AMIKON TECHNICAL DOCUMENTATION

Installation Instructions

Siemens 6ES7155-6BA01-0CN0

PROFIBUS High Feature Bundle

SUPPLY	NETWORK	STATION	RATE
24 V DC	**PROFIBUS DP**	**244 bytes I/O**	**12 Mbit/s**

For qualified personnel only. Isolate the equipment and follow the complete manufacturer and site safety procedures. This reference does not replace the approved project design or the full installation manual.

01 PREPARATION AND WIRING CHECKS

- Use the interface manual with the ET 200SP system manual and qualified-personnel requirements.
- Use a 24 V DC SELV/PELV supply; supply terminal pairs are internally bridged, with 10 A maximum loop-through.
- For RS485, pin 3 is data line B and pin 8 is data line A; check the complete original pin table before connection.
- Set one unique PROFIBUS DP address from 1 to 125 and match the configured station address; changes require POWER ON.
- Configure the server module in the last station slot using the required status-byte length.
- Before hot swapping, follow the master-specific restrictions; S7-300 insertion can cause a brief station failure.
- Check first-BaseUnit and external-fuse requirements for the actual module type.

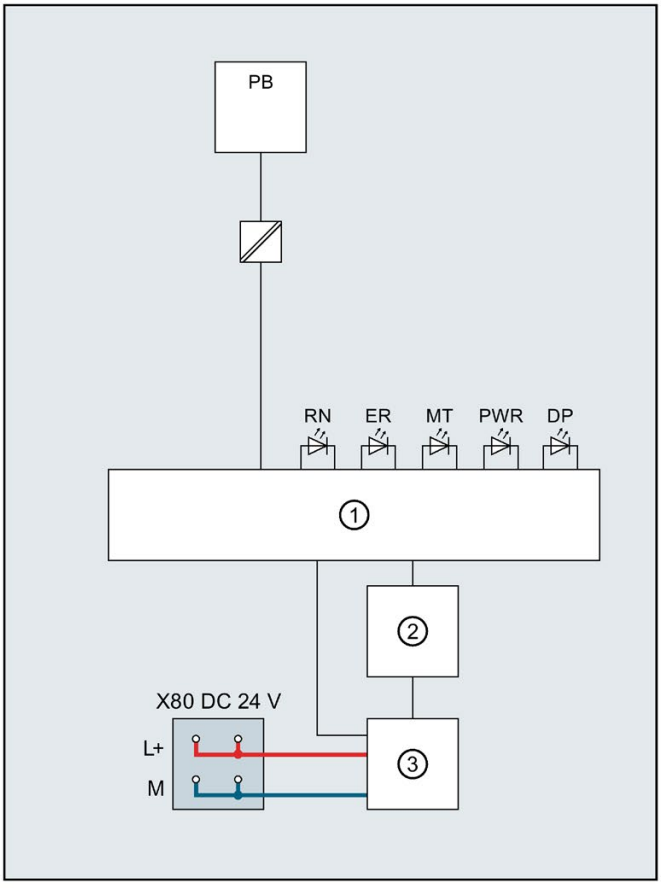
02 ORIGINAL WIRING REFERENCE

Original source PDF pages 20, 3, 4, 5, 13, 14, 16, 18, 19, 21, 51, 52. The following pages retain the original Siemens drawings and printed page numbers.

Siemens original installation documentation

3.2 Block diagram

The following figure show the block diagram of the IM 155-6 DP HF interface module.



①	ET 200SP backplane bus interface and electronics	L+	24 V DC supply voltage
②	Backplane bus	M	Ground
③	Internal power supply	RN	RUN/STOP LED (green)
X80 24 V DC	Feed supply voltage	ER	ERROR LED (red)
PB	PROFIBUS interface	MT	MAINT LED (yellow)
		PWR	POWER LED (green)
		DP	PROFIBUS DP LED (green)

Figure 3-1 Block diagram of the IM 155-6 DP HF interface module

Legal information

Warning notice system

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

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

NOTICE

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

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

Qualified Personnel

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

Proper use of Siemens products

Note the following:

⚠ WARNING

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

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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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Preface

Purpose of the documentation

This manual supplements the ET 200SP distributed I/O system (http://support.automation.siemens.com/WW/view/en/58649293) system manual.

Functions that generally relate to the system are described in this manual.

The information provided in this manual and in the system/function manuals supports you in commissioning the ET 200SP distributed I/O system.

Conventions

Please also observe notes marked as follows:

Note

A note contains important information on the product described in the documentation, on the handling of the product or on the section of the documentation to which particular attention should be paid.

Recycling and disposal

For environmentally friendly recycling and disposal of your old equipment, contact a certified electronic waste disposal company and dispose of the equipment according to the applicable regulations in your country.

Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

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To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under (https://www.siemens.com/industrialsecurity).

Product overview

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2.1 Properties

Article number

6ES7155-6BA01-0CN0

Article number 6ES7155-6BA01-0CN0 contains the following components:

- Interface module IM 155-6 DP HF (6ES7155-6BU01-0CN0)
- Server module (6ES7193-6PA00-0AA0)
- PROFIBUS FastConnect bus connector (6ES7972-0BB70-0XA0)

View of the module

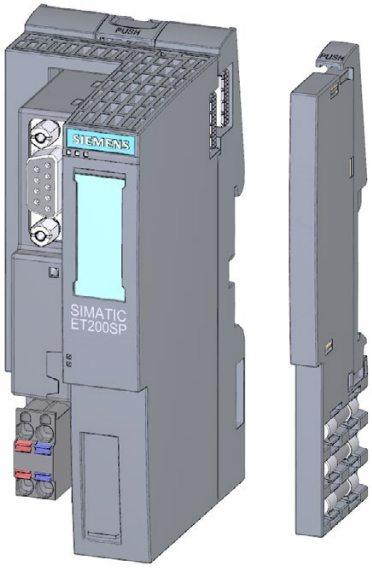


Figure 2-1 View of the 155-6 DP HF interface module with supplied accessories

Properties

The module has the following technical properties:

- Connects the ET 200SP distributed I/O system with PROFIBUS DP
- Power supply 1 L+ 24 V DC (SELV/PELV)
- Bus connection via RS485 interface

The module supports the following functions (Page 14):

Maximum configuration

- 244 bytes I/O data
- 32 I/O modules and 16 ET 200AL modules

Accessories

You order the following accessories separately:

- Labeling strips
- Reference identification label

You can find additional information on the accessories in the ET 200SP distributed I/O system (http://support.automation.siemens.com/WW/view/en/58649293) system manual.

Server module

The server module is included in the product package of the interface module and available separately as an accessory.

The server module has the following properties:

- Terminates the backplane bus of the ET 200SP distributed I/O system
- Features a support for 3 spare fuses (5 × 20 mm)
- Provides station functions, e.g., status bytes
- Identification data I&M 0 to 3

Note

You need to configure the server module in the configuration software.

To do so, place the server module with the required length of status bytes at the last slot of the configuration. When there are 32 I/O modules, the server module is inserted at slot 33.

Requirements

The table below shows the software requirements for a configuration with the IM 155-6 DP HF interface module:

Table 2- 1 Version dependencies of other module functions

Function	Product version of the module as of	Firmware version of the module as of	Configuration software		
			Configuration with GSD file (http://support.automation.siemens.com/WW/view/en/19698639/130000) / software from a third-party manufacturer[1]	STEP 7 as of V5.5 SP3 with HSP0242	STEP 7 (TIA Portal) as of V13
Operation after Y-link (not with F-modules)	1	V1.1.0	X	-	-
Hot-swapping	1	V1.0.0	X	X	X
Station extension via ET-Connection	1	V3.0.0	X	X (as of HSP0242 V2)	-
F-direct data exchange	1	V3.1.0	-	X (as of HSP0242 V3)	-
Interface module; article number: 6ES7155-6BA01-0CN0	1	V4.2	-	X [2]	X (as of V15.1)

[1] Systems of third-party manufacturers: Depending on the range of functions of the third-party system

[2] Configure the module as version 6ES7155-6BA00-0CN0 FW V3.1 (as of HSP0242 V3)

Connecting

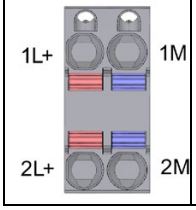
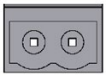
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3.1 Terminal assignment

24 V DC supply voltage

The table below shows the signal names and descriptions of the pin assignment of the 24 V DC supply voltage.

Table 3- 1 Pin assignment 24 V DC supply voltage

View		Signal name[1)]	Description
Connector	IM connection		
		1L+	24 V DC
		2L+	24 V DC (for looping through)[2]
		1M	Ground
		2M	Ground (for looping through)[2]

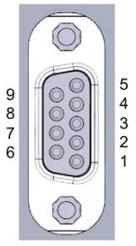
1 1L+ and 2L+ as well as 1M and 2M are internally bridged.

2 Maximum 10 A permitted.

PROFIBUS DP with RS485 interface

The following table shows the signal names and descriptions of the terminal assignment of the PROFIBUS DP interface.

Table 3- 2 Terminal assignment PROFIBUS DP with RS485 interface

View		Signal name	Description
	1	-	-
	2	-	-
	3	RxD/TxD-P	Data line B
	4	RTS	Request To Send
	5	M5V2	DP data reference potential (from station)
	6	P5V2	Supply plus (from station)
	7	-	-
	8	RxD/TxD-N	Data line A
	9	-	-

Reference

You can find additional information on connecting the interface module and on the accessories in the ET 200SP distributed I/O system (http://support.automation.siemens.com/WW/view/en/58649293) system manual.

3.3 Setting the PROFIBUS DP address

Introduction

On the interface module (PROFIBUS), set the PROFIBUS DP address for PROFIBUS DP using the DIP switch. By setting the PROFIBUS DP address, you specify where the ET 200SP is to be addressed on the PROFIBUS DP.

Requirements

- Each PROFIBUS DP address may be assigned only once on the PROFIBUS DP.
- Valid PROFIBUS DP addresses are 1 to 125.
- The set PROFIBUS DP address must match the PROFIBUS DP address specified for the ET 200SP in the configuration software.

Required tools

Screwdriver 3 - 3.5 mm

Setting the PROFIBUS DP address

1. Slide the window of the interface module upwards.
2. Use a screwdriver to set the required PROFIBUS address via the DIP switch.
3. Close the window.

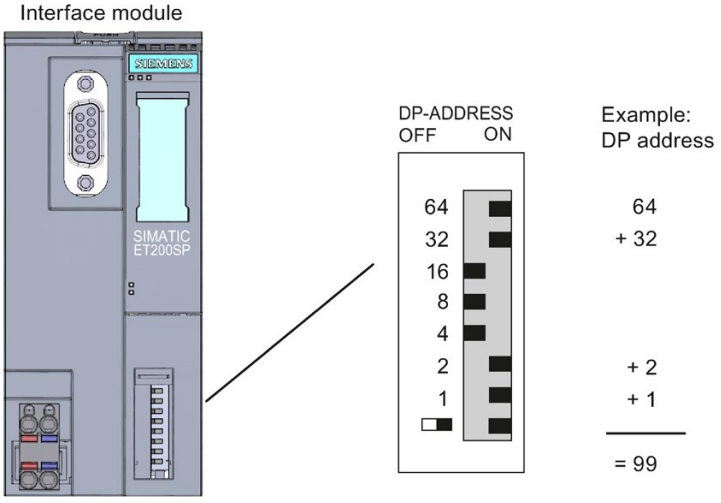


Figure 3-2 Setting the PROFIBUS DP address

Changing the PROFIBUS DP address

You can change the PROFIBUS DP address in exactly the same way as you set it. **A change in the PROFIBUS DP address only becomes valid for the ET 200SP** after a POWER ON of the interface module.

Plugging and pulling (hot-swapping) of ET 200SP I/O modules

NOTICE

Pulling and plugging (hot swapping) of ET 200SP I/O modules during operation on S7-300 via PROFIBUS **DP**

ET 200SP I/O modules can be pulled and plugged:

- As of STEP7 V5.5 SP3 HSP 242 and
- If "Operation if preset configuration <> actual configuration" parameter is enabled.

Note the following when operating the ET 200SP with S7-300 via PROFIBUS DP: Plugging of ET 200SP I/O modules results in a brief station failure of the ET 200SP.

Note

ET 200SP I/O modules can be pulled and plugged without restrictions for all other DP master systems if you enable the "Pull/plug module (OB83)" parameter.

Communication module IO-Link Master CM 4xIO-Link

Note

Communication module IO-Link Master CM 4xIO-Link

Operation of the CM 4xIO-Link IO-Link Master communication module with the IM 155-6 DP HF interface module is supported as of S7-PCT V3.1 and an updated module firmware version/GSD file.

Reaction times for fail-safe modules

The following maximum reaction time of the interface module must be taken into account when calculating the reaction times of fail-safe modules: **Maximum reaction time = 2.3 ms**

First BaseUnit of an ET 200SP in the configuration

The interface modules support plugging a dark-colored BaseUnit in slot 1. This means that modules without a connection to the integrated voltage buses P1 and P2 can now also be configured starting with slot 1. Currently, this applies to the following modules:

- AI EnergyMeter ST (6ES7134-6PA00-0BD0)
- DI 4x120 … 230VAC ST (6ES7131-6FD00-0BB1)
- DQ 4x24 … 230VAC/2A ST (6ES7132-6FD00-0BB1)

Note

First BaseUnit of an ET 200SP in the configuration

Please note the information on limiting the overvoltage and power rating in the AC I/O module manuals.

The 24 V DC supply voltage is fed in via an external fuse.

The 24 V DC supply voltage is provided by a light-colored BaseUnit.

Requirement for configuration of these modules in slot 1:

- Configuration via GSD or GSDML
- Configuration as of STEP7 V5.5 SP4 as of
  - HSP0242 V2.0 for IM155-6 DP HF
- Configuration as of STEP7 V13 SP1

See also: Functions (Page 14)