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.

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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.

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Note the following:

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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.

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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.
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Introduction

Purpose of these operating instructions

The information contained in these operating instructions enables you to start up and operate the ET 200pro with the RF170C communication module:

- on the PROFIBUS DP as DP Slave
- on PROFINET as a PROFINET IO device
- as central I/O with an ET 200pro interface module

(IM 154-1 DP, IM 154-2 DP High Feature, IM 154-4 PN High Feature, IM 154-6 PN High Feature, IM 154-8 CPU)

Basic knowledge required

These operating instructions assume general knowledge of automation engineering and identification systems.

Scope of the manual

The operating instructions apply to the RF170C communications module with interface RS-422/RS-232 (article number “6GT2002-0HD01”). If you are using the RF170C with article number “6GT2002-0HD00” please use the operating instructions version 10/2009.

Position in the information landscape

- In addition to these operating instructions, you need:
  - the operating instructions for the DP Master used
  - or PROFINET IO controller
  - or the operating instructions of the ET 200pro interface module being used.
- For information on programming the communications module and for a full error description, refer to the manuals “FB 45 for MOBY U, MOBY D, RF200, RF300” and “Ident profile and Ident blocks”.
- You will find further instructions for installation and commissioning in the operating instructions of the ET 200pro distributed I/O device.
- The manual of the particular RFID system contains information on the readers to be connected.
- Special information on parameter assignment of the RF620R/RF630R readers in conjunction with the RF170C communications module can be found in the “Configuration Manual RF620R/RF630R”.

You will find the current manuals on the pages of the “Siemens Industry Online Support (https://support.industry.siemens.com/cs/www/en/ps/14970/man)".
Conventions

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

- Reader: Write/read device (SLG), optical handheld reader
- Transponder, tag: Data carrier, mobile data storage, MDS
- Communications module, CM: Interface module, IM

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Guide

These operating instructions describe the hardware of the RF170C communication module. They comprise introductory chapters and reference chapters (e.g. technical data).

The operating instructions include the following subject areas:

- Installing and connecting the RF170C communication module
- Parameterizing the RF170C communication module
- Description of the firmware update
- Display elements of the RF170C communication module
- Diagnostics information
- Technical data as well as dimension drawings of the RF170C communication module
- Ordering data

Recycling and disposal

- The RF170C communication module is environmentally friendly and is thus recyclable.
- Contact a certified electronic-waste disposal company to recycle and dispose of your old equipment in an environment-friendly manner.
Description

2.1 Area of application and features

Area of application

The RF170C communication module is a SIMATIC S7 module. It can be plugged into the ET 200pro distributed I/O station. The ET 200pro is operated via PROFIBUS DP V1 or PROFINET IO. An S7-300/-400/-1200/-1500 can be used as the controller.

Via the interface module of the ET 200pro, the RF170C can communicate with all DP masters that behave according to the standard IEC 61784-1:2002 Ed1 CP 3/1. The DP master must support DP-V1 (acyclic services).

The RF170C can be used as a central I/O device in an ET 200pro with a suitable interface module. Thanks to its degree of protection IP67, the RF170C can be installed and operated directly at the process without any additional protective housing.

When operating the communications modules on a SIMATIC S7, convenient function blocks are available to you.

The following RFID devices and optical readers can be operated with the RF170C:

- RF200 (normal addressing)
- RF300 (standard addressing)
- RF600 (RF620R/RF630R)
- MOBY D
- MOBY E
- MOBY I (normal addressing)
2.1 Area of application and features

- MOBY U (normal addressing)
- MV400
- MV320, MV340
- Any serial devices via RS-232/RS-422 (Freeport protocol)(in preparation)

Features

Operation of the RF170C requires an ET 200pro interface module (IM 154-1 DP, IM 154-2 DP High Feature, IM 154-4 PN High Feature, IM 154-8 CPU).

Via the RF170C, the data on the transponders can be physically addressed (normal addressing)

The following functions are available to you in SIMATIC S7
- FB 45 / FB 55 for normal addressing
- Ident profile/Ident blocks

The functions provide you with an interface that features numerous commands and is easy to operate.

The hardware configuration of the RF170C is made using a hardware support package (HSP) which must be integrated in the SIMATIC Manager or TIA Portal or using the GSD file.

Other features

- Up to nine RF170Cs can be operated at the same time in an ET 200 station.
- Any other I/O modules from the ET 200pro range can be operated in parallel with an RF170C.
- Degree of protection IP67
- Integration into the plant with standard cables or user-assembled cables using via
  - PROFINET: M12, 7/8", push pull (RJ-45 or SCRJ FO)
- Firmware update of the RF170C
- Diagnostics data can be enabled/disabled
- Support for I&M functionality
  (I&M is a mechanism for reading out information via the module and saving system information such as function, installation date, installation location, and comments.)
2.2 Design

2.2.1 Configuration
This chapter describes a sample configuration of an ET 200pro with RF170C.

Structure
The ET 200pro is installed on a rack and consists basically of the following:

- an interface module that transfers data to the DP master or IO controller,
- or a CPU,
- up to 9 RF170C modules,
- Connection modules for an interface module in various designs for
  - Interface modules (PROFIBUS DP, PROFINET IO, power supply)
  - Communications modules

This allows you to create the setup precisely to meet your local requirements.
The simple handling of the ET 200pro ensures fast commissioning and easy maintenance.

Note
Configuring the ET 200pro
The maximum electrical setup can be checked with the TIA Selection Tool. We recommend use of the tool because the maximum setup cannot be achieved with all reader configurations.

You will find the tool on the Internet on the page of the "Siemens homepage (http://w3.siemens.com/mcms/topics/en/simatic/tia-selection-tool/Pages/tab.aspx)".
2.2 Design

As the interface module an IM 154-1 DP, IM 154-2 DP High Feature, IM 154-4 PN High Feature, IM 154-6 PN High Feature or IM 154-8 CPU can be plugged in.
Configuration

In the figures below, the ET 200pro with the CM IM DP Direct connection module represents an example of the interface module.

Image 2-3 Configuration example
Image 2-4  Maximum configuration of RF170C on an ET 200pro
2.2 Design

Components of the ET 200pro distributed I/O device with RF170C

The following table lists the most important components of the ET 200pro.

Table 2-1 Components of ET 200pro

<table>
<thead>
<tr>
<th>Component</th>
<th>Function</th>
<th>Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module rack</td>
<td>The ET 200pro is mounted on the rack. The rack is available in several versions with different lengths: • Rack, narrow</td>
<td></td>
</tr>
<tr>
<td>Interface module for PROFIBUS, PROFNET or CPU functionality with bus module and terminating module</td>
<td>The interface module connects the ET 200pro to the DP master and prepares the data for the communications modules. The unit is delivered with the terminating module and the interface module is already mounted on the bus module. The following interface modules are available: • PROFIBUS – IM 154-1 DP – IM 154-2 DP High Feature • PROFINET – IM 154-4 PN High Feature – IM 154-6 PN High Feature • CPU functionality – IM 154-8 CPU</td>
<td></td>
</tr>
<tr>
<td>Connection modules for interface modules</td>
<td>The connection modules are mounted on the interface modules. Depending on the interface module you are using, different variants of the connection module are available.</td>
<td></td>
</tr>
</tbody>
</table>
### 2.2 Design

#### RF170C communication module

The unit is supplied with the communications module mounted on the bus module. The bus module is the mechanical and electrical connection element between the various ET 200pro modules.

#### RF170C connection module

The connection modules are mounted on the communications modules. They are used for connecting readers.

<table>
<thead>
<tr>
<th>Component</th>
<th>Function</th>
<th>Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communications module RF170C</td>
<td>The unit is supplied with the communications module mounted on the bus module. The bus module is the mechanical and electrical connection element between the various ET 200pro modules.</td>
<td><img src="image" alt="Comm module RF170C" /></td>
</tr>
<tr>
<td>RF170C connection module</td>
<td>The connection modules are mounted on the communications modules. They are used for connecting readers.</td>
<td><img src="image" alt="Conn module RF170C" /></td>
</tr>
</tbody>
</table>

### 2.2.3 Maximum configuration

#### Mechanical maximum configuration

The maximum configuration of an ET 200pro is reached when one of the rules outlined below applies:

<table>
<thead>
<tr>
<th>Properties</th>
<th>Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of modules</td>
<td>Maximum 9 RF170Cs</td>
</tr>
<tr>
<td>Width of the ET 200pro</td>
<td>max. 1 meter mounting width (without rack)</td>
</tr>
</tbody>
</table>
2.3 Galvanic isolation

Electrical maximum configuration

Electronics+/encoder supply 1L+
- Supplies power to the internal electronics of the modules and to readers connected externally
- Electrically isolated from the backplane bus of the ET 200pro and PROFIBUS DP

Table 2-3 Electrical maximum configuration

<table>
<thead>
<tr>
<th>Properties</th>
<th>Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronics+ / encoder supply 1L+</td>
<td>max. 5 A per ET 200pro station (must not be exceeded with connected readers)</td>
</tr>
</tbody>
</table>

Note
Configuring the ET 200pro

The maximum electrical setup can be checked with the TIA Selection Tool. We recommend use of the tool because the maximum setup cannot be achieved with all reader configurations.

You will find the tool on the Internet on the page of the "Siemens homepage (http://w3.siemens.com/mcms/topics/en/simatic/tia-selection-tool/Pages/tab.aspx)".

2.3 Galvanic isolation

Galvanic isolation

ET 200pro with RF170C enables ungrounded configuration of a system. The following circuit shows the internal relationships of the reference potentials.
2.4 Integration

The following figure shows how the ET200pro with RF170C is integrated in an automation system.

Image 2-6  Example of integration
The RF170C is integrated in the hardware configuration by using a Hardware Support Package (HSP) or the GSD/GSDML file of the interface module. The RF170C can then be configured using the device configuration of STEP 7 Basic/Professional (TIA Portal), Hardware Config of the SIMATIC Manager or another engineering system. The HSP or the GSD/GSDML file are available to you on the DVD "RFID Systems Software & Documentation" or on the pages of "Siemens Industry Online Support".

2.5 Planning data throughput

You will find a throughput calculation tool on the "Ident Systems Software & Documentation" DVD in the path for the RF170C module in the "Tools" subfolder. You can use this tool on planning a system to check whether the throughput for the planned configuration meets your expectations.

Requirements

If one or more of the following conditions apply, we recommend that you run this check:

- You are working with readers of a high-speed Ident system (e.g. RF300)
- When you want to process large blocks of data on the transponder (e.g. > 100 bytes)
- When you want to use several RF170C modules each with 2 readers in a distributed ET 200pro structure.
- When your application is extremely time-critical

User interface

The throughput calculation tool is shown in the figure below. It is very easy to use. The input fields are commented to guide you with the entries.

Note

The throughput tool cannot be used for MV3xx.
2.5 Planning data throughput

Image 2-7  Data throughput calculation tool
You will find detailed information on mounting the RF170C in an ET 200pro in the operating
instructions "ET 200pro distributed I/O device (https://support.industry.siemens.com/cs/ww/en/view/21210852)".

Below is an overview of the installation steps.

3.1 Installing the interface module

Introduction
The interface module connects the ET 200pro to PROFIBUS DP / PROFINET IO and supplies power to the RF170C.

Requirements

When using the interface module for PROFIBUS DP
- The terminating module is removed from the interface module.
- The rack has been mounted.

When using the interface module for PROFIBUS IO
- The terminating module is removed from the interface module.
- The SIMATIC Micro Memory Card is inserted (module dependent).
- The rack has been mounted.
Mounting

3.2 Installing the RF170C communication module

Procedure

Follow the steps below to mount the interface module:

1. Plug the interface module onto the rack until it locks in place, then slide the module into the correct position.

2. Screw the Interface module to the rack.
   - Interface modules for PROFIBUS DP (without connection module):
     2 cross-head screws on the front: top and bottom, tightening torque 1.5 N/m
   - Interface module for PROFINET IO:
     6 cross-head screws on the front: top and bottom, tightening torque 1.5 N/m

Image 3-1   Example: Mounting the interface module for PROFIBUS DP

3.2 Installing the RF170C communication module

Introduction

The RF170C communications module determines the function of the reader outputs. The connection module is mounted on the communications module.

Requirements

- The interface module is mounted on the rack.
- All communications modules are installed to the right beside the interface module.
- The communications module is plugged into the relevant bus module (delivery state).
3.3 Mounting the terminating module

Introduction

The ET 200pro is terminated with the terminating module. To operate the ET 200pro the terminating module must be mounted.

Requirements

- The last communications module of the ET 200pro has been mounted.
- All communications modules are screwed onto the rack.
3.4 Set the PROFIBUS address and the terminating resistor

Procedure

Follow the steps below to mount the terminating module:

1. Plug the terminating module onto the rack.
2. Move the terminating module to the left to the last communications module.

3. Screw the terminating module onto the rack (2 cross-head screws on the fronte, torque 1.5 Nm).

Make sure that all other connection modules are already screwed to the communications modules.

3.4 Set the PROFIBUS address and the terminating resistor

You will find detailed information on setting the terminating resistor in the “ET 200pro distributed I/O device (https://support.industry.siemens.com/cs/ww/en/view/21210852)” operating instructions.
Connection

NOTICE

Proper use
When connecting non-specified devices to the ET 200pro, remember that the connected device may be destroyed.

PROFIBUS/PROFINET connection system

You will find detailed information on connecting the ET 200pro to PROFIBUS DP or PROFINET IO in the “ET 200pro Distributed I/O Device” operating instructions. The network components are also described here.

You will find Information on connecting an ET 200pro with IM 154-8 CPU in the operating instructions “ET 200pro Interface Module IM 154-8 CPU”. When operating with interface module IM 154-8 the connection can be omitted.
4.1 Connecting readers

Reader connector system

Every reader connected to an RF 170C occupies one of the two M12 connector sockets (X1, X2). A pre-assembled cable permits simple connection of the reader. Various cable lengths are available.

Image 4-1 Overview of cabling
4.2 Connect the RF170C with the connection module

Introduction
The readers are connected to the connection module RF170C using the connecting cable via the 8-pin round sockets (X1, X2). If you want to configure the cable yourself you can use an 8-pin M12 connector and a suitable cable,
If you do this note the cable configurations in section "Connecting cables (Page 53)" and in the system manuals of the relevant RFID families.

Requirements
Before you start to wire the RF170C connection module, switch off the supply voltage, or de-install the connection module.

Accessories required for the RF170C
- Preassembled cable with 8-pin M12 connector
- alternatively: Shielded 7-core Cu cable, flexible, conductor cross-section ≤ 0.75 mm² and 8-pin M12 connector

Connecting the M12 connector
Follow the steps below to connect the M12 plug:
1. Plug the connector into the relevant round socket of the RF170C connection module.
   Make sure the connectors and sockets are properly interlocked (tongue and groove).
2. Tighten the knurled screw of the connector (torque = 1.5 N/m).
4.2 Connect the RF170C with the connection module

Connecting the RF170C connection module

Follow the steps below to connect the connection module:

1. Insert the RF170C connection module into the RF170C communications module.
2. Screw the connection module onto the rack.

   4 cross-head screws on the front: top and bottom, tightening torque 1.5 Nm

![Image 4-3 Connecting the RF170C connection module]

Closing unused sockets

Always close all unused round sockets using M12 caps in order to achieve the degree of protection IP65, IP66 or IP67.
5

Parameter settings

5.1 Hardware configuration

Hardware configuration

As default the RF170C communications module is not included in the device configuration of the TIP Portal (STEP 7) or the hardware configuration of the SIMATIC Manager. You can include the CM later using an HSP file in TIA or in the SIMATIC Manager.

If you work with other configuration software, a GSD / GSDML file is available for the configuration. You will find the relevant GSD/GSDML files in Siemens Industry Online Support for the ET 200pro.

5.2 Configuration via STEP 7 (Basic/Professional)

Configuration with the TIA Portal

You configure the RF170C is using the TIA Portal. To do this, drag the required ET 200pro module (interface module/central module) to the device configuration from the hardware catalog. Then drag the RF170C to the module. Note that the communications module can only be operated in conjunction with an interface module or a central module.

Image 5-1 Adding the RF170C in the device configuration
5.2 Parameter settings

5.2 Configuration via STEP 7 (Basic/Professional)

5.2.1 Parameter assignment with the device configuration

You can set the parameters of the RF170C and the parameters of the reader connected to the RF170C in the properties window of the RF170C. Via the parameter group "Module parameters", you can configure all module-specific parameters.

5.2.2 "Module parameters" parameter group

In this parameter group, you can configure all module-specific parameters of the RF170C RS-422/RS-232.

The "Module parameters" parameter group contains the following parameters:

Image 5-2 Parameters in the "Module parameters" parameter group
### Parameter settings

#### 5.2 Configuration via STEP 7 (Basic/Professional)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter value</th>
<th>Default value</th>
<th>Description</th>
</tr>
</thead>
</table>
| User Mode | Ident profile/RFID standard profile | Ident profile/RFID standard profile | Selection depends on the communications module and Ident system being used. With this parameter you select the block:  
- Ident profile/RFID standard profile:  
The program block for the Ident profile/RFID standard profile is used on the controller.  
- FB 45 / FC 45:  
  Single tag mode FB 45 (PROFIBUS/PROFINET) or FC 45 (PROFIBUS) is used on the controller.  
- FB 55 / FC 55:  
  Multitag mode. FB 55 (PROFIBUS/PROFINET) or FC 55 (PROFIBUS) is used on the controller. |
| MOBY Mode | RF200/RF300/RF600; MV4x0; MOBY U/D MOBY I/E MV3xx Freeport protocol (in preparation) RF300 filehandler | RF200/RF300/RF600; MV4x0; MOBY U/D | Selection depends on the communications module and Ident system being used. With this parameter, you set the mode of the communications module.  
- RF200/RF300/RF600; MV4x0; MOBY U/D  
- MOBY I/E  
- MV3xx  
- Freeport protocol  
- RF300 filehandler\(^1\)  
Normal addressing: The transponder is addressed with physical addresses. |
| Transmission speed | 19.2 kBd 57.6 kBd 115.2 kBd | 115.2 kBd | Selection depends on the communications module and Ident system being used. With this parameter you set the transmission speed between the communications module and reader.  
When the RFID reader is connected: After changing the transmission speed, the reader must be turned off and on again (cycle power).  
When an optical reader is connected: The transmission speed selected here must match the transmission speed selected in the firmware of the reader. |
Parameter settings

5.2 Configuration via STEP 7 (Basic/Professional)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter value</th>
<th>Default value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnostics messages</td>
<td>None</td>
<td>None</td>
<td>Selection depends on the communications module and Ident system being used. With this parameter you set whether hardware diagnostics messages will be reported.</td>
</tr>
<tr>
<td></td>
<td>Hard errors</td>
<td></td>
<td>• None: Apart from standard diagnostics, no other alarms are generated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Hard errors: Critical hardware errors are reported by the S7 diagnostics.</td>
</tr>
<tr>
<td>Suppression of Error LED</td>
<td>None</td>
<td>None</td>
<td>Disabling the Error LED (ERR) of a channel. The communications module has two channels to which the readers / optical readers can be connected.</td>
</tr>
<tr>
<td></td>
<td>Channel 1</td>
<td></td>
<td>The Error LED of the other channel flashes permanently when only one of the channels is being used. With the help of the suppression, you can disable the Error LED of the unused channel.</td>
</tr>
<tr>
<td></td>
<td>Channel 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interface</td>
<td>RS-232</td>
<td>RS-232</td>
<td>Selection of the interface type that the connected hardware (reader / optical reader) uses. This parameter only needs to be set if the MOBY mode &quot;Freeport protocol&quot; was selected.</td>
</tr>
<tr>
<td></td>
<td>RS-422</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) The MOBY mode "RF300 filehandler" is not supported by the RF170C communications module.

5.2.3 "Frame" parameter group

The "Frame" parameter group is only displayed when you have selected the parameter value "Freeport protocol" in the "MOBY Mode" parameter of the module parameters. In this parameter group, you can configure all parameters specific to the "Freeport protocol".

The “Frame” parameter group contains the following parameters:
Parameter settings

5.2 Configuration via STEP 7 (Basic/Professional)

Image 5-3 Parameters in the "Frame" parameter group
### Parameter settings

#### 5.2 Configuration via STEP 7 (Basic/Professional)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter value</th>
<th>Default value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data bits</td>
<td>7, 8</td>
<td>8</td>
<td>Selection of the number of bits on which a character is represented.</td>
</tr>
<tr>
<td>Parity</td>
<td>None, Odd, Even, Fixed value 1, Fixed value 0</td>
<td>None</td>
<td>Parity selection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>A sequence of data bits can be expanded by a parity bit. With its value &quot;0&quot; or &quot;1&quot;, the parity bit is added to the sum of all bits (data bits and parity bits) to form a defined status. This increases data reliability.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- None: Data is sent without a parity bit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Odd: The parity bit is set so that the sum of the data bits (including the parity bit) is odd when the signal state is &quot;1&quot;.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Even: The parity bit is set so that the sum of the data bits (including the parity bit) is even when the signal state is &quot;1&quot;.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Fixed value 1: The parity bit is set permanently to the value &quot;1&quot;.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Fixed value 0: The parity bit is set permanently to the value &quot;0&quot;.</td>
</tr>
<tr>
<td>Stop bits</td>
<td>1, 2</td>
<td>1</td>
<td>Selection of the number of stop bits that indicate the end of a character. The stop bits are appended to every transferred character during transmission.</td>
</tr>
</tbody>
</table>
### Parameter settings

#### 5.2 Configuration via STEP 7 (Basic/Professional)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Parameter value</th>
<th>Default value</th>
<th>Description</th>
</tr>
</thead>
</table>
| Specifying end detection      | After character delay time elapses                   | After character delay time elapses | Specifies the end detection of a received frame.  
- After character delay time elapses:  
  - The frame has neither a fixed length nor defined end delimiters. The end of a frame is indicated by a gap in the character sequence. The size of this gap is specified by the character delay time.  
- On receipt of fixed number of characters:  
  - The length of the received frame is always the same. When data is received, the end of the frame is recognized when the set number of characters has been received.  
- On receipt of the end delimiter(s):  
  - At the end of the frame there are one or two defined end delimiters. When data is received, the end of the frame is recognized when the set end delimiter(s) is/are received. |
| No. of end delimiters         | 1, 2                                                 | 1             | Selection of the number of end delimiters. A maximum of 2 end delimiters can be configured. When data is received, the end of the frame is recognized when the selected end delimiter combination is received. |
| 1st end delimiter             | 0...7F / 0...FF                                      | 3             | Input of the 1st end delimiter of maximum two end delimiters for end criteria "On receipt of the end delimiter(s)". The selected end delimiter or the selected end delimiter combination limits the length of the frame. Parameter value depending on the "Data bits" parameter. |
| 2nd end delimiter             | 0...7F / 0...FF                                      | 0             | Input of the 2nd end delimiter of maximum two end delimiters for end criteria "On receipt of the end delimiter(s)". The selected end delimiter or the selected end delimiter combination limits the length of the frame. Parameter value depending on the "Data bits" parameter. |
| Frame length                  | 1...233 (with FB45) 1...229 (with Ident profile)    | 233           | Entry of the frame length in bytes for the end criterion "On receipt of fixed number of characters".                                                                                                         |
| Character delay time          | 0...65535                                            | 15            | Entry of the time that may elapse until a frame end is recognized. Select the character delay time dependent on the send behavior of your communications partner. Depending on the data transmission speed the character delay time is limited to a minimum value. |
5.3 Parameter setting by means of GSD/GSDML file

In addition to the PROFIBUS-relevant control parameters, several RFID-relevant control parameters are also defined for the RF170C in the GSD/GSDML file. The relevant parameters are set using the "Object properties" of the slave in HW Config or the TIA Portal.

The parameters of the GSD file are identical to those described in the sections "Module parameters" parameter group (Page 28) and "Frame" parameter group (Page 30).

5.4 Overview of the Ident blocks

The following table provides an overview of the currently available blocks.

Table 5-3 Overview of the Ident library

<table>
<thead>
<tr>
<th>Position</th>
<th>Symbolic name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructions/blocks</td>
<td>Ident blocks Basic blocks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Read</td>
<td>Using these blocks, it is simple to program communication with the Ident systems.</td>
</tr>
<tr>
<td></td>
<td>Write</td>
<td>The basic blocks include all the blocks that are used often.</td>
</tr>
<tr>
<td></td>
<td>Reset_Reader</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Read_MV</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Set_MV_Program</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Config_Download</td>
<td>Using these blocks, it is simple to program communication with the Ident systems.</td>
</tr>
<tr>
<td></td>
<td>Config_Upload</td>
<td>The extended blocks provide functions that are required less often for operating the Ident system.</td>
</tr>
<tr>
<td></td>
<td>Inventory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Read_EPC_Mem</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Read_TID</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Read_UID</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Set_ANT_RF300</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Set_ANT_RF600</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Set_Param</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Write_EPC_ID</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Write_EPC_Mem</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AdvancedCmd</td>
<td>Advanced command set. With the &quot;AdvancedCmd&quot; block it is possible to access other commands from the Ident command set and to execute chained commands.</td>
</tr>
<tr>
<td></td>
<td>Reader_Status</td>
<td>Using the status blocks you obtain information on the reader or transponder.</td>
</tr>
<tr>
<td></td>
<td>Tag_Status</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reset_MOBY_D</td>
<td>Using these blocks, it is simple to program communication with the Ident systems.</td>
</tr>
<tr>
<td></td>
<td>Reset_MOBY_U</td>
<td>The reset blocks are used for simple initialization of the Ident systems if the &quot;Reset_Reader&quot; block is not supported by the Ident system.</td>
</tr>
<tr>
<td></td>
<td>Reset_MV</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reset_RF200</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reset_RF300</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reset_RF600</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reset_Univ</td>
<td></td>
</tr>
</tbody>
</table>
5.5 Parameters and commands of the Ident profile

### Parameters of the Ident profile

<table>
<thead>
<tr>
<th>Position</th>
<th>Symbolic name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ident profile</td>
<td>Ident_Profile</td>
<td>These blocks are available for experts to be able to include complex command structures in their own program sequence. It is also possible to use repeat commands and chaining.</td>
</tr>
</tbody>
</table>

Image 5-4 Parameters of the Ident profile
## Command table of the Ident profile

The following table contains all the commands supported by the Ident profile and the "AdvancedCMD" block.

<table>
<thead>
<tr>
<th>Command</th>
<th>Command code</th>
<th>Parameters used</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYSICAL-READ</td>
<td>70 'p'</td>
<td>OFFSETBUFFER, EPCID_UID, LEN_ID, LEN_DATA, ADR_TAG, MEM_BANK, PSWD</td>
<td>Reads data from a transponder / optical reader system by specifying the physical start address, the length and the password.</td>
</tr>
<tr>
<td>PHYSICAL-WRITE</td>
<td>71 'q'</td>
<td>OFFSETBUFFER, EPCID_UID, LEN_ID, LEN_DATA, ADR_TAG, MEM_BANK, PSWD</td>
<td>Writes data to a transponder by specifying the physical start address, the length and the password.</td>
</tr>
<tr>
<td>READER-STATUS</td>
<td>74 't'</td>
<td>OFFSETBUFFER, ATTRIBUTES</td>
<td>Reads out the status of the reader.</td>
</tr>
<tr>
<td>TAG-STATUS</td>
<td>73 's'</td>
<td>OFFSETBUFFER, EPCID_UID, LEN_ID, ATTRIBUTES</td>
<td>Reads out the status of a transponder.</td>
</tr>
<tr>
<td>INVENTORY</td>
<td>69 'i'</td>
<td>OFFSETBUFFER, ATTRIBUTES, DURATION, DUR_UNIT</td>
<td>Requests a list of all currently accessible transponders within the antenna range.</td>
</tr>
<tr>
<td>FORMAT</td>
<td>66 'f'</td>
<td>OFFSETBUFFER, EPCID_UID, LEN_ID, LEN_DATA</td>
<td>Initializes the transponder.</td>
</tr>
<tr>
<td>PUT</td>
<td>65 'e'</td>
<td>OFFSETBUFFER, EPCID_UID, LEN_ID, LEN_DATA</td>
<td>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.</td>
</tr>
<tr>
<td>WRITE-ID</td>
<td>67 'g'</td>
<td>OFFSETBUFFER, EPCID_UID, LEN_ID, NEW-LEN_ID, PSWD</td>
<td>RF680R/RF685R: Writes a new EPC-ID to the transponder.</td>
</tr>
<tr>
<td>KILL-TAG</td>
<td>6A 'j'</td>
<td>EPCID_UID, LEN_ID, PSWD</td>
<td>RF680R/RF685R: The transponder is permanently deactivated.</td>
</tr>
<tr>
<td>LOCK-TAG-BANK</td>
<td>79 'y'</td>
<td>EPCID_UID, LEN_ID, PSWD, ACTION, MASK</td>
<td>RF680R/RF685R: The corresponding memory area of the transponder is blocked as specified.</td>
</tr>
<tr>
<td>EDIT-BLACKLIST</td>
<td>7A 'z'</td>
<td>EPCID_UID, LEN_ID, MODE</td>
<td>RF680R/RF685R: The black list is processed. The current transponder can be added, all identified transponders added, individual transponders deleted or all transponders deleted.</td>
</tr>
<tr>
<td>GET-BLACKLIST</td>
<td>6C 'l'</td>
<td>OFFSETBUFFER</td>
<td>RF680R/RF685R: The entire TagIDs are read out from the black list.</td>
</tr>
</tbody>
</table>
5.6 Parameters and commands of FB 45

Parameters of FB 45
Assignment is made in UDT 10.

Table 5-5 Parameters of FB 45

<table>
<thead>
<tr>
<th>Address</th>
<th>Name</th>
<th>Permissible values</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0.0</td>
<td>ASM_address</td>
<td>256, 260, 264, 268, ...</td>
<td>Each RF170C occupies four bytes of I/O in the I/O area of the control unit</td>
</tr>
<tr>
<td>+2.0</td>
<td>ASM_channel</td>
<td>1, 2</td>
<td></td>
</tr>
<tr>
<td>+8.0</td>
<td>MDS_control</td>
<td>B#16#0, 1</td>
<td>0 = no presence check</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 = presence check</td>
</tr>
<tr>
<td>+9.0</td>
<td>ECC_mode</td>
<td>TRUE, FALSE</td>
<td></td>
</tr>
<tr>
<td>+9.1</td>
<td>RESET_long</td>
<td>TRUE, FALSE</td>
<td></td>
</tr>
<tr>
<td>+10.0</td>
<td>MOBY_mode</td>
<td>B#16#0, 4, 5, 6, 7, 8, 9, A, B</td>
<td>Special features of the MOBY I dialog (8):</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Write/read device must be type SLG4x.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• The VMDS memory size is 16KB. The INIT command for the VMDS must be specified using 4000 hex.</td>
</tr>
<tr>
<td>+11.0</td>
<td>scanning_time</td>
<td>MOBY I: B#16#00 ... FF</td>
<td>A value not equal to 00 is only practical if MOBY mode has been parameterized accordingly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MOBY U: B#16#00 ... C8</td>
<td></td>
</tr>
<tr>
<td>+12.0</td>
<td>option_1</td>
<td>B#16#00, 02, 04</td>
<td></td>
</tr>
<tr>
<td>+13.0</td>
<td>distance_limiting</td>
<td>MOBY U (normal output power): B#16#05, 0A, 0F, 14, 19, 1F, 23</td>
<td>MOBY U / D</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MOBY U (reduced output power): B#16#05, 8A, 8F, 94, 99, 9E, A3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MOBY D, RF290R: B#16#02 ... 28</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>RF380R: B#16#02 ... 08</td>
<td></td>
</tr>
<tr>
<td>+14.0</td>
<td>multitag</td>
<td>B#16#1</td>
<td></td>
</tr>
<tr>
<td>+15.0</td>
<td>field_ON_control</td>
<td>MOBY U: B#16#0, 1, 2, 3</td>
<td>MOBY U / D, RF300</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MOBY D, RF300: B#16#0</td>
<td></td>
</tr>
</tbody>
</table>
Parameter settings

5.6 Parameters and commands of FB 45

<table>
<thead>
<tr>
<th>Address</th>
<th>Name</th>
<th>Permissible values</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>+16.0</td>
<td>field_ON_time</td>
<td>MOBY U: B#16#00 ... FF</td>
<td>MOBY U/D RF300 reserved (00)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MOBY D: B#16#00, 01</td>
<td></td>
</tr>
</tbody>
</table>

You will find detailed information on the parameters of FB 45 in combination with the RF620R/RF630R readers in the section "Parameter assignment > Parameter assignment RF620R/RF630R with FB 45 > Input parameters" in the "Configuration Manual RF620R/RF630R".

Command table of Fb 45 (normal addressing)

The assignment is made in UDT 20 using the "command" variable.

Table 5-6  Commands of FB 45

<table>
<thead>
<tr>
<th>Command code</th>
<th>Description</th>
<th>available in the RFID system</th>
</tr>
</thead>
<tbody>
<tr>
<td>normal</td>
<td>chained*</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>41 Write to transponder</td>
<td>all</td>
</tr>
<tr>
<td>02</td>
<td>42 Read transponder; read fixed code</td>
<td>all</td>
</tr>
<tr>
<td>03</td>
<td>43 Initialize transponder</td>
<td>all</td>
</tr>
<tr>
<td>04</td>
<td>44 Reader status</td>
<td>RF300 / RF600 / MOBY U / D</td>
</tr>
<tr>
<td>08</td>
<td>48 Turn off transponder</td>
<td>U</td>
</tr>
<tr>
<td>0A</td>
<td>4A Switch antenna on/off</td>
<td>RF300 / RF600 / MOBY U / D</td>
</tr>
<tr>
<td>0B</td>
<td>4B Transponder status</td>
<td>RF300 / RF600 / MOBY U / D</td>
</tr>
</tbody>
</table>

*) Chained commands are not supported by all readers / write/read devices. Please note the relevant information in the RFID system manuals.
6.1 Degree of protection IP65, IP66 and IP67

**CAUTION**

Ensuring the degree of protection IP65, IP66, IP67

Degree of protection IP65, IP66 and IP67 is not ensured if one of the ET 200pro components listed below is removed, or is not secured by screws as specified:

- Connection module for the interface module or RF170C
- Terminating module
- Interface module or RF170C
- ECOFAST cable connectors, 7/8" cable connectors, M12 connectors
- Screws on cable gland on connection module CM IM DP Direct
- Cover caps

Degree of protection IP65, IP66 and IP67 may also be impaired due to damage of the sheath of any cable connected to the ET 200pro.

6.2 Removing, inserting and replacing modules of the ET 200pro

**Introduction**

The ET 200pro consists of different modules (bus modules, electronic modules and connection modules). Every module in an ET 200pro can be replaced. Various modules can be removed and replaced during operation.

**NOTICE**

Removing connection modules

In order to prevent damage to your ET 200pro, always deactivate the outputs (no power) before you remove any connection modules.
Removing the connection module from the interface module

Removing the connection module from the interface module has the following consequences.

- The ET 200pro fails.
- The following ET 200 modules ② remain operational.

![Image 6-1 Removing the connection module from the interface module]

① ET 200pro including modules
② ET 200pro including modules
③ Connection module
④ Interface module
⑤ RF170C communications module
⑥ PROFINET/PROFIBUS and the supply voltages are fed in to the connection module and looped through.

6.3 Removing and inserting the RF170C

Introduction

The ET 200pro distributed I/O device supports the removal and insertion of an RF170C during operation (RUN mode). If the CM RF170C is removed, the ET 200pro remains in RUN mode. If you remove more than one RF170C, this leads to an ET 200pro station failure.

Requirements

- Removal and insertion must be supported by the CPU used.
- Removing and inserting RF170C modules during operation (RUN mode) is possible only if you have enabled the parameter "Operation in Desired ↔ Actual Configuration" on the interface module.
- Only one RF170C may be removed at any given time.
Replacing a (defective) RF170C

Follow the steps below to replace the CM RF170C:

1. Loosen the 4 screws on the front panel of the connection module (top and bottom) using the cross-head screwdriver.

2. Remove the connection module with the RF170C from the bus module.

3. Press the release button on the top of the RF170C while at the same time pulling the connection module up and off the electronic module.

4. Remove one half of the coding element from the new RF170C (top left).

5. Insert the connection module onto the new RF170C.

6. Insert the connection module with the RF170C onto the bus module and secure it with the screws.

---

**Note**

**Removing/plugging in the reader cable**

Removal and insertion of the reader cable is permissible under power. An "init_run" is required after connecting a new reader.

---

**NOTICE**

**Do not make any changes to the coding during the replacement.**

Do not make any changes to the coding during the replacement to make sure that your system continues to run free of errors.

---

**NOTICE**

**Configuring the modules with the article number "6GT2002-0HD00"**

The modules with article number "6GT2002-0HD00" will be completely replaced by the modules with article number "6GT2002-0HD01". Note that if you configure the old modules with one of the new modes (e.g. Freeport protocol) the modules will be inoperable. If the old modules are configured with a new mode, no “desired/actual” error message will be generated. Instead a parameter assignment error is reported when the module starts up.

---

### 6.4 Firmware update

The firmware of the RF170C can be updated. The update takes place via STEP 7 (TIA Portal) or the SIMATIC Manager.

You will find detailed information on the update in the operating instructions “ET 200pro distributed I/O device” ([https://support.industry.siemens.com/cs/ww/en/view/21210852](https://support.industry.siemens.com/cs/ww/en/view/21210852)).

Service and maintenance

6.4 Firmware update
Diagnostics and error messages

7.1 LED displays on the interface module

You will detailed information on the LED display of the interface module in the ET 200pro distributed I/O device (https://support.industry.siemens.com/cs/ww/en/view/21210852) operating instructions.

7.2 LED displays on the RF170C communication module

LED display

The figure below shows the position and arrangement of the LED display on the connection module RF170C.

Image 7-1  LED display on the RF170C communication module

Status and error LEDs on the RF170C connection module

Table 7-1 Status and error LEDs for RF170C

<table>
<thead>
<tr>
<th>LED</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF</td>
<td>Group error</td>
</tr>
<tr>
<td>ACT_1, ACT_2</td>
<td>The corresponding reader is active processing a user command. (MOBY only)</td>
</tr>
<tr>
<td>ERR_1, ERR_2</td>
<td>A flashing pattern indicates the last error to occur.</td>
</tr>
</tbody>
</table>
### 7.3 Identification and maintenance data (I&M data)

#### Definition and features

Identification data (I data) is information on the module, some of which is printed on the module housing. I data is for reading only.

Maintenance data (M data) is plant-dependent information such as installation location, installation date etc. M data is created during configuration and written onto the module.
Identification and maintenance data (I&M) is information stored in a module to support you when:

- Checking the plant configuration
- Locating hardware modifications in a plant
- Correcting errors in a plant

Modules can be uniquely identified online by means of the I&M data. For the RF170C, this data is available on the ET 200pro.

**Reading the I&M data**

You will a detailed description “ET 200pro Distributed I/O device” operating instructions.

**Structure of I&M data**

<table>
<thead>
<tr>
<th>I&amp;M data</th>
<th>Access</th>
<th>Default</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Identification data 0:</strong> Index 1 (data record 231 or =xAFF0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MANUFACTURER_ID</td>
<td>Read (2 bytes)</td>
<td>2A hex (= 42 dec)</td>
<td>The vendor name is stored here. (42 dec = SIEMENS AG)</td>
</tr>
<tr>
<td>ORDER_ID</td>
<td>read (20 bytes)</td>
<td>Dependent on module</td>
<td>Order number of the module</td>
</tr>
<tr>
<td>SERIAL_NUMBER</td>
<td>read (16 bytes)</td>
<td>Dependent on module</td>
<td>Electronic type plate</td>
</tr>
<tr>
<td>HARDWARE_REVISION</td>
<td>Read (2 bytes)</td>
<td>Dependent on module</td>
<td>Electronic type plate</td>
</tr>
<tr>
<td>SOFTWARE_REVISION</td>
<td>Read (4 bytes)</td>
<td>Firmware</td>
<td>Provides information about the firmware of the module.</td>
</tr>
<tr>
<td>REVISION_COUNTER</td>
<td>Read (2 bytes)</td>
<td>-</td>
<td>Provides information about the parameter changes on the module.</td>
</tr>
<tr>
<td>PROFILE_ID</td>
<td>Read (2 bytes)</td>
<td>5B00 hex</td>
<td>RFID systems</td>
</tr>
<tr>
<td>PROFILE_SPECIFIC_TYPE</td>
<td>Read (2 bytes)</td>
<td>0000 hex</td>
<td>RFID systems</td>
</tr>
<tr>
<td>IM_VERSION</td>
<td>Read (2 bytes)</td>
<td>101 hex</td>
<td>Provides information about the version of the identification data (0001 hex = Version 1.1)</td>
</tr>
<tr>
<td>IM_SUPPORTED</td>
<td>Read (2 bytes)</td>
<td>000F hex</td>
<td>Provides information about the available identification data (Index 2 to 4)</td>
</tr>
<tr>
<td><strong>Maintenance data 1:</strong> Index 2 (data record 232 or =0xAFF1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TAG_FUNCTION</td>
<td>read / write (32 bytes)</td>
<td>-</td>
<td>Here, enter an ID for the module here that is unique in the entire plant.</td>
</tr>
<tr>
<td>TAG_LOCATION</td>
<td>read / write (22 bytes)</td>
<td>-</td>
<td>Here enter the installation location of the module.</td>
</tr>
<tr>
<td><strong>Maintenance data 2:</strong> Index 3 (data record 233 or =0xAFF2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INSTALLATION_DATE</td>
<td>read / write (16 bytes)</td>
<td>-</td>
<td>Here, enter the installation date of the module.</td>
</tr>
<tr>
<td>RESERVED</td>
<td>read / write (38 bytes)</td>
<td>-</td>
<td>Reserved</td>
</tr>
</tbody>
</table>
Diagnostics and error messages

7.4 Parameterization of the diagnostics

In addition to the PROFIBUS / PROFINET standard diagnostics, the RF170C offers user-
specific diagnostics data integrated in the diagnostics of the interface module.

The diagnostics data can be read out as follows:

- as plain text in the STEP 7 user interface
- on PROFIBUS DP
  - Read out with SFC 13 slave diagnostics and store in the data area of the application
- on PROFINET IO
  - Read data records from the IO device with SFB 52
  - Receive alarms from the IO device with SFB 54
- Evaluation with FB 125 or FC 125

Parameter assignment options

- None
  No other diagnostics data is reported, apart from standard diagnostics.

- Hard errors
  Extended diagnostics messages are generated in the case of the following events.
  - Hardware fault (memory test)
  - Firmware error (checksum)
  - Connection to reader lost
  - Short-circuit fault/interruption, if supported by hardware
  - Firmware update (message at start/end)
  In the case of this diagnostics, the “Ext_Diag” bit is set, that is, it is treated as high-priority
diagnostics information in the controller (SF-LED is lit)

Diagnostics alarms

With the diagnostics alarms, a distinction is made between incoming and outgoing
diagnostics.

Incoming diagnostics
An event occurs and triggers a diagnostics alarm. Depending on the parameter assignment,
the “Ext_Diag” bit is set.

<table>
<thead>
<tr>
<th>I&amp;M data</th>
<th>Access</th>
<th>Default</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance data 3: Index 4 (data record 234 or =0xAFF3)</td>
<td>read / write (54 bytes)</td>
<td>-</td>
<td>Here, enter a comment describing the module.</td>
</tr>
</tbody>
</table>
Outgoing diagnostics
The event is no longer pending and a diagnostics alarm is output without a set "Ext_Diag" bit. In the case of events that are only pending for a moment, cancellation is delayed by 3 seconds.

The hard errors are supported by text messages stored in the GSD/GSDML file.

7.5 Diagnostics of the RF170C communications module

Diagnostics of the RF170C is mapped to the channel-related diagnostics of the ET 200pro.

The data in the table below apply for the RF170C:

Table 7-4  Diagnostics of the RF170C

<table>
<thead>
<tr>
<th>Content</th>
<th>Value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel assignment</td>
<td>80h</td>
<td>Reader 1</td>
</tr>
<tr>
<td></td>
<td>81h</td>
<td>Reader 2</td>
</tr>
<tr>
<td>Channel type</td>
<td>11B</td>
<td>Input/output channel</td>
</tr>
<tr>
<td>Channel resolution</td>
<td>101B</td>
<td>Word</td>
</tr>
<tr>
<td>Error type</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>00001B</td>
<td>Short-circuit (voltage supply to the reader has a short circuit)</td>
</tr>
<tr>
<td></td>
<td>00110B</td>
<td>Wire break (connection to the reader is interrupted)</td>
</tr>
<tr>
<td></td>
<td>01001B</td>
<td>Error (internal module error has occurred on the RF170C)</td>
</tr>
<tr>
<td></td>
<td>10000B</td>
<td>Parameter assignment error (RF170C does not have parameters)</td>
</tr>
<tr>
<td></td>
<td>10001B</td>
<td>No encoder voltage or load voltage (supply voltages not present or too low)</td>
</tr>
</tbody>
</table>
Diagnostics and error messages

7.5 Diagnostics of the RF170C communications module
Table 8-1  Technical specifications for RF170C

<table>
<thead>
<tr>
<th>Product type designation</th>
<th>SIMATIC RF170C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technical specifications - interfaces</strong></td>
<td></td>
</tr>
<tr>
<td>Serial interface to the user</td>
<td>PROFIBUS DP-V1, PROFINET IO</td>
</tr>
<tr>
<td>Interface to the ET 200pro</td>
<td>ET 200pro backplane bus</td>
</tr>
<tr>
<td>Connector system</td>
<td>See “ET 200pro” operating instructions</td>
</tr>
<tr>
<td>Transmission speed</td>
<td>See “ET 200pro” operating instructions</td>
</tr>
<tr>
<td>Max. block length</td>
<td>2 words cyclic/240 bytes acyclic (per channel)</td>
</tr>
<tr>
<td><strong>Serial interface to the reader</strong></td>
<td></td>
</tr>
<tr>
<td>Connector</td>
<td>2 x M12 connector plug</td>
</tr>
<tr>
<td>Max. cable length</td>
<td>1000 m, dependent on reader (preassembled cables 2..50 m for other standard cables and self-assembled cables, refer to the section “Connecting cables”)</td>
</tr>
<tr>
<td>• RS-422</td>
<td>30 m</td>
</tr>
<tr>
<td>Connectable readers</td>
<td>2 x reader</td>
</tr>
<tr>
<td><strong>Software functions</strong></td>
<td></td>
</tr>
<tr>
<td>Programming</td>
<td>Depending on the PROFIBUS DP master</td>
</tr>
<tr>
<td>SIMATIC S7 function blocks</td>
<td>Ident profile/Ident blocks/RFID standard profile</td>
</tr>
<tr>
<td></td>
<td>FB 45 / FB 55</td>
</tr>
<tr>
<td>Transponder addressing</td>
<td>Direct access via addresses</td>
</tr>
<tr>
<td><strong>Electrical data</strong></td>
<td></td>
</tr>
<tr>
<td>Supply voltage(^1)</td>
<td></td>
</tr>
<tr>
<td>• Rated value</td>
<td>24 VDC</td>
</tr>
<tr>
<td>• Permitted range</td>
<td>20 to 30 VDC</td>
</tr>
<tr>
<td>Current consumption (^2)</td>
<td>Max. 1 A; typ. 130 mA (without reader)</td>
</tr>
<tr>
<td>Current taken from reader outputs</td>
<td></td>
</tr>
<tr>
<td>• RS-422</td>
<td>max 800 mA at 24 VDC (in total for one or two readers.)</td>
</tr>
</tbody>
</table>
Technical data

RF170C communication module

Operating Instructions, 01/2016, J31069-D0176-U001-A4-7618

6GT2002-0HD01

- RS-232 max 1200 mA at 5 VDC (in total for one or two readers.)

Electrical isolation yes

Mechanical data

Dimensions (W x H x D) in mm

- Electronic module RF170C 90 x 130 x 35
- RF170C connection module 90 x 130 x 60

Weight

- Electronic module RF170C approx. 270 g
- RF170C connection module approx. 500 g

Environmental conditions

Ambient temperature

- During operation –25 to +55 °C
- During transportation and storage –40 to +70 °C

Degree of protection IP67

MTBF (at 40°C) 77.5 years

Approvals cULus (File E248953)

1) All supply and signal voltages must be safety extra low voltage (SELV/PELV according to EN 60950) 24 VDC). Reliable (electrical) isolation of low voltage (SELV / PELV acc. to EN 60950)

2) The power supply must provide the required current of max. 1 A during brief power outages of ≤ 20 ms.
9.1 Interface module with connection module

You will find the dimension drawings in the “ET 200pro Distributed I/O device” operating instructions.

9.2 RF170C with connection module

RF170C with connection module

The dimension drawing for an RF170C communication module with plugged-in connection module is shown below.
Dimension drawings

9.2 RF170C with connection module
Appendix

A.1 Connecting cables

A.1.1 Routing of standard cables

Image A-1 Connecting cable M12 ↔ Reader (MOBY I / E / U) l = 2 m, 5 m

Image A-2 Connecting cable/extension cable M12 ↔ M12; l = 2 m, 5 m, 10 m, 20 m, 50 m

- RF300/RF600 connecting cable
- Extension cable for all RFID systems

Image A-3 Connecting cable M12 ↔ sub-D (MOBY D)

Image A-4 Connecting cable M12 ↔ RJ-50 (MV320); l = 1.6 - 4 m
Appendix

A.1 Connecting cables

![Connecting cable M12 ↔ Mini DIN (MV340); l = 1.6 - 4 m](Image A-5)

**Maximum cable length with RS-422**

The RF170C can be operated with every reader configuration with the maximum cable length of 50 m. In some situations, longer connecting cables up to 1000 m are possible. The current consumption of the connected reader must, however, be taken into account. You will find further information in the relevant system manuals.

Joining more than 2 cables to form a long cable should be avoided due to the additional contact resistances.

**Maximum cable length with RS-232**

For RS-232 devices, the maximum cable length is 30 m. If the RS-232 device is supplied with the 5 V voltage from the RF170C device the maximum cable length is reduced to 5 m.
Pin assignment

Table A-1 Connecting cable M12 ↔ reader (MOBY I / E / U)

<table>
<thead>
<tr>
<th>M12 connector (male)</th>
<th>Reader connector (female)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>–</td>
</tr>
<tr>
<td>8</td>
<td>7</td>
</tr>
</tbody>
</table>

![M12 connector image]

Table A-2 Connecting cable/extension cable M12 ↔ M12

<table>
<thead>
<tr>
<th>M12 connector (male)</th>
<th>M12 connector (female)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
</tr>
</tbody>
</table>

![M12 connector image]

Table A-3 Connecting cable M12 ↔ D-sub, 9-pin (MOBY D)

<table>
<thead>
<tr>
<th>M12 connector (male)</th>
<th>D-sub connector (female)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>–</td>
</tr>
<tr>
<td>8</td>
<td>1.8</td>
</tr>
</tbody>
</table>

![D-sub connector image]

Note that the reader with D-sub connectors must be supplied with 24 VDC via an additional connector.
A.1 Connecting cables

Table A-4  Connecting cable M12 ↔ RJ50 (MV320)

<table>
<thead>
<tr>
<th>M12 connector (male)</th>
<th>RJ50 connector (female)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>8</td>
<td>-</td>
</tr>
</tbody>
</table>

Table A-5  Connecting cable M12 ↔ Mini-DIN (MV340)

<table>
<thead>
<tr>
<th>M12 connector (male)</th>
<th>Mini-DIN connector (female)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>-</td>
</tr>
</tbody>
</table>

A.1.2 Self-assembled cables

If you want to assemble your cable yourself a reader cable connector with screw-type terminals is available. Assembling the reader connector M12, 8-pin is described in this section. For all other RFID families, you will find the description of the reader connectors in the relevant system manual.

Cables and reader connectors can be ordered from the catalog “D 10 Industrial Identification Systems”.

Cable structure

You will need cables of the following specifications for self-assembled cables:

- 6 x 0.25 mm²
- LiYCY11Y 6 x 0.25
Appendix

A.2 Connection of optical handheld readers or serial devices

Connectors
You can order the M12 connectors with the following article numbers:

- M12, 8-pin, male for RF170C
  6GT2090-0BE00
- M12, 8-pin, female for reader
  6GT2090-0BD00

Pin assignment
The pin assignment of the reader connector M12, 8-pin is described in the following table.

<table>
<thead>
<tr>
<th>Pin</th>
<th>RS-422</th>
<th>RS-232</th>
<th>Wire color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+24 V</td>
<td>+24 V</td>
<td>Note the data sheet provided by cable manufacturer</td>
</tr>
<tr>
<td>2</td>
<td>-RxD</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>GND</td>
<td>GND</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>+RxD</td>
<td>RxD</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>+TxD</td>
<td>+5 V</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>-TxD</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>--</td>
<td>TxD</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Shield</td>
<td>Shield</td>
<td></td>
</tr>
</tbody>
</table>

A.2 Connection of optical handheld readers or serial devices
The parameter assignment options of the optical handheld readers are described in the manuals of the relevant devices. You will find the manuals on the optical handheld readers from Siemens in Siemens Industry Online Support (https://support.industry.siemens.com/cs/ww/en/ps/15157/man).

You will find the parameter assignment options of other serial devices in the manuals of the device vendor.

A.2.1 Compatible optical handheld readers
The following optical handheld readers can be operated via the communications module RF170C RS-422/RS-232:

- SIMATIC MV340
- SIMATIC MV320
- SIMATIC MV325 (in preparation)

With the RF170C (6GT2002-1HD01) you can operate the optical handheld readers via the RS-232 interface.
A.2.2 Connecting handheld readers / serial devices

The coiled connecting cable of the optical handheld readers SIMATIC MV320, MV325 and MV340 has a length of 1.6 m. Due to its coiling, it can be extended to a length of 4 m during operation.

When connecting general serial devices, you need to assemble the cable yourself for the specific device. You will find detailed information on this topic in section “Self-assembled cables (Page 56)*.

A.2.3 Hardware configuration

The optical handheld readers can be integrated in SIMATIC automation systems with the aid of STEP 7 Basic / Professional (TIA Portal) or STEP 7 Classic (SIMATIC Manager). The connection is via the ET 200 pro module.

Below the configuration of the communications module RF170C RS-422/RS-232 for operation with the optical handheld readers via the TIA Portal is described.

Requirement

The optical handheld reader is connected to the controller via the RF170C RS-422/RS-232 and has started up. The TIA Portal has been started. You have created a project.
Procedure

Follow these steps to configure the RF170C RS-422/RS-232 for operation with the optical handheld readers.

1. In the module parameters of the RF170C select the suitable MOBY mode:
   - for SIMATIC MV340: MV3xx
   - for SIMATIC MV320: MV3xx
   - for SIMATIC MV325: Freeport protocol
   - for other serial devices Freeport protocol

   **NOTICE**

   **Changing to the RS-232 interface**

   By selecting “MV3xx”, the communications module automatically switches to the RS-232 interface. If you select the Freeport protocol, you need to change the interface to RS-232 manually and set the interface parameters.

2. Select the user mode “FB 45 / FC 45” or “Ident profile”.

3. Set all other parameters as required and download the configuration to the controller.

Configuring the optical handheld readers

To allow operation of the optical handheld readers via the RS-232 interface with the RF170C RS-422/RS-232 you need to configure the handheld readers appropriately. This configuration can be achieved quickly and simply by scanning the relevant codes.

With the handheld reader MV340, you can also create the configuration using the program “ESP” on a PC.

**Note**

**Product information contains codes**

The optical handheld readers and the connecting cable are supplied with product information with the codes.
A.2 Connection of optical handheld readers or serial devices

- SIMATIC MV320
- SIMATIC MV340

By scanning the code, all relevant parameters for the communication between the RF170C RS-422/RS-232 communications module and the optical handheld reader are set.

- Interface: RS-232
- Transmission speed: 115.2 kBD
- Data bits: 8
- Parity: None
- Stop bits: 1
- Protocol format: Packet mode (not supported by the MV325)

A.2.4 Functions and commands opt. handheld readers

The optical handheld readers can be operated with the following controllers/program blocks via the RF170C RS-422/RS-232:

<table>
<thead>
<tr>
<th>Program blocks</th>
<th>S7-300 / S7-400 and STEP 7 V5.5</th>
<th>S7-1200 and STEP 7 Basic/Professional</th>
<th>S7-1500 and STEP 7 Basic/Professional</th>
</tr>
</thead>
<tbody>
<tr>
<td>FB 45</td>
<td>Yes</td>
<td>No</td>
<td>Yes 1)</td>
</tr>
<tr>
<td>Ident profile/Ident blocks as of V2.0</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

1) Via application example; in preparation
Overview of the commands

The following table shows the block-specific commands that you can execute with the optical handheld readers.

<table>
<thead>
<tr>
<th>Program blocks</th>
<th>Command / bit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FB 45</td>
<td>Init_run</td>
<td>The parameter “option 1” can be set to “0” or “2”. Further input is unnecessary.</td>
</tr>
<tr>
<td>Read</td>
<td>Reading optical data</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Address “0x0000”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 bytes for length information is reported in the result, max. net data 231 bytes; no error message if the length is exceeded</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Address “0x0002”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No length information in the result; max. net data 233 bytes</td>
<td></td>
</tr>
<tr>
<td>SLG-Status</td>
<td>Fetch the status from the optical handheld reader (sub-command “13”)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The type of the optical handheld reader is displayed.</td>
<td></td>
</tr>
<tr>
<td>Ident blocks</td>
<td>Read</td>
<td>Reading optical data</td>
</tr>
<tr>
<td></td>
<td>• Address “0x0000”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 bytes for length information is reported in the result, max. net data 227 bytes; no error message if the length is exceeded</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Address “0x0002”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>No length information in the result; max. net data 229 bytes</td>
<td></td>
</tr>
<tr>
<td>Reset_MV</td>
<td>The input value for the “Program” parameter is unnecessary.</td>
<td></td>
</tr>
<tr>
<td>Reader_Status</td>
<td>Fetch the status from the optical handheld reader (ATTRIBUTE “0x8D”)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The type of the optical handheld reader is displayed.</td>
<td></td>
</tr>
</tbody>
</table>

You will find more information on programming in the function manual “FB 45”.

Notes on the commands and functions

Init_run

With “Init-run” (RESET command) the connection to the optical handheld reader is established. In the instance DB of the Ident profile or MOBY_DB you can read out the firmware version of the RF170C. A successful connection establishment is indicated by 3 signal tones of the optical handheld reader. The RESET command does not have reader-specific parameters and triggers deletion of the buffers on the optical handheld reader.

After the “Init_run” the handheld reader is ready for operation.

If the connection is not established or the connection attempt is incorrect, the FB outputs the error message “Error_MOBY = 03” or ”0xE4FE03” with the Ident profile.
Appendix
A.2 Connection of optical handheld readers or serial devices

Read
If the "Read" command is started, the data that the RF170C has already received from the handheld reader is transferred to the controller in the Read acknowledgment.

If no "Read" has yet been sent, the presence bit ("TP" or "ANZ_MDS_present") informs that new data has been scanned in and is available to be fetched with a "Read" command on the RF170C.

SLG-Status/Reader_Status
With "SLG-Status" (sub-command "13") or "Reader_Status" (ATTRIBUTE "0x8D") the device status of the optical handheld reader can be obtained. The following information is contained in the acknowledgment of the status command sent by the CM (response of the handheld reader):

Table A- 9 Structure of the “Status” acknowledgment frame of the optical handheld reader

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>iVVVVWWWWXXXSSSSSSSSSAOODYYYYYHHIIIIJJJKKKKLLL&lt;TAB&gt;Z…Z</td>
<td>Indicates that data contains the zero-terminated Reader information string (of printable ASCII characters and TAB) in the following format:</td>
</tr>
<tr>
<td>0xD</td>
<td>is reserved</td>
</tr>
<tr>
<td>I</td>
<td>indicates &quot;I&quot; string output</td>
</tr>
<tr>
<td>VVVV</td>
<td>is the application firmware version number</td>
</tr>
<tr>
<td>WWWW</td>
<td>is the core application firmware version number</td>
</tr>
<tr>
<td>XXXX</td>
<td>is reserved</td>
</tr>
<tr>
<td>SSSSSSSSSSS</td>
<td>is the Reader’s serial number (ten digits)</td>
</tr>
<tr>
<td>A</td>
<td>is the current execution state: &quot;A&quot; means core is running</td>
</tr>
<tr>
<td>OO</td>
<td>is the OEM identifier</td>
</tr>
<tr>
<td>D</td>
<td>is the display type: &quot;0&quot; is no display device</td>
</tr>
<tr>
<td>YYYY</td>
<td>is reserved</td>
</tr>
<tr>
<td>HH</td>
<td>is the hardware revision</td>
</tr>
<tr>
<td>IIII</td>
<td>is the hardware type identifier: Reports the value in register &quot;0x21b&quot;</td>
</tr>
<tr>
<td>JJJJ</td>
<td>is the boot application version</td>
</tr>
<tr>
<td>KKKK</td>
<td>is the operating system kernel version</td>
</tr>
<tr>
<td>LLLL</td>
<td>is the root file-system version</td>
</tr>
<tr>
<td>&lt;TAB&gt;</td>
<td>is the ASCII TAB character</td>
</tr>
<tr>
<td>Z…Z</td>
<td>is the OEM decoder version: a null terminated string of printable ASCII characters</td>
</tr>
</tbody>
</table>

Note
Connection error to the reader
With the MV340, if the trigger button of the reader is pressed for longer than 30 seconds, a message appears on the controller indicating an unconnected optical handheld reader. The message is no longer reported when the trigger button is released.
Appendix

A.2 Connection of optical handheld readers or serial devices

See also
Migration of an RFID project with FB45 from S7-300/400 to S7-1500

A.2.5 Functions and commands of serial devices

With the "Freeport protocol" the communications module RF170C RS-422/RS-232 has a further interface setting. The "Freeport protocol" allows communication between any serial field device (e.g. barcode scanner, intelligent sensor or other serially connected automation component) and the Et 200pro. One or two field devices of the same type can be operated with an RF170C via RS-232 or RS-422.

The parameter assignment options for the protocol are descried in section ""Module parameters" parameter group (Page 28).

Functions and commands

Communication can be achieved using the function block FB 45. The "Write" command handles the sending of data and the "Read" command the reception. The maximum length of the frames (header and data) is 233 bytes or 229 bytes with the Ident profile.

Table A- 10 Compatible controllers/program blocks

<table>
<thead>
<tr>
<th>Program blocks</th>
<th>Controllers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S7-300 / S7-400 and STEP 7 V5.5</td>
</tr>
<tr>
<td>FB 45</td>
<td>Yes</td>
</tr>
<tr>
<td>Ident profile/Ident blocks as of V2.0</td>
<td>Yes</td>
</tr>
</tbody>
</table>

¹ Via application example; in preparation

Table A- 11 Overview of the commands

<table>
<thead>
<tr>
<th>Program blocks</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FB 45</td>
<td>Init_run</td>
<td>The parameter “option 1” can be set to “0” or “2”. Further input is unnecessary.</td>
</tr>
<tr>
<td></td>
<td>Read</td>
<td>The address must be specified as “0x0000”. The length of the valid data is entered in the first 2 bytes of the result. The user data is entered starting at the third byte. Max. net data 231 bytes; no error message if the length is exceeded</td>
</tr>
<tr>
<td></td>
<td>Write</td>
<td>The address must be specified as “0xFFFF”. Max. net data 233 bytes (without length information); no error message if the length is exceeded</td>
</tr>
</tbody>
</table>
A.2 Connection of optical handheld readers or serial devices

<table>
<thead>
<tr>
<th>Program blocks</th>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ident blocks</td>
<td>Read</td>
<td>Read data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Address &quot;0x0000&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 bytes for length information is reported in the result, max. net data 227 bytes; no error message if the length is exceeded</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Address &quot;0x0002&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No length information in the result; max. net data 229 bytes</td>
</tr>
<tr>
<td>Write</td>
<td></td>
<td>The address must be specified as “0x0000”. Max. net data 194 bytes (without length information); no error message if the length is exceeded</td>
</tr>
<tr>
<td>Reset_Reader</td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

You will find more information on programming in the function manual "FB 45".

Connecting

Cabling

For cabling any devices, you will find the pin assignment in section "Connecting cables (Page 53)". Suitable connectors and cables for self assembly can be ordered according to section "Article numbers RF170C (Page 65)". Connectors that may be needed on the field devices must be obtained from electrical retailers or the vendor of the device.

Power supply

The connected field device can be supplied with power via the RF170C if the performance data of the RF170C is not exceeded. Note the technical specifications of the RF170C in this respect: 24 V max. 0.8 A or 5 V max. 1.2 A.

See also

Migration of an RFID project with FB45 from S7-300/400 to S7-1500

A.2.6 MOBY mode-specific error messages

The following table provides an overview of the specific error messages with the MOBY mode "MV3xx".

<table>
<thead>
<tr>
<th>MOBY Mode</th>
<th>Block</th>
<th>Error ID</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>MV3xx</td>
<td>FB45</td>
<td>0x05</td>
<td>Unknown command or incorrect command parameter (wrong length information)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0x0D</td>
<td>Address error in the command (= 0000 or 0002)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0x12</td>
<td>Internal communication error</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0x18</td>
<td>&quot;Init_Run&quot; necessary</td>
</tr>
</tbody>
</table>
### A.3 Ordering data

#### A.3.1 Article numbers RF170C

**Communication module and connection module**

<table>
<thead>
<tr>
<th>Name</th>
<th>Article number</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF170C communications module, pack of 1</td>
<td>6GT2002-0HD01</td>
</tr>
<tr>
<td>RF170C connection module, pack of 1</td>
<td>6GT2002-1HD01</td>
</tr>
</tbody>
</table>
RF170C connection module accessories

Table A- 14  RF170C connection module

<table>
<thead>
<tr>
<th>Name</th>
<th>Article number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reader connecting cable MOBY I / E / U</td>
<td>2 m 6GT2091-4FH20</td>
</tr>
<tr>
<td></td>
<td>5 m 6GT2091-4FH50</td>
</tr>
<tr>
<td>Reader connecting cable MOBY D</td>
<td>2 m 6GT2691-4FH20</td>
</tr>
<tr>
<td>Reader connecting cable RF200 / RF300, RF600 / MV400 extension cable</td>
<td>2 m 6GT2891-4FH20</td>
</tr>
<tr>
<td>RF200 / RF300 / RF600 / MV400 / MOBY I / E / U / D</td>
<td>5 m 6GT2891-4FH50</td>
</tr>
<tr>
<td></td>
<td>10 m 6GT2891-4FN10</td>
</tr>
<tr>
<td></td>
<td>20 m 6GT2891-4FN20</td>
</tr>
<tr>
<td></td>
<td>50 m 6GT2891-4FN50</td>
</tr>
<tr>
<td>Reader connecting cable RF200 / RF300M connector on reader at an angle</td>
<td>2 m 6GT2891-4JH20</td>
</tr>
<tr>
<td></td>
<td>5 m 6GT2891-4JH50</td>
</tr>
<tr>
<td></td>
<td>10 m 6GT2891-4JN10</td>
</tr>
<tr>
<td>Connecting cable coiled for MV320 1.6 to 4 m</td>
<td>6GT2191-0BH50</td>
</tr>
<tr>
<td>Connecting cable coiled for MV325/MV340 1.6 to 4 m</td>
<td>6GT2191-0AH50</td>
</tr>
</tbody>
</table>

Table A- 15  Connectors and cables for self assembly

<table>
<thead>
<tr>
<th>Name</th>
<th>Article number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecting cable, communication module - reader, without connector</td>
<td>50 m 6GT2090-4AN50</td>
</tr>
<tr>
<td></td>
<td>120 m 6GT2090-4AT12</td>
</tr>
<tr>
<td></td>
<td>800 m 6GT2090-4AT80</td>
</tr>
<tr>
<td>Connector M12, 8-pin, with screw connectors, male for RF170C</td>
<td>6GT2090-0BE00</td>
</tr>
<tr>
<td>Connector M12, 8-pin, with screw connectors, female for reader</td>
<td>6GT2090-0BD00</td>
</tr>
</tbody>
</table>

A.3.2  Article numbers accessories ET 200pro

You will find the complete ordering overview for the ET 200pro

- in the “ET 200pro Distributed I/O device” operating instructions
- in the "Siemens Industry Mall (https://mall.industry.siemens.com)" or
A.3.3 Further article numbers

Table A-16 Further article numbers

<table>
<thead>
<tr>
<th>Name</th>
<th>Article number</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIMATIC Manual Collection</td>
<td>6ES7998-8XC01-8YE0</td>
<td>Contains all SIMATIC manuals in electronic format</td>
</tr>
</tbody>
</table>
| DVD "Ident Systems Software & Documentation" | 6GT2080-2AA20 | • FB for SIMATIC  
  • 3964R driver for DOS/Windows 95/NT/2000/XP/7  
  • C libraries  
  • PC demo program  
  • RFID documentation  
  • Throughput calculation tool |

A.4 Standards and certifications

Introduction

The general technical specifications contain the standards and test values that RF170C communications module meets in the ET 200pro distributed I/O device and which test criteria the RF170C was tested with.

CE approval

The RF170C communications module meets the general and safety-related requirements of the following EC directives and conforms to the harmonized European standards (EN) for programmable controllers published in the official gazettes of the European Union:

- 89/336/EEC "Electromagnetic Compatibility" (EMC Directive)

Approval

Underwriters Laboratories Inc. in accordance with

- UL 508 (Industrial Control Equipment)
- CSA C22.2 No. 142 (Process Control Equipment)
A.5 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
- Web form for support request ([https://support.industry.siemens.com/My/ww/en/requests](https://support.industry.siemens.com/My/ww/en/requests))
- Internet: E-mail ([mailto:support.automation@siemens.com](mailto:support.automation@siemens.com))

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](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


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/](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](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/).
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A.5 Service & Support
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