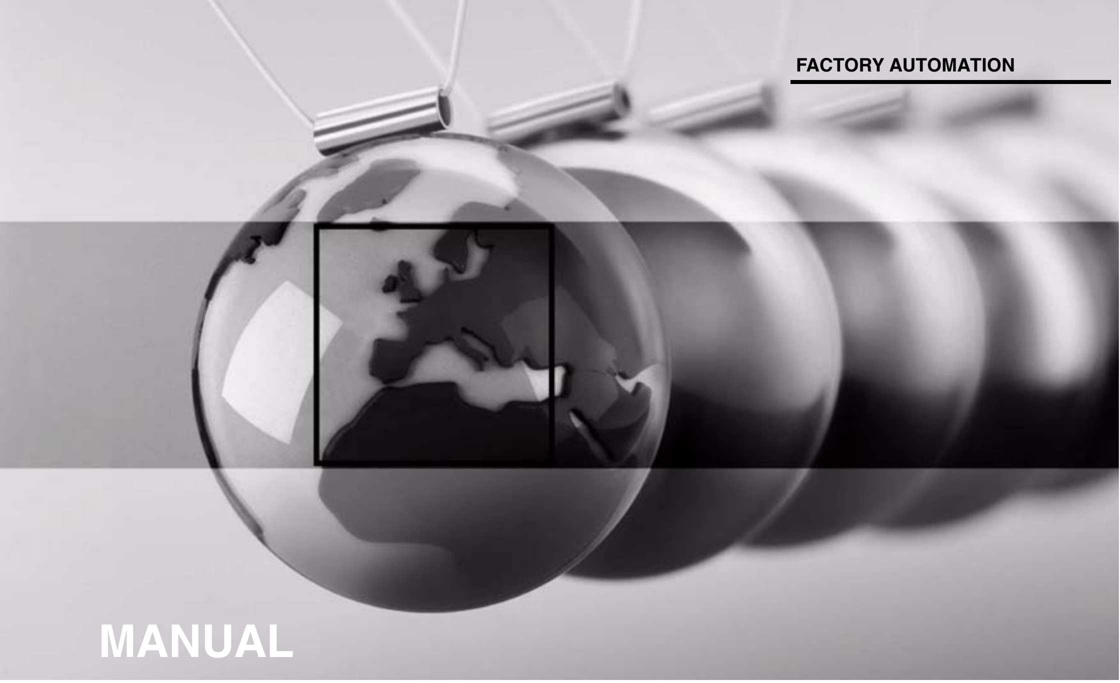
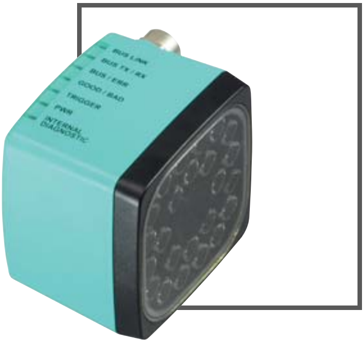


FACTORY AUTOMATION

MANUAL

OPC120P-F201-B17

Integration into SIMATIC TIA V13



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SENSING YOUR NEEDS

With regard to the supply of products, the current issue of the following document is applicable: The General Terms of Delivery for Products and Services of the Electrical Industry, published by the Central Association of the Electrical Industry (Zentralverband Elektrotechnik und Elektroindustrie (ZVEI) e.V.) in its most recent version as well as the supplementary clause: "Expanded reservation of proprietorship"

1 Integrating hardware

This section explains how to integrate the Optical Print Inspector via PROFINET. An example of integration is shown.

1.1 Installing the GSD file

You will find the current GSD file on our homepage http://www.pepperl-fuchs.com.

Installing the GSD file

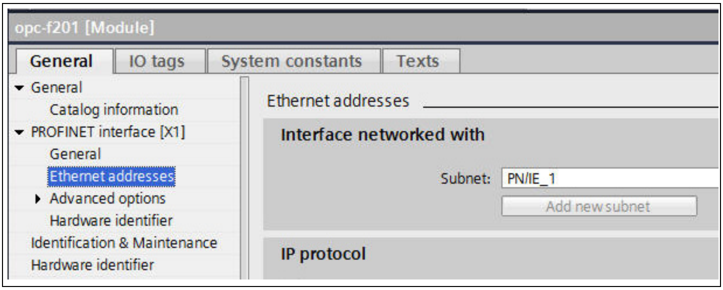
1. Before installing a GSD file, close all hardware configuration projects.
2. To install the GSD file, select **Options > Install GSD files** in the hardware configuration.

1.2 Incorporating Optical Print Inspector

Incorporating Optical Print Inspector

1. To incorporate an Optical Print Inspector into your PROFINET, double-click on the PROFINET interface.

   ↳ This opens the Properties window.
2. On the **General** tab, click on **Ethernet addresses**.
3. To create a new Ethernet subnet, click on **Add new subnet**.



Subnet: PN/IE_1

Figure 1.1 Inserting PROFINET IO system

↳ A PROFINET IO system is now available to which you can connect new devices.

4. Drag the PROFINET module of the Optical Print Inspector from the catalog into the connection window and assign it to the corresponding IO controller.

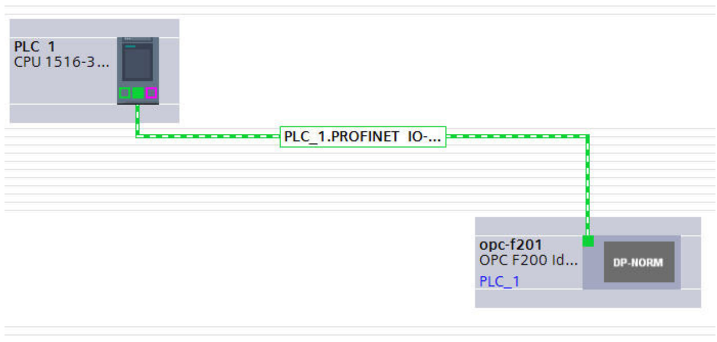
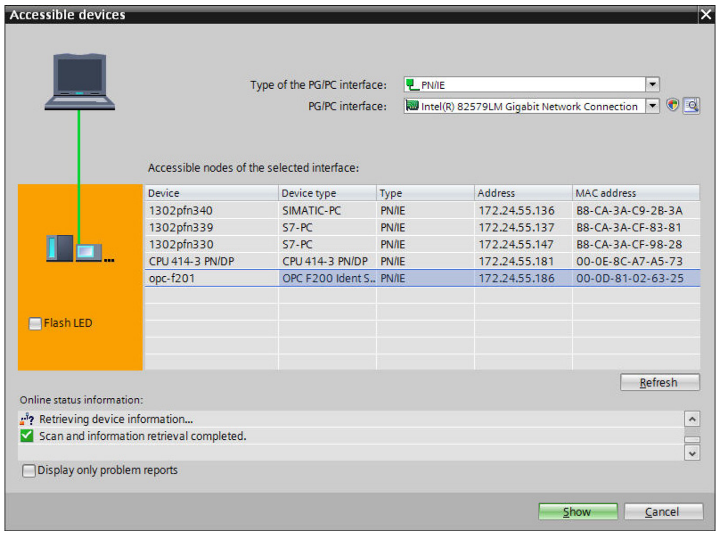


Figure 1.2 PROFINET topology

5. To identify the Optical Print Inspector in the subnet, from the menu bar select **Online** > **Accessible devices**.

6. Select **PN/IE** in the list **Type of PG/PC interface**. Select your interface in the **PG/PC** list.

↳ A list appears containing all accessible bus devices.



Type of the PG/PC interface: PN/IE

PG/PC interface: Intel(R) 82579LM Gigabit Network Connection

Accessible nodes of the selected interface:

Device	Device type	Type	Address	MAC address
1302pfn340	SIMATIC-PC	PN/IE	172.24.55.136	B8-CA-3A-C9-2B-3A
1302pfn339	S7-PC	PN/IE	172.24.55.137	B8-CA-3A-CF-83-81
1302pfn330	S7-PC	PN/IE	172.24.55.147	B8-CA-3A-CF-98-28
CPU 414-3 PN/DP	CPU 414-3 PN/DP	PN/IE	172.24.55.181	00-0E-8C-A7-A5-73
opc-f201	OPC F200 Ident S...	PN/IE	172.24.55.186	00-0D-81-02-63-25

□ Flash LED

Refresh

Online status information:

Retrieving device information...

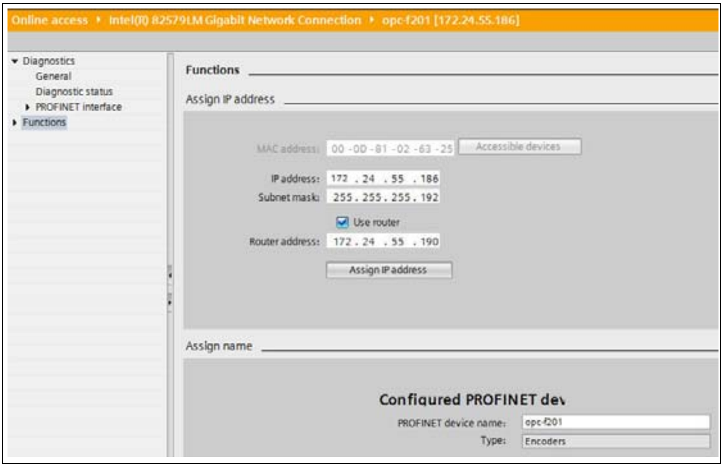
✓ Scan and information retrieval completed.

□ Display only problem reports

Show Cancel

Figure 1.3 Browsing PROFINET

7. Select the Optical Print Inspector from the list (in this example **opc186**) and click **Show**. To identify a device more easily, click on **Flash LED**. This causes the GOOD/BAD LED of the Optical Print Inspector to start flashing.
8. To assign a PROFINET name and an IP address to the Optical Print Inspector, click on **Online access > your PG/PC interface used > opc-f201** in the project navigation. The designation **opc-f201** is preset in the factory.
9. Select **Functions**. Here you can assign an IP address and a PROFINET name to the device. To complete the process, click on **Assign name** or **Assign IP address**.



Online access ▸ Intel(R) 82579LM Gigabit Network Connection ▸ opc-f201 [172.24.55.186]

Functions

Assign IP address

MAC address: 00 -0D -81 -02 -63 -25

IP address: 172 . 24 . 55 . 186

Subnet mask: 255 . 255 . 255 . 192

☑ Use router

Router address: 172 . 24 . 55 . 190

Assign name

Configured PROFINET de

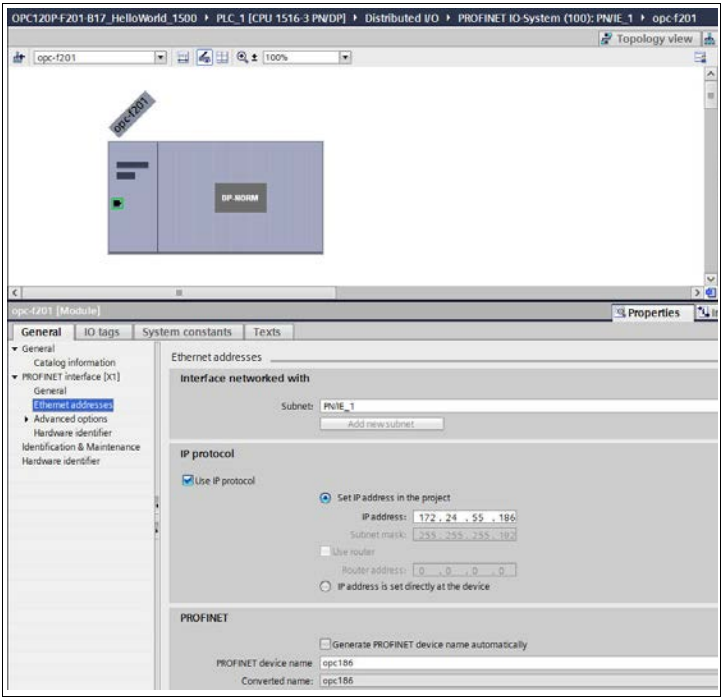
PROFINET device name: opc-f201

Type: Encoders

Figure 1.4 Assigning IP address and PROFINET name

10. Double-click on the PROFINET module.

    ↳ This opens the Properties window.
11. On the **General** tab, click on **PROFINET interface** > **Ethernet addresses**.
12. In the **IP protocol** area enter the IP address, and in the **PROFINET** area enter the PROFINET device name of the Optical Print Inspector.



Ethernet addresses

Interface networked with

Subnet: PN/IE_1

IP protocol

☑ Use IP protocol

● Set IP address in the project

IP address: 172 . 24 . 55 . 186

Subnet mask: 255 . 255 . 255 . 192

□ Use router

Router address: 0 . 0 . 0 . 0

○ IP address is set directly at the device

PROFINET

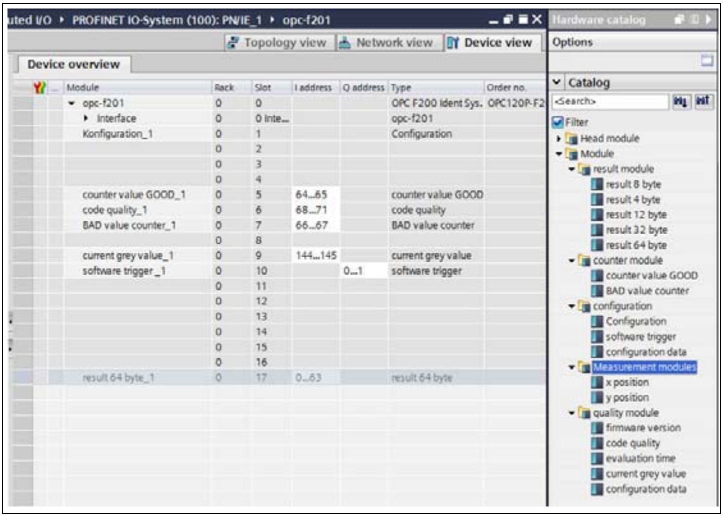
□ Generate PROFINET device name automatically

PROFINET device name: opc186

Converted name: opc186

Figure 1.5 PROFINET module properties

13. To assign address areas for inputs and outputs, add the following modules from the catalog to the Optical Print Inspector:
- Result counter: Good results
- Result counter: Bad results
- Read quality
- Gray value
- Software trigger
- Result 64 bytes



Module	Rack	Slot	I address	Q address	Type	Order no.
▾ opc-f201	0	0			OPC F200 Ident Sys.	OPC120P-F2
▸ Interface	0	0 Inte...			opc-f201	
Konfiguration_1	0	1			Configuration	
	0	2				
	0	3				
	0	4				
counter value GOOD_1	0	5	64...65		counter value GOOD	
code quality_1	0	6	68...71		code quality	
BAD value counter_1	0	7	66...67		BAD value counter	
	0	8				
current grey value_1	0	9	144...145		current grey value	
software trigger_1	0	10		0...1	software trigger	
	0	11				
	0	12				
	0	13				
	0	14				
	0	15				
	0	16				
result 64 byte_1	0	17	0...63		result 64 byte	

☑ Filter

- ▸ Head module
- ▾ Module
  - ▾ result module
    - result 8 byte
    - result 4 byte
    - result 12 byte
    - result 32 byte
    - result 64 byte
  - ▾ counter module
    - counter value GOOD
    - BAD value counter
  - ▾ configuration
    - Configuration
    - software trigger
    - configuration data
  - ▾ Measurement modules
    - x position
    - y position
  - ▾ quality module
    - firmware version
    - code quality
    - evaluation time
    - current grey value
    - configuration data

Figure 1.6 PROFINET configuration

Note!

Only use the **Result 64 bytes** module.

2 Inserting function block and data module

Inserting function block and data module

1. Unzip the zip file.
2. In the module folder, mark the function block **OPC120P-F201**, the associated instance data module **iDB_OPC120P-F201** and the UDT **I/O address OPC_Modules**. Right-click on the marked entries and select **Copy**.
3. Right-click the destination project and select **Insert**.

3 Function block description

The function block **OPC120P-F201-B17** and the associated instance data block are called by:

`CALL OPC120P-F201-B17, iDB_OPC120P-F201` (symbolic representation)

This module reads in a DataMatrix code and stores it in its instance data module. The I/O addresses and the individual communication modules are parameterized via the user-defined data type (UDT), and the parameters are then transferred to the function block as an input variable.

The following image shows the call of the function block and the variables to be parameterized.

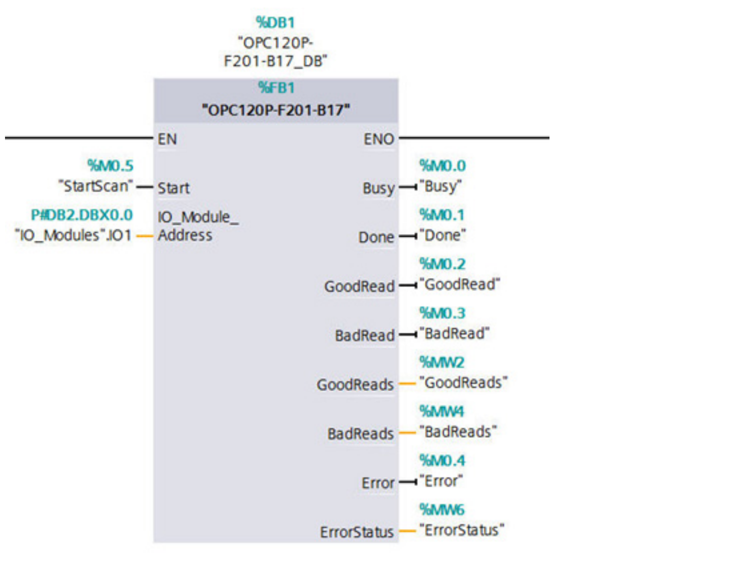


Figure 3.1 Calling function block

Input/output variables

Name	Data type	Input/output	Description
Start	BOOL	Input	Starts a read command (positive edge)
IO_Module_Address	UDT	Input	Hardware identifier of communication modules
Busy	BOOL	Output	Command is being processed
Done	BOOL	Output	Command terminated
GoodRead	BOOL	Output	New data present

Name	Data type	Input/output	Description
BadRead	BOOL	Output	No data read
GoodReads	WORD	Output	Counter value: successful reads
BadReads	WORD	Output	Counter value: failed reads
Error	BOOL	Output	Error occurred during processing
ErrorStatus	WORD	Output	Status value: 0 = OK, -1 = Timeout

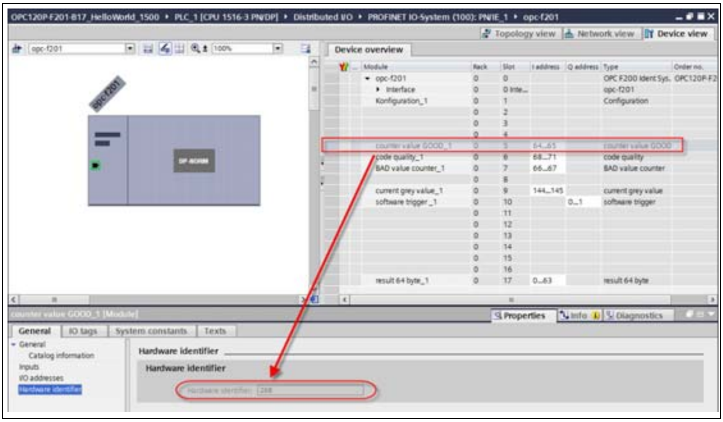
3.1 Setting communication parameters

Note!

Only the modules used in the example are required by the function block **OPC120P-F201-B17** for processing.

Setting communication parameters

1. Transfer the hardware identifiers defined in the hardware configuration for the individual modules to the UDT **I/O address OPC_Modules**. Ensure that you enter the hardware identifiers of the modules and not of the I/O devices.



OPC120P-F201-B17_HelloWorld_1500 ▸ PLC_1 [CPU 1516-3 PN/DP] ▸ Distributed I/O ▸ PROFINET IO-System (100): PN/IE_1 ▸ opc-f201

Device overview

Module	Rack	Slot	I address	Q address	Type	Order no.
opc-f201	0	0			OPC F200 Ident Sys.	OPC120P-F2
Interface	0	0 Inte...			opc-f201	
Konfiguration_1	0	1			Configuration	
	0	2				
	0	3				
	0	4				
counter value GOOD_1	0	5	64...65		counter value GOOD	
code quality_1	0	6	68...71		code quality	
BAD value counter_1	0	7	66...67		BAD value counter	
	0	8				
current grey value_1	0	9	144...145		current grey value	
software trigger _1	0	10		0...1	software trigger	
	0	11				
	0	12				
	0	13				
	0	14				
	0	15				
	0	16				
result 64 byte_1	0	17	0...63		result 64 byte	

counter value GOOD_1 [Module]

General | IO tags | System constants | Texts

- General
  - Catalog information
- Inputs
- I/O addresses
- Hardware identifier

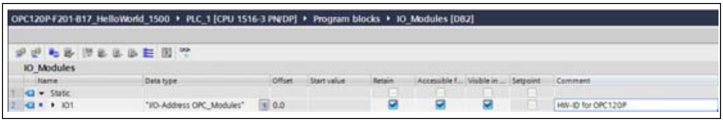
Hardware identifier

Hardware identifier

Hardware identifier: 288

Figure 3.2 Hardware identifier in the hardware configuration

2. Declare a new variable (e.g., in a global data module) as the UDT **I/O address OPC_Modules** so that it can be transferred at the UDT input of the function block.



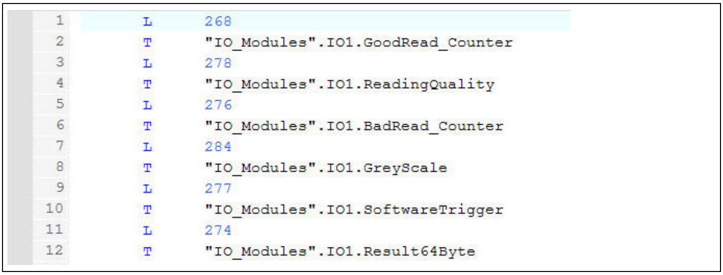
OPC120P-F201-B17_HelloWorld_1500 ▸ PLC_1 [CPU 1516-3 PN/DP] ▸ Program blocks ▸ IO_Modules [DB2]

IO_Modules

	Name	Data type	Offset	Start value	Retain	Accessible f...	Visible in ...	Setpoint	Comment
1	▾ Static				□	□	□	□	
2	▸ IO1	"I/O-Address OPC_Modules"	0.0		☑	☑	☑	□	HW-ID for OPC120P

Figure 3.3 Variables declaration in global data block

3. You can then assign the hardware identifiers, e.g., **OB1**, to the UDT variable set up previously.



```
L      268
T      "IO_Modules".IO1.GoodRead_Counter
L      278
T      "IO_Modules".IO1.ReadingQuality
L      276
T      "IO_Modules".IO1.BadRead_Counter
L      284
T      "IO_Modules".IO1.GreyScale
L      277
T      "IO_Modules".IO1.SoftwareTrigger
L      274
T      "IO_Modules".IO1.Result64Byte
```

Figure 3.4   Assigning the I/O addresses to the UDT variable

3.2 Scanning Data Matrix code

Note!

Evaluate **Busy** and **Done** before you start a new read command.

To start a read process, the input variable **Start** must be triggered. This variable reacts to a positive edge change. **Busy** then changes to HIGH. **Done** and **Error** change to LOW.

GoodRead

After a successful read, **Busy** changes to LOW. **Done** and **GoodRead** change to HIGH. In addition, the output **GoodReads** increases by 1.

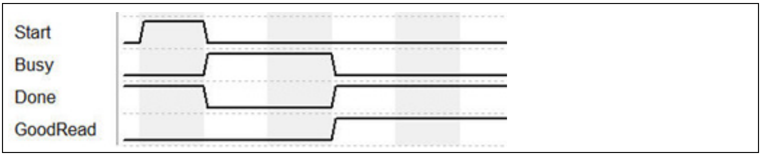


Figure 3.5   GoodRead signal curve

BadRead

After a failed read, **Busy** changes to LOW. **Done**, **BadRead** and **Error** change to HIGH. In addition, the output **BadReads** increases by 1.

For an accurate error analysis, you can evaluate the output **ErrorStatus**.

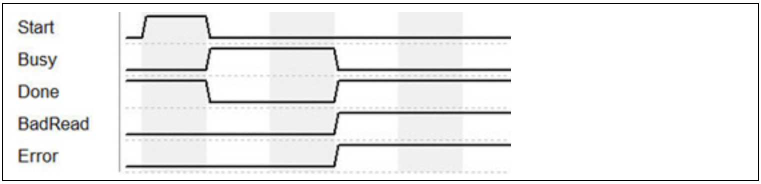


Figure 3.6   BadRead signal curve

4 Fault repair

Fault pattern	Possible cause and remedy
Device does not respond to trigger command (no PLC error, no bus error)	Communication not initialized - Regenerate and reload the instance data block.
Inserting the function block causes PLC errors	Hardware configuration not consistent with function block circuitry - Check the input/output address and the length specified. - Check the PROFINET device name and the IP address.
Bus error during communication via PROFINET	Faulty hardware configuration - Check whether you are using only the **Result 64 byte** module. - Check the PROFINET device name and the IP address.
Function block status **Busy** is permanently HIGH	Consequence of a communication error - Regenerate and reload the instance data block.
ErrorStatus displays value **-1**	Timeoutoccurred - Check the connection between the PLC and the bus devices. - Check the device power supply.

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Worldwide Headquarters
Pepperl+Fuchs GmbH
68307 Mannheim · Germany
Tel. +49 621 776-0
E-mail: info@de.pepperl-fuchs.com

USA Headquarters
Pepperl+Fuchs Inc.
Twinsburg, Ohio 44087 · USA
Tel. +1 330 4253555
E-mail: sales@us.pepperl-fuchs.com

Asia Pacific Headquarters
Pepperl+Fuchs Pte Ltd.
Company Registration No. 199003130E
Singapore 139942
Tel. +65 67799091
E-mail: sales@sg.pepperl-fuchs.com

www.pepperl-fuchs.com

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