

# SIEMENS

## SIMATIC Ident

## RFID systems ASM 456 interface module

## Operating Instructions

<u>Introduction</u>	<b>1</b>
<u>Description</u>	<b>2</b>
<u>Installation</u>	<b>3</b>
<u>Connection</u>	<b>4</b>
<u>Parameterization</u>	<b>5</b>
<u>Diagnostics</u>	<b>6</b>
<u>Firmware update</u>	<b>7</b>
<u>Technical specifications</u>	<b>8</b>
<u>Dimensional drawings</u>	<b>9</b>
<u>Appendix</u>	<b>A</b>

## 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.

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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.

# Table of contents

<b>1</b>	<b>Introduction</b> .....	<b>5</b>
<b>2</b>	<b>Description</b> .....	<b>7</b>
<b>3</b>	<b>Installation</b> .....	<b>11</b>
3.1	Mounting position, mounting dimensions.....	11
3.2	Installing the I/O module .....	12
3.3	Installing the terminal block .....	13
3.4	Replacing labels.....	14
3.5	Removing the ASM 456.....	15
<b>4</b>	<b>Connection</b> .....	<b>17</b>
4.1	Setting the PROFIBUS address .....	18
4.2	Wiring connection block ECOFAST.....	21
4.3	Wiring connection block M12, 7/8".....	25
4.4	Loop-through connection of PROFIBUS DP and supply voltage .....	30
4.5	Connecting an ASM 456 up to functional earth .....	31
<b>5</b>	<b>Parameterization</b> .....	<b>33</b>
5.1	Hardware configuration.....	33
5.2	Parameter setting by means of GSD file .....	35
5.3	Parameter assignment with FB 45/55 and FC 56.....	36
5.3.1	Input parameters for ASM 456.....	36
5.3.2	Table of commands for ASM 456 .....	38
5.4	Parameter assignment with the Ident profile and FB 101/116/132 .....	40
5.4.1	Input parameters for ASM 456.....	40
5.4.2	Table of commands for ASM 456 .....	41
<b>6</b>	<b>Diagnostics</b> .....	<b>43</b>
6.1	Diagnosis using LEDs.....	43
6.2	Parameterization of the diagnostics.....	45
6.3	Structure of the diagnostics frame .....	47
<b>7</b>	<b>Firmware update</b> .....	<b>49</b>
<b>8</b>	<b>Technical specifications</b> .....	<b>53</b>
<b>9</b>	<b>Dimensional drawings</b> .....	<b>55</b>

<b>A</b>	<b>Appendix .....</b>	<b>57</b>
	A.1 Connecting cables .....	57
	A.1.1 Routing of standard cables .....	57
	A.1.2 Self-assembled cables .....	59
	A.2 Ordering data .....	60
	A.3 Service & Support .....	62

# Introduction

## Purpose of these operating instructions

The information provided in these operating instructions will enable you to start up and operate the interface module ASM 456 on the PROFIBUS DP as a DP slave.

## Basic knowledge required

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

## Scope of the manual

The operating instructions apply to interface module ASM 456.

## Changes compared with predecessor version (Edition 04/2013)

Revised and extended edition:

- Addition of Ident profile
- Addition of the readers RF680R, RF685R
- Revision of graphics

## Position in the information landscape

- In addition to these operating instructions, you require the operating instructions for the DP master used.
- You will find information on programming the module, and a complete description of errors/faults, in the descriptions of the blocks FB 45/56 or FC 56 and in the function manual "Ident profile and Ident blocks".
- The manuals of the relevant product family contain information on the readers and code readers to be connected.
- Special information on parameter assignment of the RF620R/RF630R readers in conjunction with the ASM 456 interface module can be found in the "Configuration Manual RF620R/RF630R".
- Special information of parameter assignment of the readers RF680R/RF685R in conjunction with the ASM 456 interface module can be found in the "Configuration Manual RF650R/RF680R/RF685R".

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

## Conventions

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

Reader	Write/read device SLG , code 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 interface module ASM 456. They comprise introductory chapters and reference chapters (e.g. technical data).

The operating instructions include the following subject areas:

- Connecting the interface module ASM 456
- Parameterizing the interface module ASM 456
- Diagnostics information
- Display elements of interface module ASM 456
- Description of the firmware update
- Technical data and dimensional drawings of interface module ASM 456
- Ordering data

## Recycling and disposal

- Due to its non-toxic equipment, interface module ASM 456 can be recycled.
- Contact a certified electronic-waste disposal company to recycle and dispose of your old equipment in an environment-friendly manner.

## Description

### Area of application

The ASM 456 interface modules are slave modules for the operation of RFID readers and code readers via PROFIBUS DP-V1 on any controllers.



Figure 2-1 Interface module ASM 456 with ECOFAST or M12, 7/8" terminal block

When operating the interface module with a SIMATIC S7, convenient function blocks are available to the user.

The following RFID systems and code reader systems can be operated with the ASM 456.

- RF200 (normal addressing)
- RF300 (normal addressing, filehandler)
- RF600 (RF620R/RF630R, RF680R/RF685R)
- MOBY D
- MOBY E
- MOBY I (normal addressing, filehandler)
- MOBY U (normal addressing, filehandler)
- MV400 code readers

## Features

The ASM 456 provides simple connection technology. Optimum data throughput can be achieved through acyclic data traffic on the PROFIBUS DP V1 even when using large PROFIBUS configurations. The minimum cyclic data load of the ASM 456 on PROFIBUS provides the user with the guarantee that other PROFIBUS nodes (e.g. DI/DO) can still be processed at great speed.

Up to 2 readers can be operated at the same time on the ASM 456. This allows you to start a command at the same time on 2 readers (using the corresponding FB/FC).

The transponder data is accessed using the physical addressing of the transponder. In SIMATIC S7, the FBs 45/55/101/116/132 and FC 56 as well as the Ident profile are available for this purpose. The functions provide the S7 user with a simple-to-use interface with powerful commands (processing one complete transponder with one command; command linking; S7 data structures using UDTs).

The MOBY filehandler is also implemented on ASM 456. The file handler is a file administration system similar to DOS for the Ident system MOBY I/U and RF300. It consists of one program which is executed on the interface module. For the SIMATIC application FC 56 and the RFID standard profile (S7) are available.

## Other features

- Degree of protection IP67
- System integration with ECOFAST or M12, 7/8" concept
- T functionality, that is, a component can be replaced without adversely affecting other modules with regard to bus communication and voltage supply
- Standardized PROFIBUS user interface for Ident technology with Ident profile
- Firmware update
- PROFIBUS interface module up to 12 Mbit/s with automatic transfer rate detection
- Parameterizable device-related diagnostics data with text display
- Support for I&M functionality:

A mechanism for reading out information via the module and saving system information such as function, installation date, installation location, and comments.

- Master redundancy supported when operation is on Y link
- Operation on SIMOTION via SCOUT V4.0

You will find detailed information on this in the function manual SIMOTION, Standard functions for RFID systems

(<https://support.industry.siemens.com/cs/ww/en/view/27002208>).



Design

The ASM has a terminal block for connecting up to the PROFIBUS DP which is available as an option and the ECOFAST version or M12, 7/8".

The following figure shows the basic design of the ASM 456.

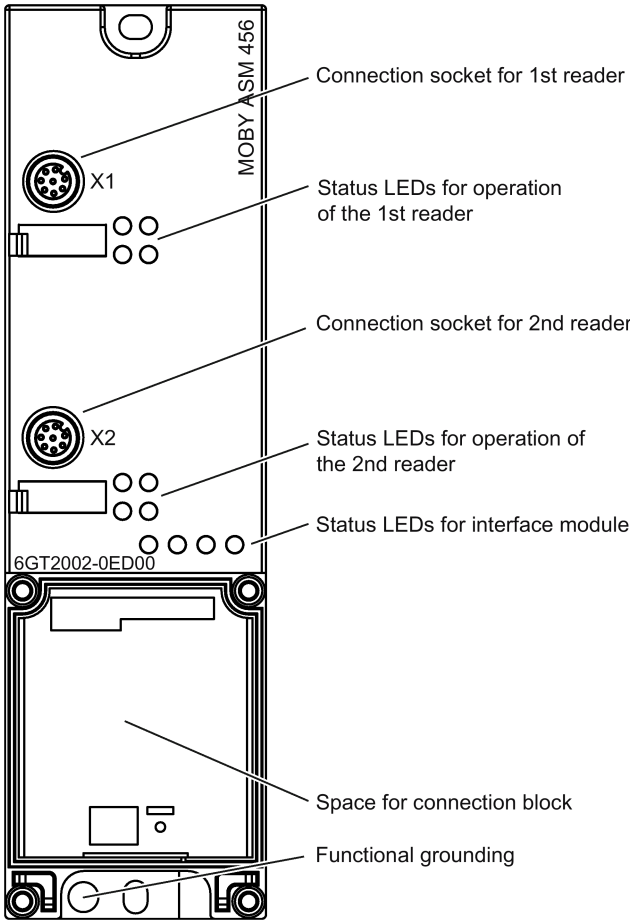


Figure 2-2 Basic design of the ASM 456

## Potential

Ungrounded installation of the system is possible with the ASM 456. The following circuit shows the internal relationships of the reference potentials.

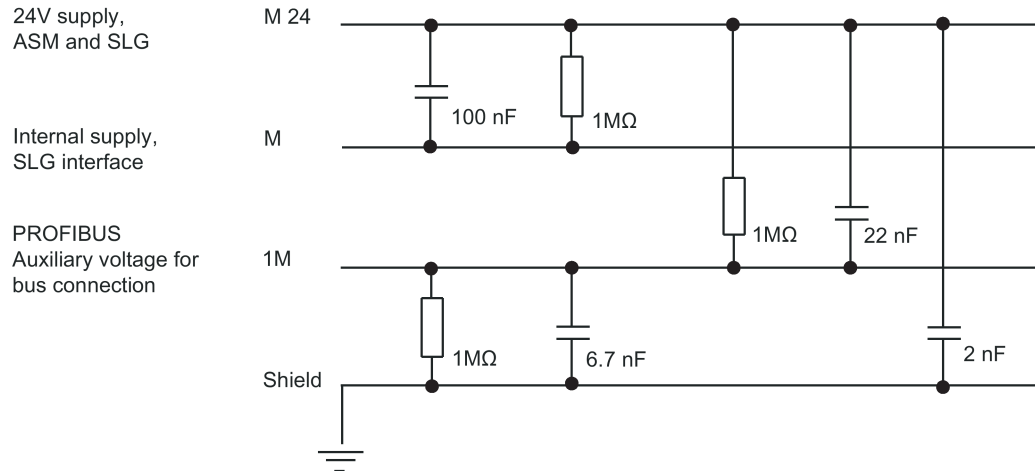


Figure 2-3 Potential isolation for ASM 456 (ground to shield)

## Integration

The following figure shows how the ASM 456 is integrated in an automation system.

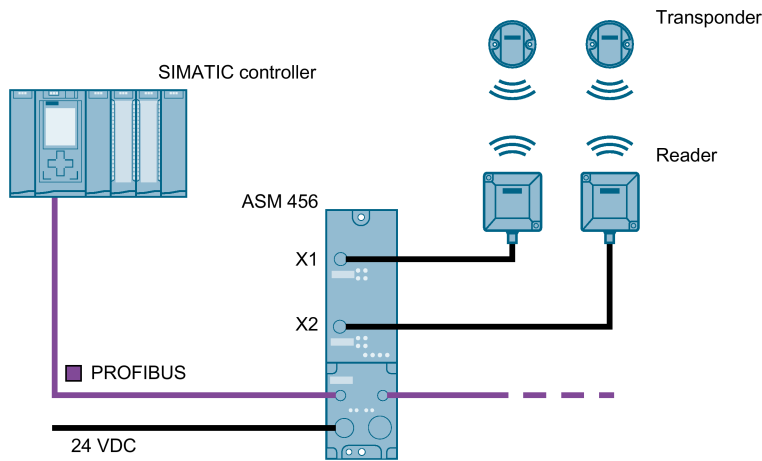


Figure 2-4 Sample configuration ASM 456

The ASM 456 is linked into STEP 7 by means of a GSD file. The ASM can then be configured using HW Config of the SIMATIC Manager, the device configuration of the TIA Portal or another PROFIBUS tool (e.g. operating mode). You will find the GSD file on the DVD "RFID Systems, Software & Documentation" or on the Internet on the pages of theIndustry online support (<https://support.industry.siemens.com/cs/ww/en/view/72341852>).

# Installation

## 3.1 Mounting position, mounting dimensions

### Mounting position

There are no restrictions regarding the mounting position of the ASM 456.

### Mounting and clearance dimensions

The following table shows the installation dimensions and clearance distances.

Table 3- 1 Mounting dimensions

	<b>Dimensions</b>
Mounting width	60 mm
Mounting height	210 mm
Mounting depth	<ul style="list-style-type: none"> <li>• with ECOFAST terminal block: 60 mm (without connector)</li> <li>• with terminal block M12, 7/8" 54 mm (without connector)</li> </ul>

## 3.2 Installing the I/O module

### Simple installation

The ASM 456 is designed for easy mounting.

### Properties

- The I/O module should be mounted on a solid surface.
- The I/O module can be prewired (without installed terminal block).

### Requirements

The following table shows the screws suitable for installing the I/O modules:

Table 3- 2 Screw types

Screw type	Description
M5 cylinder head screw according to ISO 1207 / ISO 1580 (DIN 84 / DIN 85)	The minimum screw length must be 20 mm. You also need a set of DIN 125 washers.
Cylindrical head screw with M5 hexagon socket according to DIN 912	

### Tools required

Medium-sized cross-head screwdriver or 8 mm socket wrench.

### Procedure

Screw-mount the I/O module on a plane surface.

Screw the I/O module onto the panel at both mounting fixtures at the front top and bottom.  
Tightening torque: 3 N/m.

## 3.3 Installing the terminal block

### Properties

The terminal block is used to connect the ASM 456 to PROFIBUS DP and supplies power to the device.

### Requirements

The base unit is already mounted.

### Tools required

Recessed head screwdriver, medium size

### Installing the terminal block

1. Fit the terminal block onto the base unit.
2. Screw the terminal block onto the base unit (torque 1 to 1.3 Nm). Tighten the screws already in the terminal block uniformly.

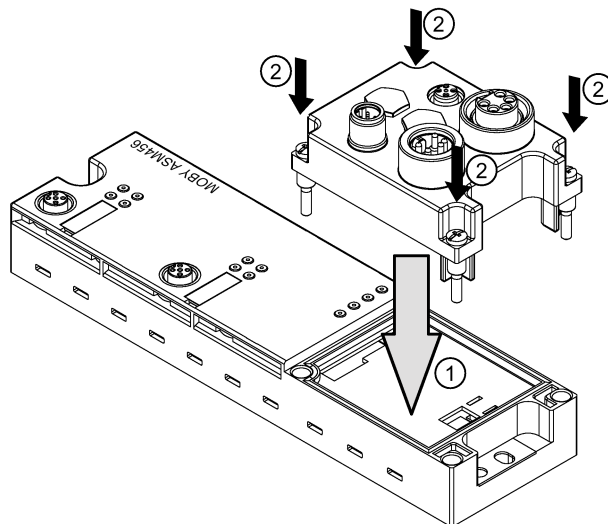


Figure 3-1 Plug the terminal block onto the base unit and screw it tight

### Note

Degree of protection IP65, IP66 or IP67 is only guaranteed when the terminal block is screwed to the base unit.

## 3.4 Replacing labels

### Properties

You can use the labels to identify every channel on the base unit and the terminal block. You will find the labels in the base unit when it is supplied.

- 8 labels on the base unit
- 1 label on the terminal block

### Requirements

You can order replacement labels. For order numbers, refer to the appendix.

### Tools required

2.5 to 4 mm screwdriver

### Replacing labels

1. Push the screwdriver into the small opening of the label at an angle, then lever it out.

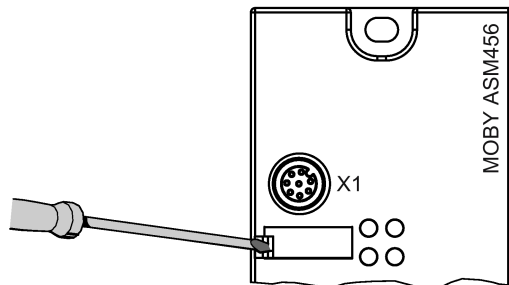


Figure 3-2 Removing labels

2. Push the label into the module using your fingers.

## 3.5 Removing the ASM 456

### Procedure

The ASM 456 is wired up and operational. Follow the steps below to remove the ASM:

1. Switch off the supply voltage for the ASM 456.
2. Disconnect the wiring from the terminal block.
3. Undo the 4 securing screws of the terminal block.
4. Remove the terminal block from the basic device.
5. Disconnect the wiring on the basic device.
6. Remove the securing screws from the basic device.





## NOTICE

### Proper use

When connecting non-specified devices to the ASM 456, it is possible that the connected device may be destroyed.

## PROFIBUS connection system

You will find general instructions on setting up a PROFIBUS network in the manual "SIMATIC NET PROFIBUS network manual (<https://support.industry.siemens.com/cs/ww/en/view/35222591>)". You will find information on setting up a PROFIBUS network with STEP 7 in the manual "PROFIBUS with STEP 7 (<https://support.industry.siemens.com/cs/ww/en/view/59193579>)".

## Reader connector system

One reader always occupies one M12 connector socket (X1, X2) on the ASM 456. A pre-assembled cable therefore permits the optimum and simple connection of the reader. The standard version connection cable is 2 m long.

The following configuration graphic shows an example of the setup of an RFID system with the ASM 456

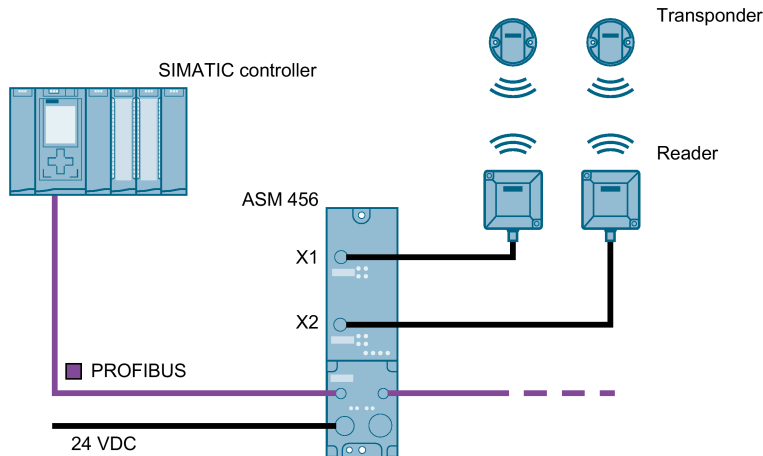


Figure 4-1 Overview of wiring

4.1 Setting the PROFIBUS address

<b>NOTICE</b>
<b>Number of operable readers/reading points</b>
Note that you can normally connect two readers to the ASM 456 and operate them. The readers RF680R and RF685R are an exception. On the ASM 456, only one RF680R/RF685R reader can ever be operated at connector socket X1 and one reading point. This ensures that the maximum permitted total current of 750 mA is not exceeded. Digital I/Os must always be operated with an external power supply.

<b>NOTICE</b>
<b>Voltage drop with extension cables</b>
Note that using extension cables (connection between communications module ↔ Reader, M12 connector eight-pin socket, 160 mohm/m) depending on the current consumption may lead to a voltage drop on the reader. This voltage drop can mean that the required minimum voltage on the reader is below the required 20 V. Cable lengths > 20 m (6GT2891-4FN50) are not permitted for the RF680R/RF685R readers.

## 4.1 Setting the PROFIBUS address

### Properties

With the PROFIBUS address, you specify the address at which the ASM 456 distributed I/O system is addressed on PROFIBUS DP.

### Requirements

- The PROFIBUS DP address for the ASM 456 is set on the connection block.
- Each address can be assigned only once on PROFIBUS DP.
- The PROFIBUS address set must match the PROFIBUS address specified in the configuration software (for the ASM 456).
- A change to the PROFIBUS DP address is only valid after the power has been switched ON on the ASM 456.

**Tools required for M12, 7/8" connection block**

- Socket wrench 14 mm
- Screwdriver 2.5 mm

**Setting PROFIBUS DP addresses on connection block M12, 7/8"**

Permitted PROFIBUS DP addresses are 1 to 99.

1. Remove the two seal caps from the rotary switches (if necessary, use a 14 mm socket wrench).
2. Set the required PROFIBUS address on the rotary switches using a screwdriver.
  - Lower rotary switch: 1st position
  - Upper rotary switch: 10th position
3. Screw the two seal caps back onto the rotary switches (torque: 0.5 to 0.8 Nm.)

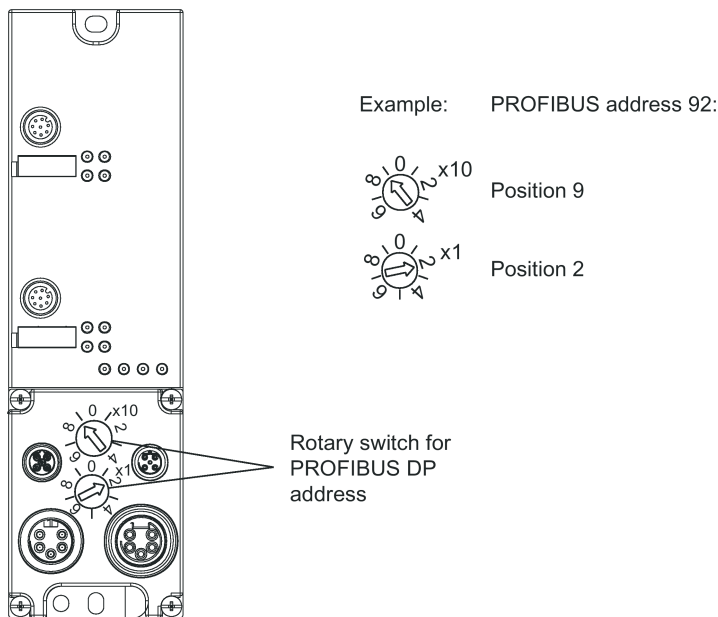


Figure 4-2 Setting PROFIBUS addresses on connection block M12, 7/8"

**Setting PROFIBUS DP addresses on connection block ECOFAST**

Permitted PROFIBUS DP addresses are 1 to 99.

1. Loosen the screw connection of the configuration connector with the ECOFAST terminal block and pull off the connector.

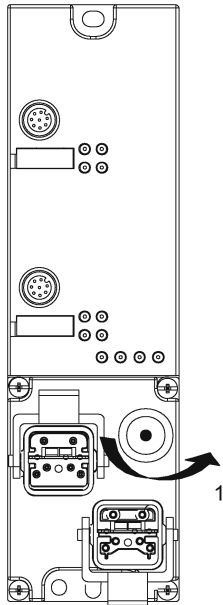


Figure 4-3 Loosening the configuration plug's screw connection

2. Loosen the screw connection of the cap on the configuration connector and pull it off.
3. Set the PROFIBUS address with the DIL switches.

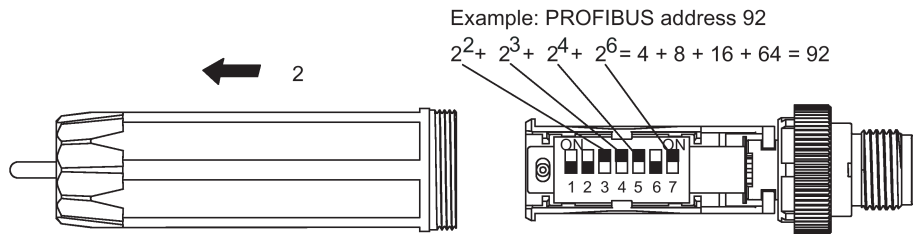


Figure 4-4 Setting the PROFIBUS address on the configuration plug

4. Screw the cover cap back down, plug the configuration plug onto the connection block and screw the configuration plug to the connection block.
5. After starting up the first time, the connector can be removed again. The PROFIBUS address remains stored on the ASM 456. To ensure it remains watertight, the plug should be sealed with a screw cap.

## 4.2 Wiring connection block ECOFAST

### Properties

- Connect up the supply voltages and PROFIBUS DP on the ECOFAST connection block using an ECOFAST connector plug.
- You can loop the supply voltages and PROFIBUS DP through via another ECOFAST connector plug.
- The first and last ASM 456 (consumer) on the PROFIBUS DP must be terminated with the terminating resistor.

### Requirements

You have set the PROFIBUS address (according to your project).

### Required tools

Screwdriver, stripping and crimping tool for wiring the ECOFAST connector plug, if you are not using pre-assembled ECOFAST connector plugs.

### Accessories required

- Pre-assembled ECOFAST hybrid cable with ECOFAST connector. The cable is available in different lengths.
- If you are not using a pre-assembled ECOFAST hybrid cable (see table below):
  - Han Brid Cu cable connector and/or Han Brid Cu cable socket
  - ECOFAST hybrid cable
- Terminating resistor (ECOFAST) for PROFIBUS DP
- For order numbers, refer to "Ordering data" section.

**Wiring ECOFAST connector plugs**

The table below contains the connector assignment for the ECOFAST connector plugs

Table 4- 1 Connection assignment for ECOFAST connector plugs

Pin	Assignment	View of ECOFAST connector plug (wiring end for supply and loop-through connection)
A	PROFIBUS DP signal A	
B	PROFIBUS DP signal B	
1	Electronics/encoder supply (1L+) (voltage supply for ASM 456 and write/read device)	
2	Ground for electronic / encoder supply (1M)	
3	Load voltage ground (2M)	
4	Load voltage supply (2L+) (unused on ASM 456)	
<p>*) You will find the assembly instructions in the packaging of the Han Brid Cu cable connector and/or Han Brid Cu cable socket.</p>		

### Connecting up ECOFAST connector plugs

1. Press down the interlock for ECOFAST connector plugs on the connection block.
2. Connect the ECOFAST connector plugs (for 1L+ and the PROFIBUS DP) into the sockets on the connection block. In so doing, note the mechanical coding of the connector plugs for supply and loop-through connection.
3. Press up the interlock for ECOFAST connector plugs.

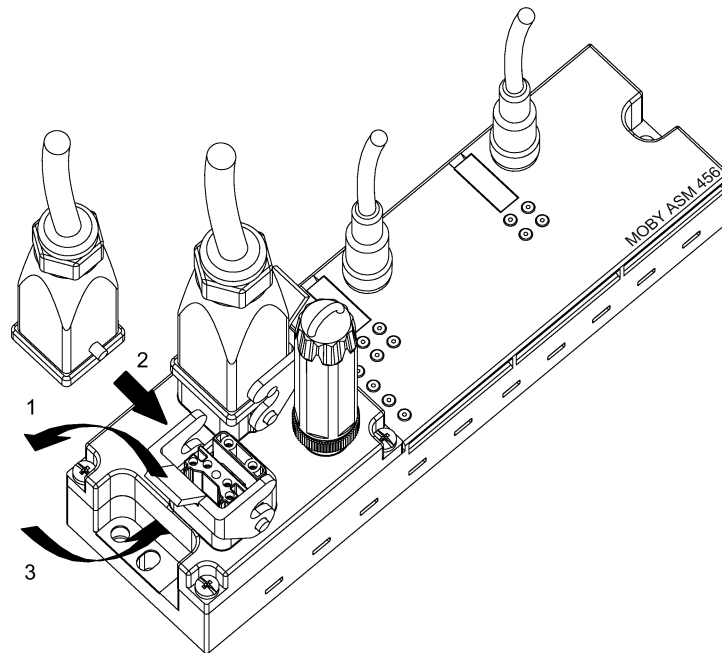


Figure 4-5 Connecting up ECOFAST connector plugs

### Connecting up ECOFAST terminating resistor

A PROFIBUS DP segment must be terminated at both its ends, that is, on the first and last segment node, with its characteristic impedance.

Connect the terminating resistor at the last bus node to the right connector plug of the corresponding ECOFAST connection module. For procedure refer to connecting up ECOFAST connector plugs For order number, refer to "Ordering data" section.

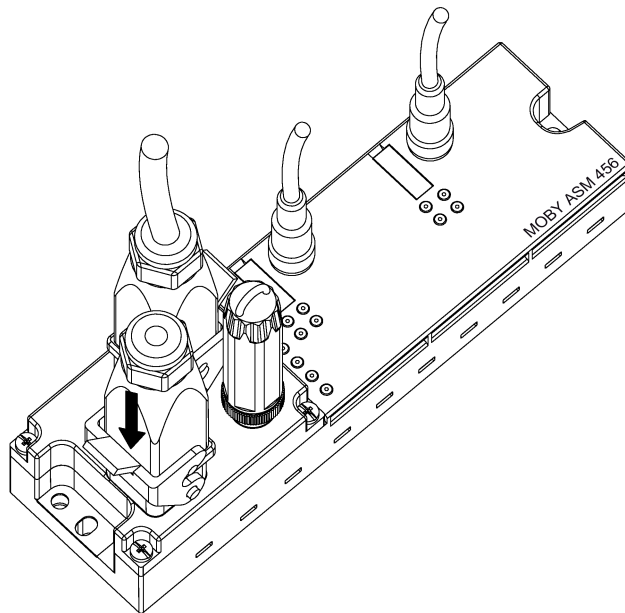


Figure 4-6 Connecting the ECOFAST terminating resistor

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#### Note

The terminating resistor is supplied by the electronic / encoder supply (1L+)

Perfect functioning of the terminating resistor is only guaranteed if the electronics/encoder supply (1L+) is within the tolerance range of 20 - 30 V.

---

### Sealing unused sockets

Seal all unused ASM 456 sockets using caps in order to achieve degree of protection IP65, IP66 or IP67. For order numbers, refer to "Ordering data" section.



## 4.3 Wiring connection block M12, 7/8"

### Properties

- Connect the supply voltages and PROFIBUS DP to connection block M12, 7/8".
  - M12 connection: PROFIBUS DP
  - 7/8" connection: Supply voltages
- You can loop the supply voltages and PROFIBUS DP through via M12 and/or 7/8" round sockets.
- On nodes (ASM 456) at the beginning or end of a PROFIBUS DP chain, a terminating resistor must be turned on.

### Requirements

- Wire connection block M12, 7/8" when the supply voltage is switched off.
- The PROFIBUS address is set according to your configuration, and the terminating resistor is switched on if required.

### Tools required

Stripping tool, screwdriver for wiring the M12 or 7/8" connector if you are not using a pre-assembled connector.

### Required accessories

- Preassembled cables with connectors
- If you do not use preassembled connectors:
  - M12: 2-core cable, shielded (bus cable) and M12 connector (see "Connection assignment for M12 connector (PROFIBUS DP)" table)
  - 7/8": 5-core cable and 7/8" connector (see "Connection assignment for 7/8" connector (supply voltage)" table)
- M12 terminating resistor for PROFIBUS DP
- For order numbers, refer to the section "Ordering data".

**Wiring M12, 7/8" connector**

The tables below contain the connector assignment for the M12, 7/8" connector:

Table 4- 2 Connection assignment for M12 connector (PROFIBUS DP)

Pin	Assignment	View of M12 connector (wiring side)
1	Supply positive (P5V2) *	
2	Data line A (RxD / TxD-N)	
3	Data reference potential (M5V2) *	
4	Data line B (RxD / TxD-P)	
5	Shield	
Thread	Shield	
<p>*) Can only be used for the M12 terminating resistor. Looping the voltage through to the next connector via a 5-core cable is not permitted.</p>		

Table 4- 3 Connection assignment for 7/8" connector (supply voltages)

Pin	Assignment	View of 7/8" connector (wiring side)
1	Chassis load voltage supply (2M)	
2	Chassis electronics/sensor supply (1M)	
3	PE	
4	Electronics / encoder supply (1L+) (voltage supply for ASM 456 and write/read device)	
5	Load voltage supply (2L+) (unused on ASM 456)	

**Note**

When connecting up the supply voltage, we recommend the cable specified in the "Ordering data" section (cable 5 x 1.5 mm<sup>2</sup> pre-assembled with 7/8" connectors).

If you want to prepare the cable yourself, you should use a cable with a conductor cross-section of 1.5 mm<sup>2</sup>.

**Connecting up M12, 7/8" connector**

1. Press the connector (M12 or 7/8") into the relevant round socket on the connection block. Make sure the connectors and sockets are properly interlocked (tongue and groove).
2. Use the knurled locking ring to secure the connector.

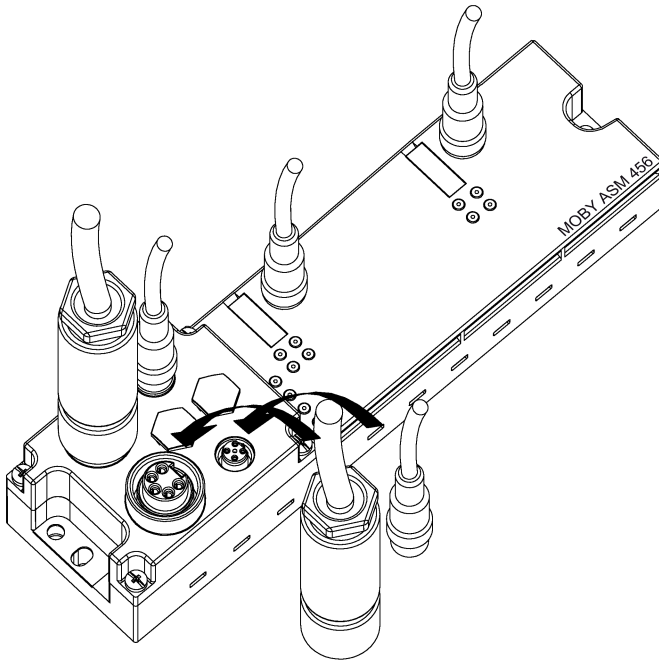


Figure 4-7 Connecting M12, 7/8" connectors

### Connecting up the terminating resistor for PROFIBUS DP

A PROFIBUS DP segment must be terminated at both its ends, in other words, on the first and last node of the segment, with its characteristic impedance.

If the ASM 456 is the **last** PROFIBUS node, then you must terminate PROFIBUS DP with the M12 terminating resistor. For the order number, refer to the section "Ordering data".

1. Plug the M12 terminating resistor into the right-hand M12 circular socket connector **Loop-through** on the terminal block. Make sure the interlock has properly engaged.
2. Use the knurled locking ring to secure the M12 terminating resistor.

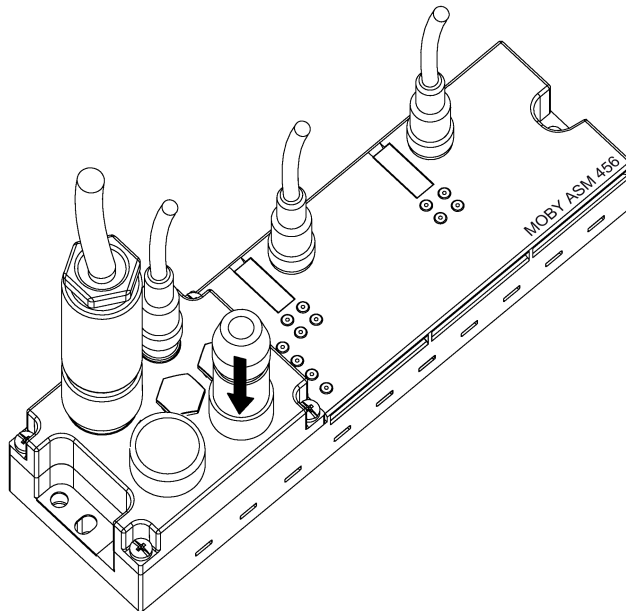


Figure 4-8 Connecting the M12 terminating resistor

### Closing unused sockets

Always close all unused sockets using M12 or 7/8" sealing caps in order to achieve the degree of protection IP65, IP66 or IP67. For order numbers, refer to the section "Ordering data".

## 4.4 Loop-through connection of PROFIBUS DP and supply voltage

### Properties

The terminal block has one connector for the supply and one socket for looping through the supply voltage and PROFIBUS DP. The connector for supply and the socket for loop-through connection are linked with one another internally.

**Result:** If you remove the terminal block during operation, other PROFIBUS nodes do not fail.

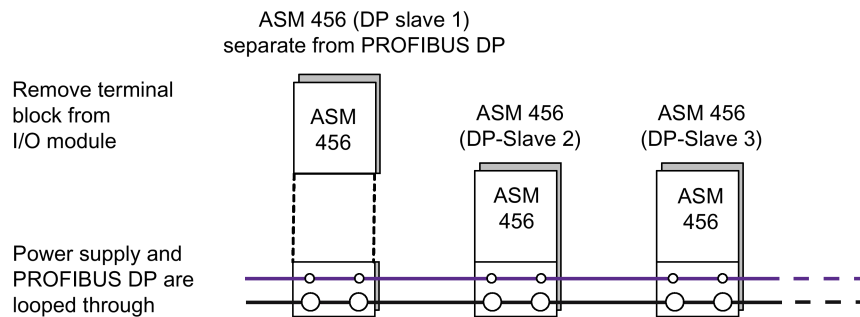


Figure 4-9 Loop-through connection of PROFIBUS DP and supply voltage

#### NOTICE

##### Ensuring the degree of protection

The IP65, IP66 or IP67 degree of protection is no longer guaranteed if the terminal block is removed.

## Notes for wiring

- If you are wiring your structure, then you must take into account the impact of cable length on supply voltage to the ASM 456.

### Example of the ECOFAST terminal block:

When using a 10 m long cable with a diameter of 1.5 mm<sup>2</sup>, the voltage drop is 2.5 V with a loading of 10 A. This corresponds to 0.25 V at a 1 A load.

- The maximum supply current
  - of the ECOFAST terminal block is 8 A at 1L+
  - of the M12, 7/8" terminal block is 6 A at 1L+

These values must not be exceeded.

### NOTICE

#### Damage to the device

If you do not observe the maximum supply currents and the cable cross-sections required, this may result in the cable isolation and contacts overheating and to the device being damaged.

## 4.5 Connecting an ASM 456 up to functional earth

### Properties

The ASM 456 needs to be connected to functional earth. This normally happens automatically when you mount the device on a grounded metal support. If you mount the module on a support that is not grounded, a separate grounding screw must be provided on the communications bus.

This connection to functional earth is also required to discharge any interference currents to ground and for EMC.

### Requirements

Always provide a low-impedance connection to functional earth. The threads of the mounting screw or the contact surface of the mounting nut on the support must not be painted in order to establish a low-impedance connection.

### Tools required

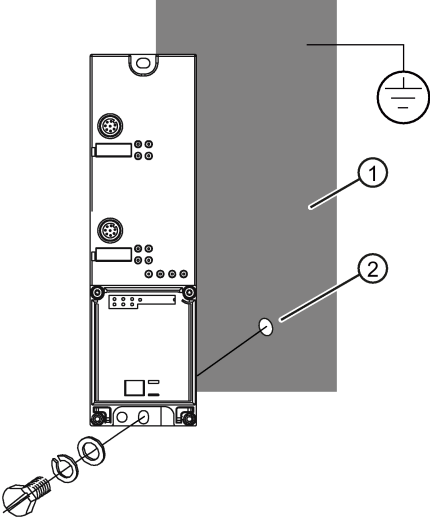
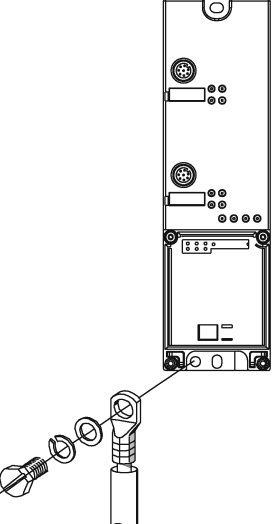
- Screwdriver
- Stripping tool (optional)
- Crimp tool (optional)

4.5 Connecting an ASM 456 up to functional earth

Required accessories (optional)

- M5 x 10 retaining bolt and washers
- Grounding cable (copper braided cable) with minimum cross-section of 4 mm<sup>2</sup>.
- Cable lug

Connecting the ASM 456 to functional earth

Standard grounding via the securing screw	Optional grounding via a grounding cable
<p>1. Mount the module on the grounded, metallic base.</p> <p>① Grounded, metallic base</p> <p>② Unpainted thread or surface of the nut</p>	<p>1. Isolate the grounding cable and secure the cable lug.</p> <p>2. Screw the cable lug on to the communication module (M5 grounding screw). The tightening torque is 3 Nm.</p>
	



# Parameterization

## 5.1 Hardware configuration

The ASM 456 is integrated into the hardware configuration of the SIMATIC Manager, the TIA Portal or other configuration software using the GSD file "SIEM8114.GSD". The file is incorporated into HW Config of the SIMATIC Manager using the "Options > Install new GSD ..." function. The file is incorporated into the project view of the TIA Portal using the "Options > Manage device description file" function. You can incorporate the communications module in your project using the hardware catalog.

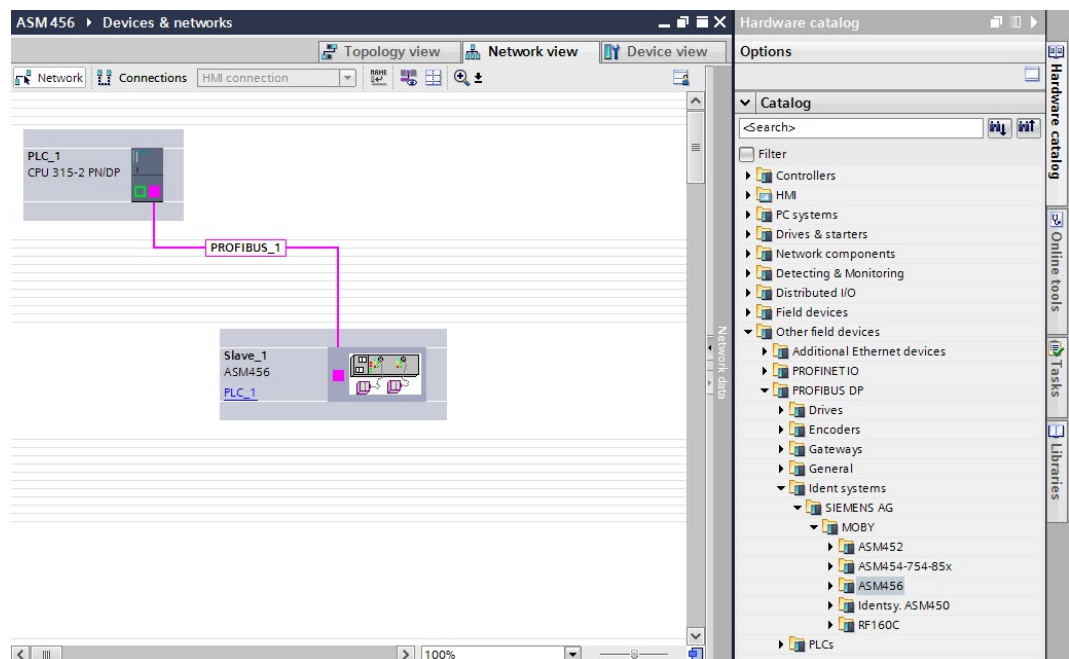


Figure 5-1 Network view in the TIA Portal

Depending on the connected reader, you need to use the appropriate module. With RF680R and RF685R you need to use the module "Word 18 IN/OUT DB-V1", with all other Ident devices, the module "Word:2 IN/OUT DP-V1".

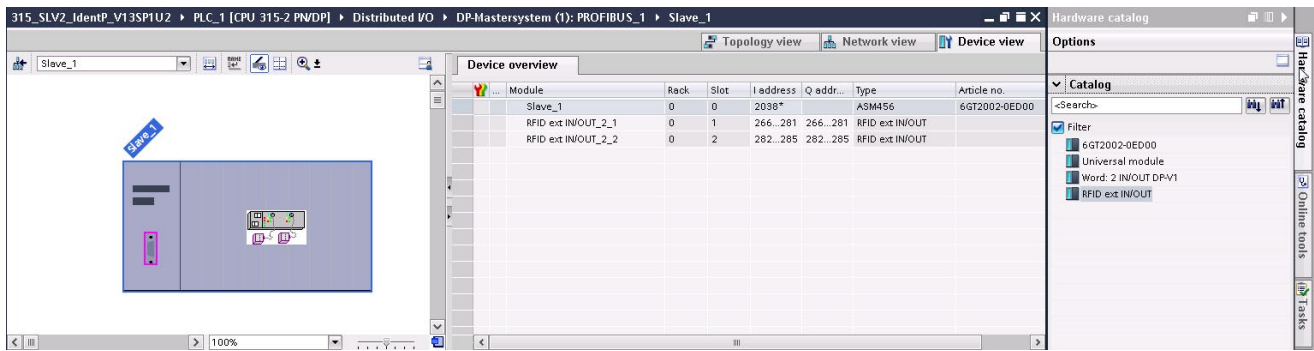


Figure 5-2 Hardware configuration using the TIA Portal

You will find the file on the "RFID Systems Software & Documentation" DVD in the folder "daten\PROFI\_GSD\ASM456".

To allow the configuration software to use the full functionality (diagnostics texts, firmware update), support of GSD revision 5 or higher is required.

The ASM 456 is displayed in the device configuration under "Other field devices > PROFIBUS DP > Ident Systems > SIEMENS AG > MOBY".

## 5.2 Parameter setting by means of GSD file

In addition to the PROFIBUS-relevant control parameters, several MOBY-relevant control parameters are also defined for the ASM 456 in the GSD file. The relevant parameters are set using the "Object properties" of the slave in HW Config or the TIA Portal. The parameters are described in the function manual "FB 45" or "Ident profile and Ident blocks".

The table below shows the possible setting options. Note that the setting options shown in the table depend on the connected reader and selected user mode.

Table 5- 1 Setting the relevant parameters

Parameter name	Value	Note
User Mode	Ident profile/RFID standard profile	Default
	FB 45 / FC 45	-
	FB 55 / FC 55	-
	FC 56	-
MOBY Mode	RF200/RF300/RF600; MV4x0; MOBY U/D	Default
	RF680R/RF685R	-
	MOBY I/E normal addressing	-
	RF300 file handler	-
	MOBY U file handler	only with FC 56 (multitag) or RFID standard profile
MOBY I file handler	-	
Transmission speed	19.2 kBd	-
	57.6 kBd	<sup>1)</sup>
	115.2 kBd	Default <sup>1)</sup>
Diagnostics messages (see section "Diagnostics (Page 43)")	none	Standard diagnostics only
	Hard errors	Hardware-related messages only
	Hard/soft error low priority	All messages
	Hard/soft error high priority	All messages high-priority
Suppression of Error LED	none	Default
	Channel 1	Suppression of startup flashing on channel 1 if no reader is connected there.
	Channel 2	Suppression of startup flashing on channel 2 if no reader is connected there.

<sup>1)</sup> not permitted with MOBY D with write/read device D11S/D12S

## 5.3 Parameter assignment with FB 45/55 and FC 56

### 5.3.1 Input parameters for ASM 456

#### Input parameters for ASM 456 with FB 45

The assignment is made in UDT 10.

Table 5- 2 Input parameters for ASM 456 with FB 45

Address	Name	Permissible values	Comment
+0.0	ASM_address	256, 260, 264, 268, ...	Each ASM 456 occupies four bytes of I/O in the I/O area of the controller.
+2.0	ASM_channel	1, 2	
+8.0	MDS_control	B#16#0, 1	0 = no presence check 1 = presence check
+9.0	ECC_mode	TRUE, FALSE	
+9.1	RESET_long	TRUE, FALSE	TRUE, if MOBY_mode = 5 (MOBY U/D; RF200, RF300, RF600)
+10.0	MOBY_mode	B#16#1, 4, 5, 6, 7, 8, 9, A, B	Special features of the MOBY I dialog (8): <ul style="list-style-type: none"><li>Write/read device must be type SLG4x.</li><li>The VMDS memory size is 16KB. The INIT command for the VMDS must be specified using 4000 hex.</li></ul>
		5	RF300 filehandler
+11.0	scanning_time	MOBY I: B#16#00 ... FF	A value not equal to 00 is only practical if parameters for MOBY_mode have been set accordingly. MOBY D, RF200, RF300 reserved (00)
		MOBY U: B#16#00 ... C8	
+12.0	option_1	B#16#00, 02, 04	
+13.0	distance_limiting	MOBY U (normal transmit power): B#16#05, 0A, 0F, 14, 19, 1E, 23	MOBY U/D RF200, RF300 reserved (00)
		MOBY U (reduced transmit power): B#16#85, 8A, 8F, 94, 99, 9E, A3	
		MOBY D: B#16#02 ... 28	
+14.0	multitag	B#16#1	MOBY U/D, RF200, RF300
+15.0	field_ON_control	MOBY U: B#16#0, 1, 2, 3	MOBY U/D, RF200, RF300
		MOBY D, RF300: B#16#0	
+16.0	field_ON_time	MOBY U: B#16#00 ... FF	MOBY U/D RF200, RF300 reserved (00)
		MOBY D: B#16#00, 01	

You will find special information on the input parameters for ASM 456 with FB45 in combination with the RF620R/RF630R readers in the section "Parameterizing > Parameterizing RF620R/RF630R with FB 45 > Input parameters" in the "Configuration Manual RF620R/RF630R".

## Input parameters for ASM 456 with FC 56

The assignment is made in UDT 10.

Table 5- 3 Input parameters for ASM 456 with FC 56

Address	Name	Permissible values	Comment
+0.0	ASM_address	0, 4, 8, 12, ...	Each ASM 456 occupies four bytes of I/O in the I/O area of the controller.
+2.0	ASM_channel	1	1 channel per ASM
+8.0	MDS IO control	B#16#0, 1, 4, 5	Enable/disable presence check
+9.0	ECC_mode	TRUE, FALSE	TRUE is only permitted when MOBY mode is set to 1
+9.2	priority_RW	TRUE, FALSE	
+9.3	priority_RWD	TRUE, FALSE	
+10.0	MOBY mode	B#16#1, 4, 5, 6	MOBY I/U
+11.0	scanning_time	MOBY I: B#16#00 ... FF MOBY U: B#16#00 ... C8	A value not equal to 00 is only of any use if MOBY mode has been parameterized accordingly
+12.0	SLG_number	B#16#0001 ... FFFF	With FFFF, the test function is switched on
+14.0	distance_limiting	B#16#05, 0A, 0F, 14, 19, 1E, 23	MOBY U
+15.0	multitag	MOBY I: B#16#1 MOBY U: B#16#01 ... 0C	MOBY I/U
+16.0	field ON control	B#16#0, 1, 2	MOBY U
+17.0	field ON time	B#16#00 ... FF	MOBY U

### 5.3.2 Table of commands for ASM 456

#### Table of commands of the ASM 456 with standard addressing (FB 45)

The assignment is made in UDT 20/UDT 30 using the "command" variable.

Table 5- 4 ASM 456 commands with normal addressing

Command code		Description	available in the MOBY system
normal	chained*		
01	41	Write to transponder	all
02	42	Read transponder; read fixed code	all
03	43	Initialize transponder	RF300 / RF620R/RF630R / MOBY U / D
04	44	Reader status	RF200 / RF300 / RF620R/RF630R / MOBY U / D
08	48	Turn off transponder	MOBY U
0A	4A	Switch antenna on/off	RF200 / RF300 / RF620R/RF630R / MOBY U / D
0B	4B	Transponder status	RF200 / RF300 / RF620R/RF630R / MOBY U
*) Chained commands are not supported by all readers. Please note the relevant information in the RFID/MOBY system manuals.			

**ASM 456 instruction table for filehandler addressing (FC 56)**

The assignment is made in UDT 50 using the "command" variable.

Table 5- 5 ASM 456 commands with filehandler addressing

Command	Meaning	command	System
FORMAT CREATE	Formatting the transponder	"I"	MOBY I/U, RF300 filehandler
	Create a new file on the formatted transponder	"B"	
QUEUE-WRITE	Completely initialize the data carrier	"Q"	MOBY I/U, RF300 filehandler
QUEUE-READ	Read several files with one command	"E"	
UPDATE	Write data in file (update file length)	"U"	MOBY I/U, RF300 filehandler
WRITE	Write data in file	"W"	
READ	Read data from file	"R"	
DELETE	Delete file on transponder	"D"	MOBY I/U, RF300 filehandler
ATTRIB	Give file attribute	"Y"	
COVER	Protect transponder structure	"C"	MOBY I/U, RF300 filehandler
DIR	Read transponder directory	"G"	MOBY I/U, RF300 filehandler
MDS-STATUS	Request transponder status	"F"	
END	Terminate communication with the transponder	"K"	MOBY U, RF300 filehandler
TRACE	Absolute reading of the transponder	"T"	MOBY I/U, RF300 filehandler
MOVE	Save system data (DIR + FAT + checksum) in data block	"M"	MOBY I, RF300 filehandler
LOAD	Transfer system data to ASM	"O"	
GET	Read out UID of all transponders	"P"	MOBY U, RF300 filehandler
SET-ANT	Switch antenna of the reader on or off	"A"	
ASM/SLG-STATUS	Request ASM or reader status	"S"	MOBY I/U
RESET	Reset ASM/filehandler; this command is initiated by setting init_run	"X"	
NEXT	Processing of the next transponder	"N"	MOBY I, RF300 filehandler

## 5.4 Parameter assignment with the Ident profile and FB 101/116/132

### 5.4.1 Input parameters for ASM 456

Note that the input parameters of the RFID standard profile differ from those of the Ident profile essentially due to the changed physical address setting of the reader.

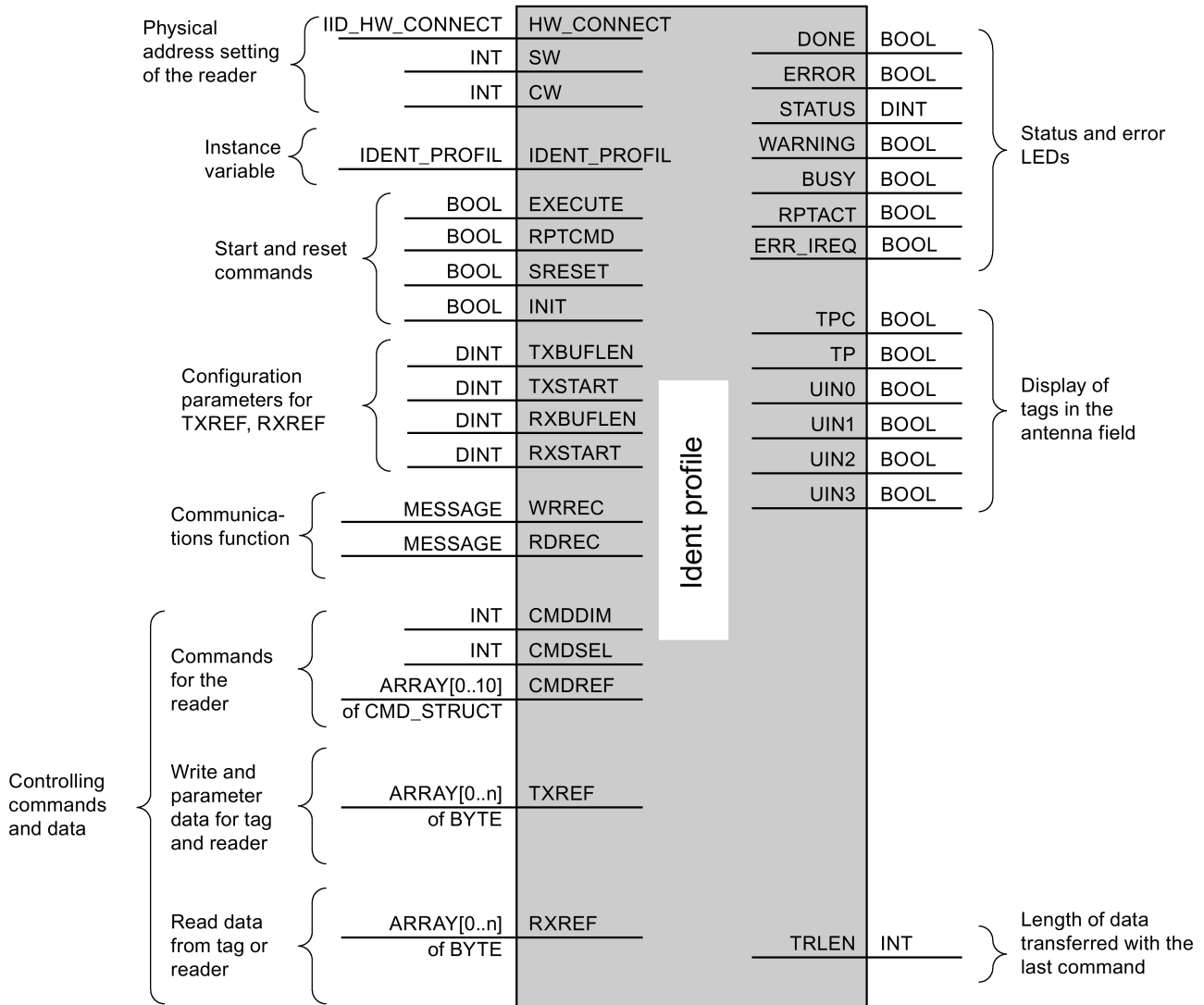


Figure 5-3 Input parameters for ASM 456 with the Ident profile and RFID standard profile with FB 101/116/132



## 5.4.2 Table of commands for ASM 456

### Table of commands of the ASM 456 with Ident profile/RFID standard profile (FB 101/116/132)

Assignment is made in UDT 1 using the "command" variable. Note that some of the commands shown in the table are block-specific and cannot be used with both blocks.

Table 5- 6 Commands of the ASM 456 with Ident profile Ident profile/RFID standard profile

Command	Command code		Description
	HEX	ASCII	
CREATE	68	'h'	Creates a new file.
DELETE	64	'd'	Deletes a file from the transponder.
DEV-STATUS	74	't'	Reads out the status of a communications module
GET-DIRECTORY	6D	'm'	Reads the directory from the transponder
MEM-STATUS	73	's'	Reads out the status of a transponder
NEXT	6E	'n'	Does not permit any more operations on a transponder
READ	72	'r'	Reads the data of a file
SET-ATTRIBUT	6F	'o'	Sets/modifies the attributes belonging to a file
UPDATE	75	'u'	Writes data to a file
WRITE	77	'w'	Writes data to a file
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.
READER-STATUS	74	't'	Reads out the status of the communications module/reader.
TAG-STATUS	73	's'	Reads out the status of a transponder.
INVENTORY	69	'i'	Requests a list of all currently accessible transponders within the antenna range.
FORMAT	66	'f'	Initializes the transponder.
PUT	65	'e'	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.
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.
EDIT-BLACKLIST	7A	'z'	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'	RF680R/RF685R: The entire TagIDs are read out from the black list.

Command	Command code		Description
	HEX	ASCII	
READ-CONFIG	61	'a'	Reads out the parameters from the communications module/reader.
WRITE-CONFIG	78	'x'	Sends new parameters to the communications module/reader.

## Diagnostics

### 6.1 Diagnosis using LEDs

The following figure shows details of the LEDs of the ASM 456.

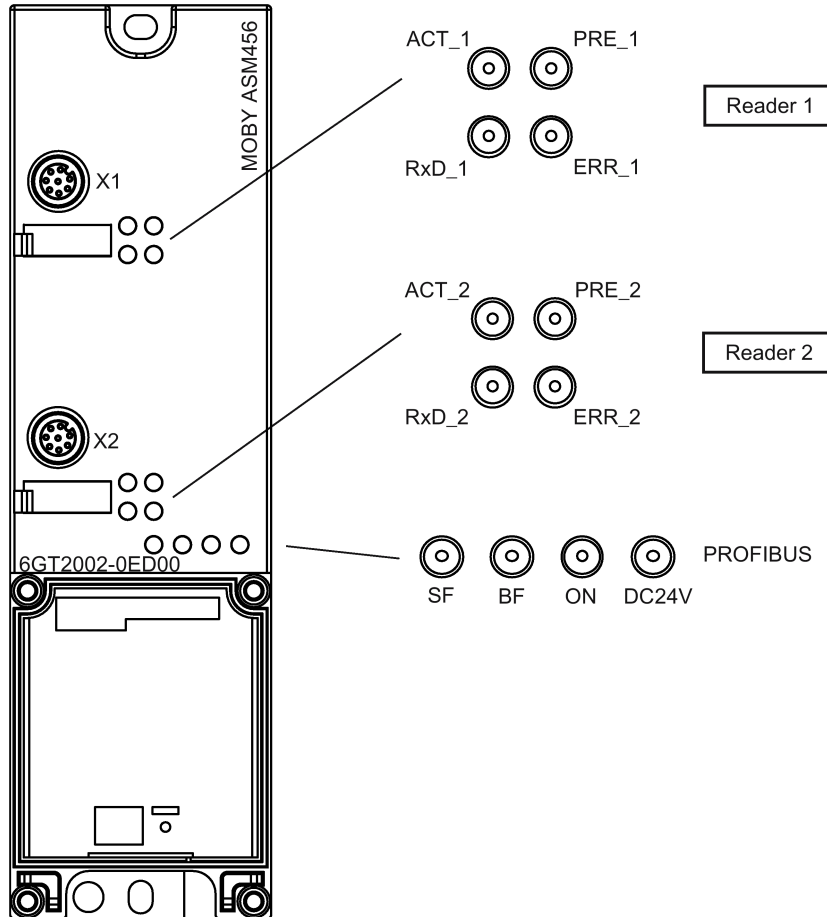


Figure 6-1 LEDs of the ASM 456

Table 6- 1 Status LEDs for ASM 456

LEDs	Meaning
ON	Lights up when there is logic voltage at the ASM (is generated by the 24 V supply voltage).
DC 24 V	Lights up when the 24 V supply voltage is connected to the ASM.
ACT_1, ACT_2	Lights up when the reader processes a user command. (no significance with RF200/RF300/RF600, MOBY D/U)
ERR_1, ERR_2 <sup>1)</sup>	A flashing pattern indicates the last error to occur.

LEDs	Meaning
PRE_1, PRE_2 <sup>2)</sup>	RFID: Indicates the presence of a transponder. MV: LED on - camera on and in stop mode LED off - no connection to camera or error status on camera LED flashes - a flashing pattern shows the value of "number_MDS".
RxD_1, RxD_2	Indicates live communication with the reader. May also indicate malfunctions on the reader.

- 1) The meaning of the individual flash patterns and the associated fault/error descriptions can be found in the relevant FB and FC documentation.  
 2) In multitag mode, this LED uses a flash interval to indicate the number of data carriers currently within the range of influence of the reader.

Table 6-2 LED display for PROFIBUS diagnosis

BF	SF	Cause of error	Error handling
On	-	<ul style="list-style-type: none"> <li>• ASM is in start-up mode.</li> </ul>	-
		<ul style="list-style-type: none"> <li>• Connection to DP Master failed.</li> <li>• ASM not detecting a baud rate</li> </ul>	<ul style="list-style-type: none"> <li>• Check the PROFIBUS DP connection.</li> <li>• Check the DP Master</li> </ul>
		<ul style="list-style-type: none"> <li>• Bus interrupt</li> <li>• DP Master not functioning</li> </ul>	<ul style="list-style-type: none"> <li>• Check all cables on your PROFIBUS DP network.</li> <li>• Check whether the connector plugs for the PROFIBUS DP are securely plugged into the ASM.</li> </ul>
flashes	On	<ul style="list-style-type: none"> <li>• The project data sent to the ASM by the DP Master do not match the configuration of the ASM.</li> </ul>	<ul style="list-style-type: none"> <li>• Check the project for the ASM (input/output, PROFIBUS address).</li> <li>• Correct GSD file being used?</li> </ul>
flashes	-	<ul style="list-style-type: none"> <li>• ASM has detected the baud rate, but is not activated by the DP Master.</li> <li>• ASM has not been assigned project plans.</li> </ul>	<ul style="list-style-type: none"> <li>• Check the PROFIBUS address set in ASM and/or in the project software.</li> <li>• Check the project for the ASM (station type).</li> </ul>
On	flashes	<ul style="list-style-type: none"> <li>• There is a hardware defect in the ASM.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace the ASM.</li> </ul>
Off	On	<ul style="list-style-type: none"> <li>• Diagnosis available</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate the diagnostic information.</li> </ul>
On	Off	<ul style="list-style-type: none"> <li>• The set PROFIBUS address is incorrect or greater than 99.</li> </ul>	<ul style="list-style-type: none"> <li>• Set the address in the range 1 to 99 and carry out new run-up.</li> </ul>
- = Status not relevant			

Other ASM operating modes are indicated by the PRE, ERR, ACT, SF and ON LEDs:

ON	SF	PRE_1	ERR_1	ACT_1	PRE_2	ERR_2	ACT_2	Description
On	Off	Off	Off	On	Off	Off	Off	Ramp-up active
Off	On	Off	On	Off	Off	Off	Off	Checksum error at ramp-up
Off	On	Off	Off	Off	Off	On	Off	Firmware invalid
On	On	On	On	On	On	On	On	LED test for approximately 4 seconds; otherwise firmware fault
Off	On	Off	On	On	Off	On	On	Checksum error at ramp-up
Off	On	On	On	On	Off	On	On	Checksum error of the firmware
Off	On	On	On	On	On	On	On	External RAM defective
Off	On	On	Off	On	On	On	On	DPC-RAM defective
Off	On	Off	On	On	On	On	On	ID error firmware
On	–	Off	1 x flash every 3 s	Off	Off	1 x flash every 3 s	Off	ASM successfully ramped up, waiting for reset command
–	–	–	n x flash-es	–	–	m x flashes	–	The last reported fault in the channel can be seen from the number of flash-es (n, m).
On	–	–	Flashing	Rapid flashing	–	Flashing	Rapid flashing	Firmware update; alternate flashing of the error LEDs at approximately 1 Hz

– = not relevant

## 6.2 Parameterization of the diagnostics

In addition to the PROFIBUS standard diagnostics, the ASM 456 offers user-specific diagnostics data structured in the form of device-related diagnostics.

Along with error messages that are also communicated with command processing, diagnostics data contain cross-application information such as the start of a firmware update.

The diagnostics data can be read out as follows:

- As a plaintext display on S7 interfaces.
- Storage of the diagnostics data with the help of SFC 13 in the data area of an application.
- Evaluation with FB 125 or FC 125.

### Parameter assignment options

- **None**

No other diagnostics data are reported, apart from standard diagnostics.

- **Hard errors**

Extended diagnostics messages are generated in the case of the following events.

- Hardware fault (memory test)
- Firmware problem (checksum)
- Reader connection interrupted
- Short-circuit/break, if supported by hardware
- Firmware update (message at start/end)

In the case of this diagnostics information, the Ext\_Diag bit is set, that is, it is treated as high-priority diagnostics information in the PLC (SF LED is ON)

- **Hard/soft errors low priority**

In contrast to the hard errors, in this case, errors are also reported that arise during command processing.

The diagnostics information is treated like status information, the Ext\_Diag bit is not set.

- **Hard/soft errors high priority**

Correspond to the hard/soft errors but the Ext\_Diag bit is set.

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

#### Incoming diagnostics

An event occurs and triggers a diagnostics message. The Ext\_Diag bit is set, depending on parameterization.

#### Outgoing diagnostics

The event is no longer current, a diagnostics message is output without a set Ext\_Diag bit. For events that only exist momentarily, the reset is delayed by 3 seconds.

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

## 6.3 Structure of the diagnostics frame

When using device-related diagnostics, it can be evaluated using the table below.

The diagnostics frame consists of 6 bytes of standard diagnostics and 18 bytes of diagnostics extension.

For the ASM 456, the diagnostics extension is designed as a status PDU for device-related diagnostics. The structure complies with the PROFIBUS Profile Guideline (PROFIBUS Proxy Guideline, Identification Systems Proxy Ident Function Block) for Identification Systems with MOBY-specific additional information.

Byte	Name	Contents	
<b>PROFIBUS Profile Guideline for Identification Systems</b>			
6	sign_len	Bit 7..6	00b: Identifier for device-related diagnostics
		Bit 5..0	010010b (18d): Length of the extension including header
7	status_type	Bit 7	1b: Identifier for status (0 = alarm)
		Bit 6..0	1d: Type for status message
8	slot_number	Bit 7..0	0d: Device in total
9	specifier	Bit 7..2	Reserved
		Bit 1..0	00b: No further differentiation 10b: Status inactive (outgoing) 01b: Status active (incoming) 11b: Reserved
10	channel_num	Bit 7..0	1d: Relating to reader 1 2d: Relating to reader 2
11	function_num	See Profile Guideline	
12	error_decode	See Profile Guideline	
13	error_code_1	See Profile Guideline	
14	error_code_2	See Profile Guideline	
<b>MOBY-specific additional information</b>			
15	moby_code_1	MOBY error code byte 1 <sup>1)</sup>	
16	moby_code_2	MOBY error code byte 2 <sup>1)</sup>	
17	moby_code_3	MOBY error code byte 3 <sup>1)</sup>	
18	moby_code_4	MOBY error code byte 4	
19	meldecode	Error code for diagnostics messages (see GSD file)	
20	counter_high	Continuous event counter high-order byte	
21	counter_low	Continuous event counter low-order byte	
22	fw_version_high	Firmware version high-order byte	
23	fw_version_low	Firmware version low-order byte	

<sup>1)</sup> With FB 45 the value is = 0, because the error code is mapped only in byte 4.





## Firmware update

The firmware of the ASM 456 can be updated via PROFIBUS. You have several options for updating the firmware:

- With STEP 7 Classic
- With STEP 7 Basic / Professional (TIA Portal)

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### Note

#### Firmware update with connected RF680R/RF685R readers

Note that when the RF680R/RF685R are connected to the ASM 456, the firmware update of the readers must be performed via the WBM of the readers. You can start the WBM from the TIA Portal.

---

## Requirements

The ASM is connected to PROFIBUS with functional DP communication (basic communication only, no application required). The firmware update can be made regardless of whether an application is running.

If the firmware update is performed while an application is running, this can slow down the update and command execution.

Make sure that the required update files (\*.upd) are stored locally.

## Procedure

### Firmware update with the SIMATIC Manager (STEP 7 Classic)

Follow the steps below to run a firmware update on the ASM 456 with the SIMATIC Manager:

1. Start SIMATIC Manager.
2. Select the ASM 456 in HW Config.
3. Using the menu entry "PLC > Firmware", select the required "\*.upd" file from ("CPU\_HD.upd" or "Header.upd").

With the C2 channel you can reach the firmware update via the basic window of the SIMATIC Manager with "PLC > Show Accessible Nodes".

4. If required, select the "Activate firmware after download" check box.
  - If this option is activated, a successful update is followed by a new startup of the ASM during which the new firmware is activated (active commands on the ASM are canceled).
  - If the option is not selected, the ASM 456 continues to operate with the previous firmware version. The new firmware is activated the next time the power supply is cycled.

While you download to the ASM, this is indicated by alternate flashing of the "ERR\_1" and "ERR\_2" LEDs at approximately 1 Hz. With the appropriate parameter assignment, an update operation is also reported by the diagnostics (see section Diagnostics (Page 43)).

### Firmware update with the TIA Portal (STEP 7 Basic / Professional)

Follow the steps below to run a firmware update on the ASM 456 with the TIA Portal:

1. Start the TIA Portal in the project view.
2. Open the "Distributed I/O" folder in the project tree.

The configured nodes are displayed.
3. Right-click the required ASM 456 and select the "Online & diagnostics" entry in the shortcut menu.

## 4. Select the entry "Functions &gt; Firmware update".

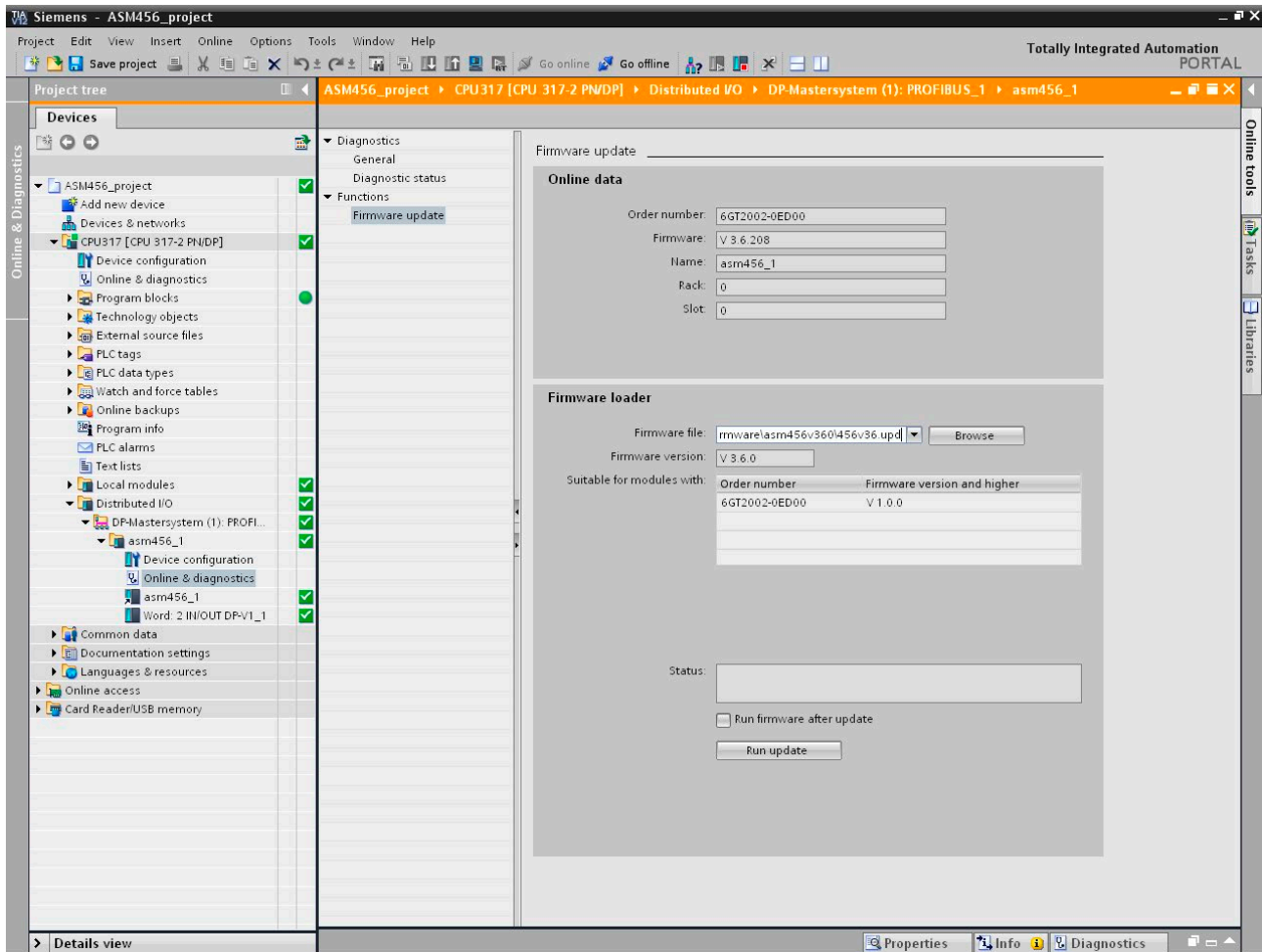


Figure 7-1 Diagnostics view in the TIA Portal; "Firmware update" entry

5. In the "Firmware loader" area, use the "Browse" button to select one of the three update files "\*.upd".
6. If required, select the "Run firmware after update" check box.
  - If this option is selected, a successful update is followed by a new startup of the ASM (active commands on the ASM are canceled).
  - If the option is not selected, the ASM 456 continues to operate with the previous firmware version. The new firmware is activated the next time the power supply is cycled.
7. Click the "Run update" button to start the update.

While you download to the ASM 456, this is indicated by alternate flashing of "ERR\_1" and "ERR\_2" at approximately 1 Hz. With the appropriate parameter assignment, an update operation is also reported by the diagnostics (see section "Diagnostics (Page 43)").



# Technical specifications

6GT2002-0ED00		
Product type designation	ASM 456	
<b>Technical specifications - interfaces</b>	<b>ASM 456 (normal addressing)</b>	<b>ASM 456 (filehandler)</b>
Serial interface to the user		
Principle	PROFIBUS DP-V1	
Transmission rate	9600 Bd to 12 MBd (automatic detection)	
Plug-in connection	EN 50170 Vol. 2 PROFIBUS <ul style="list-style-type: none"> <li>• M12, 7/8" terminal block</li> <li>• ECOFAST terminal block</li> </ul>	
Max. block length	2 words cyclic / 240 bytes acyclic	
Serial interface to the reader		
Connector	2 x M12 connector plugs, 8-pin	
Max. cable length	1000 m, reader-dependent (2 m = standard length; for other standard cables and self-assembled cables, refer to the section "Connecting cables (Page 57)")	
Connectable readers	2 x readers of the RFID families RF200, RF300, RF600, MOBY D/U	
Software functions		
SIMATIC S7 function blocks	<ul style="list-style-type: none"> <li>• FB 45/55 (normal addressing without multitag)</li> <li>• Ident profile, RFID standard profile with FB 101/116/132</li> </ul>	<ul style="list-style-type: none"> <li>• FC 56 (filehandler with and without multitag)</li> <li>• RFID standard profile with FB 101/116/132</li> </ul>
Non-Siemens systems	Ident profile, RFID standard profile <sup>1)</sup>	RFID standard profile <sup>1)</sup>
Tag addressing	Direct access via addresses	Access via DOS-like file system
Identification & Maintenance	I&M0, I&M1, I&M2, I&M3	
MOBY I dialog		
<ul style="list-style-type: none"> <li>• Normal station / VMDS</li> <li>• VMDS memory size</li> </ul>	<ul style="list-style-type: none"> <li>• yes / yes</li> <li>• 16 KB</li> </ul>	<ul style="list-style-type: none"> <li>• no / no</li> <li>• -</li> </ul>

6GT2002-0ED00

**Electrical data**

Supply voltage <sup>2)</sup>

- |                     |                |
|---------------------|----------------|
| • Rated value       | • 24 VDC       |
| • Permissible range | • 20 to 30 VDC |

Current consumption without reader <sup>3)</sup> max. 850 mA; typ. 80 mA

Permitted maximum current of connected readers (total) max. 750 mA

Maximum supply current

- |                                   |       |
|-----------------------------------|-------|
| • in the M12, 7/8" terminal block | • 6 A |
| • in the ECOFAST terminal block   | • 8 A |

Galvanic isolation Yes

**Mechanical data**

Dimensions (W x H x D)

- |  |                    |
|--|--------------------|
| • Base unit only                             | • 60 x 210 x 30 mm |
| • Base unit with M12, 7/8" terminal block    | • 60 x 210 x 54 mm |
| • Basic device with ECOFAST connection block | • 60 x 210 x 60 mm |

Mounting position All mounting positions are possible

Weight

- |                            |                 |
|----------------------------|-----------------|
| • Base unit                | • Approx. 210 g |
| • M12, 7/8" terminal block | • Approx. 235 g |
| • ECOFAST terminal block   | • Approx. 130 g |

Degree of protection IP67

**Environmental conditions**

Temperature range during operation 0 ... +55 °C

Temperature range during transportation and storage -40 ... +70 °C

MTBF (Mean Time Between Failures) in years 122 years

Approvals • cULus (File E116536)

- 1) To allow this, the relevant profile block is required on the non-Siemens system; according to the PIB specification of PROFIBUS INTERNATIONAL to IEC 61131-3; order no. of the specification: 3.142
- 2) All supply and signal voltages must be safety extra-low voltage (SELV/PELV according to EN 60950)  
24 VDC supply: Safety (electrical) isolation of low voltage (SELV / PELV acc. to EN 60950)
- 3) The power supply must provide the required current of max. 800 mA during brief power outages of ≤ 20 ms.

## Dimensional drawings

The following figure shows the dimensional drawing of an ASM 456 with bus connection block.

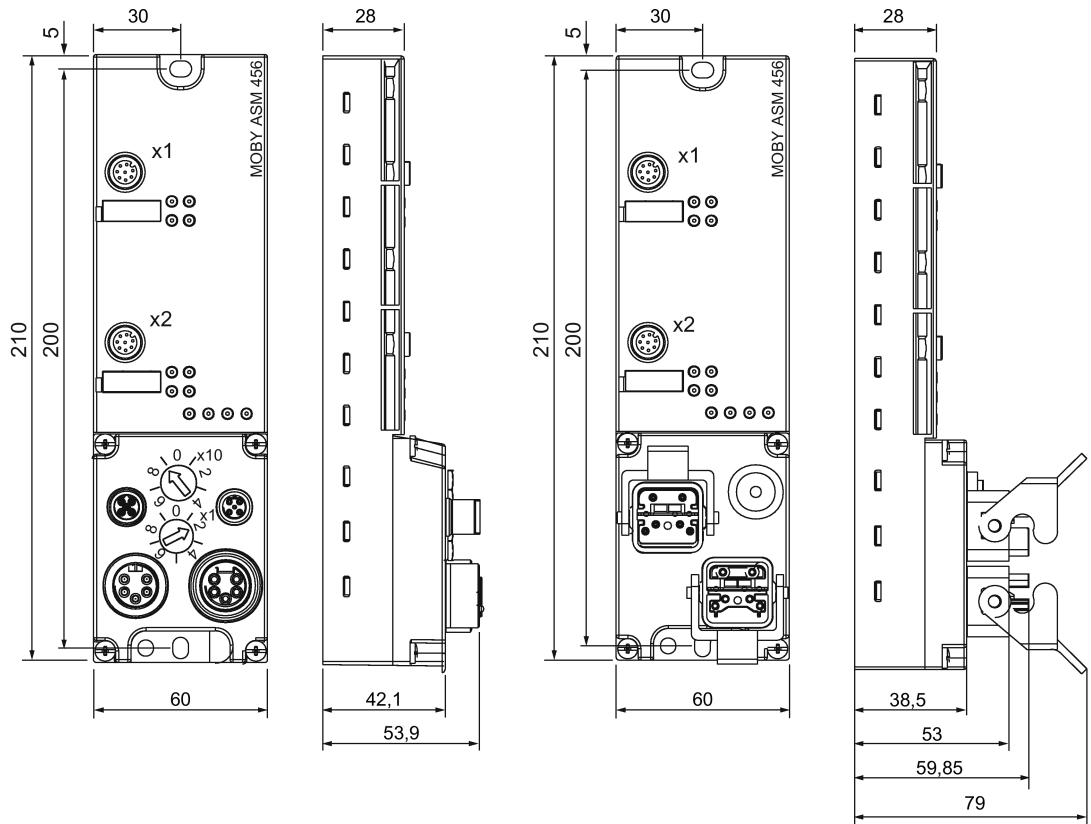


Figure 9-1 Dimensional drawing of ASM 456 (in mm)





## Appendix

### A.1 Connecting cables

#### A.1.1 Routing of standard cables

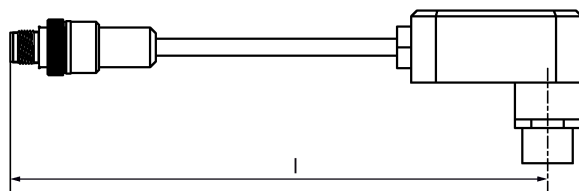


Figure A-1 M12 connecting cable ↔ reader

- Connecting cable MOBY E / I / U
- Length: 2 m, 5 m

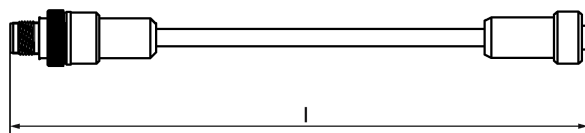


Figure A-2 Connecting cable/extension cable M12 ↔ M12

- RF200, RF300, RF600 connecting cable
- Extension cable for all RFID / MOBY systems
- Length: 2 m, 5 m, 10 m, 20 m, 50 m

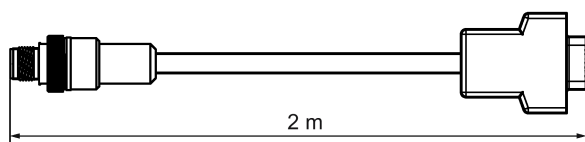


Figure A-3 Connecting cable M12 ↔ D-sub

- Connecting cable MOBY D
- Length: 2 m

**Maximum cable length**

The ASM 456 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 information in the relevant system manuals.

Sequential connection of more than 2 sub-sections to form a long section of cable should be avoided due to the additional contact resistances.

**Pin assignment**

Table A- 1 M12 connecting cable ↔ reader

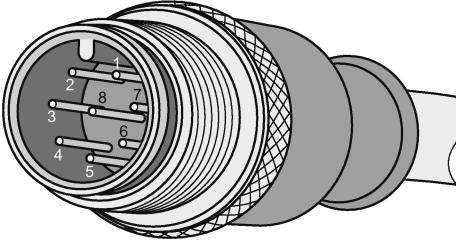
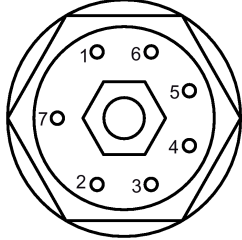
M12 connector (male)		Write/read device connector (female)	
	1	2	
	2	5	
	3	3	
	4	4	
	5	6	
	6	1	
	7	-	
	8	7	

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

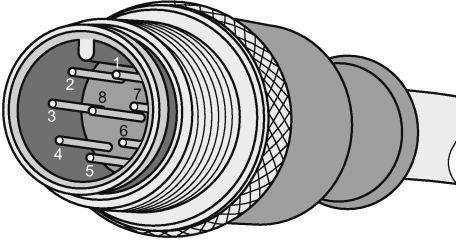
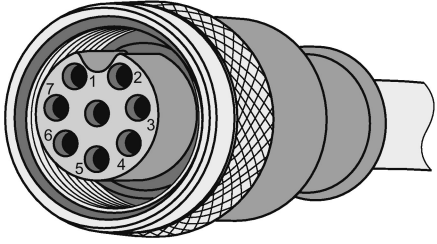
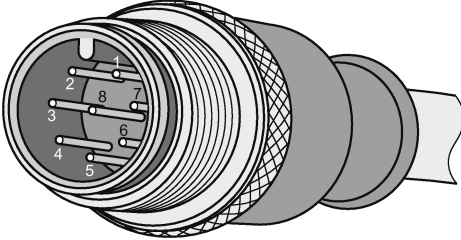
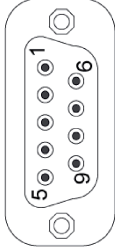
M12 connector (male)		M12 connector (female)	
	1	1	
	2	2	
	3	3	
	4	4	
	5	5	
	6	6	
	7	7	
	8	8	

Table A- 3 Connecting cable M12 ↔ sub-D 9-pin

M12 connector (male)		Sub-D connector (female)	
	1	-	
	2	5	
	3	7	
	4	3	
	5	2	
	6	6	
	7	-	
	8	1, 8	
Note: Readers with D-sub connectors must be supplied with 24 VDC via an additional connector.			

## A.1.2 Self-assembled cables

A write/read connector plug with screw-on clamps is provided for users who want to individually pre-assemble their own cables (refer to the relevant system manual). Cables and write/read connector plugs can be ordered from the MOBY catalog.

The pin assignment is listed in the following table.

### Cable structure

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

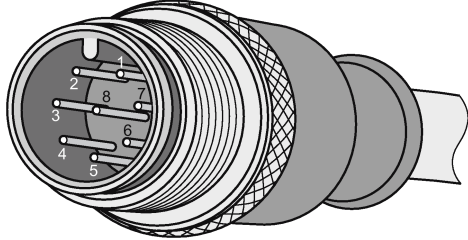
7 x 0.25 mm<sup>2</sup>

LIYC11Y 7 x 0.25

## Connectors

M12 connectors can be obtained from the relevant specialist dealers (e.g. Binder).

Table A- 4 Pin assignment

M12 connector (male)	Pin	Signal	Core color
	1	+24 V	Note data sheet provided by cable manufacturer
	2	-RxD	
	3	0 V	
	4	RxD	
	5	TxD	
	6	-TxD	
	7	Free	
	8	PE / shield	

## A.2 Ordering data

Table A- 5 Ordering data - ASM 456

	Article number
ASM 456 communications module for PROFIBUS DP V1 max. 2 readers can be connected	6GT2002-0ED00
ECOFAST terminal block	6ES7194-3AA00-0AA0
M12, 7/8" terminal block	6ES7194-3AA00-0BA0
Labels 20 x 7 mm (pack of 340)	3RT1900-1SB20

Table A- 6 Ordering data - accessories for ECOFAST connection

	Article number
PROFIBUS ECOFAST hybrid plug 180 (pack of 5) <ul style="list-style-type: none"> <li>with pin insert</li> <li>with socket insert</li> </ul>	<ul style="list-style-type: none"> <li>6GK1905-0CA00</li> <li>6GK1905-0CB00</li> </ul>
PROFIBUS ECOFAST termination plug with terminating resistor	6GK1905-0DA10
ECOFAST hybrid cable (pre-assembled)	6XV1830-7Bxxx *
ECOFAST hybrid cable (not pre-assembled, sold by the meter)	6XV1830-7AH10

\*) These cables are available in different lengths. See Catalog IK PI for more details.

Table A- 7 Ordering data - accessories for M12 7/8 terminal block

	Article number
M12 terminal resistor for PROFIBUS (5 per pack)	6GK1905-0EC00
PROFIBUS cable with pre-assembled M12 connectors	6XV1830-3Dxxx *
Cable for supply voltage with pre-assembled 7/8" connectors	6XV1822-5Bxxx *
PROFIBUS FC standard non-pre-assembled cable; min. length 20 m, max. length 1000 m	6XV1830-0EH10
Energy cable Trailing power cable, 5 x 1.5 mm <sup>2</sup> ; sold by the meter, min. length 20 m, max. length 1000 m	6XV1830-8AH10
PROFIBUS M12 connector plug (5 per pack) <ul style="list-style-type: none"> <li>• with pin insert</li> <li>• with socket insert</li> </ul>	<ul style="list-style-type: none"> <li>• 6GK1905-0EA00</li> <li>• 6GK1905-0EB00</li> </ul>
Connector plug 7/8" for voltage (5 per pack) <ul style="list-style-type: none"> <li>• with pin insert</li> <li>• with socket insert</li> </ul>	<ul style="list-style-type: none"> <li>• 6GK1905-0FA00</li> <li>• 6GK1905-0FB00</li> </ul>
Covering caps 7/8" (10 items)	6ES7194-3JA00-0AA0

\*) These cables are available in different lengths. See Catalog IK PI for more details.

Table A- 8 Ordering data - RFID accessories

	Article number	
Reader cable MOBY I / E / U	2 m	6GT2091-4FH20
	5 m	6GT2091-4FH50
MOBY D reader cable	2 m	6GT2691-4FH20
Reader cable RF200 / RF300, RF600 extension cable RF200 / RF300 / RF600 / MOBY I / E / U / D	2 m	6GT2891-4FH20
	5 m	6GT2891-4FH50
	10 m	6GT2891-4FN10
	20 m	6GT2891-4FN20
	50 m <sup>1)</sup>	6GT2891-4FN50
RF200 / RF300 reader cable; angled connector on reader	2 m	6GT2891-4JH20
M12 sealing caps for unused reader connections (10 units)		3RX9802-0AA00
DVD "RFID Systems Software & Documentation" with FB 45/55, FC 56, FB 101/116/132, Ident profile, GSD/GSDML files, drivers, tools and RFID documentation		6GT2080-2AA20

<sup>1)</sup> Not permitted in conjunction with the RF680R/RF685R readers

## A.3 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
- Online support request form: (<https://support.industry.siemens.com/My/ww/en/requests>)
- Internet: E-mail (<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

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 homepage (<http://w3.siemens.com/mcms/identification-systems/>).

### Online catalog and ordering system

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

## 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 homepage (<http://sitrain.automation.siemens.com/sitrainworld/>).

