
Byte 5		low nibble	
Byte 6	S-Info	0x30	Mode from command
Byte 7		0x30	

Address	Designation	Value	Description
Byte 8	Command status	0x30	0x30 ≙ command is not active
Byte 9		0x30 / 0x31	0x31 ≙ command is active
Byte 10	Presence	0x30	0x30 ≙ no presence
Byte 11		0x30 / 0x31	0x31 ≙ presence

2.5 SLG STATUS (mode 1) command

Table 2- 8 SLG STATUS (mode 1) command

Address	Designation	Value	Description
Byte 0	Frame length	0x30	Net data length of the frame - 1 byte
Byte 1		0x36	
Byte 2	Command	0x30	--
Byte 3		0x34	
Byte 4	Status	0x30	--
Byte 5		0x30	
Byte 6	Mode	0x30	Mode 1
Byte 7		0x31	
Byte 8	Reserve	0x30	--
Byte 9		0x30	
Byte 10	Reserve	0x30	--
Byte 11		0x30	
Byte 12	Reserve	0x30	--
Byte 13		0x30	

Table 2- 9 "SLG STATUS" (mode 1) acknowledgment

Address	Designation	Value	Description
Byte 0	Frame length	0x31	Net data length of the frame - 1 byte
Byte 1		0x42	
Byte 2	Command	0x30	--
Byte 3		0x34	
Byte 4	Status	high nibble	Error code "error_Moby"
Byte 5		low nibble	
Byte 6	S-Info	0x30	Mode from command
Byte 7		0x31	
Byte 8	Hardware	0x33	Hardware version (reader)

Address	Designation	Value	Description
Byte 9		0xXX	XX = 31 ≙ RF260R XX = 32 ≙ RF210R / RF220R XX = 33 ≙ RF240R XX = 34 ≙ RF240R (RS-232) XX = 35 ≙ RF260R (RS-232) XX = 36 ≙ RF250R XX = 37 ≙ RF250R (RS-232)
Bytes 10..11	HW-V(low)	0x30, 0x31	RF200 family
Bytes 12..13	HW-V(high)	0x30, 0x30	Reserved
Byte 14	Url-V	xx, high nibble	--
Byte 15		xx, low nibble	
Byte 16		yy, high nibble	
Byte 17		yy, low nibble	
Byte 18	FW	0x33	FW variant RF200 ISO only
Byte 19		0x33	
Byte 20	FW-V	xx, high nibble	Firmware version, format xx.yy
Byte 21		xx, low nibble	
Byte 22		yy, high nibble	
Byte 23		yy, low nibble	
Byte 24	TR	0x33	Driver variant LAUF
Byte 25		0x33	
Byte 26	TR-V	xx, high nibble	Version of the driver, format xx.yy
Byte 27		xx, low nibble	
Byte 28		yy, high nibble	
Byte 29		yy, low nibble	
Byte 30	SS	0x30	0x31 ≙ RS-422 interface
Byte 31		0x31 / 0x32	0x32 ≙ RS-232 interface
Byte 32	Baud rate	0x30	0x31 ≙ 19.2 kBd
Byte 33		0x31 / 0x33 / 0x35	0x33 ≙ 57.6 kBd 0x35 ≙ 115.2 kBd
Byte 34	Interface parameters	0x30	Bit 0: 0 ≙ 1 stop bit; 1 ≙ 2 stop bits
Byte 35		0x3X	Bit 1: 0 ≙ 8 data bits Bit 2, 3: 00 ≙ odd parity; 01 ≙ even parity; 10 ≙ no parity
Bytes 36..39	Reserved	0x30	--
Byte 40	LTBG	0x30	Reserved
Byte 41		0x30	
Byte 42	MTAG	0x30	Number of transponders that can be processed
Byte 43		0x31	
Bytes 44..45	Reserved	0x30	--

Address	Designation	Value	Description
Byte 46	Ftim	0x30	Selected ISO mode from reset parameter (see section "RESET")
Byte 47		xx	
Bytes 48..49	Reserved	0x30	--
Byte 50	ANT	0x30	0x31 ≙ antenna is switched on 0x32 ≙ antenna is switched off
Byte 51		0x31 / 0x32	
Bytes 52..53	Reserved	0x30	--
Byte 54	ANW	0x30	Operating mode 0x30 ≙ without presence 0x31 ≙ with presence 0x34 ≙ presence with command
Byte 55		0x30 / 0x31 / 0x34	

2.6 "MDS-STATUS" (mode 3) command

Table 2- 10 "MDS-STATUS" (mode 3) command

Address	Designation	Value	Description
Byte 0	Frame length	0x30	Net data length of the frame - 1 byte
Byte 1		0x35	
Byte 2	Command	0x30	--
Byte 3		0x42	
Byte 4	Status	0x30	--
Byte 5		0x30	
Byte 6	Mode	0x30	Mode 3
Byte 7		0x33	
Byte 8	Reserve	0x30	--
Byte 9		0x30	
Byte 10	Reserve	0x30	--
Byte 11		0x30	

Table 2- 11 "MDS-STATUS" (mode 3) acknowledgment

Address	Designation	Value	Description
Byte 0	Frame length	0x31	Net data length of the frame - 1 byte
Byte 1		0x32	
Byte 2	Command	0x30	--
Byte 3		0x42	
Byte 4	Status	high nibble	Error code "error_Moby"
Byte 5		low nibble	

Address	Designation	Value	Description
Byte 6	Mode	0x30	Value from command
Byte 7		0x33	
Byte 8	UID	0x45	8-byte UID, beginning with the MSB (always E0)
Byte 9		0x30	
Byte 10		byte 6, high nibble	
Byte 11		byte 6, low nibble	
Byte 12		byte 5, high nibble	
Byte 13		byte 5, low nibble	
Byte 14		byte 4, high nibble	
Byte 15		byte 4, low nibble	
Byte 16		byte 3, high nibble	
Byte 17		byte 3, low nibble	
Byte 18		byte 2, high nibble	
Byte 19		byte 2, low nibble	
Byte 20		byte 1, high nibble	
Byte 21		byte 1, low nibble	
Byte 22		byte 0, high nibble	
Byte 23		byte 0, low nibble	
Byte 24	Transponder type	0x30	transponders recognized in antenna field
Byte 25		0xXX	XX = 33: Infineon XX = 34: Fujitsu XX = 35: Philips XX = 36: TI Tag-it XX = 37: ST XX = 31: other
Byte 26	Version	high nibble	ICReference from <Get System Information> or ChipType from UID (Infineon)
Byte 27		low nibble	
Byte 28	Variable	high byte, high nibble	Size of the user memory in bytes
Byte 29		high byte, low nibble	
Byte 30		low byte, high nibble	
Byte 31		low byte, low nibble	
Byte 32	Lockbits	0x30	Reserved
Byte 33		0x30	
Byte 34	Block Size	high nibble	Size of a block in the user memory
Byte 35		low nibble	
Byte 36	Number of blocks	high nibble	Number of blocks in user memory
Byte 37		low nibble	

2.7 "SET-ANT" acknowledgement

Table 2- 12 "SET-ANT" acknowledgement

Address	Designation	Value	Description
Byte 0	Frame length	0x30	Net data length of the frame - 1 byte
Byte 1		0x33	
Byte 2	Command	0x30	--
Byte 3		0x30	
Byte 4	Status	0x30	--
Byte 5		0x41	
Byte 6	Mode	0x30	0x31 ≙ antenna on
Byte 7		0x31 / 0x32	0x31 ≙ antenna off

Table 2- 13 "SET-ANT" acknowledgement

Address	Designation	Value	Description
Byte 0	Frame length	0x30	Net data length of the frame - 1 byte
Byte 1		0x32	
Byte 2	Command	0x30	--
Byte 3		0x41	
Byte 4	Status	high nibble	Error code "error_Moby"
Byte 5		low nibble	

2.8 "SET-RS232" command

Table 2- 14 "SET-RS232" command

Address	Designation	Value	Description
Byte 0	Frame length	0x30	Net data length of the frame - 1 byte
Byte 1		0x35	
Byte 2	Command	0x42	New command
Byte 3		0x42	
Byte 4	Status	0x30	--
Byte 5		0x30	
Byte 6	Baud rate	0x30	0x31 ≙ 19.2 kBd
Byte 7		0x31 / 0x33 / 0x35	0x33 ≙ 57.6 kBd 0x35 ≙ 115.2 kBd

Address	Designation	Value	Description
Byte 8	Parity	0x30	0x30 ≙ odd parity
Byte 9		0x30 / 0x31 / 0x32	0x31 ≙ odd parity 0x32 ≙ no parity
Byte 10	Stop bit	0x30	0x30 ≙ 1 stop bit
Byte 11		0x30 / 0x31	0x31 ≙ 2 stop bits

Table 2- 15 "SET-RS232" acknowledgment

Address	Designation	Value	Description
Byte 0	Frame length	0x30	Net data length of the frame - 1 byte
Byte 1		0x32	
Byte 2	Command	0x42	--
Byte 3		0x42	
Byte 4	Status	high nibble	Error code "error_Moby"
Byte 5		low nibble	

2.9 "RESET" command

Table 2- 16 "RESET" command

Address	Designation	Value	Description
Byte 0	Frame length	0x30	Net data length of the frame - 1 byte
Byte 1		0x41	
Byte 2	Command	0x30	--
Byte 3		0x30	
Byte 4	Status	0x30	--
Byte 5		0x30	
Byte 6	ScanningTime	0x30	Reserved
Byte 7		0x30	
Byte 8	Param	0x30	Operating mode without presence
		0x32	Operating mode with presence
		0x38	Operating mode without pres. with antenna control
Byte 9		0x35	Single tag mode
Byte 10	Option1	0x30	0x30 ≙ red LED is not reset
Byte 11		0x30 / 0x32	0x32 ≙ red LED is reset
Byte 12	Dili	0x30	Reserved
Byte 13		0x30	

Address	Designation	Value	Description
Byte 14	mtag	0x30	Only single tag mode is supported
Byte 15		0x30	
Byte 16		0x30	
Byte 17		0x31	
Byte 18	Fcon	0x30	Reserved
Byte 19		0x30	
Byte 20	Ftim	0x30	ISO mode general
Byte 21		0x31	

The RESET command can be sent to the reader at any time to initialize the parameters.

Table 2- 17 "RESET" acknowledgment

Address	Designation	Value	Description
Byte 0	Frame length	0x30	Net data length of the frame - 1 byte
Byte 1		0x35	
Byte 2	Command	0x30	--
Byte 3		0x30	
Byte 4	Status	high nibble	Error code "error_Moby"
Byte 5		low nibble	
Byte 6	Firmware version	xx, high nibble	Firmware version Format: xx.yy
Byte 7		xx, low nibble	
Byte 8		yy, high nibble	
Byte 9		yy, low nibble	
Bytes 10..11	Reserved	0x30	--

2.10 "ANW-MELD" message

Table 2- 18 "ANW-MELD" message

Address	Designation	Value	Description
Byte 0	Frame length	0x30	Net data length of the frame - 1 byte
Byte 1		0x34	
Byte 2	Command	0x30	New command
Byte 3		0x46	
Byte 4	Status	0x30	--
Byte 5		0x30	

Address	Designation	Value	Description
Byte 6	reserved	0x30	--
Byte 7		0x30	
Byte 8	Presence status	0x30	0x30 ≙ no transponder in the antenna field 0x31 ≙ one transponder in the antenna field
Byte 9		0x30 / 0x31	

With the active presence check, if there is a change in the presence status, the reader sends a frame with the number of transponders in the antenna field. If a transponder leaves the field at the same time as another transponder enters the field, two "ANW-MELD" messages are sent.

Note

Reachability of the host

The presence message is asynchronous (i.e. without a request from the host).

This means that the host must always be ready to receive and must make suitable buffers available so that the message can be processed immediately.

2.11 Error messages

The following error messages are recognized by the RF200 system and entered in the command acknowledgement in the "status" field.

Table 2- 19 Error codes of the RF200 readers

Flashing of red LED on reader	Error code	Description
00	0x00	no error
02	0x01	Presence error, possible causes: • The active command was not carried out completely • The transponder left the antenna field while the command was being processed • Communication problem between reader and transponder
05	0x05	Parameter assignment error, possible causes: • Unknown command • Incorrect parameter • Function not allowed
06	0x06	Air interface faulty
12	0x0C	The transponder memory cannot be written, possible cause: • Hardware fault (memory faulty) • Write-protected transponder
13	0x0D	Error in the specified memory address (access attempted to non-existent or non-accessible memory areas).
19	0x13	Buffer overflow: Insufficient buffer available on the reader for saving the command
20	0x14	Serious system fault (hardware fault)
21	0x15	Parameter assignment error: bad parameter in RESET command
24	0x18	Only RESET command is permitted
25	0x19	Previous command is still active
28	0x1C	Communications error, possible causes: • Antenna is already turned off / Antenna is already turned on • The antenna is turned of, the command cannot be executed on the air • external antenna has a short-circuit or is not connected
30	0x1E	Incorrect number of characters in frame
--	0x1F	Running command canceled by "RESET" command

Note

Manufacturer-dependent error messages

With transponders with a blocked/protected memory area, different error messages (e.g. error 0x01, 0x0C) can occur depending on the manufacturer type (NXP, Infineon, etc.)

Scan mode function extension for ASCII readers

3

The scan mode function extension retains the original function of the RF200 ASCII readers. The extension adds the SYSTEM command to the existing command set. Using this command, you can switch the readers retentively to scan mode. This means that the switchover to scan mode is stored in a failsafe manner on the reader.

Once the readers have been switched to scan mode, the RF200 ASCII readers operate in exactly the same way (autonomously) as an RF300 scan mode reader. It is not necessary to restart the reader. The reader LED shows you which operating mode the reader is in.

LED		Mode
	Flashing green	ASCII mode
	Lit up green	Scan mode

Using the parameter assignment frames, you can also store all other parameters retentively in the reader (e.g. transmission rate, data to be read, etc.). The scan mode parameter allows you to reset the readers to basic functionality by means of the parameter assignment frame ("scan mode = 0x02"). You can transmit the frame via the terminal program as well as from the application.

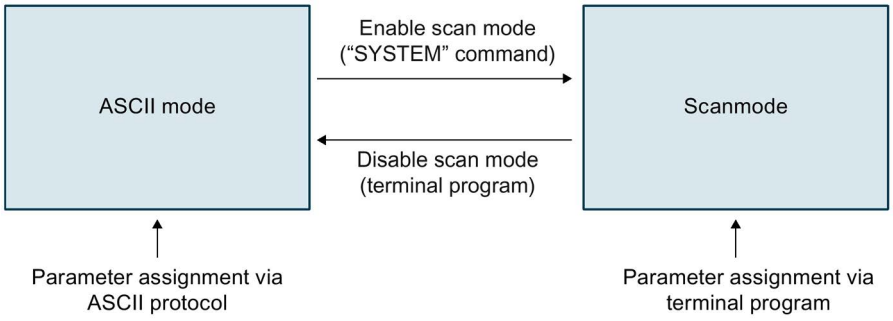

Figure 3-1 Retentively enabling/disabling scan mode

3.1 Retentively enabling/disabling scan mode

You can enable scan mode by executing the “SYSTEM” command with the function identifier “FKT = 0x08”.

Command	Value	Description
SYSTEM	0xAA	Retentively enable scan mode • FKT = 0x08 • PARA = 0x01

Enable scan mode (disable ASCII mode)

Scan mode is enabled using the “SYSTEM” command, as described below:

Table 3- 1 Structure of the “SYSTEM” command

STX	Net data						{optional: LF}	ETX
	Length	Com-mand	Status	FKT	PARA	Res.		
0x02	0x05	0xAA	0x00	0x08	0x01	0x00	0x0A	0x03

The reader is in scan mode as soon as the command has been successfully acknowledged.

Disabling scan mode (enabling ASCII mode)

To disable scan mode, you must set the “Scan mode” parameter to the value “0x02” using the “Change parameters” frame.

Table 3- 2 Structure of the “Change parameters” frame (binary)

Command parameter			Frame parameter			
Byte 1	Byte 2	Byte 3	Byte 1	Byte 2	Byte 3	Byte 4
Command	Status	Count	Tag type	Modulation	Subcarrier	Data rate
0x01	0x00	0x15	0x01	0x1E	0x00	0x00
Frame parameter						
Byte 5	Byte 6	Byte 7	...	Byte 20	Byte 21	BCC
Operating mode	Scan mode	Para	Para	Para	Para	
0x00	0x02	... [1]	... [1]	... [1]	... [1]	

If scan mode is disabled with this frame, only the scan mode parameter is evaluated; all other parameters in this frame are ignored.

You will find more information on this subject as well as parameter descriptions [1] in the sections “Communication in scan mode (Page 26)” and ““Change parameters” frame (Page 29)”.

The reader is in scan mode as soon as the message frame has been successfully transmitted.

3.2 Communication and parameter assignment

In the scan mode, data are transferred automatically to the host via the serial interface when the reader is switched on. The type of data acquisition and transmission is preset in the reader using parameters.

For commissioning, it is also possible to communicate with the reader during operation. For this, the host transmits a frame via the serial interface that is processed and acknowledged in the reader.

The following functions are available for the commissioning:

- Change parameters
- Read status (incl. parameters)
  The information about the FW/HW version is appended to the parameters when reading.
- Enable test mode

NOTICE
Loss of transponder information in host-reader communication during operation When you start the communication between host and reader during commissioning, make sure that there are no transponders in the antenna field at that time. In this way, the reader's acknowledgement of a frame from the host can be directly recognized as such. Otherwise, the reply data of the reader may include transponder data along with the acknowledgement.

NOTICE
Documenting parameter changes A change in the communication-relevant parameters “baud rate” and “parity” must be well documented, because with unknown interface parameter assignment, the reader cannot be addressed and can also no longer receive user data. If the interface setting in the reader is no longer known, the host must search for the setting: using the “read status” frame, for example. It may be necessary to test all combinations with the “baud rate” and “parity” parameters until a frame is acknowledged as valid.

NOTICE
Changes in scan mode are retentive Not that changes made in scan mode can be saved retentively. If parameters are saved retentively in the reader, the reader will still retain these stored values after changing modes.

3.3 Communication in scan mode

The communication between host and reader in scan mode occurs using the interface parameters set in the reader. The interface parameters are set as follows in the factory:

- Physical structure: RS232 [1)]
- 8 data bits, 1 stop bit [1)]
- No parity
- Transmission speed: 38.4 kBd

[1)] This value cannot be changed in RF200 readers.

Frames use binary communications.

Frame structure:

A frame from the host to the reader is structured as follows:

Table 3- 3 Example of a frame structure

Command parameter			Frame parameter			
Command	Status	Count	Byte 1	...	Byte x	BCC

The acknowledgement from the reader to the host is structured as follows:

Table 3- 4 Example of an acknowledgment

Command	Error code	BCC

The reader transmits the acknowledgement after it has finished performing the command.

Conditions for frame transmission

The following conditions apply for frame transmission:

- The BCC checksum is calculated by simple XORing of all bytes.
- If an interface parameter is changed (baud rate, parity): the acknowledgement is sent with the old setting. The new setting then takes effect (scan data, next frame).

After connecting to the host, the reader automatically uses the configured parameters to transmit data to the user program via the serial interface. This requires the presence of a transponder in the antenna field. Data transmission can only be secured by assigning a parity bit. Other protective mechanisms, such as check sums, are not possible. The different data groups can be separated by configurable characters.

The “ByteOrder” parameter is valid data transmission, although only the “LSB first” setting is intended. The data item at the least significant address is transmitted first.

The UID, however, is always transmitted with “MSB first”, regardless of the “ByteOrder” parameter.

The “Transmission in ASCII format” setting means that the four higher-order bits are converted and transmitted first followed by the four least significant bits, irrespective of the “ByteOrder” parameter.

Data description

The following table lists all parameters available in the reader. The byte indication refers to the entry in the “Change parameter” frame to the reader.

If a parameter value consists of two bytes, the MSB is always transferred first. The bolded value in a cell in the “Value” column is the preset default value.

Table 3- 5 Description of the parameters

Byte	Value	Meaning	Description
0	21	21	Current length of the parameters in the frame (in bytes). This value is always 21.
1	0	reserved	Tag type Setting of the air interface/transponder used
	1	ISO general	
	255	ISO user-defined	
2	**30**	30 %	Modulation Air interface optimization: setting is only possible by selecting “ISO user-defined”
	0-100	0-100 %	
3	**0**	single	Subcarrier Air interface optimization: setting is only possible by selecting “ISO user-defined”
	1	double	
4	**0**	high	Data rate Air interface optimization: setting is only possible by selecting “ISO user-defined”
	1	low	
5	**0**	Single tag	Operating mode Only single tag setting is possible. If there are multiple transponders in the antenna field, these are not identified and cannot be processed.
	1	reserved	
6	**0**	Continuous Read	Scan mode Selection of scan mode sequence • Continuous read: Read operations are executed continuously. The “Locktime” parameter defines the distance between read operations. All UIDs of identified transponders are reported. The UID of a single transponder can be reported multiple times. • Single read: Read operations are executed continuously. All UIDs of identified transponders are reported one time. A single UID cannot be reported multiple times in succession, even if the transponder is in the antenna field for an extended period. The UID must first change. • Single read repeated: Read operations are executed continuously. All UIDs of identified transponders are reported. The UID of a single transponder can be reported multiple times.
	1	Single Read	
	2	Scanmode Off	
	3	Single Read repeated	
7 + 8	10	10 * 100 ms	Lock time Setting for lock time duration for continuous read mode
	1...65535	(1...65535) * 100 ms	
9	reserved	--	Transmit power Transmit power setting to optimize communication with the transponder. Only possible with RF38xR.

Byte	Value	Meaning	Description
10	**1**	RS232	Physical interface
	2	reserved	Physical interface setting. Only possible with RF38xR.
11	0	9600	Baud rate
	1	19200	Transmission speed setting. Applies to scan mode, test mode, and frame communication.
	2	38400	
	3	57600	
	5	115200	
12	**0**	None	Parity
	1	Even	Parity bit setting. Applies to scan mode, test mode, and frame communication.
	2	Odd	
13	**0**	UID	Data record
	1	User data	Combination of data that the reader automatically transfers to the host in scan mode.
	2	UID + user data	
14 + 15	**0**	0	User data start address
	0...8192	0...8192	Specification of address from which the user data should be read (“user data” setting).
16 + 17	**4**	4	User data length
	1...1024	1...1024	Specification of amount of user data that should be read (“user data” setting).
18	0	ascii	Data format
	1	binary	Setting for data transfer type: Bytes are transferred as binary bytes or are converted into two ASCII characters. This parameter does not apply to the separator or end-of-text character (binary). This parameter does not apply to frame traffic either.
19	0	CR+LF	Separator
	2C	‘,‘	Setting for the separator transmitted between data when “UID + user data” is configured. Not used when “UID” or “user data” is configured.
	1...FF	Any character (not 0)	
20	**0**	CR+LF	End-of-text character
	1...FF	Any character (not 0)	End-of-text character transmitted at the end of a data set; separates data from different transponders.
21	1	LSB first	Byte order
			LSB is transmitted first (within the block size) This parameter applies only to user data.

Examples of frame content for various parameter settings

Table 3- 6 “Data record” parameter, UID

UID	End-of-text character

Table 3- 7 “Data record” parameter, user data

Data	End-of-text character

Table 3- 8 “Data record” parameter, UID + user data

UID	Separator	Data	End-of-text character

Table 3- 9 Example of a UID in ISO mode

binary:	0xE0	0x04	0x01	0x00	0x54	0x75	0xC7	0x4F
ascii:	0x45	0x30	0x30	0x34	0x30	0x31	0x30	0x30
	0x35	0x34	0x37	0x35	0x43	0x37	0x34	0x46

3.3.1 “Change parameters” frame

All parameters can be changed using this frame, including serial interface parameters. Please note:

- Acknowledgement from the reader is sent with the old settings
- Subsequent scan data are sent with the new settings
- The parameters can be stored in the reader either retentively or non-retentively:
  - In a retentive parameter assignment, the transmitted data are still available after the reader is powered up again.
  - In non-retentive parameter assignment, the data are only changed for current operation. The previous parameters are used the next time the reader is powered up.

After the parameters are accepted and the acknowledgement is sent, the reader returns automatically to scan mode.

Table 3- 10 “Change parameters” frame

Command parameter			**Frame parameter**			
Byte 1	Byte 2	Byte 3	Byte 1	...	Byte 21	BCC
Command	Status	Count	Para	...	Para	
0x01	0x00	0x15	...	...	...	

Table 3- 11 “Change parameters” frame

Command parameter			**Frame parameter**			
Byte 1	Byte 2	Byte 3	Byte 1	...	Byte 21	BCC
Command	Status	Count	Para	...	Para	
0x01	0x01	0x15	...	...	...	

Table 3- 12 “Change parameters” frame acknowledgment

Command	Error code	BCC
0x01	0xXX	

All parameters must always be transmitted together. If the reader configuration is not saved on the host, you should first read out the parameters saved to the reader.

3.3.2 "Read status" frame

This frame allows you to read out the reader status. This includes the parameters and version information. You can identify individual readers by the version information. This information is specified at factory and cannot be changed.

After the acknowledgement is sent, the reader switches automatically back to "read data" mode.

Table 3- 13 "Read status" frame

Command parameter			Frame parameter			
Byte 1	Byte 2	Byte 3	Byte 1	...	Byte 21	BCC
Command	Status	Count	Para	...	Para	
0x02	0x00	0x15	0x00	...	0x00	

Table 3- 14 "Read status" frame (retentive)

Command parameter			Frame parameter			
Byte 1	Byte 2	Byte 3	Byte 1	...	Byte 21	BCC
Command	Status	Count	Para	...	Para	
0x02	0x01	0x15	0x00	...	0x00	

Table 3- 15 "Read status" frame acknowledgment

Command	Error code	Count	Byte 1	...	Byte 25	BCC
0x01	0xXX	0x19	Para	...	Para	

Status information

The following table lists the status information that can be read out from the reader. The byte count refers to the entry in the acknowledgement of the “Read status” frame.

Table 3- 16 Description of status information

Byte	Description
1...21	Parameter content A description of parameters can be found in the “Description of parameters” table in section “Communication in scan mode (Page 26)”. Note: Only the RF38xR reader supplies the “Physical interface” and “Transmit power” parameters. RF200-ASCII readers return the specified, or default, parameter values.
22	Indicates the firmware version For example: V xx.yy Byte 23 contains the contents of "xx"; byte 22 contains the contents of "yy".
23	
24	Indicates the hardware version (in ASCII format)
25	Indicates the FPGA version

3.3.3 “Enable test mode” frame

This frame helps you when commissioning a reader. Test mode is enabled in the reader immediately after the acknowledgement is transmitted. You can disable test mode by turning the reader off or transmitting a new parameter record.

In test mode, the reader continually scans for a transponder. Successful scans (a transponder has responded) as well as unsuccessful scans (incorrect or no response from a transponder) are counted. The reader continually transmits the number of successful scans to the host (all 20 scans).

The transmitted value provides information about how well a positioned in or passes through the antenna field.

Table 3- 17 “Enable test mode” frame

Command parameter			Frame parameter			
Byte 1	Byte 2	Byte 3	Byte 1	...	Byte 21	BCC
Command	Status	Count	Para	...	Para	
0x03	0x01	0x15	0xXX	...	0xXX	

Table 3- 18 “Enable test mode” frame acknowledgment

Command	Error code	BCC
0x03	0xXX	

3.4 Error messages

Error messages

The error code is always stored in byte 2 of the acknowledgment. Error Code “00” is always output when a frame is processed without errors. Error code ≠ 00 means that the parameters have not been accepted. The following table lists all possible error codes.

Table 3- 19 Error messages

Error code	Description
0x01	Command is unknown (in first byte of frame).
0x02	Status is unknown (in second byte of frame).
0x03	A parameter setting is faulty.
0x04	BCC is faulty (in last byte of frame).
0x05	Data could not be stored retentively (FEPROM are not identified).
0x06	Data could not be stored retentively (FEPROM sector cannot be deleted).
0x07	Data could not be stored retentively (FEPROM sector cannot be programmed).

Reader

4

4.1 Ordering data

Table 4- 1 Ordering data of the reader

	Article number
RF240R with RS-232 interface (ASCII)	6GT2821-4AC40
RF250R with RS-232 interface (ASCII)	6GT2821-5AC40
RF260R with RS-232 interface (ASCII)	6GT2821-6AC40

4.2 LED status indicator

The LEDs indicate the reader's operating states. The LED can appear green, red, or yellow and indicate off, on, and flashing status:

Table 4- 2 LED status indicator on the reader

Color	Description
	Operating voltage present, reader not initialized or antenna turned off
	Operating voltage present, reader initialized and antenna turned on
1)	Transponder present "Command execution active" when operating without presence
	Error has occurred, the type of flashing corresponds to the error code in the table in the section "Error messages". The optical error display is only reset if the corresponding reset parameter ("option_1", see FC 45 / FB 45 documentation, section "Input parameters") is set.
	No operating voltage present, no startup is possible
	RS-232: Parameter in flash undefined (only with the ASCII variant)

1) Only in the "with presence" mode.

Transponder

5

5.1 Selecting the transponders

Table 5- 1 ISO transponder

ISO transponder	Description	Article number
MDS D100	• IP68 • Memory size: 112 bytes of EEPROM user memory • Operating temperature: -25 °C ... +80 °C • Dimensions (L x W x H): 85.6 x 54 x 0.9 mm • Credit card format	6GT2600-0AD10
MDS D117	• IP68 • Memory size: 112 bytes of EEPROM user memory • Operating temperature: -25 °C ... +85 °C • Dimensions (Ø x H): 4 x 5 mm	6GT2600-0AG00
MDS D124	• IP68; IPx9K • Memory size: 112 bytes of EEPROM user memory • Operating temperature: -25 °C ... +180 °C • Dimensions (Ø x H): 27 (±0.2) x 4 (±0.2) mm	6GT2600-0AC10
MDS D126	• IP68 • Memory size: 112 bytes of EEPROM user memory • Operating temperature: -25 °C ... +85 °C • Dimensions (Ø x H): 50 x 3.6 mm • Round design with mounting hole	6GT2600-0AE00
MDS D127	• IP68; IPx9K • Memory size: 112 bytes of EEPROM user memory • Operating temperature: -25 °C ... +125 °C • Dimensions (Ø x H): M6 x 5 (±0.2) mm	6GT2600-0AF00
MDS D139	• IP68; IPx9K • Memory size: 112 bytes of EEPROM user memory • Operating temperature: up to +200 °C/+220 °C • Dimensions (Ø x H): 85 (±0.5) x 15 (-1.0) mm	6GT2600-0AA10
MDS D160	• IP68; IPx9K • Memory size: 112 bytes of EEPROM user memory • Operating temperature: -25 °C...+70 °C • Dimensions (Ø x H): 16 (±0.2) x 3.0 (±0.2) mm • Laundry transponder for cyclic applications	6GT2600-0AB10

ISO transponder	Description	Article number
MDS D165	• IP65 • Memory size: 112 bytes of EEPROM user memory • Operating temperature: -25 °C ... +85 °C • Dimensions (L x W): 86 x 54 mm • Smartlabel (PET) in credit card format	6GT2600-1AB00-0AX0
MDS D200	• IP67 • Memory size: 256 bytes of EEPROM user memory • Operating temperature: -20 °C ... +60 °C • Dimensions (L x W x H): 86 x 54 x 0.8 mm • Credit card format	6GT2600-1AD00-0AX0
MDS D261	• IP65 • Memory size: 256 bytes of EEPROM user memory • Operating temperature: -25 °C ... +85 °C • Dimensions (L x W): 55 x 55 mm • Smartlabel (PET), small design	6GT2600-1AA00-0AX0
MDS D324	• IP67; IPx9K • Memory size: 992 bytes of EEPROM user memory • Operating temperature: -25 °C ... +125 °C • Dimensions (Ø x H): 27 (±0.2) x 4 (±0.2) mm	6GT2600-3AC00
MDS D339	• IP68; IPx9K • Memory size: 992 bytes of EEPROM user memory • Operating temperature: -25 °C ... +220 °C • Dimensions (Ø x H): 85 (±0.5) x 15 (-1.0) mm	6GT2600-3AA10
MDS D400	• IP67 • Memory size: 2000 bytes of FRAM user memory • Operating temperature: -25 °C ... +60 °C • Dimensions (L x W x H) 85.6 (±0.3) × 54 (±0.2) × 0.8 (±0.05) mm	6GT2600-4AD00
MDS D421	• IP67; IPx9K • Memory size: 2000 bytes of FRAM user memory • Operating temperature -25 °C ... +85 °C • Dimensions (Ø x H): 10 x 4.5 mm	6GT2600-4AE00
MDS D422	• IP68 • Memory size: 2000 bytes of FRAM user memory • Operating temperature: -25 °C ... +85 °C • Dimensions (Ø x H): M20 x 6 (±0.2) mm • Can be screwed into metal (flush-mounted)	6GT2600-4AF00

ISO transponder	Description	Article number
MDS D423	• IP68; IPx9K • Memory size: 2000 bytes of FRAM user memory • Operating temperature: -25 °C ... +85 °C • Dimensions (Ø x H): 30 (+0.2/-0.5) x 8 (-0.5) mm	6GT2600-4AA00
MDS D424	• IP67; IPx9K • Memory size: 2000 bytes of FRAM user memory • Operating temperature: -25 °C ... +125 °C • Dimensions (Ø x H): 27 (±0.2) x 4 (±0.2) mm	6GT2600-4AC00
MDS D425	• IP68; IPx9K • Memory size: 2000 bytes of FRAM user memory • Operating temperature: -25 °C ... +85 °C • Dimensions (Ø x H): 24 X 10 mm; M6 thread • Screw transponder	6GT2600-4AG00
MDS D426	• IP68 • Memory size: 2000 bytes of FRAM user memory • Operating temperature: -25 °C ... +85 °C • Dimensions (Ø x H): 50 x 3.6 mm • Round design with mounting hole	6GT2600-4AH00
MDS D428	• IP68; IPx9K • Memory size: 2000 bytes of FRAM user memory • Operating temperature: -25 °C ... +85 °C • Dimensions (Ø x H): 18(±1) x 20(±1) mm (without thread); thread M8	6GT2600-4AK00-0AX0
MDS D460	• IP67; IPx9K • Memory size: 2000 bytes of FRAM user memory • Operating temperature: -25 °C ... +85 °C • Dimensions (Ø x H): 16 (±0.2) x 3.0 (±0.2) mm	6GT2600-4AB00
MDS D521	• IP67; IPx9K • Memory size: 8192 bytes of FRAM user memory • Operating temperature -25 °C ... +85 °C • Dimensions (Ø x H): 10 x 4.5 mm	6GT2600-5AE00
MDS D522	• IP68 • Memory size: 8192 bytes of FRAM user memory • Operating temperature: -25 °C ... +85 °C • Dimensions (Ø x H): M20 x 6 (±0.2) mm • Can be screwed into metal (flush-mounted)	6GT2600-5AF00

ISO transponder	Description	Article number
MDS D522 **Special version**	• IP68 • Memory size: 8192 bytes of FRAM user memory • Operating temperature: -25 °C ... +85 °C • Dimensions (Ø x H): 18 (+0.1) x 5.2 mm • Can be clipped into metal (flush-mounted)	6GT2600-5AF00-0AX0
MDS D524	• IP67 • Memory size: 8192 bytes of FRAM user memory • Operating temperature: -25 °C ... +85 °C • Dimensions (Ø x H): 27 (±0.2) x 4 (±0.2) mm	6GT2600-5AC00
MDS D526	• IP67; IPx9K • Memory size: 8192 bytes of FRAM user memory • Operating temperature: -25 °C ... +85 °C • Dimensions (Ø x H): 50 x 3.6 mm • Round design with mounting hole	6GT2600-4AH00
MDS D528	• IP68; IPx9K • Memory size: 8192 bytes of FRAM user memory • Operating temperature: -25 °C ... +85 °C • Dimensions (Ø x H): 18 (±1) x 20 (±1) mm (without thread); thread M8	6GT2600-5AK00

5.2 Memory configuration of the transponders

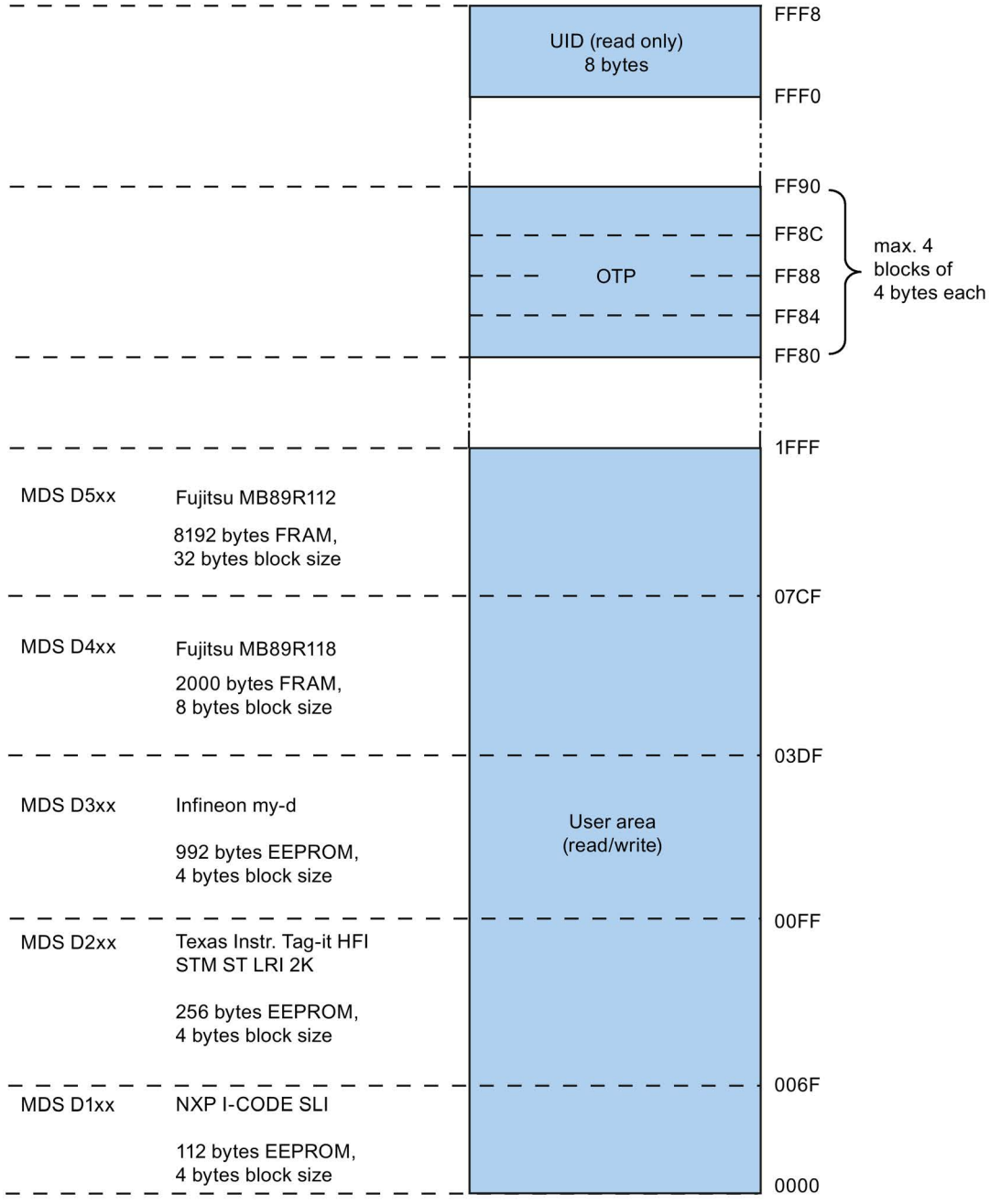

Figure 5-1 Memory configuration of the transponders

Memory areas

Depending on the manufacturer of the transponder chip, the memory configuration of an ISO transponder consists of varying sizes of user memory.

The typical sizes are 112 bytes, 256 bytes, 992 bytes EEPROM or 2000 bytes FRAM. Each ISO transponder chip has an 8-byte long unique serial number (UID, read only). This UID is transferred as an 8-byte value by a read command to address FFF0 with a length of 8.

Note

Special feature of the NXP transponder

The NXP chip has the quirk of NOT responding to bad commands. Here there is no error message, and the command behaves as if the transponder was not in the antenna field.

Note

Special feature of the Fujitsu transponder

The following restriction applies to the "Get Multiple Block Status" command: A maximum of 64 blocks can be read (in other words, "BlockNumber" is max. 39 hex) and the block number must be divisible by 8.

Appendix

A

A.1 PC driver "LAUF/3964R"

As an alternative to the ASCII protocol, you can, however, also assign parameters using the PC with the "3964R" driver. The SIEMENS PC driver "3964R" can be integrated easily in an application to simplify the creation of the communications functions between a PC as host and the reader.

You will find the driver on the DVD "RFID Systems, Software & Documentation" (6GT2080-2AA20) or on the Internet on the Support homepage (http://www.siemens.com/automation/service&support).

A.2 Connecting cables

With 4-pin power supply connector

The connecting cable (6GT2891-4KH50) is 5 m long.

Special feature of the cable: additional branch for the power supply.

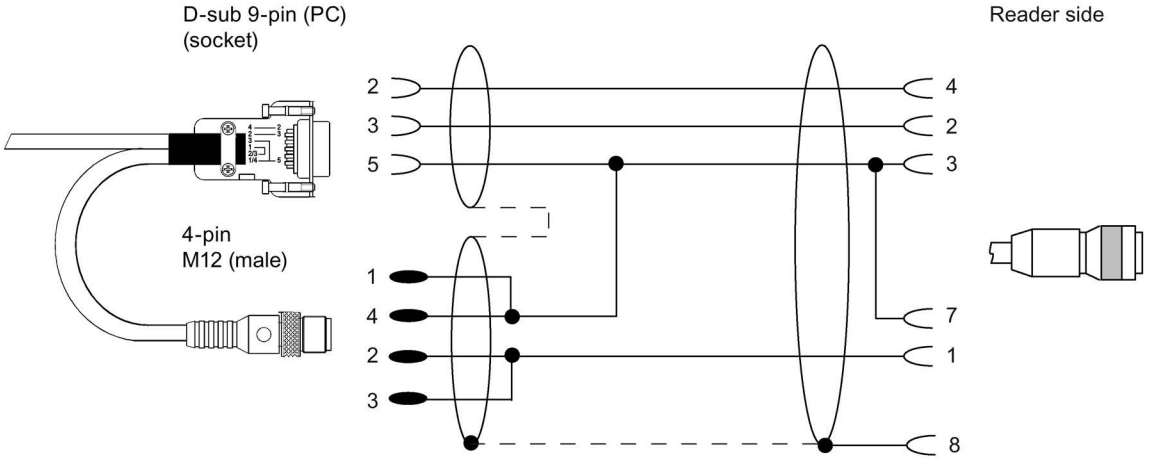

Figure A-1 Connecting cable between PC and RF240R/RF260R/RF290R (RS-232) with 4-pin power supply connector

Suitable power supply unit: e.g. wide-range power supply unit

With open ends for the power supply

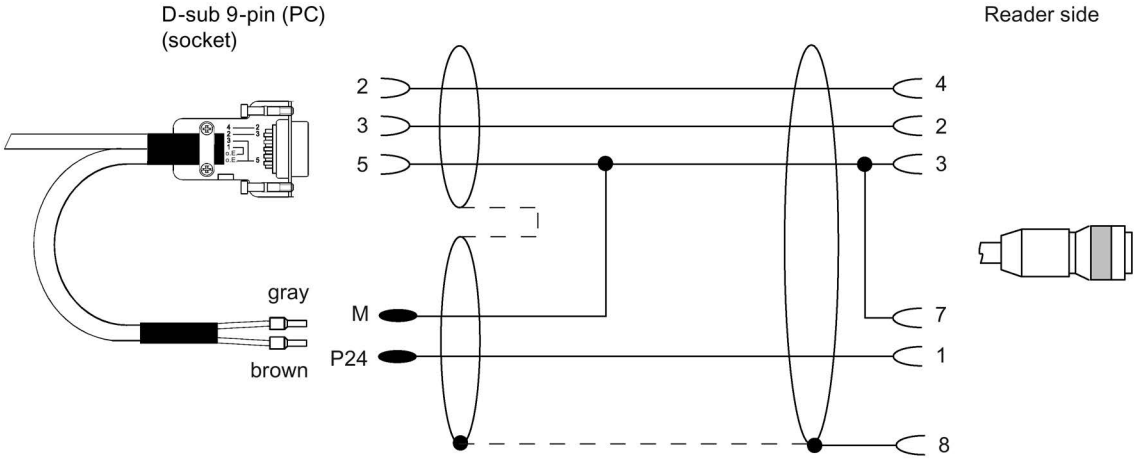

Figure A-2 Connecting cable between PC and RF240R/RF260R/RF290R (RS-232) with open ends for the power supply

A.3 Wide-range power supply unit

The wide-range power supply unit for SIMATIC RF systems is a universal compact power supply and allows an efficient, cost-saving solution for many different mid-range power supply tasks.

The primary switched power supply is designed for use on single-phase AC systems. The two DC outputs (sockets) are connected in parallel and protected by a built-in current limiting circuit against overload and short-circuits.

The device is vacuum-cast and prepared for Safety Class I applications. The EU and UK versions satisfy the low-voltage directive as well as the current EU standards for CE conformity. Furthermore, the US version has been UL-certified for the US and Canada.

Wide-range power supply unit for SIMATIC RF systems	Characteristics	
	Application	Supplying power to Siemens Ident devices
	Degree of protection	IP67
	Design features	• Mechanically and electrically rugged design • Short-circuit and no-load stability • Suitable for frame mounting
	Structure	① Network connector (PE) ② DC output 1 ③ DC output 2

Table A- 1 Ordering data for the wide-range power supply unit for SIMATIC RF systems

	Article number
Wide-range power supply unit for SIMATIC RFsystems (100 - 240 VAC / 24 VDC / 3 A) with 2 m connecting cable with country-specific power cable/plug, 2 m	EU: 6GT2898-0AC00
	UK: 6GT2898-0AC10
	US: 6GT2898-0AC20

Note

Country-specific adaptation of the connector

When necessary, the primary cable can be adapted to country-specific conditions. The connector can be replaced by a country-specific connector. If you do this, make sure that the protective conductor is in the connector and that grounding is ensured.

Table A- 2 Ordering data accessories for the wide-range power supply unit for SIMATIC RF systems

		Article number
24 V connecting cable for SIMATIC RF620R/RF630R/RF640R/RF670R	5 m	6GT2891-0NH50
24 V connecting cable for SIMATIC RF650R/RF680R/RF685R	5 m	6GT2891-0PH50
24 V connecting cable for readers of the SIMATIC-product family MOBY D	5 m	6GT2491-1HH50
24 V connecting cable for SIMATIC RF200 / RF300 with RS-232	5 m	6GT2891-4KH50
24 V connecting cable for SIMATIC RF200 / RF300 with open ends at the power supply unit end	5 m	6GT2891-4KH50-0AX0

Service & Support

B

Industry Online Support

In addition to the product documentation, the comprehensive online information platform of Siemens Industry Online Support at the following Internet address:
Link 1: (https://support.industry.siemens.com/cs/de/en/)

Apart from news, there you will also find:

- Project information: Manuals, FAQs, downloads, application examples etc.
- Contacts, Technical Forum
- The option submitting a support query:
  link 2: (https://support.industry.siemens.com/My/ww/en/requests)
- Our service offer:

  Right across our products and systems, we provide numerous services that support you in every phase of the life of your machine or system - from planning and implementation to commissioning, through to maintenance and modernization.

You will find contact data on the Internet at the following address:
Link 3: (http://w3.siemens.com/aspa_app)

RFID homepage

For general information about our identification systems, visit RFID homepage (http://w3.siemens.com/mcms/identification-systems/).

Online catalog and ordering system

The online catalog and the online ordering system can also be found on the Industry Mall Homepage (https://mall.industry.siemens.com).

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Link: (http://sitrain.automation.siemens.com/sitrainworld/)