SIEMENS

SIMATIC Ident

RFID systems
Ident profile, Add-on instruction for Rockwell systems

Function Manual

06/2016

C79000-G8976-C410-02

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER

indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ WARNING

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Siemens AG
Division Process Industries and Drives
Postfach 48 48
90026 NÜRNBERG
GERMANY

C79000-G8976-C410-02
℗ 06/2016 Subject to change

Preface

Warranty and Liability

The application examples are not binding and do not claim to be complete regarding the configuration and equipment and any eventuality. The application examples do not represent customer-specific solutions. They are only intended to provide help for typical applications. You are responsible for ensuring that the described products are used correctly These application examples do not relieve you of the responsibility to use safe practices in application, installation, operation and maintenance. When using these application examples, you recognize that we cannot be made liable for any damage/claims beyond the liability clause described. We reserve the right to make changes to these application examples at any time without prior notice. If there are any deviations between the recommendations provided in these application examples and other Siemens publications – e.g. Catalogs – the contents of the other documents have priority.

We do not accept any liability for the information contained in this document.

Any claims against us – based on whatever legal reason – resulting from the use of the examples, information, programs, engineering and performance data etc., described in this application example shall be excluded. Such an exclusion shall not apply in the case of mandatory liability, e.g. under the German Product Liability Act (“Produkthaftungsgesetz”), in case of intent, gross negligence, or injury of life, body or health, guarantee for the quality of a product, fraudulent concealment of a deficiency or breach of a condition which goes to the root of the contract (“wesentliche Vertragspflichten”). The damages for a breach of a substantial contractual obligation are, however, limited to the foreseeable damage, typical for the type of contract, except in the event of intent or gross negligence or injury to life, body or health. The above provisions do not imply a change of the burden of proof to your detriment.

Any form of duplication or distribution of these application examples or excerpts hereof is prohibited without the expressed consent of the Siemens AG.

Table of contents

Introduction

1

Purpose of this document

As the interface to the communication services the ready made program block “Ident_Profile” is available to you for your user program in the environment of Rockwell controllers. This manual contains descriptions of the Ident profile with which you can commission and assign parameters for the various Ident systems via the Ethernet/IP interface.

It is intended for programmers and testers as well as service and maintenance technicians.

Scope of this documentation

This documentation is valid for the Ident profile for Rockwell systems and describes the delivery status as of May 2015.

The functions named in this documentation for the RF680R and RF685R readers are currently still at the planning stage. These functions are, however, already supported by the Ident profile.

Documentation classification

You will find further information on the blocks and Ident devices named in this manual on the Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/14970/man) in the following manuals:

- RFID 181EIP

Specifications

The Ident profile block in the manual is based on the "Proxy Ident Function Block" protocol. You can obtain the specification of the "Proxy Ident Function Block" from the PROFIBUS User Organization.

Requirement

To assign parameters to the Ident device with the blocks and functions described in this manual, it is assumed that the Ident device is already configured on Ethernet/IP and has been integrated using the EDS file.

You will find all the required files and blocks the on the "RFID Systems Software & Documentation" DVD (6GT2080-2AA20).

Registered trademarks

SIMATIC®, SIMATIC RF®, MOBY®, RF MANAGER® and SIMATIC Sensors® are registered trademarks of Siemens AG.

Naming of the functions

The elements typically called "blocks" at Siemens, are called "Add-on instructions" at Rockwell. In the remainder of this manual the typical Rockwell names are used.

Abbreviations and naming conventions

The following terms/abbreviations are used synonymously in this document:

Reader	Write/read device (SLG)
Transponder, tag	Mobile data storage (MDS), data carrier
Communications module (CM)	Interface module (ASM)

History

Previous edition(s) of thís function manual:

Edition	Note
05/2015	First Edition
06/2016	Revised and expanded edition

Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, solutions, machines, equipment and/or networks. They are important components in a holistic industrial security concept. With this in mind, Siemens' products and solutions undergo continuous development. Siemens recommends strongly that you regularly check for product updates.

For the secure operation of Siemens products and solutions, it is necessary to take suitable preventive action (e.g. cell protection concept) and integrate each component into a holistic, state-of-the-art industrial security concept. Third-party products that may be in use should also be considered. You will find more information about Industrial Security in:
Industrial security

To stay informed about product updates as they occur, sign up for a product-specific newsletter. You will find more information about this in
Product support

Description

2

2.1 Area of application and features

The Ident profile can be used in Rockwell controllers (Allen-Bradley ControlLogix 1756 and MicroLogix 1768) with an Ethernet/IP interface. It can be configured with RSLogix 5000.

Image 2-1 Module configurable with RSLogix 5000: RFID 181EIP

2.2 Functions of the instructions

The instruction “Ident_Profile” serves as the communication interface between an Ident device (e.g. RFID 181EIP) and the user program. The instruction supports the following functions:

- Configuration
- Editing commands
- Reading and writing of data
- Diagnostics

The Ident profile is a single complex instruction containing all the commands and functions for RFID systems and code reader systems. The "Param_Config" instruction is used to assign parameters for the Ident device during startup.

The size of the data buffers "TXREF" and "RXREF" can be variable. You can specify the length manually.

Assigning parameters for instructions 3

3.1 Overview of the instructions and data types

The following table provides an overview of the currently available instructions/data types.

Table 3- 1 Overview of the blocks/data types

Position		Symbolic name	Description
PLC instructions	Ident profile	IDENT_PROFILE	This instruction supports all commands to operate Ident systems on an Ethernet/IP module.
	Configuration instruction	PARAM_CONFIG	Instruction to assign parameters to the communications module.
PLC data types	System data types	IID_CHANNEL	Data type for the Ident profile, that is necessary for every channel to be operated. It also contains the instance data type, the addressing data type “IID_HW_CONNECT”, the command buffer "CMDREF” and the send and receive buffers "TXREF" and "RXREF".
		IID_CMD_STRUCT	Data type for the Ident profile for setting the command parameters. This data type is contained in "IID_CHANNEL”.
		IID_HW_CONNECT	Data type to synchronize and address a channel. This data type is contained in "IID_CHANNEL”.
		IID_PARAM	Data type for the configuration instructions "PARAM_CONFIG".

3.2 Parameter assignment for "PARAM_CONFIG"

To assign parameters to a module, a parameter assignment frame needs to be sent to the module. This frame contains settings for:

- MOBY mode ("MOBY_MODE")
- Transmission speed ("BAUD_RATE")

You have the instruction "PARAM_CONFIG" available for this parameter assignment frame.

This instruction must be called per physical module until the instruction has been completed (DONE = 1). Only after this call can you process further commands. With this instruction, for example, with the RFID 181EIP both channels have parameters assigned. Calling the instruction per channel of an RFID 181EIP is not necessary.

Parameter assignment for "PARAM_CONFIG"

Follow the steps below to assign parameters for the instruction:

1. Create the following two variables for the instruction:
   - "IID_PARAM" (in the example "RFID_01_Config")
   - MESSAGE" (in the example "RFID_01_WRREC")

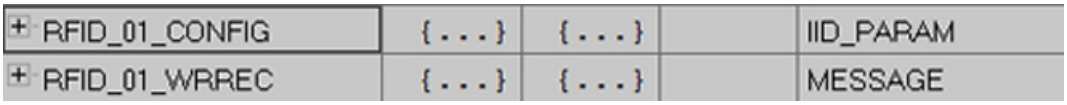


Image 3-1 Variables of the data type "IID_PARAM" and "MESSAGE"

2. Set the parameters for the instruction as shown in the following figure.

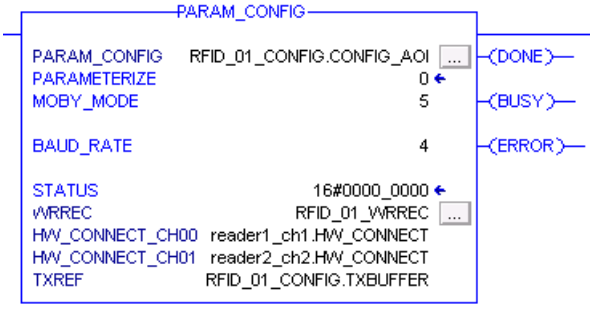


Image 3-2 "PARAM_CONFIG" instruction

Interface description

Table 3- 2 Input parameter

Input parameter	Data type	Default value	Meaning
PARAM_CONFIG	IID_PARAM	--	Instance variable for the "PARAM_CONFIG" instruction
PARAMETERIZE	BOOL	FALSE	TRUE = Start of the instruction
MOBY_MODE	SINT	FALSE	MOBY mode for the connected Ident system on the channels of the RFID 181EIP: • 0x05 = RF200/RF300/RF600; MV4x0; MOBY U/D normal addressing • 0x06 = RF620R/RF630R (4 bytes UID; handle ID) • 0x07 = RF620R/RF630R (8 bytes UID; EPC-ID)
BAUD_RATE	SINT	FALSE	Transmission speed for serial communication on the RFID 181EIP: • 0x01 = 19.2 kBd • 0x02 = 38.4 kBd • 0x03 = 57.6 kBd • 0x04 = 115.2 kBd
WRREC	MESSAGE	10	Instance for the "MESSAGE" instruction. The configuration of this instance is explained below.
TXREF	SINT[10]	--	Reference to global memory area for send data. This parameter does not contain any user-relevant information.

Table 3- 3 Output parameter

Output parameter	Data type	Default value	Meaning
DONE	BOOL	FALSE	TRUE = Command was executed free of errors
BUSY	BOOL	FALSE	TRUE = the instruction is executing a command
ERROR	BOOL	FALSE	TRUE = Error was detected The error is output in the "STATUS" parameter. The bit is reset automatically when a new command is started.
WARNING	BOOL	FALSE	--
STATUS	DINT	FALSE	Error If ERROR = TRUE, the STATUS parameter will contain error information. For more information, refer to the section "Error messages (Page 79)".

Assign the input parameters "PARAM_CONFIG" and "WRREC" as follows:

- PARAM_CONFIG

  In this parameter specify the variable that was created in the first step of the type "IID_PARAM" (in the example "RFID_01_CONFIG").

- WRREC

  In this parameter specify the variable that was created in the first step of the type "MESSAGE" (in the example "RFID_01_WRREC").

  Configure the "MESSAGE" instruction. To do this, click the "..." button.

  – Source Element

    Assign the data buffer the "Source" element from the variables of the data type "IID_CONFIG" (in the example "RFID_01_CONFIG.TXBUFFER").

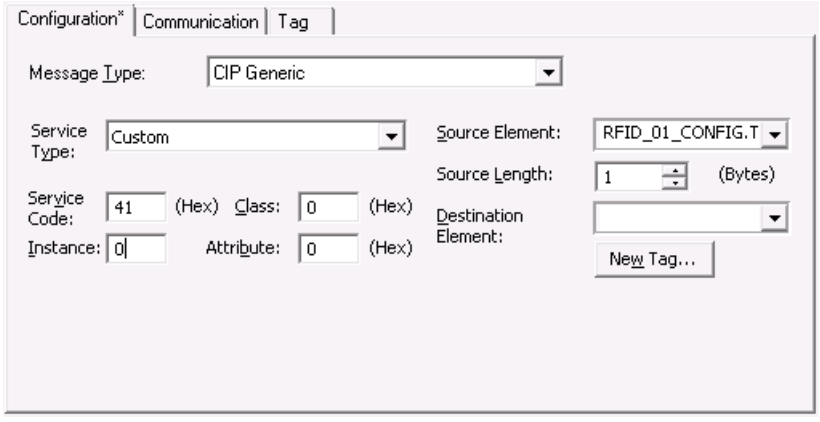


Image 3-3 Configuring the "MESSAGE" function

  – Communication Path

    Under "Communication" a sign the corresponding module (in the example "RFID_181EIP_01").

Sequence

The instruction is started with a rising edge at "PARAMETERIZE".

Via the outputs "DONE", "BUSY", "ERROR" and "STATUS" it is possible to query whether the instruction was terminated successfully or with an error. After successfully calling the "PARAM_CONFIG" instruction, you can start processing commands with the aid of the Ident profile.

3.3 Assigning parameters to the Ident profile

In the following project example, all the variables and instances are prepared for a channel. For every other channel for which you want to set parameters, you require the following three data types:

- "IID_CHANNEL" (in the example "RFID_01_CH00")
- 2x "MESSAGE" (in the example "RFID_01_CH00_RDREC" and "RFID_01_CH00_WRREC")

The variable of the data type "IID_CHANNEL" contains the variable "CM_CHANNEL" within the "HW_CONNECT" data structure. This variable specifies the physical channel of the RF181 EIP.

Creating variables

Follow the steps below to create the variables for a channel:

1. In the project tree, open the folder "Controller Tags" by double-clicking.

   The folder contains the three variables required to set parameters for the channel.

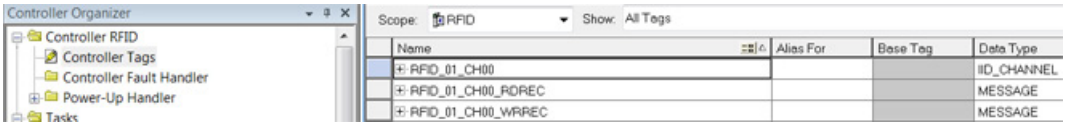


Image 3-4 Variables of the folder "Controller Tags"

2. To set parameters for a further channel, copy these three variables and adapt the names.
3. Open the variable of the data type "IID_CHANNEL".
4. Open the variable "HW_CONNECT".
5. Specify the address data of the Ident device or the channel.
   - Under "HW_CONNECT.CM_CHANNEL": Channel of the reader on the CM or the antenna

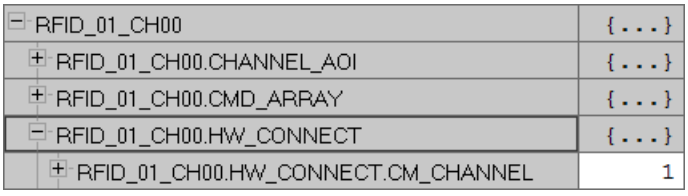


Image 3-5 Variable "HW_CONNECT" with "CM_CHANNEL"

The "IID_CHANNEL" data type has now been created and addressed for a channel. Repeat steps 1-5 for every other reader/channel. If you want to use a different channel of the reader/CM, set this using the "CM_CHANNEL" parameter.

3.4 Programming the Ident profile

3.4.1 Structure of the Ident profile

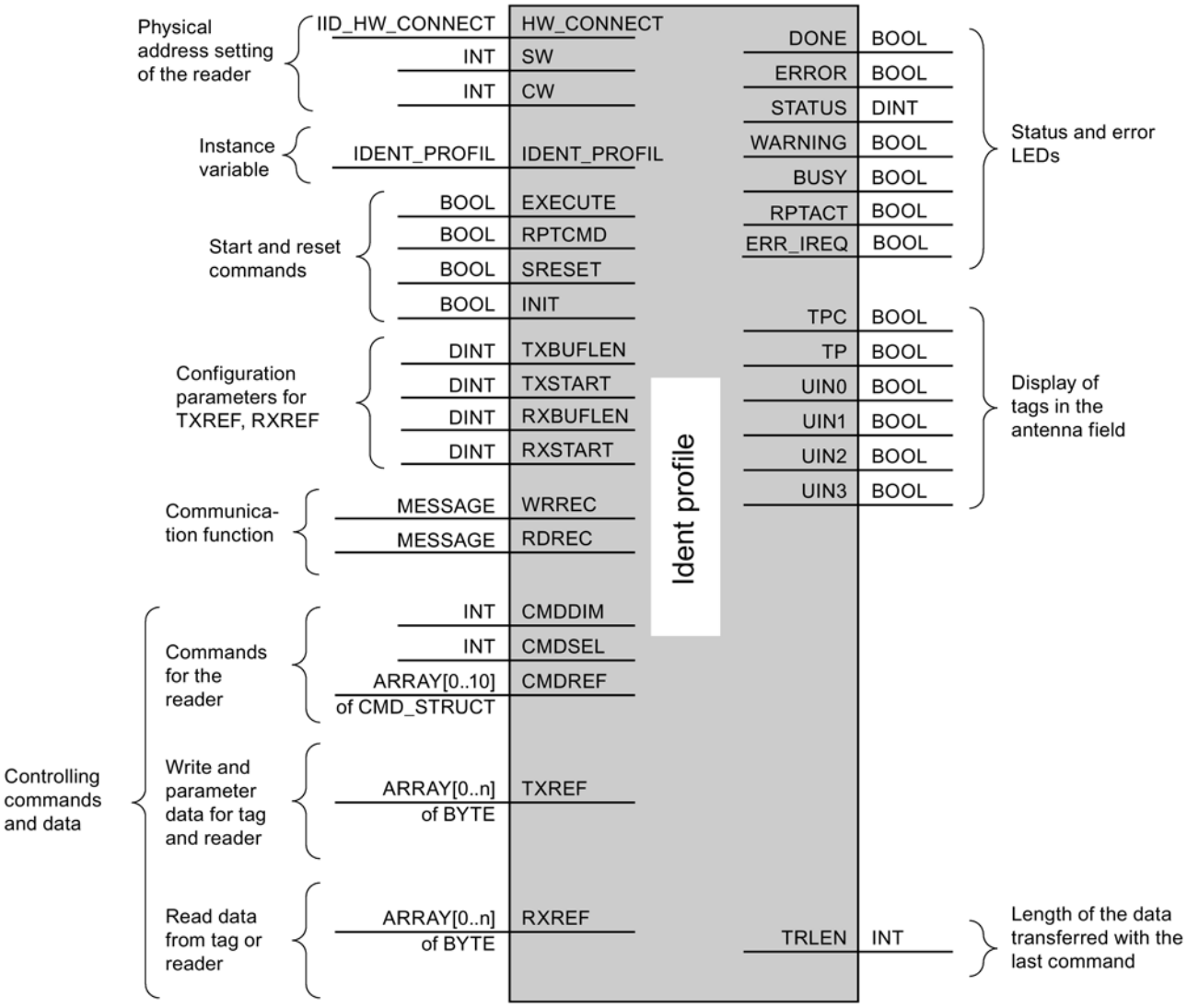


Image 3-6 The input parameters of the Ident profile

Note

Working with multiple channels

If you work with several channels, you must ensure that for each channel, the instruction is called with a separate instance DB.

Interface description

Table 3- 4 Input parameter

Input parameter	Data type	Default value	Description
HW_CONNECT	IID_HW_CONNECT	--	Own data type for physical addressing of communications modules and readers. The addressing is as described in the section "Assigning parameters to the Ident profile (Page 15)".
SW	INT	--	Status word
CW	INT	--	Control word
IDENT_PROFIL	IDENT_PROFIL	--	Instance variable for the "IDENT_PROFILE" instruction
EXECUTE	BOOL	FALSE	TRUE = triggers a new command Before starting you need to set the command and the corresponding parameters in the memory linked to "CMDREF".
RPTCMD	BOOL	FALSE	TRUE = Repeating the command currently being executed or the next command to be executed by communications module
SRESET	BOOL	FALSE	TRUE = Cancellation of the command currently processed on the communications module
INIT	BOOL	FALSE	TRUE = Communications module executes a Reset and is re-assigned parameters
TXBUFLEN	DINT	2048	Maximum length of the send buffer "TXREF"
TXSTART	DINT	0	First element of the send buffer "TXREF"
RXBUFLEN	DINT	2048	Maximum length of the receive buffer "RXREF"
RXSTART	DINT	0	First element of the receive buffer "RXREF"
WRREC	MESSAGE	--	"MESSAGE" instance for communication
RDREC	MESSAGE	--	"MESSAGE" instance for communication
CMDDIM	INT	10	Number of commands in the parameter "CMDREF"
CMDSEL	INT	0	Selection of the command to be executed "CMDREF"; 1 ⇒ 1. command, ... The value of the "CMDSEL" parameter can never be higher than the value of the "CMDDIM" parameter.
CMDREF	ARRAY[0..10] of IID_CMD_STRUCT	--	Command field The field can hold up to 10 commands. The commands are complex variables of the type "CMD_STRUCT". You will find more information on "CMDREF" in the section "Commands of the Ident profile (Page 26)".
TXREF	ARRAY[0..n] of SINT	--	Reference to global memory area for send data. The memory area can be shared with other instruction instances. The value "n" of the individual instructions is variable and can be up to 32 KB in size.
RXREF	ARRAY[0..n] of SINT	--	Reference to global memory area for receive data. The memory area can be shared with other instruction instances. The value "n" of the individual instructions is variable and can be up to 32 KB in size.

Table 3- 5 Output parameter

Output parameter	Data type	Default value	Description
DONE	BOOL	FALSE	TRUE = Command was executed free of errors
ERROR	BOOL	FALSE	TRUE = Error was detected The error is output in the "STATUS" parameter. The bit is reset automatically when a new command is started.
STATUS	DINT	FALSE	Warning and error If ERROR = TRUE or WARNING = TRUE, the error or warning information is contained in the STATUS parameter. For more information, refer to the section "Error messages (Page 79)".
WARNING	BOOL	FALSE	TRUE = Warning was detected The warning is output in the "STATUS" parameter. If the "ERROR" parameter is not set at the same time, the data was correctly processed. The bit is reset automatically when a new command is started.
BUSY	BOOL	FALSE	TRUE = the instruction is executing a command Other commands except for "INIT" and "SRESET" cannot be started.
RPTACT	BOOL	FALSE	TRUE = "RPTCMD" is active The acknowledgement bit shows that the "Repeat mode" of the CM/reader is active.
ERR_IREQ	BOOL	FALSE	TRUE = An error has occurred on the communications module or reader (e.g. at power-up or connection termination)
TPC	BOOL	FALSE	Transponder Presence Changed TRUE = New transponder in the antenna field of the reader. The parameter is set to "FALSE" after the successful execution of the next "INVENTORY" or "INIT" command.
TP	BOOL	FALSE	Transponder Presence TRUE = There is a transponder in the antenna field of the reader.
UIN0	BOOL	FALSE	With RFID readers, the number of transponders in the antenna field is indicated. With code reader devices, the various statuses of the code reader device is displayed. UIN0: Corresponds to IN_OP bit of the reader UIN1: Corresponds to RDY bit of the reader UIN2 + UIN3: These two bits are interpreted as an unsigned value (bit 2 is the less significant bit) that represents the number of available decoded codes. If the value is = 3, three or more decoded codes are available.
UIN1	BOOL	FALSE	
UIN2	BOOL	FALSE	
UIN3	BOOL	FALSE	
TRLEN	INT	0	Number of data elements received after successful execution of the command.

3.4.2 Assigning parameters for the instruction

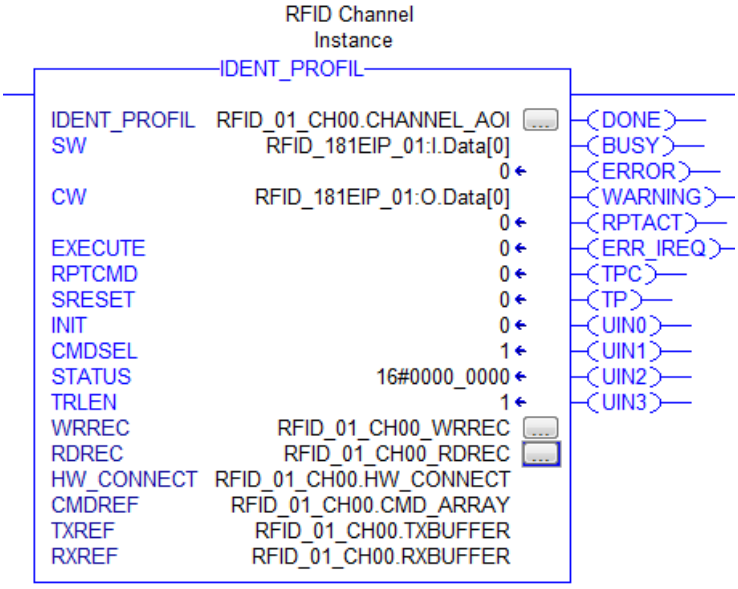


Image 3-7 "IDENT_PROFIL" instruction

You must assign the following parameters of the instruction:

- IDENT_PROFIL
- SW (Statusword)
- CW (Controlword)
- WRREC
- RDREC
- HW_CONNECT
- CMDREF
- TXREF
- RXREF

Example of parameter assignment

IDENT_PROFIL

Assign an instance to the "IDENT_PROFIL" parameter. This instance is contained in the "IID_CHANNEL" data type .

In the example "RFID_01_CH00.CHANNEL_AOI"

CW and SW

Assign the cyclic input word to the SW parameter and the cyclic output word for the channel to the CW parameter. Per physical module, variables are automatically created for the cyclic words.

The "I" stands for input and the "O" for output as shown in the following figure. These are assigned as follows:

- Input for SW: ...I.Data...
- Output for CW: ...O.Data...

The element numbers are assigned as follows:

- Element 0 for channel 1: ...Data[0]
- Element 1 for channel 2: ...Data[1]

⊞ RFID_181EIP_01:C	{...}	{...}		AB:ETHERNET_MODULE:C:0
⊟ RFID_181EIP_01:I	{...}	{...}		AB:ETHERNET_MODULE_INT_4Bytes:I:0
⊟ RFID_181EIP_01:I.Data	{...}	{...}	Decimal	INT[2]
⊞ RFID_181EIP_01:I.Data[0]	0		Decimal	INT
⊞ RFID_181EIP_01:I.Data[1]	0		Decimal	INT
⊟ RFID_181EIP_01:O	{...}	{...}		AB:ETHERNET_MODULE_INT_4Bytes:O:0
⊟ RFID_181EIP_01:O.Data	{...}	{...}	Decimal	INT[2]
⊞ RFID_181EIP_01:O.Data[0]	0		Decimal	INT
⊞ RFID_181EIP_01:O.Data[1]	0		Decimal	INT

Image 3-8 Automatically created input and output variables

WRREC and RDREC

Assign a "MESSAGE" instance to the parameters "WRREC" and "RDREC". These instances were created along with the assignment to the instructions (section: "Parameter assignment for "PARAM_CONFIG" (Page 11)").

In the example: "RFID_01_CH00.WRREC" and "RFID_01_CH00.RDREC"

WRREC

Configure the "WRREC" parameter. To do this, click the "..." button.

- Source Element

  Open the "Configuration" tab and assign the corresponding data buffer to the "Source Element".

  In the example "RFID_01_CH00.HW_CONNECT.Static.buf"

  The buffer is located under "HW_CONNECT > Static > buf".

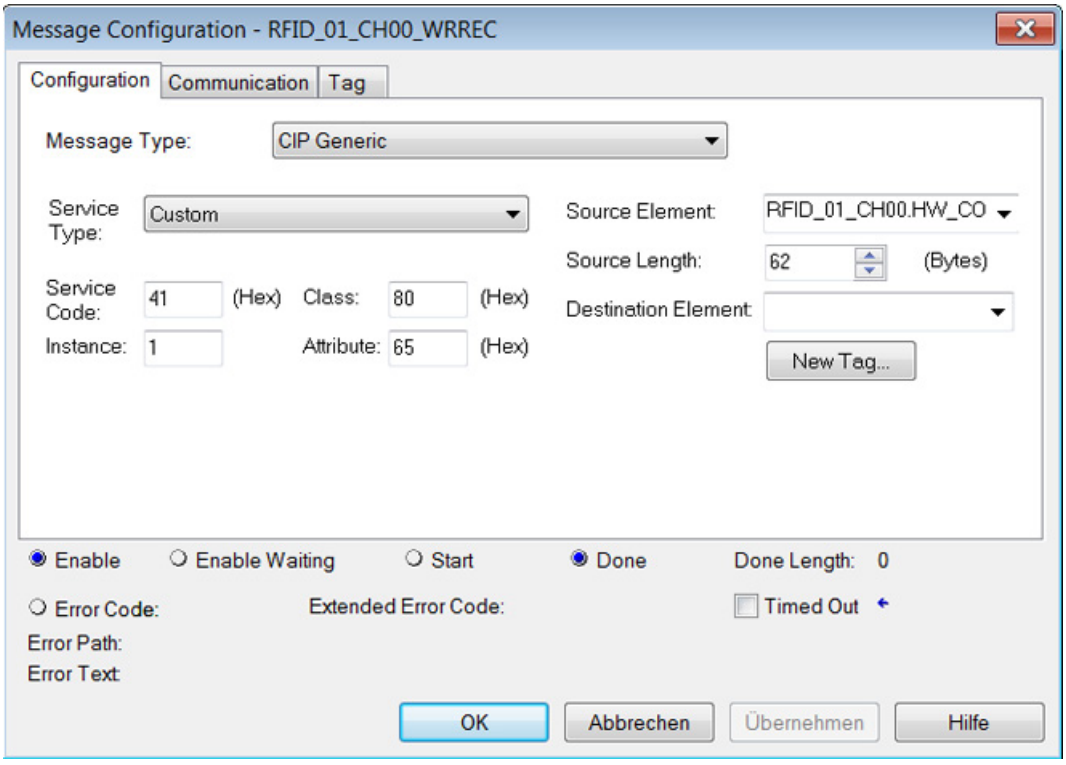


Image 3-9 Assigning the variables

- Communication Path

  In the "Communication" tab, assign the relevant module..

  In the example "RFID_181EIP_01"

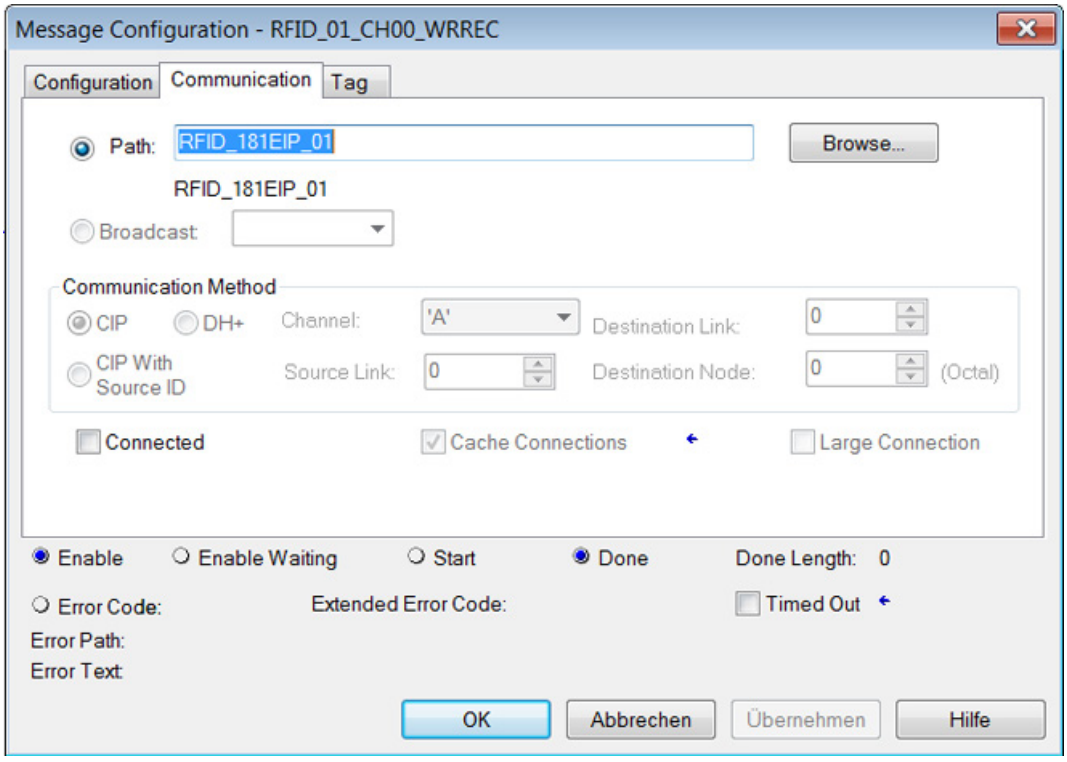


Image 3-10 Assigning the module

RDREC

- Source Element

  In the example "RFID_01_CH00.HW_CONNECT.Static.buf"

- Destination Element

  In the example "RFID_01_CH00.HW_CONNECT.Static.buf"

- Communication Path

  According to the module being used (e.g. "RFID_181EIP_01")

HW_CONNECT

Assign a variable to the "HW_CONNECT" parameter. This variable is contained in the "IID_CHANNEL" data type .

In the example "RFID_01_CH00.HW_CONNECT"

CMDREF

Assign a variable to the "CMDREF" parameter. This variable is contained in the "IID_CHANNEL" data type .

In the example "RFID_01_CH00.CMD_ARRAY"

TXREF

Assign a variable to the "TXREF" parameter. This variable is contained in the "IID_CHANNEL" data type .

In the example "RFID_01_CH00.TXBUFFER"

RXREF

Assign a variable to the "RXREF" parameter. This variable is contained in the "IID_CHANNEL" data type .

In the example "RFID_01_CH00.RXBUFFER"

3.4.3 Changing the length of the data buffer

The receive and send buffer need to have parameters assigned by you and their length must be set manually. To do this, adapt the relevant arrays of "TXBUFFER" and "RXBUFFER" in the data type definition..

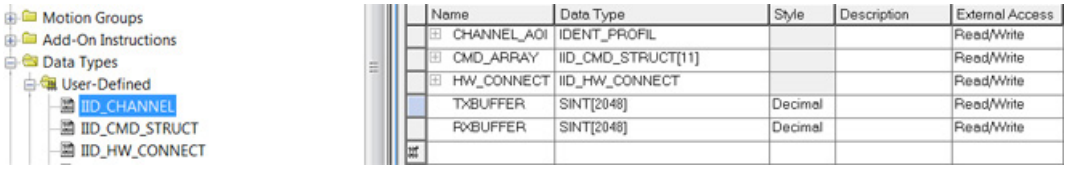


Image 3-11 "TXBUFFER" and "RXBUFFER" of the "IID_CHANNEL" data type

You also need to adapt the newly specified length in the parameters "TXBUFLEN" and "RXBUFLEN". In the example, the length of both buffers is set to 2048 (0 to 2047). For this reason, the "TXBUFLEN" and "RXBUFLEN" are also preset at 2048.

3.4.4 Data structure of the Ident profile

Each time the Ident profile is called, you need to supply the parameters ("HW_CONNECT", "CMDREF", "TXREF" and "RXREF") with values as described in section "Structure of the Ident profile (Page 16)".

The relationship between the three "IN/OUT" parameters is described in greater detail below:

- CMDREF (command buffer):

  ARRAY[0...10] of CMD_STRUCT

- TXREF (send buffer):

  ARRAY[0...n] of SINT

- RXREF (receive buffer):

  ARRAY[0...n] of SINT

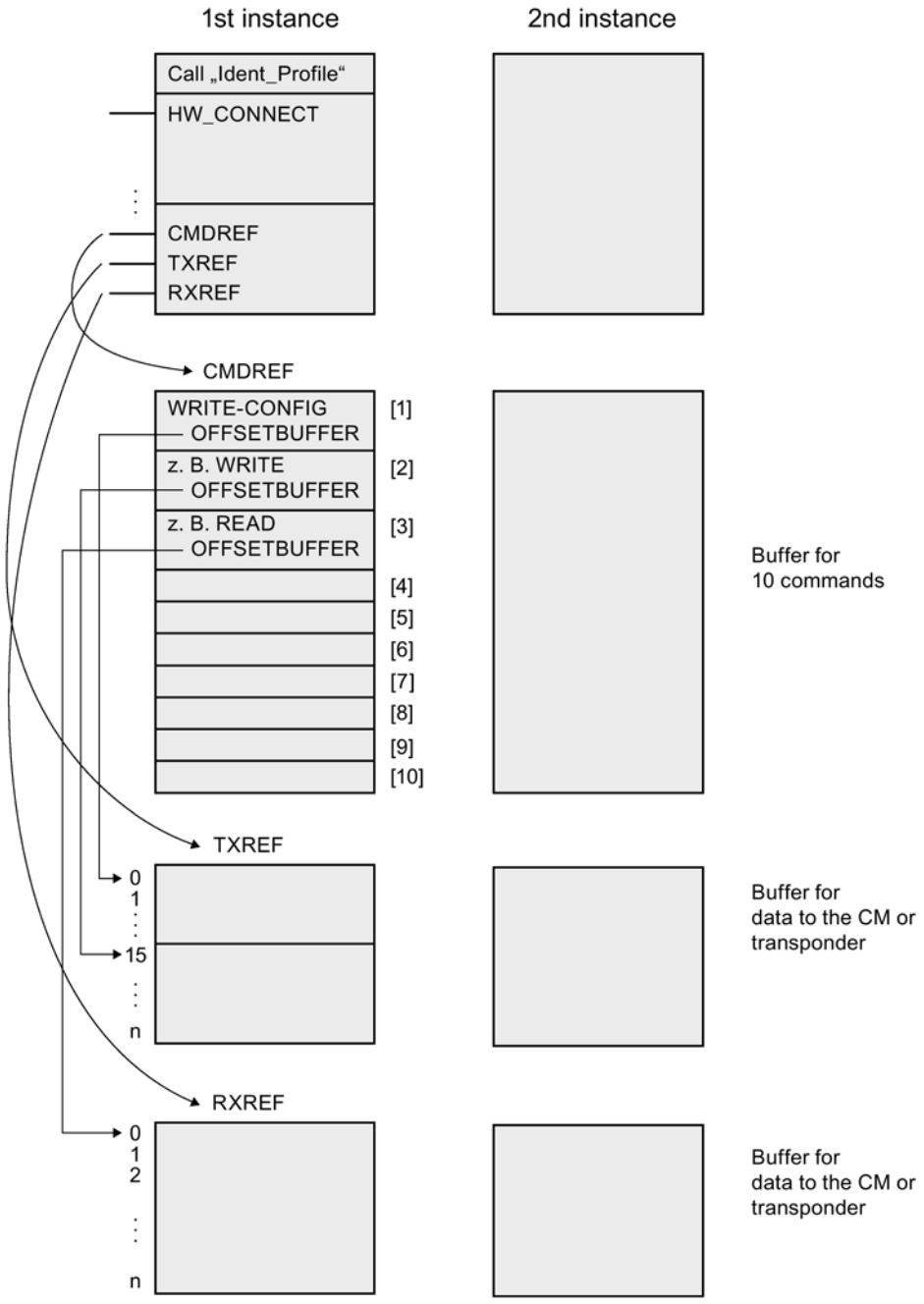


Image 3-12 Data structure example of the Ident profile

Explanation of the data structure example

- CMDREF[1]:

  Command "WRITE-CONFIG", OFFSETBUFFER = 0

  At the CMDREF[1] point you need to set the "WRITE-CONFIG" command so that the "INIT/Reset" is correctly executed.

- CMDREF[2]:

  Command "WRITE", OFFSETBUFFER = 15

- CMDREF[3]:

  Command "READ", OFFSETBUFFER = 0

If the "CMDREF[2]" command is selected, a write command is started and the data to be written is fetched starting at element 15 of the "TXREF" parameter. If the "CMDREF[3]" command is selected, the read data is stored starting at element 0 in the "RXREF" parameter.

3.4.5 Commands of the Ident profile

The following table contains all the commands supported by the Ident profile.

Table 3- 6 Commands of the Ident profile

Command [1]	Command code		Parameters used	Description
	HEX	ASCII		
PHYSICAL-READ	70	'p'	OFFSETBUFFER, EPCID_UID, LEN_ID, LEN_DATA, ADR_TAG, MEM_BANK, PSWD	Reads data from a transponder/code reader system by specifying the physical start address, the length and the password.
PHYSICAL-WRITE	71	'q'	OFFSETBUFFER, EPCID_UID, LEN_ID, LEN_DATA, ADR_TAG, MEM_BANK, PSWD	Writes data to a transponder/code reader system by specifying the physical start address, the length and the password.
READER-STATUS	74	't'	OFFSETBUFFER, ATTRIBUTES	Reads out the status of the communications module/reader.
TAG-STATUS	73	's'	OFFSETBUFFER, EPCID_UID, LEN_ID, ATTRIBUTES	Reads out the status of a transponder.
INVENTORY	69	'i'	OFFSETBUFFER, ATTRIBUTES, DURATION, DUR_UNIT	Requests a list of all currently accessible transponders within the antenna range.
FORMAT	66	'f'	OFFSETBUFFER, EPCID_UID, LEN_ID, LEN_DATA	Initializes the transponder.
PUT	65	'e'	OFFSETBUFFER, EPCID_UID, LEN_ID, LEN_DATA	Transfers further commands not specified in the standard profile. To this end, a corresponding data structure is defined in the send data buffer for each command.

Command [1]	Command code		Parameters used	Description
	HEX	ASCII		
WRITE-ID	67	‘g‘	OFFSETBUFFER, EPCID_UID, LEN_ID, NEW-LEN_ID, PSWD	RF680R/RF685R: Writes a new EPC-ID to the transponder.
KILL-TAG	6A	‘j‘	EPCID_UID, LEN_ID, PSWD	RF680R/RF685R: The transponder is permanently deactivated.
LOCK-TAG-BANK	79	‘y‘	EPCID_UID, LEN_ID, PSWD, ACTION, MASK	RF680R/RF685R: Defines a password for transponder access.
EDIT-BLACKLIST	7A	‘z‘	EPCID_UID, LEN_ID, MODE	RF680R/RF685R: The black list is processed. The current transponder can be added, all identified transponders added, individual transponders deleted or all transponders deleted.
GET-BLACKLIST	6C	‘l‘	OFFSETBUFFER, EPCID_UID, LEN_ID	RF680R/RF685R: The entire TagIDs are read out from the black list.
READ-CONFIG	61	'a'	--	Reads out the parameters from the communications module/reader.
WRITE-CONFIG	78	'x'	LEN_DATA, CONFIG	Sends new parameters to the communications module/reader.

[1] The supported range of commands depends on the CM/reader being used. Make sure that the CM/reader you are using supports the commands.

3.4.5.1 Command structure

Before you can start a command with "EXECUTE" or "INIT", you need to define the command. To allow simple definition of a command, the command buffer "CMDREF" was created using the "IID_CMD_STRUCT" data type. In the command buffer, you have 10 areas available in which commands can be set. The parameter "CMDSEL" specifies which command (0...10) is started with "EXECUTE".

Remember that the first element in the buffer is always reserved for "INIT". In other words if "INIT" is set, "CMDSEL" must be set to "1" and element "1" in the CMD buffer must be filled with the relevant settings. The following table contains the command structure of the parameters. Not every command uses all parameters.

Note

Restriction of the command buffer "CMDREF"

Element "0" of the "CMDREF" command buffer cannot be used.

Table 3- 7 Command structure of the parameters

Parameter	Data type	Default value	Description
CMD	SINT	16#0	Command code (compare the table in the section "Commands of the Ident profile (Page 26)".)
OFFSETBUFFER	INT	0	Relative offset within the received data buffer. The parameter specifies the address within the memory area at which the first byte of the received data must be stored or the first byte of the data to be sent is expected. All subsequent bytes must be stored in ascending addresses.
EPCID_UID	ARRAY[1...62] OF SINT	16#0	Buffer for up to 62 bytes EPC-ID, 8 bytes UID or 4 bytes handle ID. • 2 - 62-byte EPC-ID is entered at the start of the buffer (length is set by "LEN_ID") • 8-byte UID is entered at the start of the buffer ("LEN_ID = 8") • 4 byte handle ID must be entered in the array element [5]-[8] (LEN_ID = 8) Default value: 0x00 ≙ unspecified single tag access
LEN_DATA	INT	16#0	Amount of data to be read/written in bytes
ADR_TAG	DINT	16#0	Physical start address on the transponder
ATTRIBUTES	SINT	16#0	Sub command designation for several commands (e.g. "READER-STATUS", "INVENTORY", etc,)
CHAINED	BOOL	FALSE	• 0x00 = not chained • 0x01 = chained All chained commands must have this bit set except the last command. The commands are worked through in the order in which they are located in the CMD structure.

Parameter		Data type	Default value	Description
CONFIG		SINT	16#0	• 0x01 = reset, no configuration data • 0x02 = no reset, configuration data to be sent • 0x03 = reset, configuration data to be sent • 0x80 = no reset, only individual parameters
EXT_UHF		STRUCT	--	Structure for additional parameters (RF680R/RF685R only)
	LEN_ID	SINT	16#0	Length of the valid data in the "EPCID_UID" field.
	MEM_BANK	SINT	16#3	Memory bank on the transponder • 0x00 = RESERVED • 0x01 = EPC • 0x02 = TID • 0x03 = USER
	PSWD	DINT	16#0	Password for transponder access 0x00 ≙ no password
	EDIT_BLACKLIST_MODE	SINT	16#0	Mode • 0x00 = add TagID • 0x01 = add all "Observed" transponders • 0x02 = delete TagID • 0x03 = delete all
	INVENTORY_DURATION	INT	16#0	Duration Period of time or number of inventories or number of "Observed" events Example: • 0x00 ≙ no inventory • 0x01 ≙ one inventory
	INVENTORY_DUR_UNIT	INT	16#0	Unit for "DURATION" • 0x00 = time [ms] • 0x01 = inventories • 0x02 = number of "Observed" events
	LOCK-TAG-BANK_ACTION	INT	16#0	Lock-Action (see "EPC Specification")
	LOCK-TAG-BANK_MASK	INT	16#0	Lock-Mask (see "EPC Specification")

3.4.5.2 Commands

Table 3- 8 PHYSICAL-READ

CMD	OFFSET BUFFER	LEN_ DATA	ADR_ TAG	CHAINED	EPCID_ UID	LEN_ID	MEM_ BANK	PSWD	RXREF
0x70	Offset in the "RXREF" receive buffer	Length of received data	Address on the transponder	True = chained False = not chained	Buffer for up to 62 bytes EPC-ID, 8 bytes UID or 4 bytes handle ID. • 2 - 62-byte EPC-ID is entered at the start of the buffer (length is set by "LEN_ID") • 8-byte UID is entered at the start of the buffer ("LEN_ID = 8") • 4-byte handle ID must be entered in the array element [5]-[8] ("LEN_ID = 8") Default value: 0x00 ≙ unspecified single tag access	Length of the EPC-ID (2-62 bytes) 0x00 ≙ unspecified single tag access	Memory bank • 0x00 ≙ reserved • 0x01 ≙ EPC • 0x02 ≙ TID • 0x03 ≙ USER	Password 0x00 ≙ no password	Read data

Table 3- 9 PHYSICAL-WRITE

CMD	OFFSET BUFFER	LEN_ DATA	ADR_ TAG	CHAINED	EPCID_ UID	LEN_ID	MEM_ BANK	PSWD	TXREF
0x71	Offset in the "TXREF" send buffer	Length of the data to be written	Address on the transponder	True = chained False = not chained	Buffer for up to 62 bytes EPC-ID, 8 bytes UID or 4 bytes handle ID. • 2 - 62-byte EPC-ID is entered at the start of the buffer (length is set by "LEN_ID") • 8-byte UID is entered at the start of the buffer ("LEN_ID = 8") • 4-byte handle ID must be entered in the array element [5]-[8] ("LEN_ID = 8") Default value: 0x00 ≙ unspecified single tag access	Length of the EPC-ID (2-62 bytes) 0x00 ≙ unspecified single tag access	Memory bank • 0x00 ≙ reserved • 0x01 ≙ EPC • 0x02 ≙ TID • 0x03 ≙ USER	Password 0x00 ≙ no password	Data to be written

Table 3- 10 READER-STATUS

CMD	OFFSETBUFFER	ATTRIBUTES	RXREF
0x74	Offset in the "RXREF" receive buffer	Identifier of the status modes / possible entries: • RF200: 0x81 • RF300: 0x81, 0x86 • RF620R, RF630R: 0x87, 0x88, 0xA0, 0xA1 • RF680R, RF685R: 0x89 • MOBY U: 0x81, 0x84, 0x85 • MOBY D: 0x81	Received status data You will find the data structure of the status modes in the section "Auto-Hotspot".

Table 3- 11 TAG-STATUS

CMD	OFFSETBUFFER	ATTRIBUTES	EPCID_ UID	LEN_ID	RXREF
0x73	Offset in the "RXREF" receive buffer	Identifier of the status modes / possible entries: • RF200: 0x83 • RF300: 0x04, 0x82, 0x83 (only ISO transponders) • RF600: 0x84, 0x85 • MOBY D: 0x83 [1)] • MOBY U: 80	Buffer for up to 62 bytes EPC-ID, 8 bytes UID or 4 bytes handle ID. • 2 - 62-byte EPC-ID is entered at the start of the buffer (length is set by "LEN_ID") • 8-byte UID is entered at the start of the buffer ("LEN_ID = 8") • 4-byte handle ID must be entered in the array element [5]-[8] ("LEN_ID = 8") Default value: 0x00 ≙ unspecified single tag access	Length of the EPC-ID/UID	Received status data You will find the data structure of the status modes in the section "Auto-Hotspot".

1) SLG D10S only

Table 3- 12 INVENTORY

CMD	OFFSET BUFFER	ATTRIBUTES	INVENTORY_ DURATION	INVENTORY_ DUR_UNIT	RXREF
0x69	Offset in the "RXREF" receive buffer	Identifier of the status modes / possible entries: RF680R/RF685R: • 0x80 ≙ inventory with brief transponder information • 0x81 ≙ inventory with a lot of transponder information • 0x86 ≙ Presence mode on • 0x87 ≙ Presence mode off RF620R/RF630R: • 0x82 ≙ read out the next data record • 0x83 ≙ read handle ID when MOBY_mode ≙ 6 and EPC-ID when MOBY_mode ≙ 7 • 0x85 ≙ read out handle IDs and EPC-IDs sorted in descending order according to the mean RSSI value • 0x91 ≙ read out handle IDs sorted in descending order according to the maximum RSSI value • 0x92 ≙ read out handle IDs sorted in descending order according to read frequency • 0xA0 ≙ read out first entries from Black List • 0xA1 ≙ read out further entries from Black List RF300/MOBY U: • 0x00 ≙ list of all tags with UID	Only for 0x80 and 0x81: Duration Period of time or number of inventories or number of "Observed" events Example: • 0x00 ≙ no inventory • 0x01 ≙ one inventory	Only for 0x80 and 0x81: Unit for "DURATION" • 0x00 ≙ time [ms] • 0x01 ≙ inventories • 0x02 ≙ number of "Observed" events	With RF680R/RF685R only when 0x80 and 0x81: Data received With RF620R/RF630R/RF300/MOBY U: Data received You will find the data structure of the status modes in the section "Auto-Hotspot".

Table 3- 13 FORMAT

CMD	OFFSETBUFFER	LEN_DATA	EPCID_ UID	LEN_ID	TXREF
0x66	Offset in the "TXREF" send buffer	Length of the parameter data to be sent	Buffer for up to 62 bytes EPC-ID, 8 bytes UID or 4 bytes handle ID. • 2 - 62-byte EPC-ID is entered at the start of the buffer (length is set by "LEN_ID") • 8-byte UID is entered at the start of the buffer ("LEN_ID = 8") • 4-byte handle ID must be entered in the array element [5]-[8] ("LEN_ID = 8") Default value: 0x00 ≙ unspecified single tag access	Length of the EPC-ID/UID	Parameter data to be written

Table 3- 14 Structure of the data attachment for the "FORMAT" command with normal addressing

Byte	0...7	8	9	10	11	12	13	14
Value	00h	06h	03h	00h	INIT-Wert	00h	MSB	LSB

Table 3- 15 Explanation of the structure of the data attachment for the "FORMAT" command

Byte	Description
Byte 0...7	Reserved for security code (must be assigned "0", since SIMATIC RFID has had no code previously)
Byte 8	Permanently set to "00h"
Byte 9	Permanently set to "0x03"
Byte 10	Permanently set to "0x00"
Byte 11	"INIT" value: The data area of the transponder is written with this value (hex format).
Byte 12	Permanently set to "00h"
Byte 13	Memory size of the transponder (end address + 1; high byte, hex format)
Byte 14	Memory size of the transponder (end address + 1; low byte, hex format)

Table 3- 16 Memory sizes of the transponders

Transponder type			Memory size	INIT duration
2 KB	MOBY U	RAM *)	08 00	approx. 1 s
32 KB	MOBY U	RAM *)	80 00	approx. 1.5 s
44 bytes	MOBY D	I-Code 1	00 2C	approx. 0.4 s
112 bytes	MOBY D	ISO I-Code SLI	00 70	approx. 0.5 s
256 bytes	MOBY D	ISO Tag-it HF-I	01 00	approx. 1 s
992 bytes	MOBY D	ISO my-d	03 E0	approx. 3 s
2000 bytes	MOBY D	FRAM	07 D0	approx. 3 s
20 bytes	RF300	EEPROM	00 14	approx. 0.2 s
8 KB	RF300	FRAM *)	20 00	0.9 s
32 KB	RF300	FRAM *)	80 00	3.6 s
64 KB	RF300	FRAM *)	FF 00	7.2 s

*) The OTP memory is not initialized with this command.

Table 3- 17 PUT

CMD	OFFSETBUFFER	LEN_DATA	TXREF
0x65	Offset in the "TXREF" send buffer	Length of the parameter data to be sent	Parameter data to be written

Table 3- 18 Data structure of the PUT command

Put_SET_ANT		Switches the antenna of the reader off and on. 1 | 2 | 3 'N' | 'A' | Mode
	Mode	RF200/RF300, MOBY U/D: • 0x01 ≙ antenna on • 0x02 ≙ antenna off RF600: • Bit 0 ≙ ANT 1 / internal antenna (1 = on) • Bit 1 ≙ ANT 2 / external antenna (1 = on) • Bit 4 ≙ TagList (0 = initialize, 1 = continue working with the existing list)
	Length	3
Put_END		Terminates communication with a transponder (MOBY U only). 1 | 2 | 3 ... 10 | 11 'N' | 'K' | UID | Mode
	UID	UID of the transponder
	Mode	• 0x00 ≙ end processing of the transponder • 0x01 ≙ processing pause of the transponder
	Length	11

Table 3- 19 WRITE-ID (RF680R/RF685R only)

CMD	OFFSET BUFFER	EPCID_ UID	LEN_ID	LEN_DATA	PSWD	TXREF
0x67	Offset in the "TXREF" send buffer	Previous EPC ID 0x00 ≙ unspecified single tag access	Length of the previous EPC-ID (2-62 bytes) 0x00 ≙ unspecified single tag access	Length of the new EPC-ID	Password 0x00 ≙ no password	New EPC-ID

Table 3- 20 KILL-TAG (RF680R/RF685R only)

CMD	EPCID_ UID	LEN_ID	PSWD
0x6A	EPC ID 0x00 ≙ unspecified single tag access	Length of the EPC-ID (2-62 bytes) 0x00 ≙ unspecified single tag access	Password must be ≠ 0x00

Table 3- 21 LOCK-TAG-BANK (RF680R/RF685R only)

CMD	EPCID_ UID	LEN_ID	PSWD	LOCK_TAG_ BANK_ACTION	LOCK_TAG_ BANK_MASK
0x79	EPC ID 0x00 ≙ unspecified single tag access	Length of the EPC-ID (2-62 bytes) 0x00 ≙ unspecified single tag access	Password 0x00 ≙ no password	See EPC standard	See EPC standard

Table 3- 22 EDIT-BLACKLIST (RF680R/RF685R only)

CMD	EDIT_ BLACKLIST_MODE	EPCID_ UID	LEN_ID
0x7A	• 0x00 ≙ add EPC-ID • 0x01 ≙ add all "OBSERVED" transponders • 0x02 ≙ delete EPC-ID • 0x03 ≙ delete all	EPC ID 0x00 ≙ unspecified single tag access [1)]	Length of the EPC-ID (2-62 bytes) 0x00 ≙ unspecified single tag access

[1)] If "EDIT_BLACKLIST_MODE" = 0x00 or 0x02 was selected, the EPC-ID including the ID length must be specified.

Table 3- 23 GET-BLACKLIST (RF680R/RF685R only)

CMD	OFFSETBUFFER	RXREF
0x6C	Offset in the "RXREF" receive buffer	Read black list IDs

Table 3- 24 READ-CONFIG

CMD	OFFSETBUFFER	RXREF
0x61	Offset in the "RXREF" receive buffer	Read reset parameters

Table 3- 25 WRITE-CONFIG

CMD	OFFSET BUFFER	LEN_DATA	CONFIG	TXREF
0x78	Offset in the "TXREF" send buffer	Length of the parameter data	• 0x01 ≙ communication reset, no configuration data • 0x02 ≙ no communication reset, configuration data to be sent • 0x03 ≙ communication reset, configuration data to be sent • 0x80 ≙ no communication reset, individual parameters	Configuration data to be sent

Table 3- 26 Structure of the configuration data attachment (valid for RF200, RF300, RF620R, RF630R, MOBY D/U)

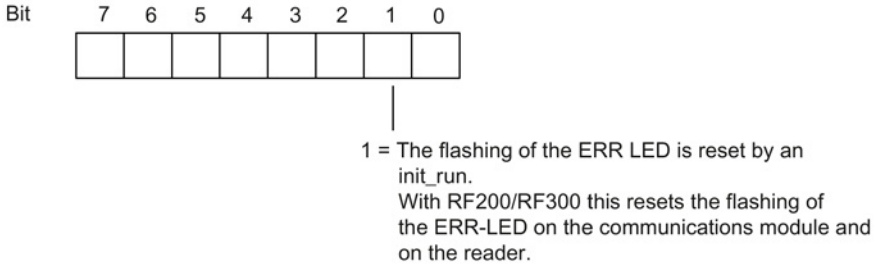
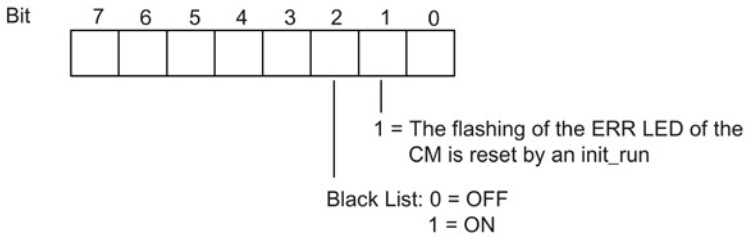
Byte	0	1...4	5	6...7	8	9	10	11	12...13	14	15
Value	04h	0	0Ah	0	scanning_ time	param	op- tion_1	distance_ limiting	Number of tran- sponders	field_on_c ontrol	field_on_ time

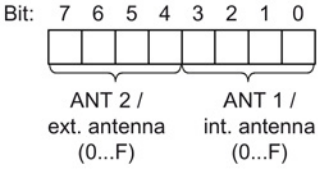
Table 3- 27 Bytes of the "PARAM" parameter

<table>
<tr><th>Byte</th><th>Value</th><th>RFID system</th><th colspan="5">Description</th></tr>
<tr><td rowspan="5">Byte 8</td><td rowspan="5">scanning_
time</td><td>MOBY U</td><td colspan="5">"scanning_time" describes the standby time for the transponder. If the transponder receives a further command before "scanning_time" has expired, this command can be executed immediately. If the transponder receives a command after "scanning_time" has expired, command execution is delayed by the "sleep_time" of the transponder.
"scanning_time" should only be set when
• the transponder is processed with several commands and
• the execution must be completed within a minimum time.

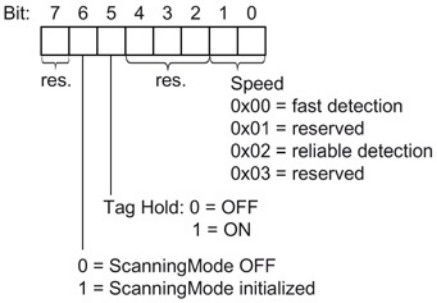
0x00 = no standby time (default)
0x01 = 7 ms standby time
0x02 = 14 ms standby time
:
C8 hex = 1400 ms standby time
Note that the "scanning_time" affects the working life of the battery. The longer "scanning_time" is, the shorter the life of the battery. For precise calculations, see the MOBY U manual for configuration, mounting and service.</td></tr>
<tr><td>RF200,
RF300,
MOBY D</td><td colspan="5">0x00 (reserved)</td></tr>
<tr><td rowspan="8">RF600</td><td colspan="5">"scanning_time" describes the radio profile according to EPC Global. Set the correct standard according to the country in which you want to operate the reader. Please check which standard and which reader type is applicable to your country before you select a wireless profile.</td></tr>
<tr><td colspan="2"></td><td colspan="3">RF600 reader variant</td></tr>
<tr><td>Value</td><td>Description</td><td>ETSI</td><td>FCC</td><td>CMIIT</td></tr>
<tr><td>0</td><td>No standard selected; the error "0x15" is output</td><td>--</td><td>--</td><td>--</td></tr>
<tr><td>1</td><td>Reader works with the default wireless profile. Value of the default wireless profile:</td><td>ETSI new</td><td>FCC</td><td>China</td></tr>
<tr><td>2</td><td>ETSI new: EU, EFTA, Turkey; 4-channel plan</td><td>X</td><td>--</td><td>--</td></tr>
<tr><td>3</td><td>ETSI old: EU, EFTA, Turkey; readers commissioned after December 31, 2009, must not be operated with this setting.</td><td>X</td><td>--</td><td>--</td></tr>
</table>

Byte	Value	RFID system	Description				
			4	FCC: e.g. USA, Canada, Mexico	--	X	--
			5	reserved	--	--	--
			6	China	--	--	
			7	Thailand	--	X	--
			8	Brazil	--	X	--
			9	South Korea	--	X	--
			C0	India	X	--	--
			Note: If you select country profiles other than those defined for the particular reader variant, the error message "09" is acknowledged.				
Byte 9	param	RF200, RF300, MOBY D, MOBY U	Setting for the RFID mode and presence check				
			Bit	7 ... 5		4	3 ... 0
				Presence check and transponder control: • 0 = no presence check • 1 = no transponder control; Presence check via firmware (default)		reserved	RFID mode:
			Value of bit 3 ... 0	Operating mode	Note		
			0	reserved	reserved for the setting with the switch or GSD parameter assignment		
			1	reserved	Short "INIT" (only the "param" and "option_1" parameters are transferred to the reader).		
			5	MOBY U/D, RF200 - without multitag handling	RFID 181EIP		
			6	MOBY U RF620R/RF630R - with multitag handling	RFID 181EIP • Parameter setting with Multitag > 1 and more than one transponder in the antenna field: the UID parameter must be supplied with the transponder ID. • Parameter setting with Multitag = 1 and only one transponder in the antenna field: the UID parameter can be supplied with the correct transponder ID or zero.		
			7	MOBY D, RF300, RF620R/RF630R - with multitag handling	RFID 181EIP		
			Note: Note that a change to the parameter may only be made after turning on a CM.				
		RF600	RFID mode setting				

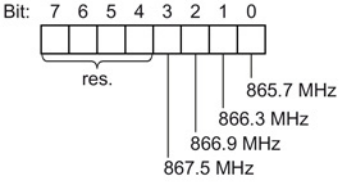
<table>
<tr><th>Byte</th><th>Value</th><th>RFID system</th><th colspan="3">Description</th></tr>
<tr><td rowspan="6"></td><td rowspan="6"></td><td rowspan="6"></td><td>Value</td><td colspan="2">Operating mode</td></tr>
<tr><td>4</td><td colspan="2">ISTM mode</td></tr>
<tr><td>5</td><td colspan="2">Single tag mode</td></tr>
<tr><td>6</td><td colspan="2">• with single tag handling (UID = 0x00), 4 bytes UID of the 8 byte handle ID
• with multitag handling, 4 bytes UID as handle ID for access to transponders with an EPC-ID of any length</td></tr>
<tr><td>7</td><td colspan="2">• with single tag handling (UID = 0x00), 8 bytes UID
• with multitag handling, 8 bytes UID of bytes 5-12 of the 12-byte long EPC-ID</td></tr>
<tr><td colspan="3">Note: Note that a change to the parameter may only be made after turning on a CM.</td></tr>
<tr><td rowspan="2">Byte 10</td><td rowspan="2">option_1</td><td>RF200, RF300, MOBY D, MOBY U</td><td colspan="3">This byte is bit-coded. As default, it has the value "B#16#0". With this byte, special controllers can be implemented on the CM/reader.
 
</td></tr>
<tr><td>RF600</td><td colspan="3">This byte is bit-coded. As default, it has the value "B#16#0".
 
</td></tr>
<tr><td rowspan="3">Byte 11</td><td rowspan="3">distance_ limiting</td><td rowspan="3">MOBY U</td><td colspan="3">Range limitation</td></tr>
<tr><td>Normal output power[1)]</td><td colspan="2">Reduced output power</td></tr>
<tr><td>0x05 = 0.5 m
0x0A = 1.0 m
0x0F = 1.5 m
0x14 = 2.0 m
0x19 = 2.5 m
0x1E = 3.0 m
0x23 = 3.5 m</td><td>0x85
0x8A
0x8F
0x91
0x99
0x9E
0xA3</td><td>Set reduced transmit power when several readers are positioned close together or when transponders which are located in the vicinity of a reader are detected later or no longer.
Disadvantage: The field lobe becomes smaller and there is less time for communication or positioning must be more precise.</td></tr>
<tr><td colspan="4">[1)] Intermediate values in steps of 0.1 m are possible (0x02, 0x03, ..., 0x23)</td></tr>
</table>

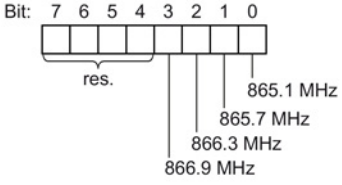
<table>
<tr><th>Byte</th><th>Value</th><th>RFID system</th><th>Description</th></tr>
<tr><td></td><td></td><td>MOBY D</td><td>Transmit power from 0.5 W to 10 W in increments of 0.25 W
Only effective with SLG D10S; a power of 1 W (04 hex) is set for SLG D11S / D12S and cannot be changed.
0x02 = 0.5 W
:
0x10 = 4 W (default)
:
0x28 = 10 W</td></tr>
<tr><td></td><td></td><td>RF200</td><td>0x00 (reserved)</td></tr>
<tr><td></td><td></td><td>RF300 (only RF380R)</td><td>With this parameter you can change the transmit power of the RF380R reader. When doing this, remember that the change to the transmit power will affect both the upper and lower limit range, as well as the minimum distance that is to be maintained between adjacent RF380Rs. You will find more information on this in the "System manual RF300".
The following settings are possible:
<table>
<tr><td>Bit</td><td>Transmit power</td></tr>
<tr><td>02</td><td>0.5 W</td></tr>
<tr><td>03</td><td>0.75 W</td></tr>
<tr><td>04</td><td>1.0 W</td></tr>
<tr><td>05</td><td>1.25 W</td></tr>
<tr><td>06</td><td>1.5 W</td></tr>
<tr><td>07</td><td>1.75 W</td></tr>
<tr><td>08</td><td>2.0 W</td></tr>
</table>
If settings are made outside the specified values, the default value = 1.25 W is set automatically. For reasons of compatibility, no error message is output.</td></tr>
<tr><td></td><td></td><td>RF600</td><td>The transmit power of the reader is set with "distance_limiting".
 

By default, ANT 1 is used with the preset transmit power.
<table>
<tr><td rowspan="2">Hex value</td><td>RF630R transmit power</td><td colspan="3">RF620R radiated power (internal antenna)</td><td>RF620R transmit power</td></tr>
<tr><td>dBm / (mW)</td><td>ETSI
dBm / (mW) ERP</td><td>FCC
dBm / (mW) EIRP</td><td>CMIIT
dBm / (mW) ERP</td><td>dBm / (mW)</td></tr>
<tr><td>0</td><td>18 / (65)</td><td>18 / (65)</td><td>20 / (105)</td><td>18 / (65)</td><td>18 / (65)</td></tr>
<tr><td>1</td><td>19 / (80)</td><td>19 / (80)</td><td>21 / (130)</td><td>19 / (80)</td><td>19 / (80)</td></tr>
<tr><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td><td>...</td></tr>
<tr><td>9</td><td>27 / (500)</td><td>27 / (500)</td><td>29 / (795)</td><td>27 / (500)</td><td>27 / (500)</td></tr>
<tr><td>O</td><td>27 / (500)</td><td>28 / (630)</td><td>30 / (1000)</td><td>28 / (630)</td><td>27 / (500)</td></tr>
<tr><td>B (...F)</td><td>27 / (500)</td><td>29 / (800)</td><td>31 / (1260)</td><td>29 / (800)</td><td>27 / (500)</td></tr>
</table></td></tr>
</table>

Byte	Value	RFID system	Description	
Byte 12...13	Anzahl der Tran-sponder	RF600	Number of transponders expected in the antenna field. Permitted values: • 0x01 ... 0x28 for RF620R • 0x01 ... 0x50 for RF630R with 2 antennas (SET-ANT = 0x03) • 0x01 ... 0x28 for RF630R with 1 antenna (SET-ANT = 0x01 or SET-ANT = 0x02). The value specified here defines the maximum expected number of transponders to be read (EPC-ID) in the inventory. The value does not restrict the number of transponders to be processed in the antenna field. To allow an efficient inventory of transponders in the antenna field, the values given here should not deviate from the maximum number of transponders expected in the antenna field by more than approx. 10%.	
Byte 14	field_on_ control	MOBY U	BERO mode; automatic activation/deactivation of the antenna field. The "Antenna ON/OFF" command is superimposed by the BERO mode.	
			0x00	without BEROs; no reader synchronization
			0x01	One or two BEROs The BEROs are ORed. The antenna field is turned on during the actuation of a BERO.
			0x02	One or two BEROs The 1st BERO switches the antenna field on and the 2nd BERO switches the antenna field off. If there are two BEROs and a " field_ON_time" is set, the antenna field is automatically turned off if the 2nd BERO does not switch within this BERO time. If no "field_ON_time" is set, the antenna field remains turned on until the 2nd BERO is activated.
			0x03	Activating reader synchronization over cable connection You will find further information in the MOBY U manual for configuration, mounting and service.
		RF200, RF300, MOBY D	0x00 (reserved)	
		RF600	"field_ON_control" sets the communications speed (fast/slow) and Tag Hold (ON/OFF).  Reader parameter assignments that have been optimized depending on the application are available with Speed: • 0x00 = fast detection • 0x02 = slower, more reliable detection	

Byte	Value	RFID system	Description		
			ScanningMode (relevant for multitag mode): • Bit 6 = 0: Normal multitag mode (including "repeat_command") • Bit 6 = 1: Unspecified read commands (UID = 0x00) are also accepted by the CM/reader if there is more than one transponder in the antenna field. By setting bit 6 to 1, the reader in multitag mode is prepared for the use of "ScanningMode".		
Byte 15	field_on_time	MOBY U	Time for BERO mode (field_ON_control = 02)		
			0x00	Timeout monitoring is deactivated. To switch the field off, the 2nd BERO is required.	
			0x01 ... 0xFF	1 ... 255 s turn on time for the reader antenna field	
		MOBY D	Transponder type		
			0 ... 255	Transponder type	
			0x00	I-Code 1 (e.g. MDS D139)	
			0x01	ISO transponder	
			0x02	I-Code 1 and ISO transponder	
			0x03	ISO-my-D (with SLG D10S only; the value "0x01" is set for ISO-my-D with SLG D11S / D12S)	
			0x04	ISO-FRAM (with SLG D11S / D12S only; the value "0x01" is set for ISOFRAM with SLG D10S)	
		RF200	Transponder type		
			0x01		Any ISO transponder
		RF300	With the aid of the "field_on_time" parameter, you can specify whether the reader is operated in RF300 mode or in ISO15693 mode (mixed operation is not intended). The following values can be set:		
			0x00	RF300	For all transponders of the type "RF3xxT"
			0x01	Any ISO transponder	Activation of the general ISO mode with rudimentary ISO commands. With this setting, operation is basically guaranteed with every ISO-compatible transponder.
			0x03	ISO my-d (Infineon SRF 55V10P)	e.g. MDS D324, D339
			0x04	ISO (Fujitsu MB89R118)	e.g. MDS D421, D422, D423, D424, D425, D426, D428, D460
			0x05	ISO I-Code SLI (NXP SL2 ICS20)	e.g. MDS D100, D124, D126, D139, D150, D165
			0x06	ISO Tag-it HFI (Texas Instruments)	e.g. MDS D200 (order no. 6GGT2600-1AA00-0AX0), D261
			0x07	ISO (ST LRI2K)	e.g. MDS D200(order no. 6GGT2600-1AA01-0AX0), D261

<table>
<tr><th>Byte</th><th>Value</th><th>RFID system</th><th>Description</th></tr>
<tr><td></td><td></td><td></td><td>Note:
• The following ISO special functions are not supported:
– AFI (Application Family Identifier)
– DSFID (Data Storage Format Identifier)
– Chip-specific added functions such as EAS, Kill commands, etc.
• If a previously unknown transponder cannot be identified based on the parameters above, an error message is generated (error_MOBY "0D"[hex]).
• Invalid parameters are rejected with an error message ("error_MOBY 15"[hex]).
• By selecting the values "03 ... 07", chip-specific commands are used if they exist. The commands have a positive effect on the communication time between the reader and transponder and can therefore also allow faster data transfer depending on the transponder.</td></tr>
<tr><td></td><td></td><td>RF600</td><td>ETSI/India variant: 0x00 ... 0x0F
Changing the channel assignment in the ETSI wireless profile ("scanning_time = 0x02"):
 

Changing the channel assignment in the India wireless profile ("scanning_time = 0xC0"):
 

0x00: Default; the channels of the reader are used in four channel mode.
Note: The setting "0x0F" is identical to "0x00".
With bits 0 to 3 of the "field_ON_time" byte, a channel (frequency) plan can be created for the situation in which several readers are operated in close proximity. Readers that use different channels will interfere with each other to a lesser extent.
If only one channel is used per reader, the reader must pause for 100 ms at intervals of 4 seconds (as of ETSI EN 302 208 V1.2.1). With time-critical applications, a smaller loss in performance can therefore be assumed in contrast to 2 to 4-channel mode of a reader.
If 2 to 4 channels per reader are used, the reader switches to another channel after 0.1 seconds in two-antenna mode and after 4 seconds in single-antenna mode. If only one of the 4 channels is selected, a pause of 100 ms is forced after 4 seconds according to the standard.
FCC and CMIIT variant: Normal: 0x00</td></tr>
</table>

Backup & Restore (with RF68xR)

When replacing a module, it is possible to read all the configuration data from the reader and to store it on the controller. When the module is replaced, this data can then be loaded on the reader from the controller. The command "WRITE-CONFIG" (Config = 3) is used for the download to the reader and "READ-CONFIG" for the upload from the reader.

3.4.5.3 Expanded commands for optical code reader systems (MV400)

The "PHYSICAL-WRITE" command

The code reader systems MV400 have further commands that can be transferred with the "PHYSICAL-WRITE" command.

Table 3- 28 PHYSICAL-WRITE

CMD	OFFSET BUFFER	ADR_TAG	LEN_DATA	TXREF
0x71	Offset in the "TXREF" send buffer	0x0000	Length of data to be sent to the code reader:	A sub command to be transferred to the code reader with data. The first SINT contains the command identifier:
			• 02	• 01 = program change
			• 01	• 02 = activate read program number
			• Match string length + 3	• 03 = write match string
			• 01	• 04 = activate read match string
			• 01	• 05 = set Disa bit
			• 01	• 06 = reset Disa bit
			• Total length of the XMATCH user data + 4	• 07= write trigger-synchronized match string (XMATCH)
			• 07	• 08 = set Digital Out

Table 3- 29 Command data area "TXREF" command identifier 03 (write match string)

Address	Value	Description
0x0000	0x03	Command identifier "Write match string"
0x0001	0x00-0xFF	Match string length high SINT
0x0002	0x00-0xFF	Match string length low SINT
0x0003	--	1st character of the match string
...	...	...
n + 2	--	(n-1)th character of the match string
n + 3	--	nth character of the match string

Table 3- 30 Command data area "TXREF" command identifier 07 (XMATCH)

Address	Value	Description
0x0000	0x07	Command identifier "XMATCH"
0x0001	0x00	Reserved
0x0002	You will find detailed information in the manual "SIMATIC MV420 / SIMATIC MV440".	XMATCH user data
…		
0xN		

Table 3- 31 Command data area "TXREF" command identifier 08 (set Digital Out)

Address	Value	Description
0x0000	0x08	Command identifier "Set digital out".
0x0001	0x1-0x4	Number of the logical external signal. Corresponds to "EXT_1", "EXT_2", "EXT_3" and "EXT_4".
0x0002	0x0-0x2	Level of the signal • 0x0: Set level statically to "low". • 0x1: Set level statically to "high". • 0x2: Set level for configured pulse time to "high".
0x0003	0x1-0x7	Type of logic operation • 0x1: Logical "OR" • 0x2: Logical "AND" • 0x3: Logical "Exclusive OR" • 0x4: no logic operation • 0x5: Logical "OR not" • 0x6: Logical "AND not" • 0x7: Logical "Exclusive OR not"
0x0004	0x0-0x5	Logical signal linked to. If the logic operation type is 0x4, the parameter has no significance. • 0x0: Logical signal "IN_OP" • 0x1: Logical signal "TRD" • 0x2: Logical signal "RDY" • 0x3: Logical signal "READ" • 0x4: Logical signal "MATCH" • 0x5: Logical signal "NOK"
0x0005	0x0	Reserved, must be 0x0 to retain upwards compatibility.
0x0006	0x0	Reserved, must be 0x0 to retain upwards compatibility.

"PHYSICAL-READ" command

The "PHYSICAL-READ" command is used for the following functions:

- Reading codes
- Follow-on command after "activate read program number" for reading out the program number
- Follow-on command after "activate read match string" for reading out the match string

Table 3- 32 PHYSICAL-READ

CMD	OFFSET BUFFER	ADR_TAG	LEN_DATA	RXREF
0x70	Offset in the "TXREF" send buffer	0x0000	Length of the data to be fetched from the code reader:	Data fetched from the code reader:
			• ≥ code length +2	• Code data
			• = 01	• Program number
			• ≥ Match string length +2	• Match string

3.4.5.4 Effect of the commands

The commands used take effect as follows:

- The input parameters "INIT" and "RESET" interrupt command execution within the communications module.
- The completed message that follows the "INIT" or "SRESET" ("DONE" or "ERROR") always relates to the input parameter "INIT" or "SRESET" and not to the interrupted command.
- The input parameter "INIT" resets communication between the Ident profile and the communications module. Following "hard" resetting of the communications module, the Ident profile automatically transfers the "WRITE-CONFIG" command to the communications module. This is why it is absolutely necessary that you store the "WRITE-CONFIG" command in the first element of the command buffer "CMDREF".
- The "WRITE-CONFIG" command resets all functions within the communications module, with the exception of the communication.
- The parameter "SRESET" interrupts a running command.

3.4.5.5 Editing commands

Follow the steps below to edit the commands:

1. Write the "CMDREF" (ARRAY [0…10]) parameter with the required commands.

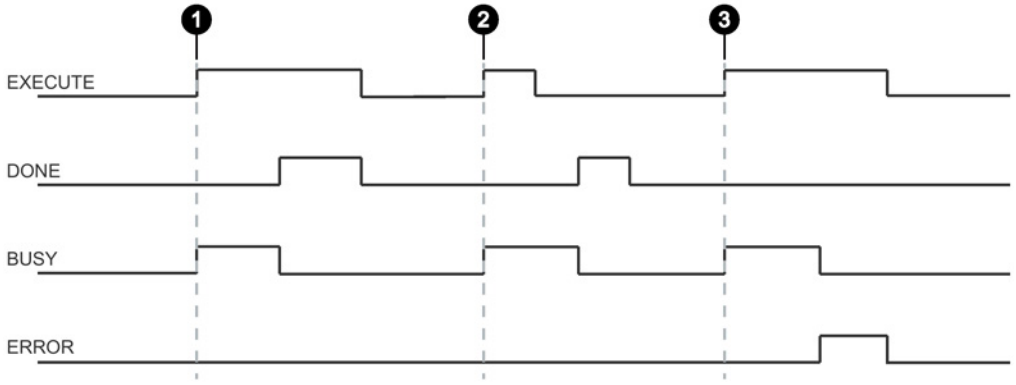
   The content of "CMDREF" = [1] is reserved for initialization. It is executed when the "INIT" input of the Ident profile is set and "CMDSEL" is = [1].
2. Transfer the data to be written to the send data buffer "TXBUF".
3. Select the previously written command (ARRAY [0…10]) with the parameter "CMDSEL".
4. Execute the command using the "EXECUTE" parameter ("EXECUTE" = 1").

   Wait until the bits "BUSY = FALSE" and "DONE = TRUE" are set.

   The command is now executed free of errors.

   If "ERROR = TRUE" is set, continue at point 5. Otherwise, continue with Step 6.
5. Evaluate the errors that have occurred.
6. Reset the "EXECUTE" bit.

The following diagram illustrates the running of the Ident profile over time. A command is always started on the positive edge of "EXECUTE", "INIT" or "SRESET".



Case ①	By setting EXECUTE (EXECUTE = 1) the instruction is started. If the job was completed successfully (DONE = 1), you need to reset EXECUTE. DONE is reset at the same time.
Case ②	EXECUTE is set for only one cycle. As soon as BUSY is set (and DONE is reset), you can reset EXECUTE again. If the job was completed successfully, DONE is set for one cycle.
Case ③	Handling as in Case 1, however with error output. As soon as ERROR is set, the precise error code is available in the STATUS output. ERROR and STATUS retain their value as long as EXECUTE is set.

Image 3-13 General sequence of the Ident profile

3.4.5.6 Parameter assignment for starting up and restarting

The communications module and the reader are restarted by setting the "INIT" parameter. With the parameter, the CM or the reader and the Ident profile are reassigned parameters and synchronized.

An "INIT" is necessary after

- switching on or restarting the controller (startup)
- turning on the power supply of the CM/reader
- plugging the reader onto the CM
- interruption in Ethernet/IP communication
- An error message by the "STATUS" parameter

3.4.5.7 Chaining

With the Ident profile, it is possible to send chained commands. Chained commands are sent in their entirety to the reader without waiting for the results of the first command. This function allows you to execute various transponder commands with one command start.

With both instructions, you have a command buffer of 10 commands available (ARRAY [1...10] of "IID_CMD_STRUCT"). In each command structure there is a "chained" bit. This bit must be set for each chained command. In the last chained command, this bit must not be set so that the instruction recognizes that the chain has ended.

Note

Chaining function is device-specific

Please check whether or not the Ident device you are using supports chaining.

Chaining is currently supported only by the RF680R/RF685R readers (status May 2015).

Overview of the commands

Table 3- 33 Overview of the commands with which chaining is possible

Command	Command code		Description
	HEX	ASCII	
PHYSICAL-READ	70	'p'	Reads data from a transponder/code reader system by specifying the physical start address, the length and the password.
PHYSICAL-WRITE	71	'q'	Writes data to a transponder/code reader system by specifying the physical start address, the length and the password.
INVENTORY	69	'i'	Requests a list of all currently accessible transponders within the antenna range.
DEV-STATUS	74	't'	Reads out the status of a communications module. This command must not be the last command within the chain.

Command	Command code		Description
	HEX	ASCII	
WRITE-ID	67	‘g‘	RF680R/RF685R: Writes a new EPC-ID to the transponder.
KILL-TAG	6A	‘j‘	RF680R/RF685R: The transponder is permanently deactivated.
LOCK-TAG-BANK	79	‘y‘	RF680R/RF685R: Defines a password for transponder access.

Example of command structure

Table 3- 34 Example of a command structure with 3 commands (without EPC-ID)

Command	Parameter	Value	Description
Command 1	IID_CMD_STRUCT[2].CMD	0x69	Execute an inventory with a duration of 2 inventories.
	IID_CMD_STRUCT[2].ATTRIBUTES	0x80	
	IID_CMD_STRUCT[2].EXT_UHF. INVENTORY.DURATION	2	
	IID_CMD_STRUCT[2].EXT_UHF. INVENTORY.DUR_UNIT	1	
	IID_CMD_STRUCT[2].OPTIONS.CHAINED	true	
Command 2	IID_CMD_STRUCT[3].CMD	0x70	Read 10 bytes from the user bank starting at address 0.
	IID_CMD_STRUCT[3].EXT_UHF.MEM_ BANK	3	
	IID_CMD_STRUCT[3].LEN_DATA	10	
	IID_CMD_STRUCT[3].ADDR_TAG	0	
	IID_CMD_STRUCT[3].OPTIONS.CHAINED	true	
Command 3	IID_CMD_STRUCT[4].CMD	0x71	Write 10 bytes to the user bank starting at address 20.
	IID_CMD_STRUCT[4].EXT_UHF.MEM_ BANK	3	
	IID_CMD_STRUCT[4].LEN_DATA	10	
	IID_CMD_STRUCT[4].ADDR_TAG	20	
	IID_CMD_STRUCT[4].OPTIONS.CHAINED	false	

In the chaining, the entire "IID_CMD_STRUCT" buffer ("IID_CMD_STRUCT[1...10]") can be used. The start of the chain is set with the "CMDSEL" parameter.

If several commands are executed in the chain for which data is returned, the position of the data in the receive buffer "RXREF" can be set for each individual command using the "IID_CMD_STRUCT[x].OFFSETBUFFER" parameter.

Note

"IID_CMD_STRUCT[1]" reserved for "INIT"

In the Ident profile, the "IID_CMD_STRUCT[1]" parameter is normally reserved for "INIT". If you want to use "IID_CMD_STRUCT[1]" for another command, make sure that the reset parameters are written into this parameter when there is an "INIT".

3.4.5.8 Command repetition

The Ident profile supports command repetition (Repeat command).

Note

Command repetition function is device-specific

Please check whether or not the Ident device you are using supports command repetition.

Command repetition is currently not supported by the RF680R/RF685R readers (status May 2015). The function is, however, in preparation and will be supported in the coming version of the readers.

How it works

After a restart (or "INIT") of the reader, the Ident profile transfers the command or command chain once to the reader. Transmission of the command is automatic with the first "EXECUTE". This command (or the last command or the command chain) always remains buffered on the reader. If command repetition is started, the temporarily stored command on the reader is executed again, and the result(s) transferred to the Ident profile.

Make sure that the "EPC-ID/UID" of the commands to be repeated have the value 0. If the EPC-ID as a different value, an error message is generated.

Effects of command repetition

- The data transfer on PROFIBUS/PROFINET is minimized. This reduction has a positive effect particularly with extensive bus configurations and slow transmission speeds.
- The reader processes each transponder regardless of the Ident profile. This has a particularly advantageous effect on gate applications since all transponders are always identified with the full reader scan speed.
- Total data throughput is increased considerably particularly with controllers that have few system resources for acyclic frames.

Overview of the commands

Table 3- 35 Overview of the commands with which command repetition is possible

Command	Command code		Description
	HEX	ASCII	
PHYSICAL-READ	70	'p'	Reads data from a transponder/code reader system by specifying the physical start address, the length and the password.
PHYSICAL-WRITE	71	'q'	Writes data to a transponder/code reader system by specifying the physical start address, the length and the password.
INVENTORY	69	'i'	Requests a list of all currently accessible transponders within the antenna range.
KILL-TAG	6A	‘j‘	RF680R/RF685R: The transponder is permanently deactivated.
LOCK-TAG-BANK	79	‘y‘	RF680R/RF685R: Defines a password for transponder access.

Starting command repetition

You have the option of using command repetition with or without transfer of the command. The various procedures are described below.

Sequence of the repeat command with simultaneous command transfer:

1. Start the command using the input parameter "EXECUTE" while "RPTCMD" is set at the same time. ①

   The command is processed and the result transferred to the Ident profile.

   The Repeat command is activated on the reader.

2. The reader confirms activation with the output parameter "RPTACT" of the Ident profile. The confirmation is made only after the first command has been executed. ②

   The reader executes the command automatically as soon as a transponder is identified in the antenna field.

   If the reader does not support the Repeat command, "RPTACT" remains inactive. If "EXECUTE" is nevertheless set, the error "E7FE0900h" is output after a timeout of 10 seconds.

3. You can read out the individual results by repeatedly setting the "EXECUTE" input parameter. ③

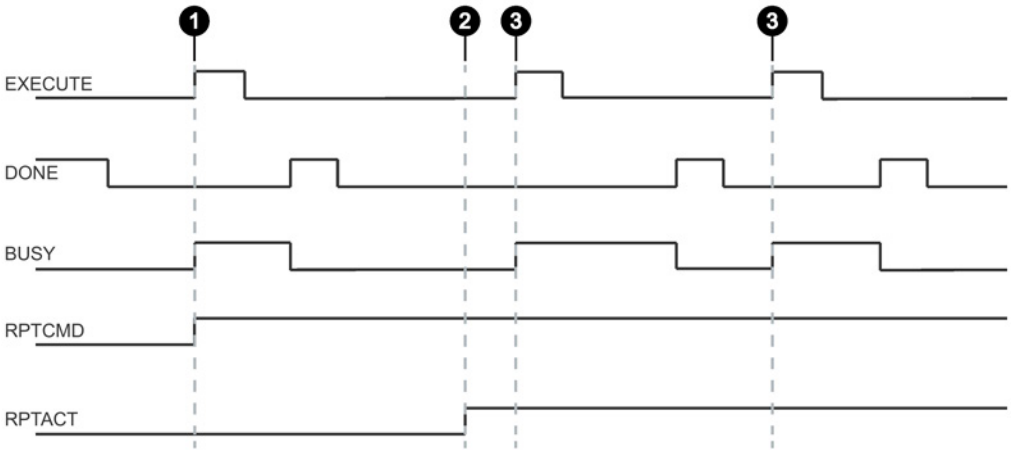


Image 3-14 Sequence of the repeat command with simultaneous command transfer

Sequence of the repeat command without command transfer:

This sequence is only possible if the command involved has already been transferred.

1. Set the "RPTCMD" input parameter. ①

   The Repeat command is activated on the reader.

2. The reader confirms activation with the output parameter "RPTACT" of the Ident profile. The confirmation is made only after the first command has been executed. ②

   If the reader does not support the Repeat command, "RPTACT" remains inactive. If "EXECUTE" is nevertheless set, the error "E7FE0900h" is output after a timeout of 10 seconds.

3. You can read out the individual results by repeatedly setting the "EXECUTE" input parameter. ③

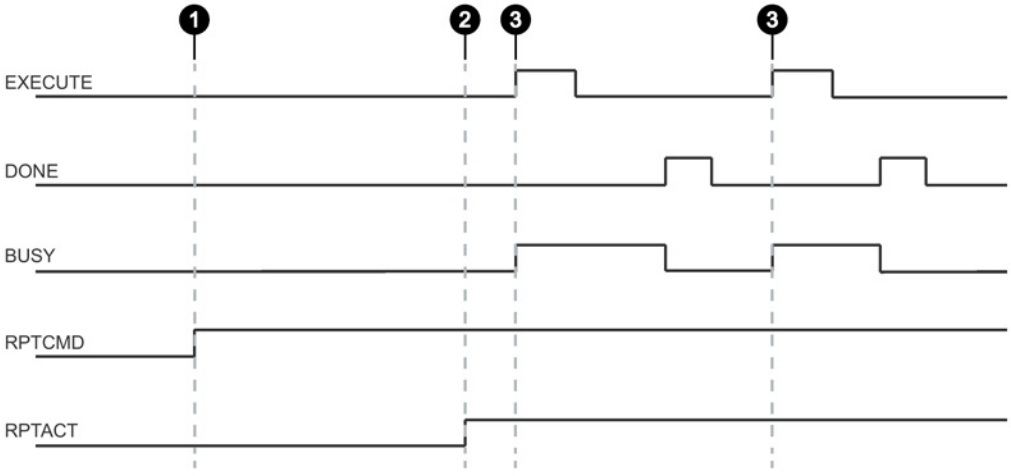


Image 3-15 Sequence of the repeat command without command transfer

Ending command repetition

You have the option of ending command repetition by resetting "RPTCMD" or using the "INIT" or "SRESET" commands. The various procedures are described below

End the Repeat command and reset "RPTCMD":

1. Reset the "RPTCMD" input parameter. ①
2. Fetch any existing acknowledgments using the "EXECUTE" input parameter. ②

   The "RPTACT" output parameter remains set by the reader as long as there are acknowledgements present.
3. When there are no more acknowledgments, "RPTACT" is reset by the reader. ③

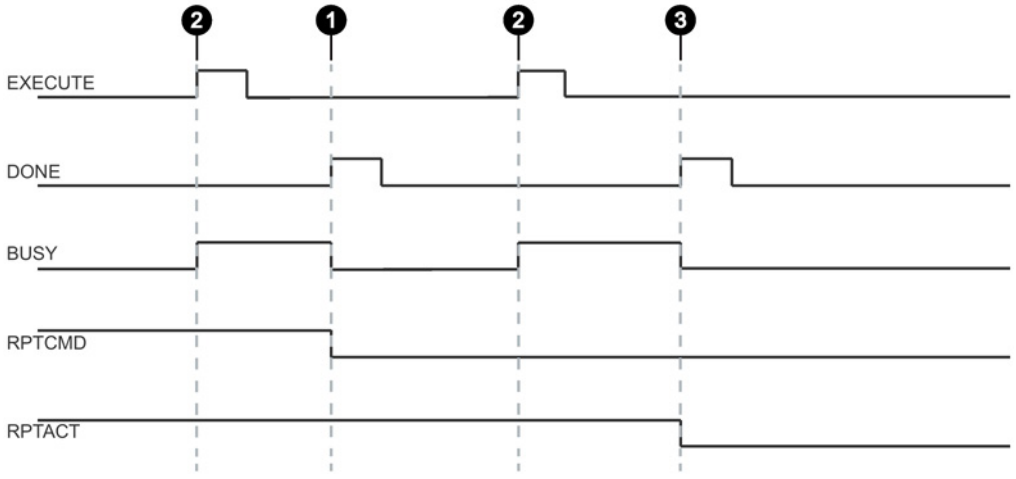


Image 3-16 End the Repeat command by resetting "RPTCMD" (ended normally)

The "RPTACT" output parameter is reset by the reader. Under certain circumstances, it is possible that resetting "RPTACT" will be delayed. In other words not at the same time as the "DONE" of the last acknowledgement. If the instruction is now restarted with "EXECUTE" and "RPTACT" is still set although there are no longer any results in the buffer, the instruction is not ended (BUSY = 1). In this case, you can wait until the next transponders are read out. As an alternative, the instruction can be ended with "INIT" or "SRESET".

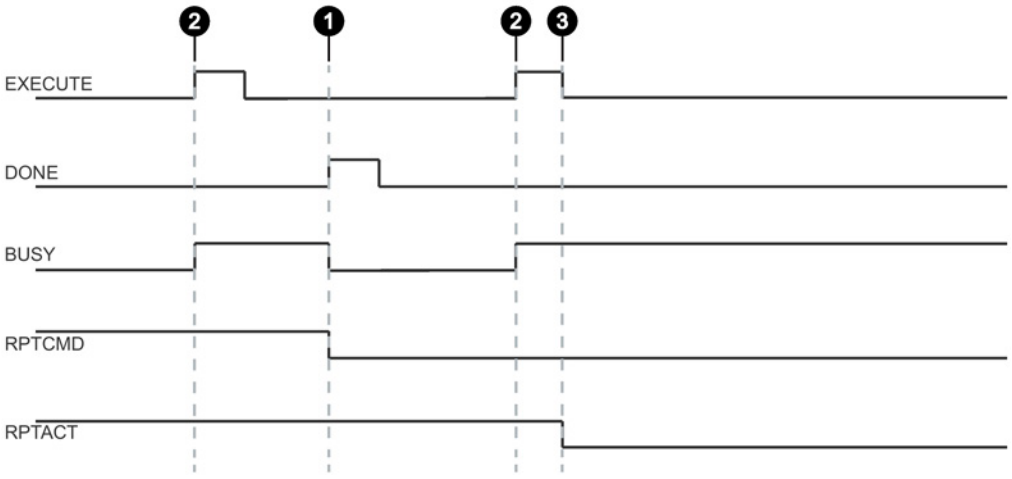


Image 3-17 End the Repeat command by resetting "RPTCMD" (the last command remains pending)

Note

End the Repeat command with "INIT" or "SRESET"

End the Repeat command using the input parameters "INIT" or "SRESET" if it is not known how many transponders were still processed after resetting the "RPTCMD" input parameter.

Normally, an "SRESET" is performed significantly faster because no reset routine is run through.

Ending the Repeat command with "INIT":

1. Reset the "RPTCMD" input parameter and set the "INIT" input parameter. ①

   If "RPTCMD" is not reset, the Repeat command is activated again on the reader. This response triggers an error message because there is no command.

2. The reader resets the "RPTACT" output parameter due to the "INIT" input parameter. ②

Ending the Repeat command with "SRESET":

1. Reset the "RPTCMD" input parameter and set the "SRESET" input parameter. ①
2. The "DONE" output parameter is set and the reader resets the "RPTACT" output parameter. ②

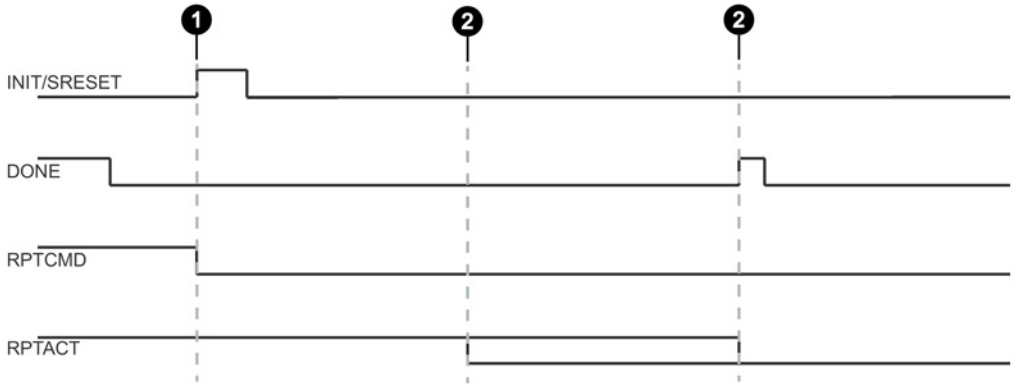


Image 3-18 Ending the Repeat command with "INIT"/"SRESET"

Data buffer

Permanent command repetition can lead to the data being transferred more slowly to the Ident profile than new transponders are processed. In this case, the reader buffers the results. The reader has a number of buffers for this. If the buffers are full, no new data is fetched by the Ident profile; in other words newly arriving transponders are no longer processed.

Table 3- 36 Readers and communications modules that support command repetition

Device type	Number of buffers (number of commands)	Max. user data that can be processed with command repetition
RF300 reader	246	233 bytes × 246 = 57 318 bytes
RF620R/RF630R	150	233 bytes × 150 = 34 950 bytes
RF680R/RF685R [1)]	250	1034 bytes × 250 = 258 500 bytes

[1)] Planned

Note

Restriction of command repetition

In the case of RFID systems with unique tag IDs (UID or EPC-ID) (e.g. RF300, RF600, MOBY U), the stored command is only repeated when different transponders enter the antenna field. If the same transponder (identical UID / EPC-ID) enters the antenna field again and again, the transponder will not be processed again.

3.4.6 Results of the commands

3.4.6.1 READER STATUS

Results

Apply the correct data type that is assigned to the ATTRIBUTE value at the "IDENT_DATA" input of the instruction so that the data can be correctly interpreted.

Table 3- 37 ATTRIBUTE "0x81" ("IID_READER_STATUS_81_RF200_300_U" data type)

Name	Type	Comment
status_info	SINT	SLG status mode
hardware	CHAR	Type of hardware
hardware_version	INT	Version of hardware
loader_version	INT	Version of loader
firmware	CHAR	Type of firmware
firmware_version_HB	SINT	Version of firmware
firmware_version_LB	SINT	
driver	CHAR	Type of driver
driver_version	INT	Version of driver
interface	SINT	Type of interface (RS 232/RS 422)
baud	SINT	Baudrate
reserved1	SINT	Reserved
reserved2	SINT	Reserved
reserved3	SINT	Reserved
distance_limiting_SLG	SINT	Distance limiting of SLG
multitag_SLG	SINT	Multitag SLG
field_ON_control_SLG	SINT	Field ON control
field_ON_time_SLG	SINT	Field On time
sync_SLG	SINT	Synchronization with SLG
status_ant	SINT	Status of antenne
stand_by	SINT	Time of standby after command
MDS_control	SINT	Presence mode

Table 3- 38 ATTRIBUTE "0x84" ("IID_READER_STATUS_84_MOBY_U" data type)

Name	Type	Comment
status_info	SINT	SLG status mode
number_MDS	SINT	Range 1..24
UID	ARRAY [1..24] of DINT	

Table 3- 39 ATTRIBUTE "0x86" ("IID_READER_STATUS_86_RF300" data type)

Name	Type	Comment
status info	SINT	SLG status mode
FZP	SINT	Error counter passive: distortion without communication
ABZ	SINT	Dropout counter
CFZ	SINT	Code error counter
SFZ	SINT	Signature error counter
CRCFZ	SINT	CRC-error counter
BSTAT	SINT	Status of last command
ASMFZ	SINT	Error counter for host interface (ASM)
reserved0	ARRAY [1..20...]	

Table 3- 40 ATTRIBUTE "0x87" ("IID_READER_STATUS_RF600" data type)

Name	**Typ**	**Kommentar**
status info	SINT	SLG status mode
hardware	CHAR	Type of hardware
hardware version	INT	Version of hardware
reserved0	INT	
firmware	CHAR	Type of firmware
firmware version HB	SINT	Version of firmware highbyte
firmware version LB	SINT	Version of firmware lowbyte
driver	CHAR	Type of driver
current_time_hour	SINT	Hours [1)]
current time min	SINT	Minutes
current time sec	SINT	Seconds
reserved1	SINT	
SLG version	SINT	SLG version
baud	SINT	Baudrate
reserved2	SINT	
distance limiting SLG	SINT	Selected transmit power
multitag SLG	SINT	Multitag SLG
field ON control SLG	SINT	Selected comunication typ
field ON time SLG	SINT	Selected channel
expert mode	SINT	Expert mode
status_ant	SINT	Status of antenna [2)]
scanning_time_SLG	SINT	Radio communication profile (country specific radio standart)
MDS control	SINT	Presence mode

1) The internal time stamp of the reader that relates to this event is output. The internal reader time stamp is not synchronized with UTC.

2) The antenna status relates to the "ATTRIBUTE" (bits 0 and 1) of the last executed "SET-ANT" or to the default value set by "init-run". In "init_run" of the RF620R, the default value is "1" (int. antenna on), with the RF630R, it is "3" (antennas 1 and 2 on).

Table 3- 41 ATTRIBUTE "0x88" ("IID_READER_STATUS_88_RF600" data type)

Name	Type	Comment
status info	SINT	SLG-Status mode(Subcommand)
hardware	CHAR	Type of hardware
hardware version	INT	Version of hardware
reserved word1	INT	Reserved
firmware	CHAR	Type of firmware
firmware version HB	SINT	Version of firmware (High-Byte)
firmware version LB	SINT	Version of firmware (Low-Byte)
driver	CHAR	Type of driver
current_time_hour	SINT	Hours 1)
current_time_minute	SINT	Minutes 1)
current_time_sec	SINT	Seconds 1)
current_time_reservByte	SINT	
SLG version	SINT	SLG-Version
baud	SINT	Baudrate
reserved byte1	SINT	Reserved
distance limiting SLG	SINT	Selected transmit power
multitag SLG	SINT	Multitag SLG
field ON control SLG	SINT	Selected communication type
field ON time SLG	SINT	Selected channel
expert mode	SINT	Expert mode
status_ant	SINT	Status of antenna 2)
scanning_time_SLG	SINT	Radio communication profile (country specific radio standart)
MDS control	SINT	Presence mode
blink pattern	SINT	Blink Pattern
act algor Single Tag	Bool	Single Tag [1]
act algor ITF Phase2	Bool	ITF Phase2 [2]
act algor ITF Phase1	Bool	ITF Phase1 [3]
act algor Smoothing	Bool	Smoothing [4]
act algor Blacklist	Bool	Blacklist [5]
act algor RSSI Threshold	Bool	RSSI Threshold [6]
act algor Power Ramp	Bool	Power Ramp [7]
act algor Power Gap	Bool	Power Gap [8]
Reserved1	Bool	Reserved1 [1]
Reserved2	Bool	Reserved2 [2]
Reserved3	Bool	Reserved3 [3]
Reserved4	Bool	Reserved4 [4]
act algor EPC MemBankFilter	Bool	EPC MemBankFilteres [5]
act algor Tag Holg	Bool	Tag Hold [6]
act algor Multi Tag	Bool	Multi Tag [7]
act algor ISTM	Bool	ISTM [8]
reserved word2	INT	Reserved
reserved word3	INT	Reserved
reserved word4	INT	Reserved
filtered max rssi	SINT	Maximum RSSI value of a tag, of all filtered tags
reserved byte2	SINT	Reserved
filtered tags rssi	SINT	Number of tags, filtered out by the RSSI threshold
reserved byte3	SINT	Reserved
filtered tags black list	INT	Number of tags, filtered out via Black-List
filtered tags epc data	INT	Number of tags, filtered out via EPC Data Filter
filtered tags smoothing	INT	Number of tags in Tag List of status Not-Observed
itf ph1 max detect	INT	Number of reads of a Tag, filtered out via ITF-phase 1
itf ph1 tags detect	INT	Number of tags, filtered out via ITF-phase 1
itf ph2 max detect	INT	Number of reads of a Tag, filtered out via ITF-phase 2
itf ph2 tags detect	INT	Number of tags, filtered out via ITF-phase 2
filtered_istm_min_dist	INT	Minimum distance of tags according to sorting criterion of ISTM
filtered istm tags	INT	Number of tags, filtered out via ISTM algorithm
last error	SINT	error code of the last occuring error (last command)

Name	Type	Comment
reserved_byte4	SINT	Reserved
error_command1	INT	Last command (has lead to error code) "last error"
error_command2	INT	Last command (has lead to error code) "last error"
error_command3	INT	Last command (has lead to error code) "last error"
reserved_word5	INT	Reserved
reserved_array_byte	ARRAY[1..30] of SINT	

Table 3- 42 ATTRIBUTE "0x89" ("IID_READER_STATUS_89_RF68xR" data type)

Name	Type	Comment
status_info	SINT	SLG-Status mode(Subcommand)
hardware_version	SINT	Version of hardware
firmware_version	ARRAY[1..4] of CHAR	Version of firmware
config_ID	DINT	Unix timestamp
inventory_status	INT	0=inventory not active; 1=inventory active; 2=presence mode active
sum_of_filtered_tags	INT	All filtered Tags
filtered_smoothing	INT	Filtered Tags trough Smoothing
filtered_blacklist	INT	Filtered Tags trough Blacklist
filtered_data-filter	INT	Filtered Tags trough Data-Filter
filtered_RSSI_threshold	INT	Filtered Tags trough RSSI Threshold
filtered_RSSI_delta	INT	Filtered Tags trough RSSI Delta

Table 3- 43 ATTRIBUTE "0xA0" and "0xA1" ("IID_READER_STATUS_A0_A1_RF600" data type)

Name	Type	Comment
reserved	SINT	
Status_info	SINT	Status-Info, SLG-Status SubCommand 20/21
number_tags_frame	SINT	Number of Tags in this frame
number_tags_next_frames	SINT	Number of Tags in the next frames
reserved_byte1	SINT	Reserved
reserved_byte2	SINT	Reserved
reserved_byte3	SINT	Reserved
reserved_byte4	SINT	Reserved
reserved_byte5	SINT	Reserved
reserved_byte6	SINT	Reserved
Black_List_ID	ARRAY[1..13] of "IID_IN_Blacklist"	EPC-ID Length
Black_List_ID[1]	"IID_IN_Blacklist"	
EPC_Length	SINT	EPC-ID Length
Antenna	SINT	Antenna = Default 3
Filtered_Tag	INT	Number of times - EPC-ID filtered out via BlackList
EPC	ARRAY[1..12] of SINT	EPC-ID
Black_List_ID[2]	"IID_IN_Blacklist"	
Black_List_ID[3]	"IID_IN_Blacklist"	
Black_List_ID[4]	"IID_IN_Blacklist"	
Black_List_ID[5]	"IID_IN_Blacklist"	
Black_List_ID[6]	"IID_IN_Blacklist"	

Name	Type	Comment
Black_List_ID[7]	"IID_IN_Blacklist"	
Black_List_ID[8]	"IID_IN_Blacklist"	
Black_List_ID[9]	"IID_IN_Blacklist"	
Black_List_ID[10]	"IID_IN_Blacklist"	
Black_List_ID[11]	"IID_IN_Blacklist"	
Black_List_ID[12]	"IID_IN_Blacklist"	
Black_List_ID[13]	"IID_IN_Blacklist"	

You will find more detailed information on the individual status modes in the manuals matching the modes "FB 45", "FB55" and "SIMATIC RF620R/RF630R".

The identifiers of the status modes specified here correspond to the following identifiers in the other manuals:

0x81 ≙ 0x01
0x82 ≙ 0x02
0x83 ≙ 0x03
0x85 ≙ 0x05
0x87 ≙ 0x07
0x88 ≙ 0x08
0x90 ≙ 0x10
0x91 ≙ 0x11
0x92 ≙ 0x12
0xA0 ≙ 0x20
0xA1 ≙ 0x21

3.4.6.2 TAG STATUS

Results

Table 3- 44 ATTRIBUTE "0x04" ("IID_TAG_STATUS_04_RF300" data type)

Name	Type	Comment
reserved	SINT	
status info	SINT	MDS status mode
UID	ARRAY [1..8] of SINT	
MDS type	SINT	Type of MDS
Lock state	SINT	Write Protection Status EEPROM
Reserved1	ARRAY[1..6] of SINT	

Table 3- 45 ATTRIBUTE "0x80" ("IID_TAG_STATUS_80_MOBY_U" data type)

Name	Type	Comment
UID	ARRAY [1..4] of SINT	Unique indentifier (MDS-Number)
MDS type	SINT	Trype of MDS
sum subframe access	DInt	Sum of subframe access
sum searchmode access	INT	Sum of search mode access
ST date Week	SINT	Date of last sleep-time change (week of year)
ST date Year	SINT	Date of last sleep-time change (year)
battery left	INT	Battery power left (percent)
ST	SINT	Actual sleep-time on MDS

Table 3- 46 ATTRIBUTE "0x82" ("IID_TAG_STATUS_82_RF300" data type)

Name	Type	Comment
reserved	SINT	
status info	SINT	MDS status mode
UID	ARRAY [1..8] of SINT	
LFD	SINT	Magnetic flux density: correlation between limit-value
FZP	SINT	Error counter passive: distortion without communication
FZA	SINT	Error counter active: distortion during communication
ANWZ	SINT	Presence counter: measure value for presence time
reserved1	ARRAY [1..3] of SINT	

Table 3- 47 ATTRIBUTE "0x83" ("IID_TAG_STATUS_83_ISO" data type)

Name	Type	Comment
reserved	SINT	
status info	SINT	MDS status mode
UID	ARRAY [1..8] of SINT	
MDS Type	SINT	Type of MDS
IC version	SINT	Chip version
size HB	SINT	Size of Memory (high Byte)
size LB	SINT	Size of memory (low Byte)
lock state	SINT	Write protection status EEPROM
block size	SINT	Size of a block in addressable memory
number of block	SINT	Number of blocks in addressable memory

Table 3- 48 ATTRIBUTE "0x84" ("IID_TAG_STATUS_84_RF600" data type)

Name	Type	Comment
reserved	SINT	
status info	SINT	MDS status mode
UID	ARRAY [1..8] of SINT	
antenna	SINT	Antenna which has observed the MDS
RSSI	SINT	RSSI value
last observed hour	SINT	Last observed time hour
last observed min	SINT	Last observed time minute
last observed sec	SINT	Last observed time seconds
last observed channel	SINT	Last observed time channel

Name	Type	Comment
EPC_length	SINT	EPC-Length
reserved1	SINT	

1) The internal time stamp of the internal reader clock that relates to this event is output. The internal reader clock is not synchronized with UTC.

Table 3- 49 ATTRIBUTE "0x85" ("IID_TAG_STATUS_85_RF600" data type)

Name	Type	Comment
status_info	SINT	MDS status mode
antenna	SINT	Antenna which has observed the MDS
channel	SINT	Channel
UID	ARRAY [1..8] of SINT	
DT_glimpsed_1	SINT	Time elasped between acknowledgement and first read in [ms]1 Highbyte
DT_glimpsed_2	SINT	Time elasped between acknowledgement and first read in [ms]2
DT_glimpsed_3	SINT	Time elasped between acknowledgement and first read in [ms]3
DT_glimpsed_4	SINT	Time elasped between acknowledgement and first read in [ms]4 Low-Byte
reserved1	SINT	
reserved2	SINT	
reserved3	SINT	
reserved4	SINT	
last_observed_hour	SINT	Last observed time hour
last_observed_min	SINT	Last observed time minutes 1)
last_observed_sec	SINT	Last observed time seconds 1)
last_observed_EPC_length	SINT	Last observed time EPC length
EPC_ID_Byte	ARRAY [1..62] of SINT	EPC-ID
reads_HB	SINT	Number of Reads of MDS in Inventory (1 - 65535)
reads_LB	SINT	Number of Reads of MDS in Inventory (1 - 65535)
RSSI	SINT	Current RSSI value of MDS 2)
mean_RSSI	SINT	Mean RSSI value of MDS
max_RSSI	SINT	Max RSSI value of MDS
min_RSSI	SINT	Min RSSI value of MDS
min_POWER	SINT	Min Power value of MDS
current_POWER	SINT	Current Power value of MDS 3)
reserved5	ARRAY[1..137] of SINT	

1) The internal time stamp of the reader that relates to this event is output. The internal reader time stamp is not synchronized with UTC.

2) The value "Reads" indicates the total transponder recognitions (inventories) regardless of the set smoothing parameters. In this way, in extreme situations, the "Reads" counter can reach extremely high values without the transponder ever reaching the "Observed" status.

3) The "current_Power" value is specified as transmit power in 0.25 dBm steps (ERP/EIRP). A "current_Power" value of "72" (0x48) therefore corresponds to 18 dBm (ERP/EIRP).

You will find more detailed information on the individual status modes in the manuals matching the modes "FB 45", "FB55" and "SIMATIC RF620R/RF630R".

The identifiers of the status modes specified here correspond to the following identifiers in the other manuals:

0x04 ≙ 0x01
0x82 ≙ 0x02
0x83 ≙ 0x03
0x84 ≙ 0x04
0x85 ≙ 0x05

3.4.6.3 INVENTORY

Results for MOBY U

Table 3- 50 ATTRIBUTE "0x00" ("IID_INVENTORY_00_MOBY_U" data type)

Name	Type	Comment
number MDS	INT	Number of MDS
UID length	INT	length of UID
UID	ARRAY[1..12] of IID_IN_I_8SINT	
UID[1]	IID_IN_I_8SINT	
UID	ARRAY[1..8] of SINT	
UID[1]	SINT	
UID[2]	SINT	
UID[3]	SINT	
UID[4]	SINT	
UID[5]	SINT	
UID[6]	SINT	
UID[7]	SINT	
UID[8]	SINT	
UID[2]	"IID_IN_I_8SINT"	
UID[3]	"IID_IN_I_8SINT"	
UID[4]	"IID_IN_I_8SINT"	
UID[5]	"IID_IN_I_8SINT"	
UID[6]	"IID_IN_I_8SINT"	
UID[7]	"IID_IN_I_8SINT"	
UID[8]	"IID_IN_I_8SINT"	
UID[9]	"IID_IN_I_8SINT"	
UID[10]	"IID_IN_I_8SINT"	
UID[11]	"IID_IN_I_8SINT"	
UID[12]	"IID_IN_I_8SINT"	

Results for RF620R, RF630R

Table 3- 51 ATTRIBUTE "0x83" ("IID_INVENTORY_82_83_RF600" data type) for RF620R, RF630R with EPC-ID/UID

Name	Type	Comment
reserved0	SINT	
number MDS	SINT	Number of MDS
EPC	ARRAY[1..19] of "IID_IN_I_12SINT"	
EPC[1]	"IID_IN_I_12SINT"	
ID	ARRAY[1..12] of SINT	
ID[1]	SINT	
ID[2]	SINT	
ID[3]	SINT	
ID[4]	SINT	
ID[5]	SINT	
ID[6]	SINT	
ID[7]	SINT	
ID[8]	SINT	
ID[9]	SINT	
ID[10]	SINT	
ID[11]	SINT	
ID[12]	SINT	
EPC[2]	"IID_IN_I_12SINT"	
EPC[3]	"IID_IN_I_12SINT"	
EPC[4]	"IID_IN_I_12SINT"	
EPC[5]	"IID_IN_I_12SINT"	
EPC[6]	"IID_IN_I_12SINT"	
EPC[7]	"IID_IN_I_12SINT"	
EPC[8]	"IID_IN_I_12SINT"	
EPC[9]	"IID_IN_I_12SINT"	
EPC[10]	"IID_IN_I_12SINT"	
EPC[11]	"IID_IN_I_12SINT"	
EPC[12]	"IID_IN_I_12SINT"	
EPC[13]	"IID_IN_I_12SINT"	
EPC[14]	"IID_IN_I_12SINT"	
EPC[15]	"IID_IN_I_12SINT"	
EPC[16]	"IID_IN_I_12SINT"	
EPC[17]	"IID_IN_I_12SINT"	
EPC[18]	"IID_IN_I_12SINT"	
EPC[19]	"IID_IN_I_12SINT"	

Note

Number of EPC-IDs

"number_MDS" specifies the number of EPC-IDs (1 to 19) transferred with the "INVENTORY" instruction. To receive the handle IDs of all transponders located in the antenna field, it may be necessary to run the "INVENTORY" instruction again with ATTRIBUTE "0x82".

Table 3- 52 ATTRIBUTE "0x83", "0x90", "0x91" and "0x92" ("IID_INVENTORY_8x_9x_RF6_MD" data type) for RF620R, RF630R with handle ID

Name	Type	Comment
reserved	SINT	
number MDS	SINT	Number of MDS
UID	ARRAY[1..29] of "IID_IN_I_8SINT"	
UID[1]	"IID_IN_I_8SINT"	
UID	ARRAY[1..8] of SINT	
UID[1]	SINT	
UID[2]	SINT	
UID[3]	SINT	
UID[4]	SINT	
UID[5]	SINT	
UID[6]	SINT	
UID[7]	SINT	
UID[8]	SINT	
UID[2]	"IID_IN_I_8SINT"	
UID[3]	"IID_IN_I_8SINT"	
UID[4]	"IID_IN_I_8SINT"	
UID[5]	"IID_IN_I_8SINT"	
UID[6]	"IID_IN_I_8SINT"	
UID[7]	"IID_IN_I_8SINT"	
UID[8]	"IID_IN_I_8SINT"	
UID[9]	"IID_IN_I_8SINT"	
UID[10]	"IID_IN_I_8SINT"	
UID[11]	"IID_IN_I_8SINT"	
UID[12]	"IID_IN_I_8SINT"	
UID[13]	"IID_IN_I_8SINT"	
UID[14]	"IID_IN_I_8SINT"	
UID[15]	"IID_IN_I_8SINT"	
UID[16]	"IID_IN_I_8SINT"	
UID[17]	"IID_IN_I_8SINT"	
UID[18]	"IID_IN_I_8SINT"	

Name	Type	Comment
UID[19]	"IID_IN_I_8SINT"	
UID[20]	"IID_IN_I_8SINT"	
UID[21]	"IID_IN_I_8SINT"	
UID[22]	"IID_IN_I_8SINT"	
UID[23]	"IID_IN_I_8SINT"	
UID[24]	"IID_IN_I_8SINT"	
UID[25]	"IID_IN_I_8SINT"	
UID[26]	"IID_IN_I_8SINT"	
UID[27]	"IID_IN_I_8SINT"	
UID[28]	"IID_IN_I_8SINT"	
UID[29]	"IID_IN_I_8SINT"	
reserved1	DINT	
Data	ARRAY[1..222] of SINT	

Note

Number of handle IDs

"number_MDS" specifies the number of handle IDs (1 to 29) transferred with the "INVENTORY" instruction. To receive the handle IDs of all transponders located in the antenna field, it may be necessary to run the "INVENTORY" instruction again with ATTRIBUTE "0x82".

Table 3- 53 ATTRIBUTE "0x85" ("IID_INVENTORY_85_RF600" data type)

Name	Type	Comment
reserved	SINT	
number MDS	STRUCT	Number of MDS
ID	SINT	
ID[1]	SINT	
Handle	ARRAY[1..8] of SINT	
Handle[1]	SINT	
Handle[2]	SINT	
Handle[3]	SINT	
Handle[4]	SINT	
Handle[5]	SINT	
Handle[6]	SINT	
Handle[7]	SINT	
Handle[8]	SINT	
EPC	ARRAY[1..12] of SINT	
EPC[1]	SINT	
EPC[2]	SINT	

Name	Type	Comment
EPC[3]	SINT	
EPC[4]	SINT	
EPC[5]	SINT	
EPC[6]	SINT	
EPC[7]	SINT	
EPC[8]	SINT	
EPC[9]	SINT	
EPC[10]	SINT	
EPC[11]	SINT	
EPC[12]	SINT	
ID[2]	"IID_IN_I_20SINT"	
ID[3]	"IID_IN_I_20SINT"	
ID[4]	"IID_IN_I_20SINT"	
ID[5]	"IID_IN_I_20SINT"	
ID[6]	"IID_IN_I_20SINT"	
ID[7]	"IID_IN_I_20SINT"	
ID[8]	"IID_IN_I_20SINT"	
ID[9]	"IID_IN_I_20SINT"	
ID[10]	"IID_IN_I_20SINT"	
ID[11]	"IID_IN_I_20SINT"	

Note

Number of IDs transferred

"number_MDS" specifies the number of IDs (1 to 11 handle IDs and EPC-IDs) transferred with the "INVENTORY" instruction. To receive the IDs of all transponders located in the antenna field, it may be necessary to run the "INVENTORY" instruction again with ATTRIBUTE "0x82".

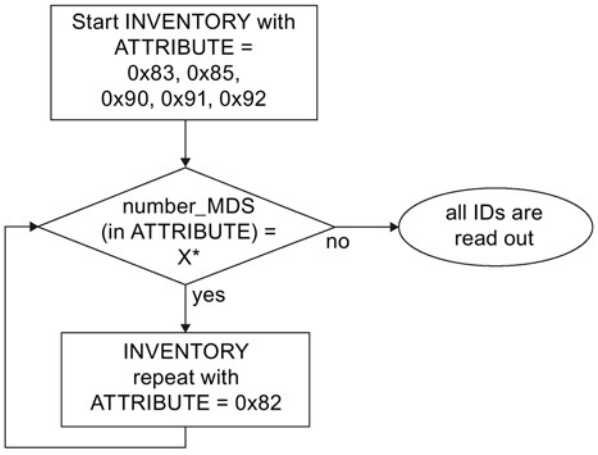
You will find more detailed information on the individual status modes in the manuals matching the modes "FB 45", "FB55" and "SIMATIC RF620R/RF630R".

The identifiers of the status modes specified here correspond to the following identifiers in the other manuals:

0x82 ≙ 0x02
0x83 ≙ 0x03
0x85 ≙ 0x05
0x90 ≙ 0x10
0x91 ≙ 0x11
0x92 ≙ 0x12

Programming ATTRIBUTE "0x82"

If the number of transponders in the antenna field is unknown, repeat the "INVENTORY" instruction with the ATTRIBUTE = "0x82".



* The number of returned IDs "X" depends on the "ATTRIBUTE" used.

Image 3-19 Program sequence of ATTRIBUTE "0x82" with unknown transponder populations

Results for RF680R, RF685R

The number of "TAG_DATA[x]" elements of the data types of the ATTRIBUTES "0x80" and "0x81" depends on the number of transponders to be expected. For this reason, you need to assemble the receive buffer yourself. Note the following structure when creating the receive buffer :"IDENT_DATA"/data type:

- The first element "NUM_MDS" is always of the type "INT".
- The next element "TAG_DATA" is always of the type "ARRAY". The number of transponders to be expected ("n") must be entered in the "ARRAY".

The following tables show an example of the structure of the receive buffer "IDENT_DATA"/data type for the ATTRIBUTES "0x80" and "0x81".

Table 3- 54 ATTRIBUTE "0x80"

Name	Type	Comment
NUM_MDS	INT	Number of MDS
TAG_DATA	ARRAY[1..n]of IID_IN_I_80	Length of EPC ID
TAG_DATA[1]	IID_IN_I_80	
Reserved	SINT	
ID_Len	SINT	Length of EPC ID
EPC_ID	ARRAY[1..62] of SINT	EPC-ID
tagPC	INT	
TAG_DATA[2]	IID_IN_I_80	
...	...	
TAG_DATA[n]	IID_IN_I_80	

Table 3- 55 ATTRIBUTE "0x81"

Name	Type	Comment
NUM_MDS	INT	Number of MDS
TAG_DATA	ARRAY[1..n] of IID_IN_I_81	
TAG_DATA[1]	IID_IN_1_81	
reserved	SINT	
ID_LEN	SINT	EPC length
EPC_ID	ARRAY[1..62]of SINT	EPC-ID
tagPC	INT	
RSSI	SINT	RSSI value
MaxRSSI	SINT	highest RSSI value
MinRSSI	SINT	lowest RSSI value
channel	SINT	channel; 1..15_ESTI; 1..53:FCC
antenna	SINT	antenna; bit coded; Bit 0=antenna 1; Bit 1=antenna 2
polarization	SINT	polarizatuin of antenna; 0=undefined; 1=circular
time	Time_OF_Day	S7 time
power	SINT	power in dBm
filterDataAvailable	SINT	0=false; 1=true
Inventoried	INT	1)
TAG_DATA[2]	IID_IN_1_81	
...	...	
TAG_DATA[n]	IID_IN_1_81	

1) Indicates how often the transponder was identified via the air interface before it changed to the "Observed" status.

3.5 Transponder addressing

Addressing

Addressing of the transponders is linear from address "0000" (or the specified start address) to the end address. The CM or reader automatically recognizes the size of the memory on the transponder. If the end address on the transponder is exceeded, you receive an error message.

The next table shows the address space of the individual transponder parameters. The "ADR_TAG" and "LEN_DATA" parameters must be assigned parameters according to this address space.

Address space of the transponder/MDS variants according to ISO 15693 for RF200, RF300 and MOBY D

System	Addressing	16-bit hexadecimal number
RF200, RF300, MOBY D	**MDS D139 (I-Code 1; 44 bytes)**	
	Start address	0000
	End address	002B
	ID-Nr.: (fixed-coded, can only be read as a whole)	
	Start address	FFF0
	Length	0008
	ISO-MDS (I-Code SLI; 112 bytes)	
	Start address	0000
	End address	006F
	ID-Nr.: (fixed-coded, can only be read as a whole)	
	Start address	FFF0
	Length	0008
	ISO MDS (Tag-it HF-I; 256 bytes)	
	Start address	0000
	End address	00FF
	ID-Nr.: (fixed-coded, can only be read as a whole)	
	Start address	FFF0
	Length	0008
	ISO MDS (my-d SRF55V10P; 992 bytes)	
	Start address	0000
	End address	03DF
	ID-Nr.: (fixed-coded, can only be read as a whole)	
	Start address	FFF0
	Length	0008
	ISO-MDS (MB 89R118B, 2000 bytes)	
	Start address	0000
	End address	07CF
	ID-Nr.: (fixed-coded, can only be read as a whole)	

System	Addressing	16-bit hexadecimal number
	Start address	FFF0
	Length	0008

Address space of the transponder versions for RF300

System	Addressing	16-bit hexadecimal number
RF300	**20 bytes of data memory (EEPROM)**	
	R/W or OTP memory (EEPROM) (The EEPROM user memory for RF300 can be used either as R/W memory or as an OTP memory (see RF300 system manual))	
	Start address	FF00
	End address	FF13
	ID-NR.: (fixed-coded; can only be output as a whole)	
	Start address	FFF0
	Length	0008
	8 KB data memory (FRAM/EEPROM)	
	R/W or OTP memory (EEPROM) (The EEPROM user memory for RF300 can be used either as R/W memory or as an OTP memory (see RF300 system manual))	
	Start address	FF00
	End address	FF13
	R/W memory (FRAM)	
	Start address	0000
	End address	1FFC
	ID-Nr.: (fixed-coded, can only be read as a whole)	
	Start address	FFF0
	Length	0008
	32 KB data memory (FRAM/EEPROM)	
	R/W or OTP memory (EEPROM) (The EEPROM user memory for RF300 can be used either as R/W memory or as an OTP memory (see RF300 system manual))	
	Start address	FF00
	End address	FF13
	R/W memory (FRAM)	
	Start address	0000
	End address	7FFC
	ID-NR.: (fixed-coded; can only be output as a whole)	
	Start address	FFF0
	Length	0008
	64 KB data memory (FRAM/EEPROM)	
	R/W or OTP memory (EEPROM) (The EEPROM user memory for RF300 can be used either as R/W memory or as an OTP memory (see RF300 system manual))	

System	Addressing	16-bit hexadecimal number
	Start address	FF00
	End address	FF13
	R/W memory (FRAM)	
	Start address	0000
	End address	FEFC
	ID-NR.: (fixed-coded; can only be output as a whole)	
	Start address	FFF0
	Length	0008

RF300: General notes on the meaning of the OTP memory

RF300 transponders and ISO transponders have a memory area that can be protected against overwriting. This memory area is called OTP. The following 5 block addresses are available for activating the OTP function:

- FF80
- FF84
- FF88
- FF8C
- FF90

A write command to this block address with a valid length (4, 8, 12, 16, 20 depending on the block address) protects the written data from subsequent overwriting.

Note

Using the OTP area only in static mode

Only use the OTP area in static mode.

Note

Use of the OTP area is not reversible

If you use the OPT area, you cannot undo this assignment, because the OPT area can only be written to once.

RF300: Address mapping of OTP memory on the RF300 transponder

R/W EEPROM memory and OTP memory is only available once on the transponder.

The following table shows the mapping of addresses on the transponder.

Data can be read via the R/W address or the OTP address.

R/W EEPROM		RF300, write OTP once	
Address	**Length**	**Address**	**Length**
FF00	1 .. 20	FF80	4,8,12,16,20
FF01	1 .. 19		
FF02	1 .. 18		
FF03	1 .. 17		
FF04	1 .. 16	FF84	4,8,12,16
FF05	1 .. 15		
FF06	1 .. 14		
FF07	1 .. 13		
FF08	1 .. 12	FF88	4,8,12
FF09	1 .. 11		
FF0A	1 .. 10		
FF0B	1 .. 9		
FF0C	1 .. 8	FF8C	4.8
FF0D	1 .. 7		
FF0E	1 .. 6		
FF0F	1 .. 5		
FF10	1 .. 4	FF90	4
FF11	1 .. 3		
FF12	1 .. 2		
FF13	1		

Note

Enabling write protection

Write access to addresses starting at FF80 to FF93 activates the write protection (OTP function) on the EEPROM user memory. This operation is not reversible. Switching on write protection must always take place in ascending order without gaps, starting at address FF80.

Address space of the transponder versions for RF600

Table 3- 56 Address spaces of the transponder variants for RF620R/RF630R

Tags	Chip type	User [1] [hex]	EPC		TID (read only)	RESERVED (passwords)	Special	
		Area / length	Area / length (max. and default)	Access	Area / length	Area / length	KILL-PW	Lock function
RF630L (-2AB00, -2AB01)	Impinj Monza 2	-	FF00-FF0B / 96 bits FF00-FF0B / 96 bits	read/ write	FFC0-FFC3 4 bytes	FF80-FF87 8 bytes	yes	yes
RF630L (-2AB02)	Impinj Monza 4QT [2]	00 - 3F 64 bytes	FF00-FF0F / 128 bits FF00-FF0B / 96 bits	read/ write	FFC0-FFCB 12 bytes	FF80-FF87 8 bytes	yes	yes
RF630L (-2AB03)	NXP G2XM	00 - 3F 64 bytes	FF00-FF1D / 240 bits FF00-FF0B / 96 bits	read/ write	FFC0-FFC7 8 bytes	FF80-FF87 8 bytes	yes	yes
RF640L	Alien Higgs 3	00 - 0F/3F [3] 16/64 bytes	FF00-FF3C / 480 bits FF00-FF0B / 96 bits	read/ write	FFC0-FFD8 24 bytes	FF80-FF87 8 bytes	yes	yes
RF680L	NXP G2XM	00 - 3F 64 bytes	FF00-FF1D / 240 bits FF00-FF0B / 96 bits	read/ write	FFC0-FFC7 8 bytes	FF80-FF87 8 bytes	yes	yes
RF690L	Alien Higgs 3	00 - 0F/3F [3] 16/64 bytes	FF00-FF3C / 480 bits FF00-FF0B / 96 bits	read/ write	FFC0-FFD8 24 bytes	FF80-FF87 8 bytes	yes	yes
RF610T	NXP G2XM	00 - 3F 64 bytes	FF00-FF1D / 240 bits FF00-FF0B / 96 bits	read/ write	FFC0-FFC7 8 bytes	FF80-FF87 8 bytes	LOCKED	yes
RF620T	Impinj Monza 4QT [2]	00 - 3F 64 bytes	FF00-FF0F / 128 bits FF00-FF0B / 96 bits	read/ write	FFC0-FFCB 12 bytes	FF80-FF87 8 bytes	LOCKED	yes
RF625T	Impinj Monza 4QT [2]	00 - 3F 64 bytes	FF00-FF0F / 128 bits FF00-FF0B / 96 bits	read/ write	FFC0-FFCB 12 bytes	FF80-FF87 8 bytes	LOCKED	yes
RF630T	NXP G2XM	00 - 3F 64 bytes	FF00-FF1D / 240 bits FF00-FF0B / 96 bits	read/ write	FFC0-FFC7 8 bytes	FF80-FF87 8 bytes	LOCKED	yes
RF640T	NXP G2XM	00 - 3F 64 bytes	FF00-FF1D / 240 bits FF00-FF0B / 96 bits	read/ write	FFC0-FFC7 8 bytes	FF80-FF87 8 bytes	LOCKED	yes
RF680T	NXP G2XM	00 - 3F 64 bytes	FF00-FF1D / 240 bits FF00-FF0B / 96 bits	read/ write	FFC0-FFC7 8 bytes	FF80-FF87 8 bytes	LOCKED	yes
RF630T	NXP G2XM	00 - 3F 64 bytes	FF00-FF1D / 240 bits FF00-FF0B / 96 bits	read/ write	FFC0-FFC7 8 bytes	FF80-FF87 8 bytes	LOCKED	yes

Tags	Chip type	User [1] [hex]	EPC		TID (read only)	RESERVED (passwords)	Special	
		Area / length	Area / length (max. and default)	Access	Area / length	Area / length	KILL-PW	Lock function
RF640T	NXP G2XM	00 - 3F 64 bytes	FF00-FF1D / 240 bits FF00-FF0B / 96 bits	read/ write	FFC0-FFC7 8 bytes	FF80-FF87 8 bytes	LOCKED	yes
RF680T	NXP G2XM	00 - 3F 64 bytes	FF00-FF1D / 240 bits FF00-FF0B / 96 bits	read/ write	FFC0-FFC7 8 bytes	FF80-FF87 8 bytes	LOCKED	yes

1) The user area also applies to the new readers RF650R/RF680R/RF685R in memory bank 3.

2) Uses User Memory Indicator (UMI).

3) The EPC memory area of the Alien Higgs chips can be increased at the cost of the user memory. You will find further information in the relevant transponder sections.

Address spaces of the transponder variants for RF650R/RF680R/RF685R

With the new readers RF650R/RF680R/RF685R, the user data, TID, EPC and passwords are read out via the relevant memory banks. To read out the required data, the relevant memory bank must be selected.

The table above shows the area and length of the user data ("USER" column). You can read out the EPC-ID using an inventory command. As an alternative, you can also read out the EPC-ID using a Read command to memory bank 1, start address 0x04.

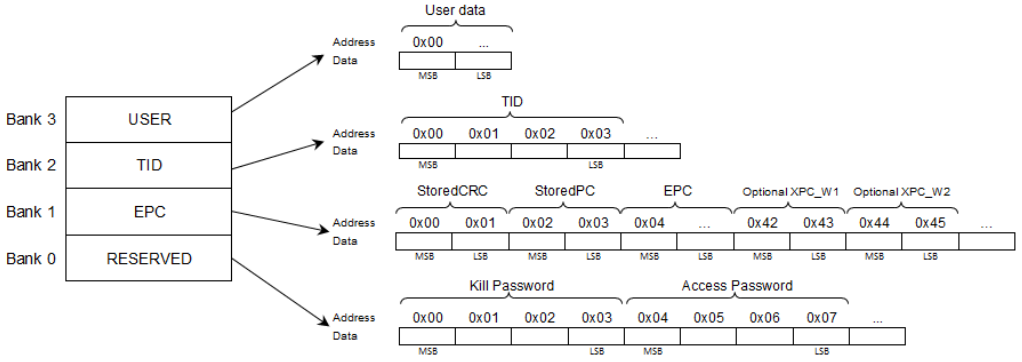


Image 3-20 Memory configuration

Address space of the transponder/MDS variants for MOBY U

System	Addressing	16-bit hexadecimal number
MOBY U	**2 KB data memory**	
	Start address	0000
	End address	07FF
	Read OPT memory (write access only possible once. The OTP memory of MOBY U can only be processed completely. In other words, the start address must always be specified with value FFF0 hex and the length with value 10 hex.)	
	Start address	FFF0
	Length	10
	ID-Nr. (4 fixed-coded bytes; can only be read out with the MDS status command)	
	32 KB data memory	
	Start address	0000
	End address	7FFF
	Read OTP memory (write access only possible once)*	
	Start address	FFF0
	Length	10
	ID-Nr.: (4 fixed-coded bytes; can only be read out with the MDS status command)	

Error messages

4

4.1 Structure of the "STATUS" output parameter

There is always an error status in the "Ident profile" instruction if the output parameter "ERROR = TRUE" is set. The error can be analyzed (decoded) using the "STATUS" output parameter.

The "STATUS" output parameter is made up of the following 4 bytes:

Table 4- 1 Bytes of the "STATUS" output parameter

Byte	Meaning
Byte 0	Instruction numbers • Cx - Error in fieldbus communication • E1 - transponder-related error • E2 - error on the air interface • E4 - reader hardware fault • E5 - error in the communication between reader and FB • E6 - error in the user command • E7 - error message generated by the FB
Byte 1	Error numbers This byte defines the meaning of the error code and the warnings. The error numbers have the followinig meaning: • 0x00 - no error, no warning • 0x81...0x8F - The controller reports an error according to the parameter "x" (0x8x). • 0xFE - error from the Ident profile or communications module/reader
Byte 2	Error code
Byte 3	Warnings In this byte, each bit has a separate meaning.

4.2 Errors from the communications module/reader

The causes of these errors can, for example, be as follows:

- Errors have occurred in communication between the CM and the reader or between the reader and the transponder.
- The communications module is unable to process the command.

Byte 3 of the "STATUS" is not relevant for the error messages.

Table 4- 2 Error messages from communications module/reader or from the Ident profile via the STATUS output parameter

Error message (hex)	Description
0xE1FE01	Memory of the transponder cannot be written to • Transponder memory is defective • Transponder EEPROM was written too frequently and has reached the end of its service life • RF620R/RF630R: Transponder is write protected (Memory Lock)
0xE1FE02	Presence error: The transponder has moved out of the transmission window of the reader. The command was executed only partially. Read command: "IDENT_DATA" has no valid data. Write command: The transponder that has just left the antenna field contains an incomplete data record. • Operating distance from reader to transponder is not being maintained • Configuration error: The data record to be processed is too large (in dynamic mode) • With timeout: No transponder in the antenna field
0xE1FE03	Address error The address area of the transponder has been exceeded. • Start address of the command start has been incorrectly set • Transponder is not the correct type • Attempted write access to write-protected areas
0xE1FE04	Only during initialization: Transponder is unable to execute the initialization command • Transponder is defective
0xE1FE06	Error in transponder memory The transponder has never been written to or has lost the contents of its memory due to battery failure. • Replace transponder (if battery bit is set) • Re-initialize transponder
0xE1FE07	Password error RF620R/RF630R: Incorrect password
0xE1FE08	The transponder in the antenna field does not have the expected UID or has no UID.
0xE1FE0A	The transponder is read/write-protected.
0xE1FE81	The transponder is not responding.
0xE1FE82	The transponder password is incorrect. Access is denied.
0xE1FE83	The verification of the written transponder data has failed.

Error message (hex)	Description
0xE1FE84	General transponder error
0xE1FE85	The transponder has too little power to execute the command.
0xE2FE01	• Field disturbance on reader Reader is receiving interference pulses from the environment. – External interference field. The interference field can be detected with the "inductive field indicator" of the STG. – The distance between two readers is too short and does not correspond to the configuration guidelines – The connecting cable to the reader is disrupted, too long or does not comply with the specification – MOBY U: Transponder has left the antenna field during communication. – MOBY U: Communication between reader and transponder was aborted due to a disruption (e.g. person/foreign body moving between reader and transponder). • Too many transmit errors The transponder was unable to receive the command or the write data from the communications module correctly even after several attempts. – The transponder is positioned exactly in the limit area of the transmission window – Data transmission to the transponder is being affected by external interference • CRC sending error – The transponder reports CRC error frequently (transponder is positioned in the limit area of the reader; transponder and/or reader has a hardware defect) • Only during initialization: CRC error on receipt of acknowledgement from transponder (cause as for field interference on the reader) • When formatting, the transponder must be in the transmission window of the reader, otherwise a timeout error will occur, in other words: – The transponder is located exactly in the limit area of the transmission window – The transponder is consuming too much power (defective) – Bad FORMAT parameter setting for transponder EEPROM • RF600: – No ETSI channel free – Wrong communications standard selected in the "INIT" command – Bad expert parameter – Power check of the ETSI wireless profile is incorrect
0xE2FE02	• More transponders are located in the transmission window than can be processed at the same time by the reader. • RF620R/RF630R: Transponder power supply close to limit. Increase the antenna power or reduce the distance to the transponder.
0xE2FE81	There is no transponder with the required EPC-ID in the transmission window or there is no transponder at all in the antenna field.
0xE2FE82	The requested data is not available.
0xE2FE83	The transponder signals a CRC error.
0xE2FE84	The selected antenna is not enabled.

Error message (hex)	Description
0xE2FE85	The selected frequency is not enabled.
0xE2FE86	The carrier signal is not activated.
0xE2FE87	There is more than one transponder in the transmission window.
0xE2FE88	General radio protocol error
0xE4FE01	Short circuit or overload of the 24 V outputs • The reader is using too much current. • The reader cable is causing a short-circuit. Possible consequences: • The affected output is turned off • All outputs are turned off when total overload occurs • A reset can only be performed by turning the 24 V voltage off and on again • and then starting "Reset_Reader"
0xE4FE03	• Error in the connection to the reader; the reader is not answering. – The cable between the communications module and reader is wired incorrectly or there is a cable break – The 24 V supply voltage is not connected or is not on or has failed briefly – Automatic cutout on the communications module has responded – Hardware defect – Another reader is in the vicinity and is active – Execute "init_run" after correcting the error • The antenna of the reader is turned off. A tag command to the communications module was started in this status. – Turn on the antenna with the command "Antenna on/off." – The antenna is turned on (off) and has received an additional turn-on (turn-off) command • The mode in the "SET_ANT" command is unknown • The antenna on the reader is turned off or the antenna cable is defective
0xE4FE04	The buffer on the communications module or reader is not adequate to store the command temporarily.
0xE4FE05	The buffer on the communications module or reader is not adequate to store the data temporarily.
0xE4FE06	The command is not permitted in this status or is not supported.
0xE4FE07	Startup message from reader/communications module. The reader or communications module was turned off and has not yet received a "Reset_Reader" ("WRITE_CONFIG") command. • Execute "INIT" • The same physical address in the "IID_HW_CONNECT" parameter is being used more than once. Check your "IID_HW_CONNECT" parameter settings. • Check connection to the reader • The baud rate was switched over but power has not yet been cycled
0xE4FE81	Reserved
0xE4FE8A	General error
0xE4FE8B	No or bad configuration data was transferred.

Error message (hex)	Description
0xE4FE8C	• Communication error between Ident profile and communications module. Handshake error. – UDT of this communications module is overwritten by other program sections – Check parameter settings of communications modules in the UDT – Check the Ident profile command that caused this error – Start "INIT" after correcting the error • Backplane bus / Ethernet/IP error occurred – Execute "INIT"
0xE4FE8D	• Internal communications error of the communications module/reader – Connector contact problem on the communications module / reader – Hardware of the communications module / reader has a defect; → Send in communications module / reader for repair – Start "INIT" after correcting the error • Internal monitoring error of the communications module/reader – Program execution error on the communications module / reader – Turn the power supply of the communications module/reader off and on again – Start "INIT" after correcting the error – MOBY U: Watchdog errror on the reader
0xE4FE8E	Active command canceled by "WRITE-CONFIG ("INIT" or "SRESET") or bus connector unplugged • Communication with the transponder was aborted by "INIT" • This error can only be reported if there is an "INIT" or "SRESET"
0xE5FE01	Incorrect sequence number order (SN) on the reader/communications module
0xE5FE02	Incorrect sequence number order (SN) in the Ident profile Possible cause: User mode "RFID standard profile" is not set in the device configuration.
0xE5FE04	Invalid data block number (DBN) on the reader/communications module
0xE5FE05	Invalid data block number (DBN) in the Ident profile
0xE5FE06	Invalid data block length (DBL) on the reader/communications module
0xE5FE07	Invalid data block length (DBL) in the Ident profile
0xE5FE08	Previous command is active or buffer overflow A new command was sent to the reader or communications module although the last command was still active. • Active command can only be terminated with an "INIT" • Before a new command can be started, "DONE bit = 1" must be set; exception: "INIT" • Two Ident profile calls had the same "HW_ID", "CM_CHANNEL" and "LADDR" parameter settings • Two Ident profile calls are using the same pointer • Start "INIT" after correcting the error • When working with command repetition (e.g., fixed code transponder), no data is being fetched from the transponder. The data buffer on the reader/communications module has overflowed. Transponder data has been lost.
0xE5FE09	The reader or communications module executes a hardware reset ("INIT_ACTIVE" set to "1"). "INIT" is expected from the Ident profile (bit 15 in the cyclic control word).

Error message (hex)	Description
0xE5FE0A	The "CMD" command code and the relevant acknowledgement do not match. This can be a software error or synchronization error that cannot occur in normal operation.
0xE5FE0B	Incorrect sequence of acknowledgement frames (TDB / DBN)
0xE5FE0C	Synchronization error (incorrect increment of AC_H / AC_L and CC_H / CC_L in the cyclic control word). "INIT" had to be executed
0xE6FE01	Unknown command Ident profile is sending an uninterpretable command to the communications module. • The transponder has signaled an address error.
0xE6FE02	Invalid command index CI
0xE6FE03	• Bad parameter assignment of the communications module or reader – Check "INPUT" parameter in the Ident profile. – Check the parameter assignment in RSLogix. – "WRITE-CONFIG" command has incorrect parameter settings. – After a startup, the reader or communications module has still not received an INIT". • The parameter assignment of the reader or communications module on PROFIBUS/PROFINET was incorrect and the command cannot be executed. – Length of the input/output areas too small for the cyclic I/O word. Correct GSD file being used? – User data length set with command (e.g. "READ") too high. • Error when processing the command – Reader/communications module hardware defective: The reader or communications module receives bad data with "INIT". – AB byte does not comply with the useful data length. • Wrong reset instruction was selected – Regardless of the selected reader system, use the "Reset_Reader" instruction.
0xE6FE04	Presence error: A transponder has passed by a reader without being processed by a command. • This error message is not reported immediately. Instead, the reader or communications module is waiting for the next command (read, write). This command is immediately replied to with this error. This means that a read or write command is not processed. The next command is executed normally again by the reader/communications module. • An "INIT" from the Ident profile also resets this error status. • Bit 2 is set in the OPT1 parameter and there is no transponder in the transmission window.
0xE6FE05	An error has occurred that makes a Reset_Reader ("WRITE-CONFIG" with "Config = 3") necessary. • The "WRITE-CONFIG" command is incorrect. • Start "INIT" after correcting the error • Check the "IID_HW_CONNECT" parameter.
0xE6FE06	The reset timer has expired.
0xE6FE81	Reserved
0xE6FE82	Reserved
0xE6FE83	Reserved

Error message (hex)	Description
0xE6FE84	Reserved
0xE6FE85	Reserved
0xE6FE86	The inventory command failed.
0xE6FE87	Read access to the transponder has failed.
0xE6FE88	Write access to the transponder has failed.
0xE6FE89	Writing the EPC-ID on the transponder has failed.
0xE6FE8A	Enabling write protection on the transponder has failed.
0xE6FE8B	The "Kill" command failed.
0xE7FE01	In this status, only the "Reset_Reader" command ("WRITE-CONFIG") is permitted.
0xE7FE02	The "CMD" command code or the value in "CMD SEL" is not permitted.
0xE7FE03	The "LEN_DATA" parameter of the command is too long. It does not match the global data reserved in the send data buffer (TXBUF).
0xE7FE04	The receive data buffer (RXBUF) or the send data buffer (TXBUF) is too small, the buffer created at TXBUF/RXBUF does not have the correct data types or the parameter "LEN_DATA" as a negative value. Possible cause / action to be taken: • Check whether the buffers TXBUF/RXBUF are at least as large as specified in LEN_DATA.
0xE7FE05	This error tells you that only an "INIT" command is permitted as the next command. All other commands are rejected.
0xE7FE06	Wrong index (outside range of "101 ... 108" and "-20401 ... -20418")
0xE7FE07	The reader or communications module does not respond to "INIT" ("INIT_ACTIVE" is expected in the cyclic status message). The next steps: • Check the address parameter "LADDR".
0xE7FE08	Timeout during "INIT" (60 seconds according to "TC3WG9")
0xE7FE09	Command repetition is not supported.
0xE7FE0A	Error during the transfer of the PDU (Protocol Data Unit).
0xFxFExx	An "FxFExxh" error is identical to the corresponding "ExFExxh" error (see "ExFExxh" error). Byte 3 contains additional warning information.

4.3 Errors from Ethernet/IP

The transport layer of the bus system being used (Ethernet/IP) is signaling an error. For precise troubleshooting and analysis, a tracer can be useful. For Ethernet/IP, the open source software "Wireshark" can be used. The system diagnostics of Ethernet/IP can provide further information about the cause of the error.

With error messages output via the "STATUS" parameter of the Ident profile that are not contained in the section "Errors from the communications module/reader (Page 80)" you need to read out the following data ("Controller Tags") of the instance "WRREC" or "RDREC". The "MESSAGE" instruction outputs two error codes. One standard error code that is displayed via "STATUS" and the instance "WRREC" or "RDREC" in the "ERR" variable and an extended error code that is displayed in the "EXERR" variable.

RFID_01_CH00	{...}	{...}		IID_CHANNEL
RFID_01_CH00.CHANNEL_AOI	{...}	{...}		IDENT_PROF
RFID_01_CH00.CMD_ARRAY	{...}	{...}		IID_CMD_STR
RFID_01_CH00.HW_CONNECT	{...}	{...}		IID_HW_CONN
RFID_01_CH00.TXBUFFER	{...}	{...}	Decimal	SINT[2048]
RFID_01_CH00.RXBUFFER	{...}	{...}	Decimal	SINT[2048]
RFID_01_CH00_RDREC	{...}	{...}		MESSAGE
RFID_01_CH00_RDREC.Flags	16#02a0		Hex	INT
RFID_01_CH00_RDREC.EW	0		Decimal	BOOL
RFID_01_CH00_RDREC.ER	0		Decimal	BOOL
RFID_01_CH00_RDREC.DN	1		Decimal	BOOL
RFID_01_CH00_RDREC.ST	0		Decimal	BOOL
RFID_01_CH00_RDREC.EN	1		Decimal	BOOL
RFID_01_CH00_RDREC.TO	0		Decimal	BOOL
RFID_01_CH00_RDREC.EN_CC	1		Decimal	BOOL
RFID_01_CH00_RDREC.ERR	16#0000		Hex	INT
RFID_01_CH00_RDREC.EXERR	16#0000_0000		Hex	DINT

Image 4-1 Tags of the "MESSAGE" instruction

You will find a description of these error codes in the help of the "RSLogix" configuration software.

4.4 Warnings

Byte 3 of the "STATUS" output parameter indicates warnings if byte 0 of the "STATUS" (instruction numbers) has the value "Fxh" or "Dxh".

Table 4- 3 Possible warnings when working with the Ident profile

Bytes 0...2	Byte 3	Meaning
FxFExxh	Bit 0	The bit is always set to "0"
	Bit 1	Depends on the manufacturer
	Bit 2	Battery low
	Bit 3	Depends on the manufacturer
	Bit 4	Depends on the manufacturer
	Bit 5	Depends on the manufacturer
	Bit 6	Depends on the manufacturer
	Bit 7	Depends on the manufacturer

Appendix

A

A.1 Hidden status parameters

Status variables

The Ident profile has a status output to allow a suitable reaction in the user program if an error occurs and to simplify error diagnostics on the device. In addition to this, the Ident profile has a time stamp and an error memory to be able to better understand previous problems.

These variables are stored in the relevant instance DB of the instruction.

Table A- 1 Status variables in the instance data block

Name	Data type	Path	Description
Last_error_status	DINT	Instance data block/ Ident_Instance/Static/ Last_error_status	This variable contains the last instruction status if an error occurs. This value is always overwritten if a new error occurs with the instruction.
Last_error_ timestamp	DTL (S7-1200/-1500) DATE_AND_ TIME S7-300/-400)	Instance data block/ Ident_Instance/Static/ Last_error_timestamp	This variable stores the time stamp of the last error to occur (Last_error_status) with the instruction.

Further status variables exist in the "IID_HW_CONNECT" variable.

Table A- 2 Status variables in "IID_HW_CONNECT"

Name	Data type	Path	Description
STATUS_IN_ WORK	BOOL	IID_HW_CONNECT variable/ Static/STATUS_IN_WORK	Command is currently being executed • True = an instruction or the Ident profile is accessing this channel/reader. • False = the channel/reader is not currently being used.
STATUS_ INITIALISATION	BOOL	IID_HW_CONNECT variable/ Static/STATUS_INITIALISATION	Reset display • True = a reset is active on this reader/channel. • False = no reset is active on this reader/channel.
LAST_CMD_INIT	BOOL	IID_HW_CONNECT variable/ Static/STATUS_LAST_CMD_INIT	This bit indicates that the last command to be executed was a reset. • True = last command was reset • False = last command was not reset This bit is reset at the next command start

A.2 Service & Support

Technical Support

You can reach technical support for all PD projects as follows:

- Phone: + 49 (0) 911 895 7222
- Fax: + 49 (0) 911 895 7223
- E-mail (mailto:support.automation@siemens.com)
- Internet: Web form for support request (https://support.industry.siemens.com/My/ww/en/requests)

Contacts

If you have any further questions on the use of our products, please contact one of our representatives at your local Siemens office.

The addresses are found on the following pages:

- On the Internet (http://w3.siemens.com/aspa_app)
- In Catalog CA 01
- In the catalog ID 10 specially for Industrial Identification Systems

Service & Support for Process Industries and Drives

On the Internet, on the Support home page (https://support.industry.siemens.com/cs/de/en/) of Process Industries and Drives (PD), you will find various services.

There you will find the following information, for example:

- Our newsletter containing up-to-date information on your products.
- Relevant documentation for your application, which you can access via the search function in "Product Support".
- A forum for global information exchange by users and specialists.
- Your local contact for PD.
- Information about on-site service, repairs, and spare parts. Much more can be found under "Our service offer".

RFID homepage

For general information about our identification systems, visit RFID home page (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 home page (https://mall.industry.siemens.com).

Training center

We offer appropriate courses to get you started. Please contact your local training center or the central training center in

D-90327 Nuremberg.

Phone: +49 (0) 180 523 56 11
(€ 0.14 /min. from the German landline network, deviating mobile communications prices are possible)

For information about courses, see the SITRAIN home page (http://sitrain.automation.siemens.com/sitrainworld/).