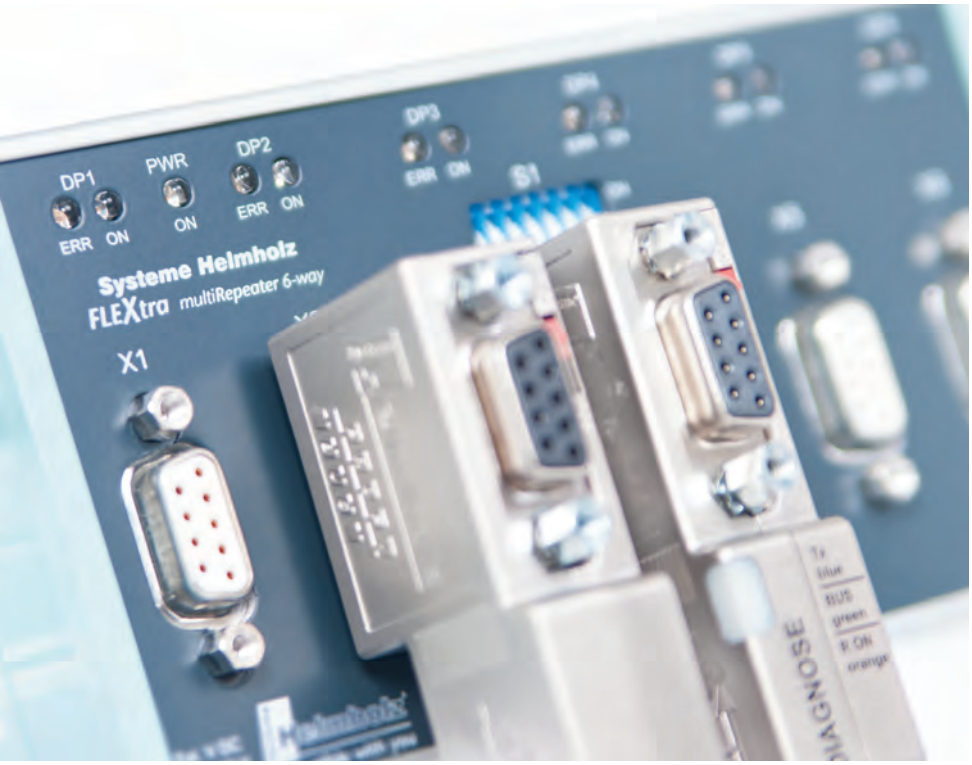
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System Components for Automation

Catalog
15

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TB20 catalog 2

The TB20 distributed fieldbus I/O system is characterized by a variety of performance attributes for practical application. A special feature is the tripartite module configuration with a freely selectable terminal, which can be used for grounding purposes or as auxiliary supply. The reduction of the number of variants and additions made to the compact functionality of each module support an especially easy use of the characteristic strengths of the new I/O system in many applications. On top of this, the ergonomic design of the system makes it easy to handle.

A large number of new bus couplers and an extensive functional expansion of the design and configuration software TB20-ToolBox now make it possible to support the simulation of an arrangement before installation. This ensures the optimal setup of your TB20 I/O system before it is delivered to you ready for use. Pre-installed product macros for electric design systems help you implement your project.

As an open fieldbus I/O system its product portfolio and functionality will be gradually expanded.

You can find the new TB20 catalog and the free of charge design software TB20-ToolBox as well as the product macros for download on www.helmholz.de.
You can of course also request printed versions of the catalogs and the price lists.

How to contact us

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Orders by email:	orders@helmholz.de

On the Internet

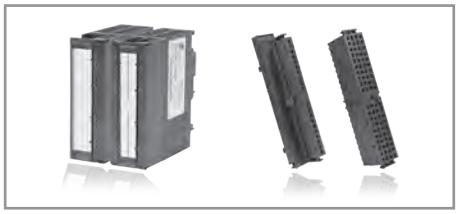
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Date November 2013

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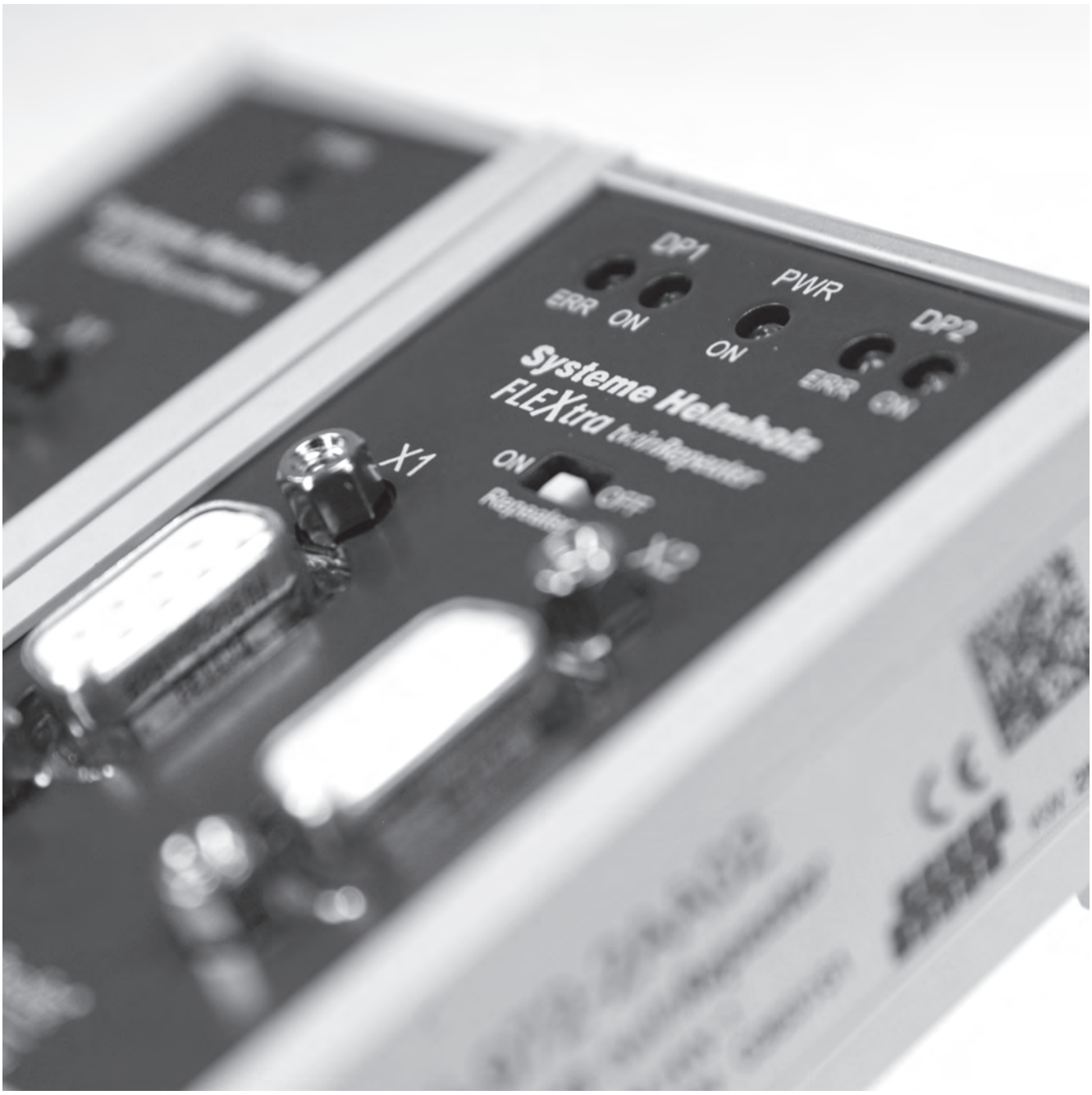
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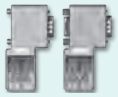
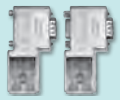
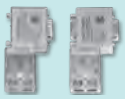


PROFIBUS (www.profibusstecker.de)

PROFIBUS Connectors
Repeater
PROFIBUS FO
Radio System
Communication

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PROFIBUS Connector Overview

Connection type	Cable type	Direction	Product Image	without PG	with PG	Page
Screw terminals		90°		700-972-0BA12	700-972-0BB12	9
		90° with Diagnostic		700-972-7BA12	700-972-7BB12	17
		35°		700-972-0BA41	700-972-0BB41	10
		axial		700-972-0CA12		11
		90° with ATEX accreditation		700-973-0BA12	700-973-0BB12	19
EasyConnect®	solid	90°		700-972-0BA50	700-972-0BB50	12
		90° with Diagnostic		700-972-7BA50	700-972-7BB50	15
		angled		700-972-0BA51	700-972-0BB51	13
		angled with Diagnostic			700-972-7BB51	16
		axial		700-972-0CA50		14
	flexible	90°		700-972-0FA50	700-972-0FB50	12
		90° with Diagnostic		700-972-7FA50	700-972-7FB50	15
		angled		700-972-0FA51	700-972-0FB51	13
		axial		700-972-0CF50		14
M12		90°		700-974-0BA12	700-974-0BB12	18
		90° with Diagnostic			700-974-7BB12	18



PROFIBUS connector 90° with (l.) and without (r.) programming device connector

Features

- Metalized housing
- No loosable parts
- Integrated switchable terminating resistor
- 90° cable outlet
- Screw terminals

The PROFIBUS connector 90° is equipped with proven and reliable screw terminals.
The connector is quickly mounted and has integrated, connectable terminating resistors.
The housing is metallized for improved electromagnetic compatibility.
The PROFIBUS connector also works in the extended ambient temperature range of -25 °C to +85 °C*.

Ordering Data	Order No.
PROFIBUS Connector, 90°	
without prog. device connector, screw terminals	700-972-0BA12
with prog. device connector, screw terminals	700-972-0BB12
Stripping tool for PROFIBUS	700-972-6AA00

The PROFIBUS connectors are also available in boxes containing 10 or 50 pieces.
1) FastConnect is a registered trademark of Siemens AG.

Technical Data	
Programming device connector Order No. 700-972-0BB12 Order No. 700-972-0BA12	 **Yes** **No**
Dimensions (D x W x H mm)	64 x 40 x 17
Weight	Approx. 40 g
Outgoing cable	Vertical outgoing cable suitable for FastConnect[1] stripping tool
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	60/75 °C copper wire up to 1.0 mm²
Connection type	4 terminals
Voltage consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	12.5 mA
Environmental pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C* -25 °C ... +85 °C 75 % at +25 °C
Class of protection	IP 20

* The maximum ambient temperature for UL is 60 °C.

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PROFIBUS Connector, 35°



PROFIBUS connector 35° with (l.) and without (r.) programming device connector

The PROFIBUS connector 35° is equipped with proven and reliable screw terminals.
The connector is quickly mounted and has integrated, connectable terminating resistors.
The housing is metallized for improved electromagnetic compatibility.
The PROFIBUS connector also works in the extended ambient temperature range of -25 °C to +85 °C*.

Features

- Metalized housing
- No loosable parts
- Integrated switchable terminating resistor
- 35° cable outlet
- Screw terminals

Ordering Data	Order No.
PROFIBUS Connector, 35°	
without prog. device connector, screw terminals	**700-972-0BA41**
with prog. device connector, screw terminals	**700-972-0BB41**

The PROFIBUS connectors are also available in boxes containing 10 or 50 pieces.

Technical Data	
Programming device connector Order No. 700-972-0BB41 Order No. 700-972-0BA41	 **Yes** **No**
Dimensions (D x W x H mm)	54 x 40 x 17
Weight	Approx. 40 g
Outgoing cable	35° outgoing cable
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	60/75 °C copper wire up to 1.0 mm²
Connection type	4 terminals
Voltage consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	12.5 mA
Environmental pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C* -25 °C ... +85 °C 75 % at +25 °C
Class of protection	IP 20

* The maximum ambient temperature for UL is 60 °C.

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PROFIBUS connector, with axial cable outlet

Features

- Metalized housing
- No loosable parts
- Integrated switchable terminating resistor
- Axial cable outlet
- Screw terminals

The PROFIBUS connector with axial cable outlet is equipped with proven and reliable screw terminals.
The connector is quickly mounted and has integrated, connectable terminating resistors.
The housing is metallized for improved electromagnetic compatibility.
The PROFIBUS connector also works in the extended ambient temperature range of -25 °C to +85 °C*.

Technical Data	
Dimensions (D x W x H mm)	68 x 35 x 17
Weight	Approx. 40 g
Outgoing cable, axial	Axial outgoing cable, suitable for FastConnect[1] stripping tool
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	60/75 °C copper wire up to 1.0 mm²
Connection type	4 terminals
Voltage consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	12.5 mA
Environmental pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C* -25 °C ... +85 °C 75 % at +25 °C
Class of protection	IP 20

* The maximum ambient temperature for UL is 60 °C.

Ordering Data	Order No.
PROFIBUS Connector, axial axial cable outlet, screw terminals	**700-972-0CA12**

The PROFIBUS connectors are also available in boxes containing 10 or 50 pieces
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PROFIBUS Connector, 90° **EasyConnect®**



PROFIBUS connector, 90° **EasyConnect®**

Features

- Metalized housing
- No loosable parts
- Integrated switchable terminating resistor
- 90° cable outlet
- **EasyConnect®** technology
- Visual connection control

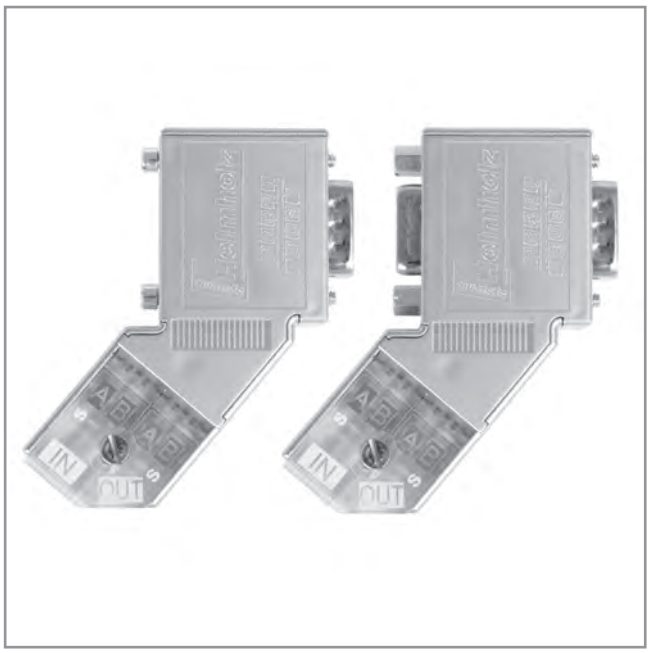
The PROFIBUS connector 90° **EasyConnect®** features quick-connect technology, which makes stripping the bus wires superfluous. Once the cable has been installed it is easy to check (visual inspection) that the PROFIBUS cable has been correctly connected. The housing is metallized for improved electromagnetic compatibility.
The **EasyConnect®** connector also works in the extended ambient temperature range of -25 °C to +85 °C*.

Ordering Data	Order No.
PROFIBUS Connector, 90° EasyConnect®, for solid cables	
without prog. device connector	700-972-0BA50
with prog. device connector	700-972-0BB50
PROFIBUS Connector, 90° EasyConnect®, for flexible cables	
without prog. device connector 90°	700-972-0FA50
with prog. device connector 90°	700-972-0FB50
Stripping tool for PROFIBUS	700-972-6AA00

1) FastConnect is a registered trademark of Siemens AG.

Technical Data	
Programming device connector Order No. 700-972-0BB50/-0FB50 Order No. 700-972-0BA50/-0FA50	 **Yes** **No**
Dimensions (D x W x H mm)	72 x 40 x 17
Weight	Approx. 40 g
Outgoing cable	Vertical outgoing cable suitable for FastConnect[1] stripping tool
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	FC standard cable solid or flexible; 0.64 mm Ø 60/75 °C copper wire
Connection type	**EasyConnect®**
Voltage consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	12.5 mA
Environmental pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C* -25 °C ... +85 °C 75 % at +25 °C
Class of protection	IP 20

* The maximum ambient temperature for UL is 60 °C.



PROFIBUS connector, angled **EasyConnect®**

Features

- Metalized housing
- No loosable parts
- Integrated switchable terminating resistor
- Angled cable outlet
- **EasyConnect®** technology
- Visual connection control

The PROFIBUS connector angled **EasyConnect®** features quick-connect technology, which makes stripping the bus wires superfluous. Once the cable has been installed it is easy to check (visual inspection) that the PROFIBUS cable has been correctly connected.
The housing is metallized for improved electromagnetic compatibility.
The **EasyConnect®** connector also works in the extended ambient temperature range of -25 °C to +85 °C*.

Ordering Data	Order No.
PROFIBUS Connector, angled EasyConnect®, for solid cables	
without prog. device connector	700-972-0BA51
with prog. device connector	700-972-0BB51
PROFIBUS Connector, angled EasyConnect®, for flexible cables	
without prog. device connector	700-972-0FA51
with prog. device connector	700-972-0FB51

Technical Data	
Programming device connector Order No. 700-972-0BB51/-0FB51 Order No. 700-972-0BA51/-0FA51	 **Yes** **No**
Dimensions (D x W x H mm)	68 x 60 x 17
Weight	Approx. 50 g
Outgoing cable	Angled outgoing cable
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	FC standard cable solid or flexible; 0.64 mm Ø 60/75 °C copper wire
Connection type	**EasyConnect®**
Voltage consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	12.5 mA
Environmental pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C* -25 °C ... +85 °C 75 % at +25 °C
Class of protection	IP 20

* The maximum ambient temperature for UL is 60 °C.

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PROFIBUS Connector, axial **EasyConnect®**



PROFIBUS connector, axial **EasyConnect®**

Features

- Metalized housing
- No loosable parts
- Integrated switchable terminating resistor
- Axial cable outlet
- **EasyConnect®** technology
- Visual connection control

The PROFIBUS connector axial **EasyConnect®** features quick-connect technology, which makes stripping the bus wires superfluous. Once the cable has been installed it is easy to check (visual inspection) that the PROFIBUS cable has been correctly connected.
The housing is metallized for improved electromagnetic compatibility.
The **EasyConnect®** connector also works in the extended ambient temperature range of -25 °C to +85 °C*.

Technical Data	
Dimensions (D x W x H mm)	70 x 35 x 17
Weight	Approx. 50 g
Outgoing cable	Vertical outgoing cable suitable for FastConnect[1] stripping tool
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	FC standard cable solid or flexible; 0.64 mm Ø 60/75 °C copper wire
Connection type	**EasyConnect®**
Voltage consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	12.5 mA
Environmental pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C* -25° C ... +85 °C 75 % at +25 °C
Class of protection	IP 20

Ordering Data	Order No.
PROFIBUS Connector, axial EasyConnect®	
for solid cables	**700-972-0CA50**
for flexible cables	**700-972-0CF50**

1) FastConnect is a registered trademark of Siemens AG.

* The maximum ambient temperature for UL is 60 °C.



PROFIBUS Connector, 90° with diagnostic LEDs, **EasyConnect®**

Features

- 3 status LEDs indicate “bus operation”, “station transmitting”, “terminating resistor inserted”
- Metalized housing
- No loosable parts
- Integrated switchable terminating resistor
- 90° cable outlet
- **EasyConnect®** technology
- Visual connection control

The PROFIBUS connector 90° with diagnostic LEDs **EasyConnect®** features quick-connect technology, which makes stripping the bus wires superfluous. Once the cable has been installed it is easy to check (visual inspection) that the PROFIBUS cable has been correctly connected.
The housing is metallized for improved electromagnetic compatibility.
The PROFIBUS diagnostic connector can be used to connect a PROFIBUS network in which the user can check the status of the bus system at any time at a glance.
The three built-in LEDs with the easily distinguished colors blue, green and orange indicate the most important states of the PROFIBUS network at each station.
The state of the terminating resistor (**orange**), whether bus activity is in progress (**green**) and whether the station addressed is participating in bus traffic (**blue**) are all indicated.
This means errors, such as bus interruptions, missing or incorrectly connected terminating resistors and malfunctioning or failed bus stations can be detected immediately.
The **EasyConnect®** connector also works in the extended ambient temperature range of -25 °C to +85 °C*.

Ordering Data	Order No.
PROFIBUS Connector, 90° with diagnostic LEDs EasyConnect®, for solid cables	
without prog. device connector	700-972-7BA50
with prog. device connector	700-972-7BB50
PROFIBUS Connector, 90° with diagnostic LEDs EasyConnect®, for flexible cables	
without prog. device connector	700-972-7FA50
with prog. device connector	700-972-7FB50
Stripping tool for PROFIBUS	700-972-6AA00

1) FastConnect is a registered trademark of Siemens AG.

Technical Data	
Programming device connector Order No. 700-972-7BB50/-7FB50 Order No. 700-972-7BA50/-7FA50	 **Yes** **No**
Dimensions (D x W x H mm)	72 x 40 x 17
Weight	Approx. 40 g
Outgoing cable	Vertical outgoing cable suitable for FastConnect[1] stripping tool
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	FC standard cable solid, 0.64 mm Ø 60/75 °C copper wire
Connection type	**EasyConnect®**
Voltage consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	35 mA
Environmental pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C* -25 °C ... +85 °C 75 % at +25 °C
Class of protection	IP 20

* The maximum ambient temperature for UL is 60 °C.

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PROFIBUS Connector, angled with diagnostic LEDs, **EasyConnect®**



PROFIBUS Connector, angled with diagnostic LEDs, **EasyConnect®**

Features

- 3 status LEDs indicate “bus operation”, “station transmitting”, “terminating resistor inserted”
- Metalized housing
- No loosable parts
- Integrated switchable terminating resistor
- angled cable outlet
- **EasyConnect®** technology
- Visual connection control

The PROFIBUS Connector angled with diagnostic LEDs **EasyConnect®** features quick-connect technology, which makes stripping the bus wires superfluous. Once the cable has been installed it is easy to check (visual inspection) that the PROFIBUS cable has been correctly connected.
The housing is metallized for improved electromagnetic compatibility.
The PROFIBUS diagnostic connector can be used to connect a PROFIBUS network in which the user can check the status of the bus system at any time at a glance.
The three built-in LEDs with the easily distinguished colors blue, green and orange indicate the most important states of the PROFIBUS network at each station.
The state of the terminating resistor (**orange**), whether bus activity is in progress (**green**) and whether the station addressed is participating in bus traffic (**blue**) are all indicated.
This means errors, such as bus interruptions, missing or incorrectly connected terminating resistors and malfunctioning or failed bus stations can be detected immediately.
The **EasyConnect®** connector also works in the extended ambient temperature range of -25 °C to +85 °C*.

Technical Data	
Programming device connector	**Yes**
Dimensions (D x W x H mm)	68 x 60 x 17
Weight	Approx. 50 g
Outgoing cable	Angled outgoing cable
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	FC standard cable solid, 0.64 mm Ø 60/75 °C copper wire
Connection type	**EasyConnect®**
Voltage consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	35 mA
Environmental pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C* -25 °C ... +85 °C 75 % at +25 °C
Class of protection	IP 20

Ordering Data	Order No.
PROFIBUS Connector, angled with diagnostic LEDs EasyConnect®, for solid cables with prog. device connector	 **700-972-7BB51**



PROFIBUS Connector, 90° with diagnostic LEDs

Features

- 3 status LEDs indicate “bus operation”, “station transmitting”, “terminating resistor inserted”
- Metalized housing
- No loosable parts
- Integrated switchable terminating resistor
- 90° cable outlet
- Screw terminals

The PROFIBUS connector 90° with diagnostic LEDs is equipped with proven and reliable screw terminals.
The connector is quickly mounted and has integrated, connectable terminating resistors.
The housing is metallized for improved electromagnetic compatibility.
The PROFIBUS diagnostic connector can be used to connect a PROFIBUS network in which the user can check the status of the bus system at any time at a glance.
The three built-in LEDs with the easily distinguished colors blue, green and orange indicate the most important states of the PROFIBUS network at each station.
The state of the terminating resistor (**orange**), whether bus activity is in progress (**green**) and whether the station addressed is participating in bus traffic (**blue**) are all indicated.
This means errors, such as bus interruptions, missing or incorrectly connected terminating resistors and malfunctioning or failed bus stations can be detected immediately.
The PROFIBUS connector also works in the extended ambient temperature range of -25 °C to +85 °C*.

Ordering Data	Order No.
PROFIBUS Connector, 90° with diagnostic LEDs	
without prog. device connector 90°	**700-972-7BA12**
with prog. device connector 90°	**700-972-7BB12**
Stripping tool for PROFIBUS	**700-972-6AA00**

1) FastConnect is a registered trademark of Siemens AG.

Technical Data	
Programming device connector Order No. 700-972-7BB12 Order No. 700-972-7BA12	 **Yes** **No**
Dimensions (D x W x H mm)	64 x 40 x 17
Weight	Approx. 40 g
Outgoing cable	Vertical outgoing cable suitable for FastConnect[1] stripping tool
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	60/75 °C copper wire up to 1.0 mm²
Connection type	4 terminals
Voltage consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	35 mA
Environmental pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C* -25 °C ... +85 °C 75 % at +25 °C
Class of protection	IP 20

* The maximum ambient temperature for UL is 60 °C.

PROFIBUS Connector 90° M12; PROFIBUS Connector 90° M12 with diagnostic LEDs



PROFIBUS Connector, 90° M12



PROFIBUS Connector, 90° M12 with diagnostic LEDs

The PROFIBUS connector M12 is used to connect PROFIBUS stations to a PROFIBUS cable with an M12 connection. The use of prefabricated system cables eliminates connection faults. Assembly effort is reduced to a minimum.
The connector has two M12 connections and integrated terminating resistors. The housing is metal-coated for improved electromagnetic compatibility.

The version with diagnostic LEDs can be used to connect a PROFIBUS network in which the user can check the status of the bus system at any time at a glance.
The three built-in LEDs with the easily distinguished colors blue, green and orange indicate the most important states of the PROFIBUS network at each station.
The state of the terminating resistor (**orange**), whether bus activity is in progress (**green**) and whether the station addressed is participating in bus traffic (**blue**) are all indicated.
This means errors, such as bus interruptions, missing or incorrectly connected terminating resistors and malfunctioning or failed bus stations can be detected immediately.
The PROFIBUS connector also works in the extended ambient temperature range of -25 °C to +85 °C*.

Order No. 700-974-0BA12 and 700-974-0BB12:

Ordering Data	Order No.
PROFIBUS Connector, 90° M12	
without prog. device connector	700-974-0BA12
with prog. device connector	700-974-0BB12
PROFIBUS Connector, 90° M12 with diagnostic LEDs	
with prog. device connector	700-974-7BB12

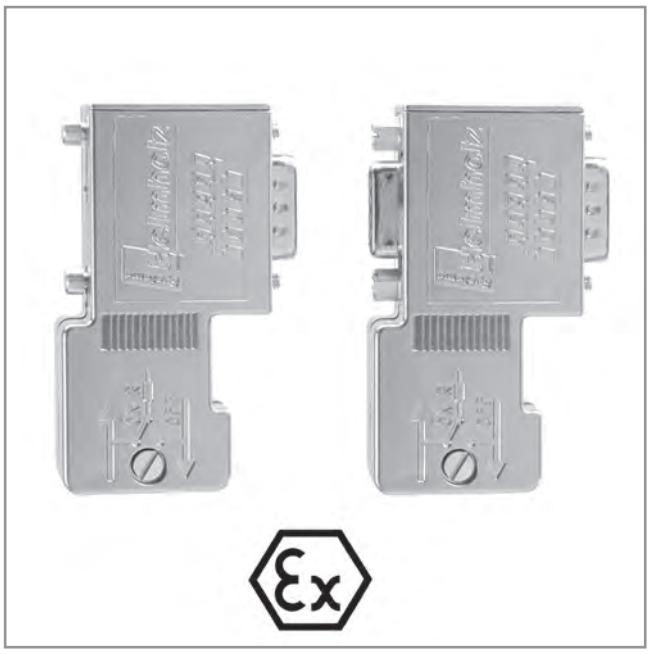
Features

- Metalized housing
- No loosable parts
- Integrated switchable terminating resistor
- 90° cable outlet
- M12 connections

Technical Data		
Programming device connector		
Order No. 700-974-0BB12		**Yes**
Order No. 700-974-0BA12		**No**
Order No. 700-974-7BB12		**Yes**
Dimensions (D x W x H mm)		70 x 41 x 17
Weight		Approx. 60 g
Outgoing cable		Vertical outgoing cable
Terminating resistor		Resistor combination integrated and connectable with slide switch
Transmission rate	max.	12 Mbps
Interfaces		
PROFIBUS station		SUB-D, 9-way
Connection type		M12
Voltage consumption		4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption		
Order No. 700-974-0BB12	max.	12.5 mA
Order No. 700-974-0BA12	max.	12.5 mA
Order No. 700-974-7BB12	max.	35 mA
Environmental pollution degree		2
Ambient temperature		-25 °C ... +85 °C*
Transport and storage temperature		-25 °C ... +85 °C
Relative humidity	max.	75 % at +25 °C
Class of protection		IP 20

* The maximum ambient temperature for UL is 60°C.

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PROFIBUS Connector, 90° with ATEX accreditation

Features

- Metalized housing
- No loosable parts
- Integrated switchable terminating resistor
- 90° cable outlet
- ATEX accreditation (II 3 G Ex nA II T4)
- Screw terminals

The PROFIBUS Connector 90° with ATEX accreditation is for usage in explosion hazardous areas of zone 2 (explosive gas atmosphere appears seldom and for very short time).
The bus connector is plugged directly onto the PROFIBUS interface (SUB-D connector, 9-way) of the PROFIBUS stations. The PROFIBUS cables are connected using 4-way screw terminals. Using a slide switch you can set whether the connector is to be used as a node or segment end. The switch can also be operated when the connector is installed. The setting can be clearly seen. The connector is quickly mounted and has integrated, connectable terminating resistors.

Ordering Data	Order No.
PROFIBUS Connector with ATEX accreditation without prog. device connector, screw terminals with prog. device connector, screw terminals	 **700-973-0BA12** **700-973-0BB12**
Stripping tool for PROFIBUS	**700-972-6AA00**

1) FastConnect is a registered trademark of Siemens AG.

Technical Data	
Programming device connector Order No. 700-973-0BB12 Order No. 700-973-0BA12	 **Yes** **No**
Dimensions (D x W x H mm)	64 x 40 x 17
Weight	Approx. 40 g
Outgoing cable	Vertical outgoing cable suitable for FastConnect[1] stripping tool
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	60/75 °C copper wire up to 1.0 mm²
Connection type	4 terminals
Voltage consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	12.5 mA
Environmental pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-20 °C ... +60 °C -25 °C ... +85 °C 75 % at +25 °C
Class of protection	IP 20

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FLEXtra® twinRepeater, PROFIBUS Repeater

Features

- Can be used as bus extension or as a spur line
- Increases the number of stations on the bus
- System expansion
- Can also be used in MPI networks
- Status LEDs per segment
- Repeater function can be deactivated
- Electrical isolation

PROFIBUS

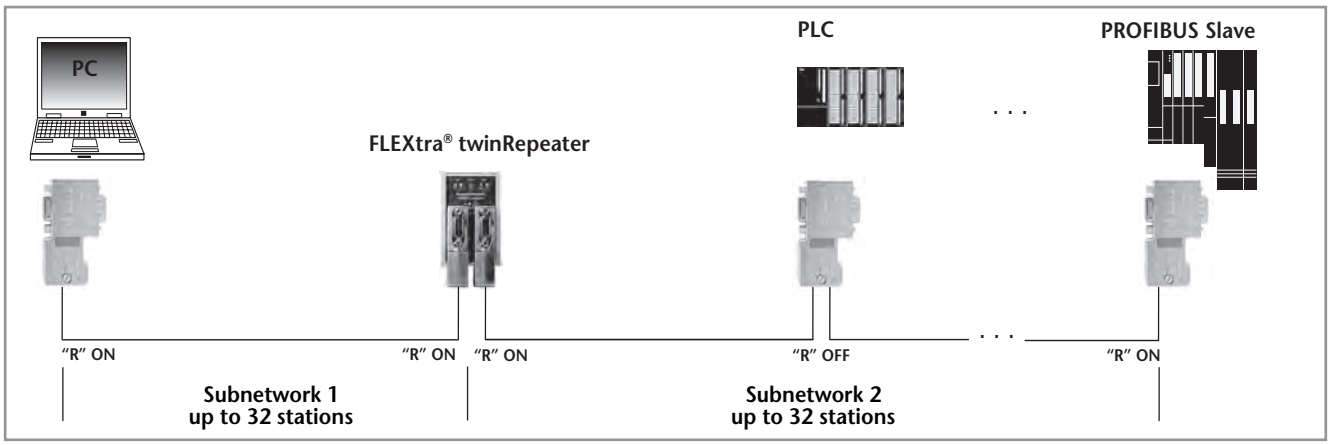
FLEXtra *twinRepeater*

Despite its compact size, the FLEXtra® twinRepeater from Systeme Helmholz GmbH is a fully functioning PROFIBUS repeater. It is designed for mounting on a DIN rail.
The FLEXtra® twinRepeater regenerates the electrical signal arriving on the bus line and retransmits it (bit reshaping and retransmission). The level, edge steepness, and mark-to-space ratio of the signals are reproduced exactly. It supports transmission rates from 9.6 kbps to 12 Mbps and automatically detects them.
The twinRepeater offers an excellent method of extending the bus (up to 1 km with 2 FLEXtra® twinRepeaters), increasing the number of stations, and expanding the system. Moreover, it can be used in MPI networks. In particular, the FLEXtra® twinRepeater can be used to implement spur lines as independent segments. The status LEDs integrated for each segment provide a clear overview of the current bus status. What is more, the FLEXtra® twinRepeater electrically isolates the two PROFIBUS segments from each other.
The twinRepeater also has a switch for deactivating the repeater function. This separates the segments, which nevertheless each remain able to function. PROFIBUS connectors are required for connection to the PROFIBUS cable (also available as a set).

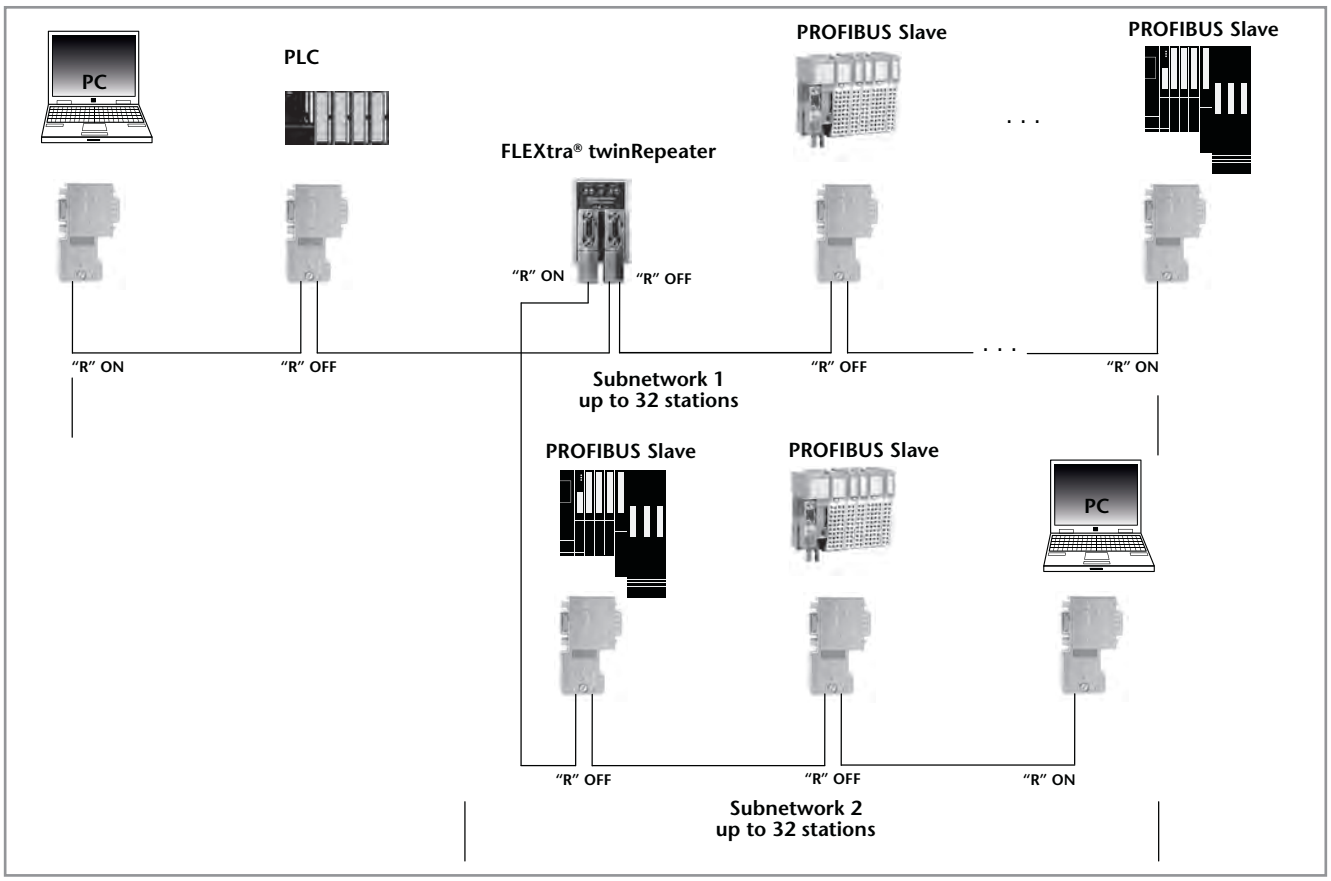
Transmission Rate	max. segment length
9.6 kbps	1000 m
19.2 kbps	1000 m
45.45 kbps	1000 m
93.75 kbps	1000 m
187.5 kbps	1000 m
500 kbps	400 m
1.5 Mbps	200 m
3 Mbps	100 m
6 Mbps	100 m
12 Mbps	100 m

Technical Data		
Dimensions (D x W x H mm)		35 x 51 x 72
Weight		Approx. 110 g
Power supply		18 ... 30 VDC
Output voltage		5 V
Potential separation		500 V
Current consumption	max.	60 mA
Segment connection		Via PROFIBUS Connector
PROFIBUS interface Transmission rate	max.	12 Mbps autodetection
Protocol		PROFIBUS-DP to EN 61 158-2
Ambient temperature Transport and storage temperature		0 °C ... +60 °C -25 °C ... +75 °C
Class of protection		IP 20

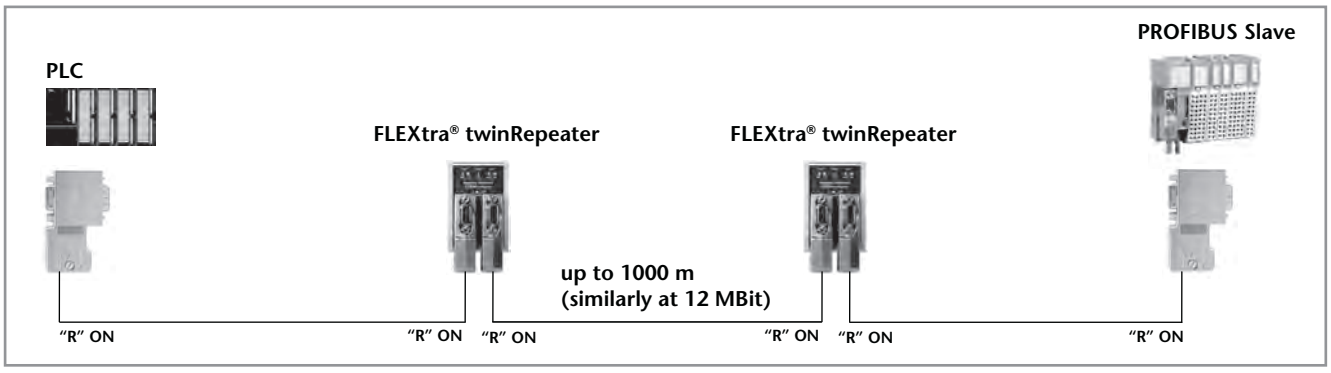
Ordering Data	Order No.
FLEXtra® twinRepeater, PROFIBUS Repeater (incl. instruction)	700-972-2AA02
FLEXtra® twinRepeater Set FLEXtra® twinRepeater, 2 PROFIBUS connectors screw terminals 90° with PG (incl. instruction)	700-972-2XA02



Application example FLEXtra® twinRepeater with more than 32 stations



Application example FLEXtra® twinRepeater with spur line



Application example FLEXtra® twinRepeater with long distances



FLEXtra® multiRepeater 4-way, 6-way

Features

- Building star networks
- Plant expansion up to 6 segments with a single device
- Increased number of stations on the bus
- Deployable for bus extension or as a spur line
- Can also be used in MPI networks
- Status LEDs for each segment
- Repeating function can be deactivated for each segment or completely
- Electrical isolation of all segments

PROFIBUS

FLEXtra *multiRepeater*

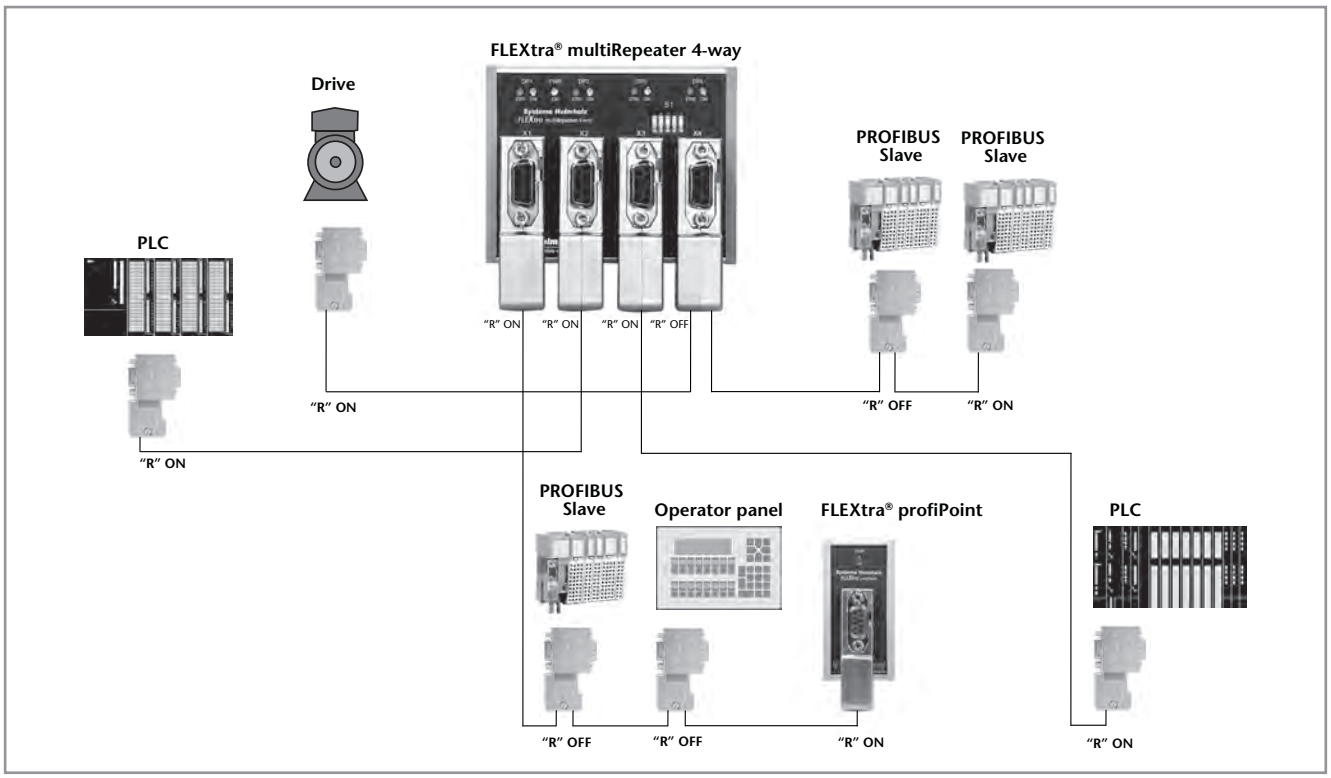
The FLEXtra® multiRepeater from Systeme Helmholz GmbH is a multiple PROFIBUS Repeater. It is designed to be mounted on a DIN rail. The FLEXtra® multiRepeater regenerates the electrical signal arriving on a bus cable and retransmits it (bit reshaping and retransmission).
The level, edge steepness and mark-to-space ratio of the signals are reproduced exactly. It supports transmission rates of 9.6 kbps to 12 Mbps and detects the rate automatically.
The multiRepeater can be used to extend the bus, to increase the number of stations on the bus, and to expand the plant. Use in MPI networks is also possible. As a special application, the FLEXtra® multiRepeater enables a star network with autonomous segments. The status LEDs integrated for each segment provide a fast overview of the bus status.
Moreover, the FLEXtra® multiRepeater ensures electrical isolation between the PROFIBUS segments. The multiRepeater also has a DIP switch for disconnecting individual segments and a switch for disconnecting all segments. The segments are disconnected but each segment remains separately functional. PROFIBUS connectors are required for connection to the PROFIBUS cable.

Transmission Rate	max. segment length
9.6 kbps	1000 m
19.2 kbps	1000 m
45.45 kbps	1000 m
93.75 kbps	1000 m
187.5 kbps	1000 m
500 kbps	400 m
1.5 Mbps	200 m
3 Mbps	100 m
6 Mbps	100 m
12 Mbps	100 m

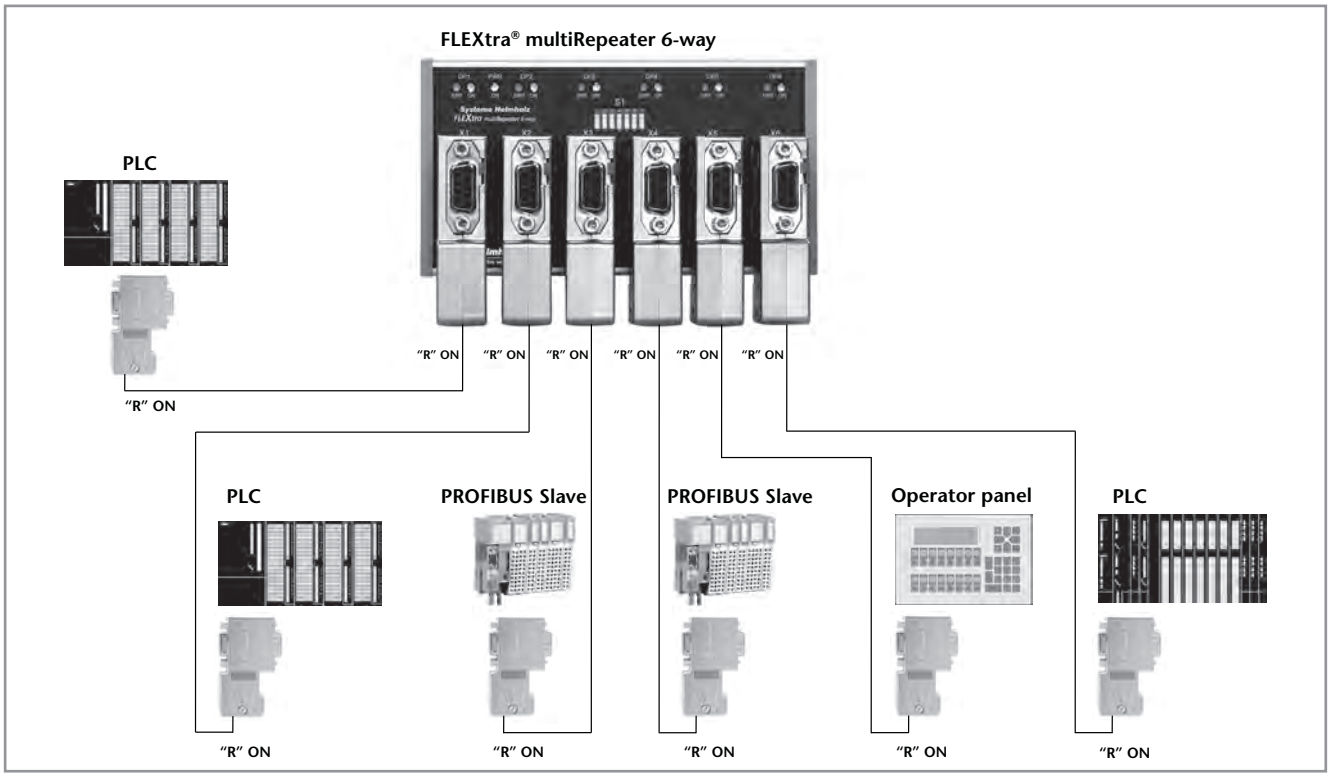
Technical Data		
	4-way	6-way
Dimensions (D x W x H mm)	35 x 94 x 72	35 x 137 x 72
Weight	Approx. 180 g	Approx. 275 g
Power supply	18 ... 30 VDC	18 ... 30 VDC
Output voltage	5 V, 150 mA per Segment	5 V, 150 mA per Segment
Potential separation	500 V	500 V
Current consuption max.	280 mA	400 mA
Segment connection	Via PROFIBUS Connector	Via PROFIBUS Connector
PROFIBUS interface Transmission rate max.	12 Mbps autodetection	12 Mbps autodetection
Protocol	PROFIBUS-DP to EN 61 158-2	PROFIBUS-DP to EN 61 158-2
Surrounding air temp. Transport and storage temperature	0 °C ... +60 °C -25 °C ... +75 °C	0 °C ... +60 °C -25 °C ... +75 °C
Class of protection	IP 20	IP 20

Ordering Data	Order No.
FLEXtra® multiRepeater 4-way, PROFIBUS Repeater (incl. instruction)	700-972-4AA02
FLEXtra® multiRepeater 6-way , PROFIBUS Repeater (incl. instruction)	700-972-6AA02

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Application example FLEXtra® multiRepeater 4-way



Application example FLEXtra® multiRepeater 6-way



PROFIBUS Compact Repeater

Features

- A real alternative to conventional PROFIBUS repeaters
- No additional space needed in the cabinet
- Very flexible in its use
- Can be used as a bus extension or spur line
- Increases the number of stations on the bus
- System expansion
- Can also be used in MPI networks
- Status LEDs
- 24 V supply is not necessary
- 5 V power supply direct from the PROFIBUS, with that it's usable on every PROFIBUS device
- Electrical isolation

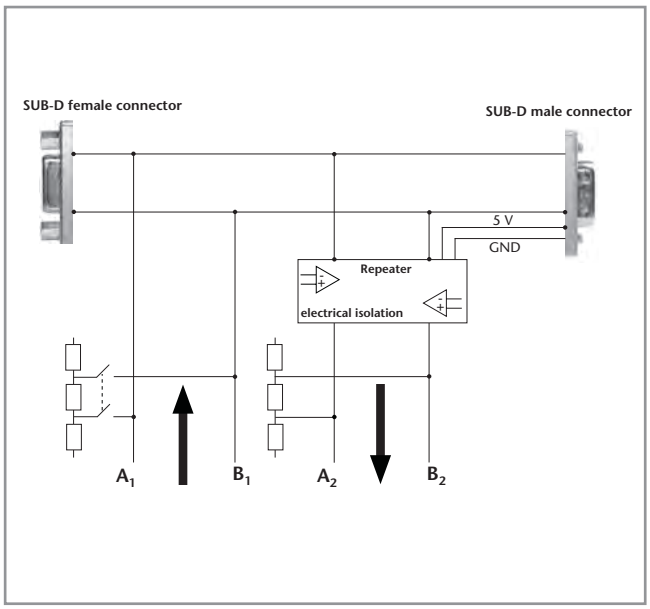
The patented PROFIBUS Compact Repeater from Systeme Helmholz GmbH is a fully functional PROFIBUS repeater. It is applicable very flexible thanks to it's very small style.
The repeater covers transmission rates from 9.6 Kbps to 12 Mbps. The transmitted signals are regenerated by the repeater and resent (Bit-Reshaping and Retransmission), so trouble in the line are mostly avoided.
In term of price as well as in term of technical reasons the PROFIBUS Compact Repeater is a real option for multitude applications instead of using standard repeaters.
It can be used for bus extensions (up to 1 km with 2 PROFIBUS Compact Repeaters), increasement of the stations as well as for plant extensions.
The operation in MPI networks is also possible.
As a special application option the PROFIBUS Compact Repeater offers you the possibility the usage of drop cables as standalone segments. Therefore it can be plugged directly on the PG port of a built in PROFIBUS connector.
Due to the compact shape no additional room is needed in the cabinet, as the PROFIBUS Compact Repeater can be used instead of PROFIBUS Connector, or simply plugged onto a node in the PROFIBUS Network.
Furthermore no separate power supply is needed, as the PROFIBUS Compact Repeater is using the 5 V power supply, every PROFIBUS device possesses for the terminating resistor. The PROFIBUS Compact Repeater generates an isolation between both PROFIBUS segments. The integrated status LEDs provide a fast overview on the current Bus status.

Transmission Rate	max. segment length
9.6 kbps	1000 m
19.2 kbps	1000 m
45.45 kbps	1000 m
93.75 kbps	1000 m
187.5 kbps	1000 m
500 kbps	400 m
1.5 Mbps	200 m
3 Mbps	100 m
6 Mbps	100 m
12 Mbps	100 m

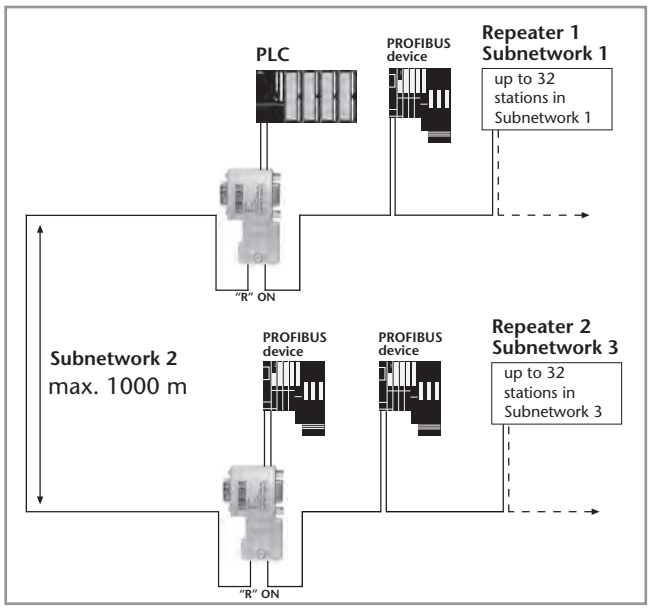
Technical Data		
Dimensions (D x W x H mm)		64 x 40 x 17
Weight		Approx. 40 g
Power supply Voltage		+ 5 V DC
Current consumption	typ.	100 mA
Connection		SUB-D, 9-way
PROFIBUS interface Transmission rate	max.	9.6 kbps to 12 Mbps autodetection
Protocol		PROFIBUS-DP per EN 50 170
Connection		SUB-D, 9-way
Max. outside diameter		8.0 mm
PROFIBUS cable		60/70 °C copper wire up to 1.0 mm²
Connection type		4 terminals
Environmental pollution degree		2
Ambient temperature Transport and storage temperature		-25 °C ... +85 °C -25 °C ... +85 °C
Class of protection		IP 20

* The maximum ambient temperature for UL is 60 °C.

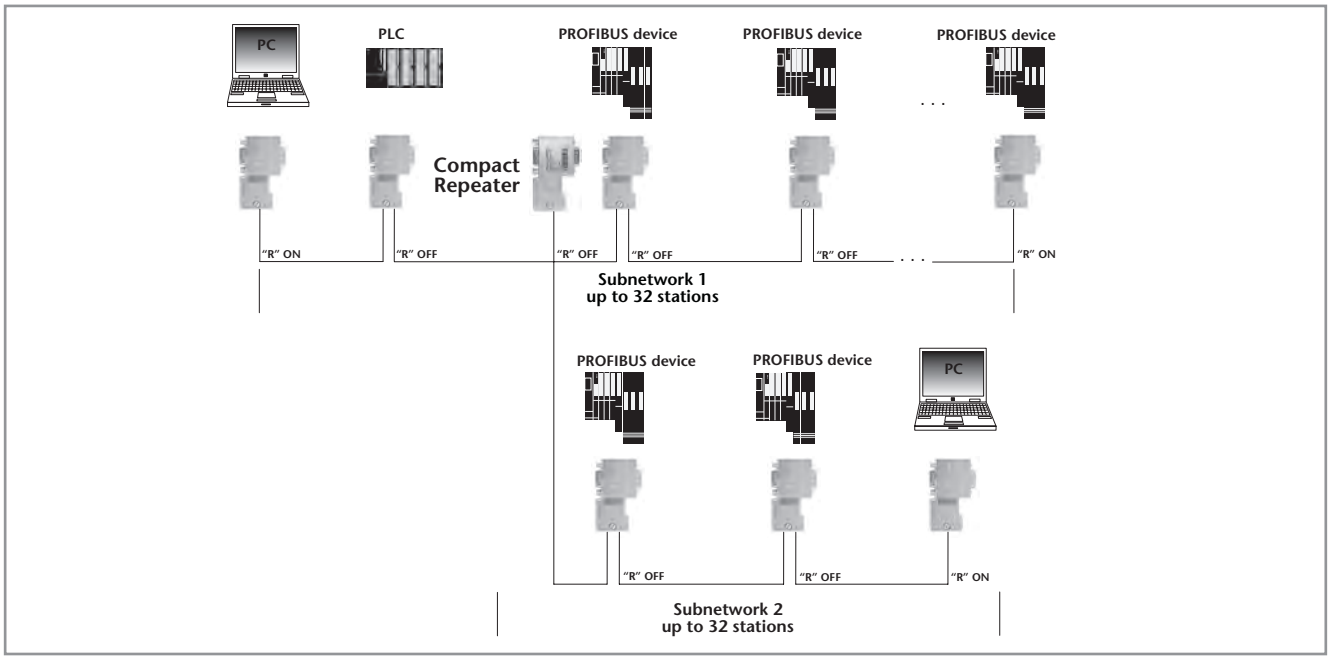
Ordering Data	Order No.
PROFIBUS Compact Repeater, with prog. device connector, screw terminals (incl. instruction)	700-972-0RB12
Stripping tool for PROFIBUS	700-972-6AA00



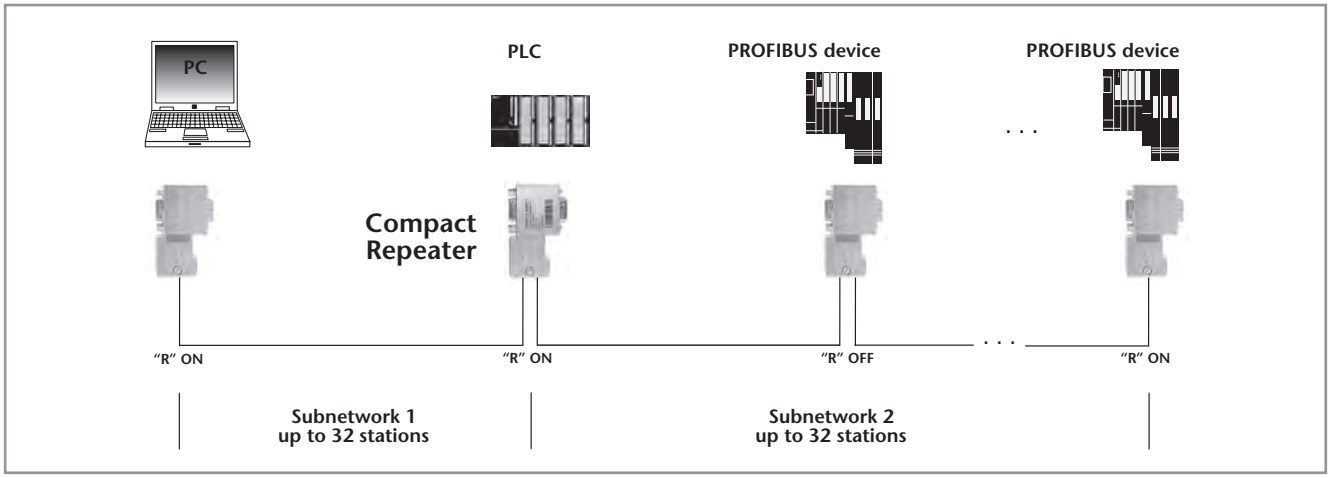
Internal design



Application example, long distances



Application example, spur line



Application example with more than 32 stations



OPTopus, PROFIBUS Optical Link

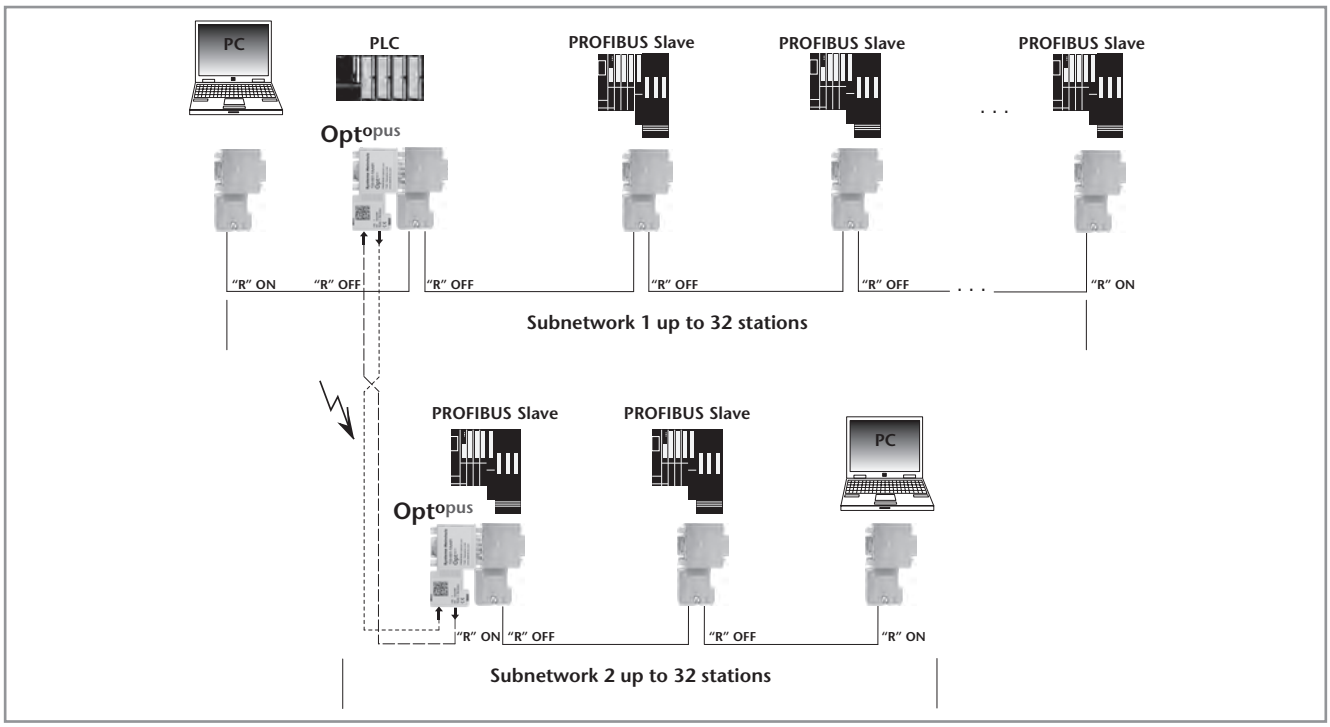
Features

- PROFIBUS baud rate (9.6 kbps to 12 Mbps), autodetect
- Compact design, not larger than a Helmholz PROFIBUS connector
- LED display of traffic/bus errors separately for FO and PROFIBUS segment
- Switchable terminating resistor with optical display
- Complete electrical isolation
- Insensitive to EMC influences
- No 24 V power supply required
- Powered directly with 5 V through the PROFIBUS station
- Available with 3 different optical interfaces (SMA, BFOC[2], Versatile Link[3])
- Suitable for POF[1] and PCF[1] FO
- Range: Cable length POF[1] 65 m
  Cable length PCF[1] 250 m
- POF[1]-FO plug-in connector supplied

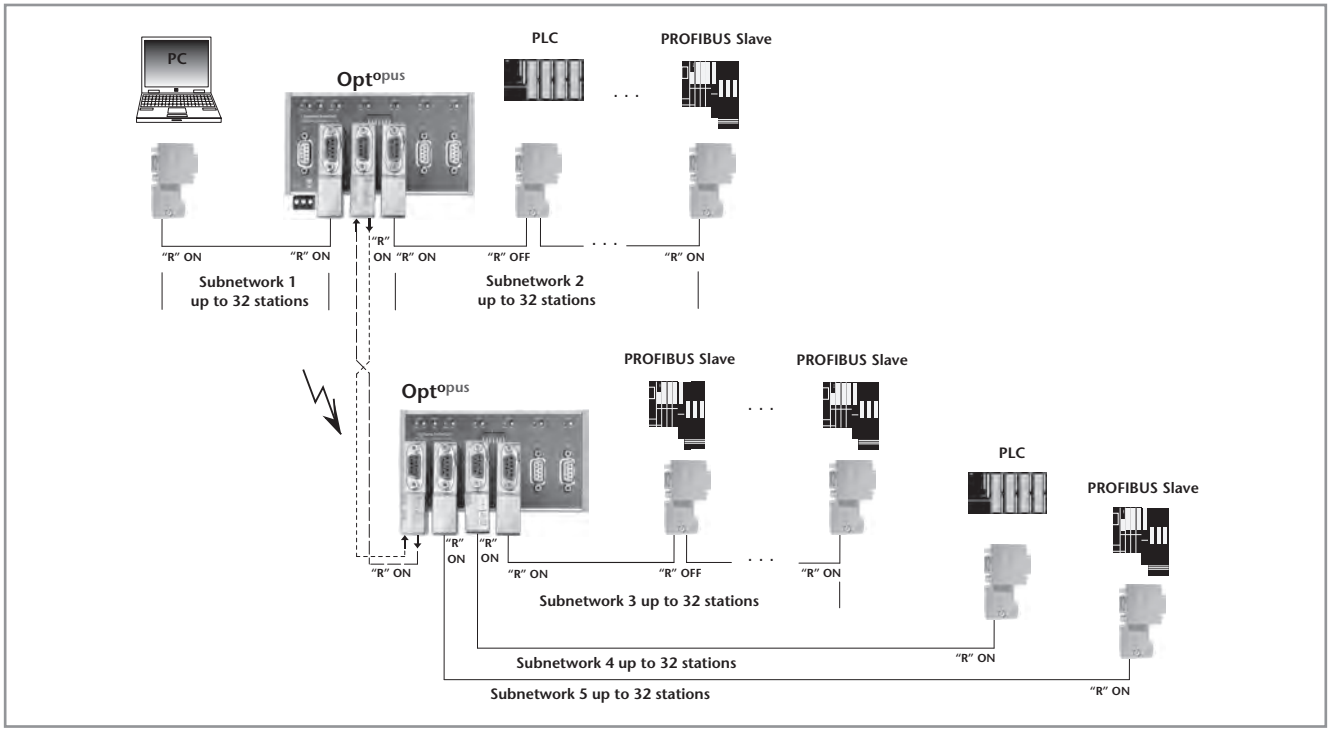
The OPTopus PROFIBUS Optical Link from Systeme Helmholz GmbH is a full PROFIBUS repeater with an integrated FO interface. The OPTopus permits transmission rates of 9.6 kbps to 12 Mbps on the PROFIBUS with automatic detection of the baud rate. With its optical signal transmission, it offers complete electrical isolation between the PROFIBUS stations and PROFIBUS subnetworks. A further advantage of the OPTopus is its insensitivity to EMC influences.
Because of its compact design, no additional space in the control cabinet is required for deployment because the OPTopus PROFIBUS Optical Link can be used instead of a PROFIBUS connector and is simply plugged into a station in the PROFIBUS network. Moreover, no separate power supply is required because the OPTopus uses the 5 V power supply that every PROFIBUS device provides for the terminating resistor.
The transmission signals are converted into optical signals by the OPTopus and are transmitted on the FO line in this way. The signals are also regenerated with their edge steepness, level and mark-to-space ratio. The OPTopus PROFIBUS is available with 3 different optical interfaces and can therefore also be perfectly combined with existing transmission systems. It is suitable for POF[1] and PCF[1] FO. For the close range up to 65 m, an optical transmission line can be set up very quickly and without great effort using POF[1]. The scope of supply of the OPTopus contains the appropriate connectors for this purpose. Only a standard POF[1] FO is additionally required. For larger distances up to 250 m, PCF[1]-FOs can be used. The optical interface of the OPTopus transmits in the visual range (650 nm red light), which enables initial checking of the optical transmission line without expensive measuring instruments.
For many applications, the OPTopus PROFIBUS Optical Link is a real alternative to conventional optical signal converters, both technically and in terms of price. It additionally provides the advantages of a normal repeater. Bus extension, increase in the number of stations and expansion of your plant. Use in MPI networks is also possible.
As a special application, the PROFIBUS Optical Link permits the building of spur lines as autonomous segments.
For this purpose, it can be plugged into programming device port of an existing PROFIBUS connector.
The OPTopus PROFIBUS Optical Link for diagnostic purposes provides a traffic LED and an error LED for the PROFIBUS, and for the optical interface. These keep you informed at all times about the bus status and ensure targeted troubleshooting.
There is also a power LED that provides information about the operating status and status of the terminating resistors.

Technical Data	
Dimensions in mm (D x W x H)	Approx. 64 x 40 x 17
Weight	Approx. 40 g
Power supply Voltage	 + 5 V DC
Current consumption typ.	100 mA
Connector socket	SUB-D 9-way
PROFIBUS interface Transmission rate	 9.6 kbps to 12 Mbps detected automatically
Protocol	PROFIBUS-DP acc. to EN 61 158-2:2011-09
Connection	Socket, SUB-D, 9-way
Optical interface Wavelength	 650 nm
Numerical aperture transmit diode	0.50
Launchable optical power/ receiver sensitivity POF[1] 980/1000 µm PCF[1] 200/230 µm	 -7.5 dBm/-20 dBm -18 dBm/-22 dBm
Overdrive limit receiver	-3 dBm
Max. transmission distance POF[1] 980/1000 µm (160 dB/km) PCF[1] 200/230 µm (10 dB/km)	 Up to 65 m Up to 250 m
Ambient temperature Transport and storage temperature	0 °C ... +60 °C -25 °C ... +75 °C
Class of protection	IP 20

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Generation of a completely electrically isolated subnetwork.



Establishment of a link between two repeaters that is not subject to EMC interference.

Ordering Data	Order No.
OPTopus, PROFIBUS Optical Link	
Versatile Link[3], 650 nm, POF/PCF[1] (incl. instruction, POF plug-in connector)	700-991-1AA01
BFOC[2], 650 nm, POF/PCF[1] (incl. instruction, POF plug-in connector)	700-992-1AA01
SMA, 650 nm, POF/PCF[1] (incl. instruction, POF plug-in connector)	700-993-1AA01

Note

1) **PCF** stands for Polymer Cladded Fiber and is equivalent to HCS (HCS is a brand of Ensign-Bickford Optics Company).
POF stands for Polymeric Optical Fiber .
For the PCF/HCS assembling are extra PCF/HCS connectors, and a special assembly tool according to the required plug connection-technology required. You get the corresponding PCF/HCS plugs from your FO cable supplier.

2) BFOC stands for Bajonett Fiber Optic Connector. This type of connector is function compatible with ST connectors (ST is registered trademark of company AT&T).

3) The Versatile Link connector is function compatible with HP-Simplex/ Duplex connectors.

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FLEXtra® FO, PROFIBUS Optical Hub

Features

- PROFIBUS repeater with 5 optical MPI/PROFIBUS interfaces
- Can perfectly be combined with existing transmission systems
- PROFIBUS baud rate (9.6 kbps to 12 Mbps), autodetect
- Disconnection of all or individual segments possible
- Use in high vulnerable emc areas
- Suitable for POF[1)] and PCF[1)] FO
- Available with 3 different optical interfaces (SMA, BFOC[2)], Versatile Link[3)])
- Range: Cable length POF[1)] 65 m
  Cable length PCF[1)] 250 m
- LED display of traffic/bus errors separately for every FO and PROFIBUS segment

The FLEXtra® FO is a PROFIBUS repeater with the capability of expansion by 2 (FLEXtra® FO 650-2) or by 5 (FLEXtra® FO 650-5) optical MPI/PROFIBUS segments.
It translates an electrical MPI/PROFBUS interface into an optical MPI/PROFIBUS interface and vice-versa.
The FLEXtra® FO permits transmission rates of 9.6 kbps to 12 Mbps on the PROFIBUS with automatic detection of the baud rate. With its optical signal transmission, it offers complete electrical isolation between the PROFIBUS stations and PROFIBUS sub networks.
A further advantage of the FLEXtra® FO is its being unaffected by EMC influences.
The transmission signals are converted into optical signals by the FLEXtra® FO and are transmitted on the FO line in this way. In addition the flank slope, level and duty cycle. of the signals are regenerated. The FLEXtra® FO is available with 3 different optical interfaces and can therefore also be perfectly combined with existing transmission systems. It is suitable for POF[1)] and PCF[1)] FO.
For the close range up to 65 m, an optical transmission line can be set up very quickly and without great effort using POF[1)]. For longer distances up to 250 m, PCF[1)] FOs can be used.
The optical interface of the FLEXtra® FO transmits in the visual range (650 nm red light), which enables initial checking of the optical transmission line without expensive measuring instruments.
The FLEXtra® FO incorporates integrated status LEDs for every segment, for use in diagnosis. These provide a continual status of the busses and the optical interfaces and assist with detailed fault finding. The FLEXtra® FO also has DIP switches for disconnecting all or individual segments. The segments are disconnected but each segment remains separately functional.

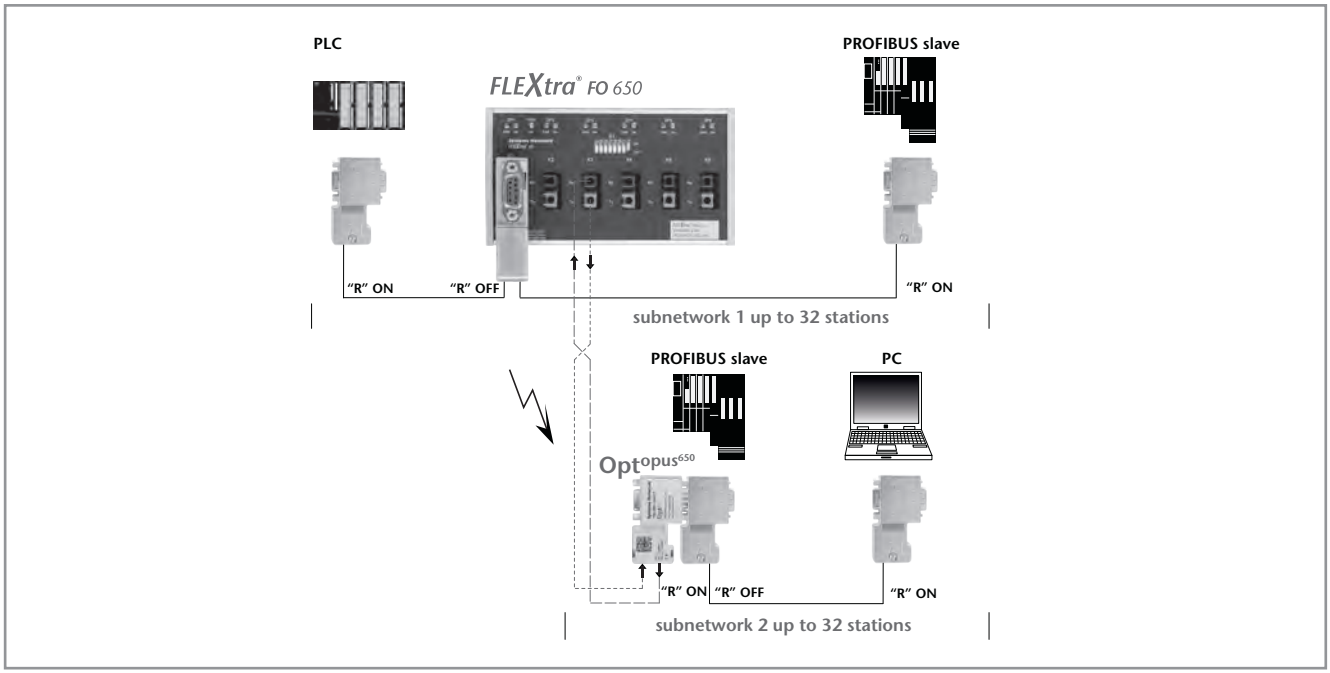
Ordering Data	Order No.
FLEXtra® FO 650-2, PROFIBUS Optical Hub	
Versatile Link[3)], 650 nm, POF/PCF[1)] (incl. instruction)	**700-996-2CA01**
BFOC[2)], 650 nm, POF/PCF[1)] (incl. instruction)	**700-996-2AA01**
SMA, 650 nm, POF/PCF[1)] (incl. instruction)	**700-996-2BA01**
FLEXtra® FO 650-5, PROFIBUS Optical Hub	
Versatile Link[3)], 650 nm, POF/PCF[1)] (incl. instruction)	**700-996-5CA01**
BFOC[2)], 650 nm, POF/PCF[1)] (incl. instruction)	**700-996-5AA01**
SMA, 650 nm, POF/PCF[1)] (incl. instruction)	**700-996-5BA01**

Note
1) **PCF** stands for Polymer Cladded Fiber and is equivalent to HCS (HCS is a brand of Ensign-Bickford Optics Company).
POF stands for Polymeric Optical Fiber .
Connector plugs for the optical connection are not included. These are available from your FO supplier.

2) BFOC stands for Bajonett Fiber Optic Connector. This type of connector is function compatible with ST connectors (ST is registered trademark of company AT&T).

3) The Versatile Link connector is function compatible with HP-Simplex/ Duplex connectors.

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A fully electrical isolated subnetwork.

Technical Data		
	650-2	**650-5**
Dimensions in mm (D x W x H)	35 x 70 x 72	35 x 137 x 72
Weight	ca. 125 g	ca. 250 g
Power supply • Voltage • Electrical isolation • Current consumption • incl. 5 V-consumer load • incl. 24 V-consumer load	 +18–30 V DC 500 V max. 200 mA max. 400 mA	 +18–30 V DC 500 V max. 400 mA max. 600 mA
Output voltage Port X1 • Voltage 1 • Voltage 2	 5 V, max. 150 mA +18–30 V DC, max. 200 mA (like supply voltage)	 5 V, max. 150 mA +18–30 V DC, max. 200 mA (like supply voltage)
Potential separation	500 V	500 V
Current consuption max.	200 mA	400 mA
Segment connection Port 1 Port 2–5	 SUB-D 9-way BFOC[2], SMA, Versatile Link[3]	 SUB-D 9-way BFOC[2], SMA, Versatile Link[3]
PROFIBUS interface Transmission rate	 9.6 | 19.2 | 45.45 | 93.75 | 187.5 | 500 Kbps 1.5 | 3 | 6 and 12 Mbps autodetection	 9.6 | 19.2 | 45.45 | 93.75 | 187.5 | 500 Kbps 1.5 | 3 | 6 and 12 Mbps autodetection
Protocol	PROFIBUS-DP acc. to EN 61 158-2:2011-09	PROFIBUS-DP acc. to EN 61 158-2:2011-09
Optical interface Wavelength	 650 nm	 650 nm
Numerical aperture transmit diode	0.50	0.50
Launchable optical power/ receiver sensitivity POF[1] 980/1000 µm PCF[1] 200/230 µm	 -7.5 dBm/-20 dBm -18 dBm/-22 dBm	 -7.5 dBm/-20 dBm -18 dBm/-22 dBm
Overdrive limit receiver	-3 dBm	-3 dBm
Max. transmission distance POF[1] 980/1000 µm (160 dB/km) PCF[1] 200/230 µm (10 dB/km)	 Up to 65 m Up to 250 m	 Up to 65 m Up to 250 m
Ambient temperature Transport and storage temperature	0 °C to +60 °C -25 °C to +75 °C	0 °C to +60 °C -25 °C to +75 °C
Class of protection	IP 20	IP 20

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viBlu, PROFIBUS radio system

Features viBlu 200

- Settable transmission power
- Up to 3 radio slaves on one radio master
- Bluetooth in the license-exempt 2.4 GHz band
- Up to 1.5 Mbps PROFIBUS-DP
- Simple configuration via USB interface
- No configuration necessary in STEP[1)] 7
- Extensive diagnostics of the radio interface
- Ranges extending up to 100 m

viBlu

The PROFIBUS radio system viBlu is a virtual cable that permits the linking of distributed I/Os or intelligent devices (e.g. rotating tables, conveyor systems, etc.) by means of radio.
Data transmission is performed via Bluetooth in the license-exempt 2.4 GHz band and supports the PROFIBUS baud rates of 9.6 kbps to 1.5 Mbps.
Depending on the local circumstances, transmission distances of up to 100 m are possible.
Use of the PROFIBUS radio module is possible in single-master, and in multi-master systems and permits full PROFIBUS expansion. At present, only PROFIBUS-DP-slaves are supported behind a viBlu slave.
The PROFIBUS radio module is powered with 24 V DC from an external power supply.
A 9-way SubD socket is used for the PROFIBUS connection. Moreover, an USB port is integrated to be used for parameterization of the radio link.
5 LEDs on the device provide information about the operating status on the PROFIBUS and on the radio side.
Antennas with a larger gain can optionally be connected to the radio module through an RP-SMA socket on the device to optimize the range.
Outside Europe, use of antennas with a gain of more than 10 dBi is permitted, enabling radio-relay systems with a range, for example, of up to a few kilometers.

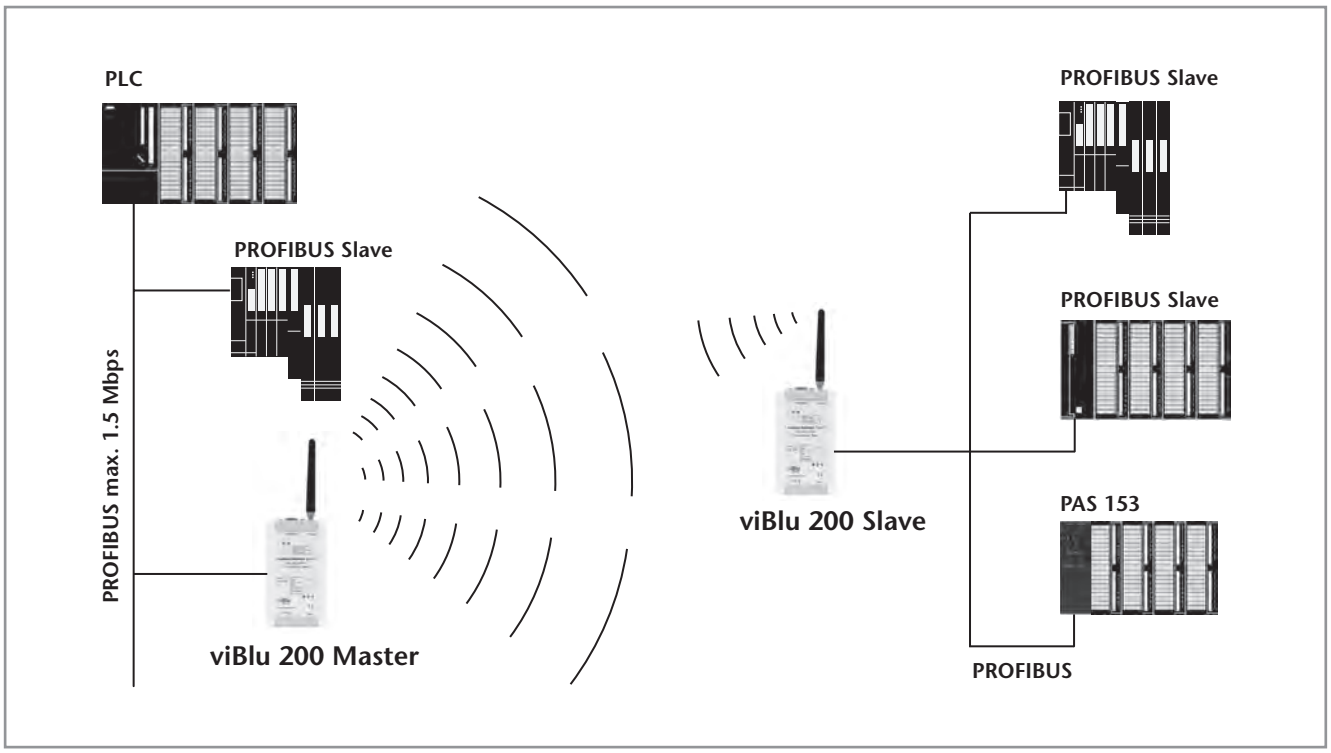
Accessory-Note
For antennas, see page 34.

Ordering Data	Order No.
viBlu 200 Master*, PROFIBUS Radio System, 2.4 GHz Bluetooth connection up to 3 Slaves; 1.5 Mbps	**700-762-PFM11**
viBlu 200 Slave*, PROFIBUS Radio System, 2.4 GHz Bluetooth	**700-762-PFS11**
*(incl. manual, CD with software)	

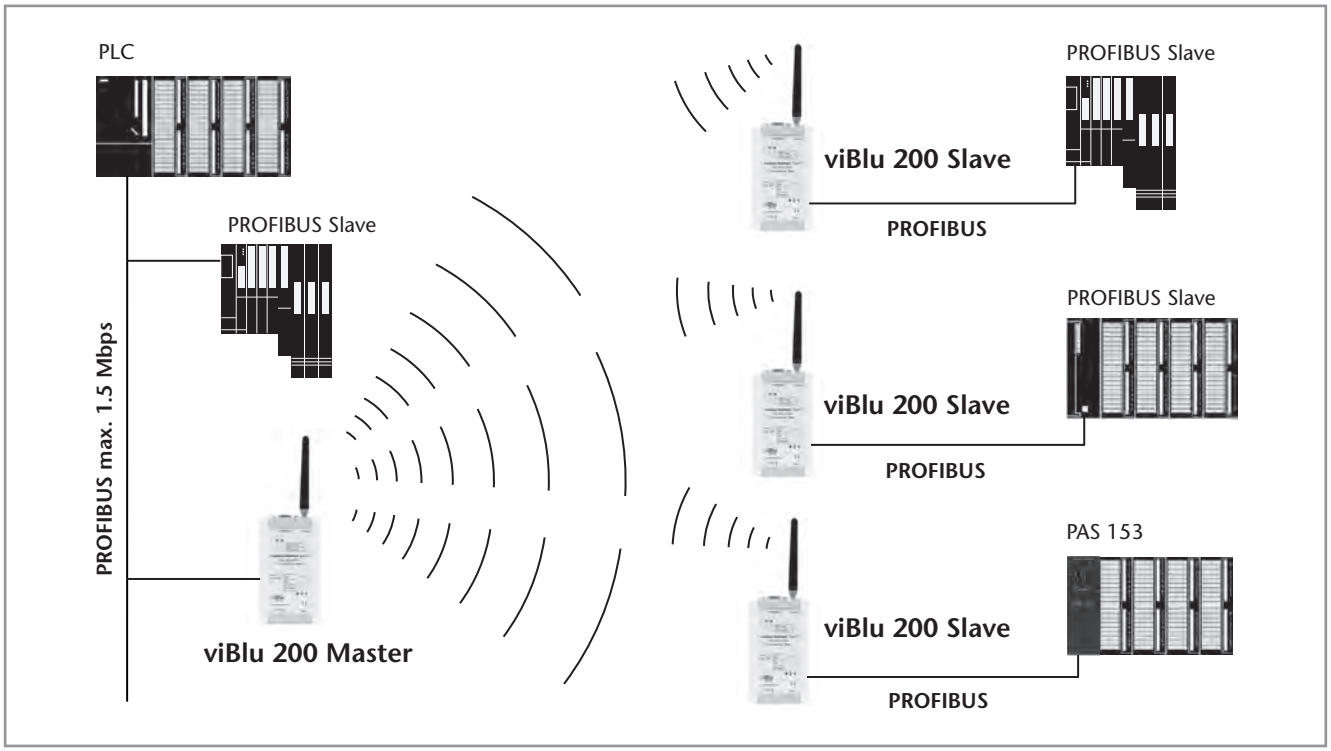
1) STEP is a registered trademark of Siemens AG.

Technical Data	
	viBlu 200
Dimensions (D x W x H mm)	130 x 68 x 30
Weight	Approx. 170 g
Power supply Voltage	DC 24 V (18 ... 30 V)
Current consumption	Typ. 100 mA
PROFIBUS Type	RS485, isolated
Number of DP/slaves	3 slaves
Transmission rate	9.6 kbps ... 1.5 Mbps, autodetection
Connection	SUB-D, 9-way
Radio interface Protocol	Bluetooth
Range	Up to 100 m
Baud rate	Up to 700 kbps
Antenna connection	RP-SMA socket
Ambient temperature	0 °C ... 60 °C
Indicators	5 LEDs
Class of protection	IP 20

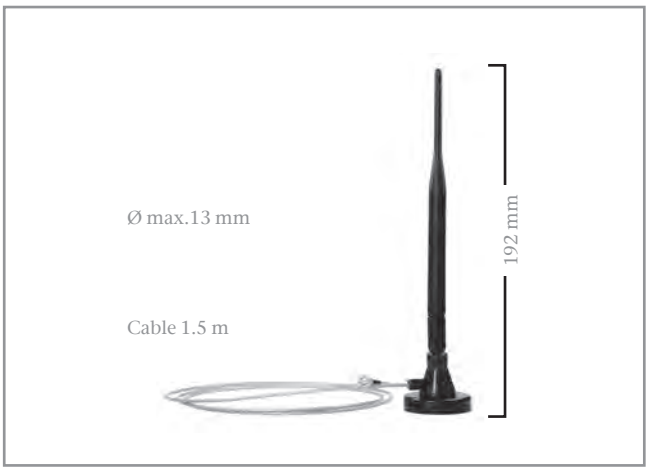
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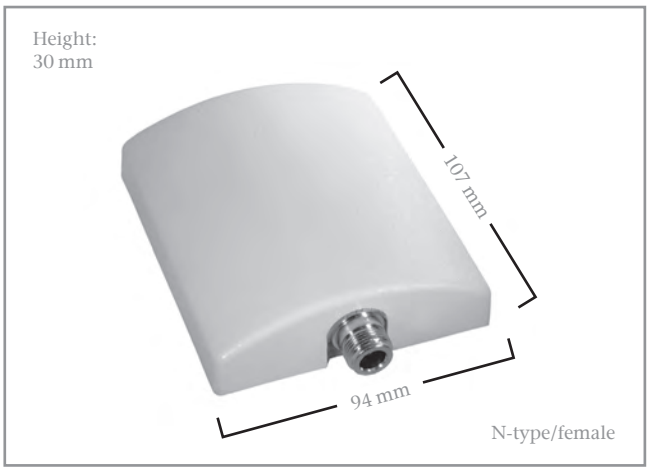
Application example viBlu 200 with a radio slave and up to 3 PROFIBUS-DP stations



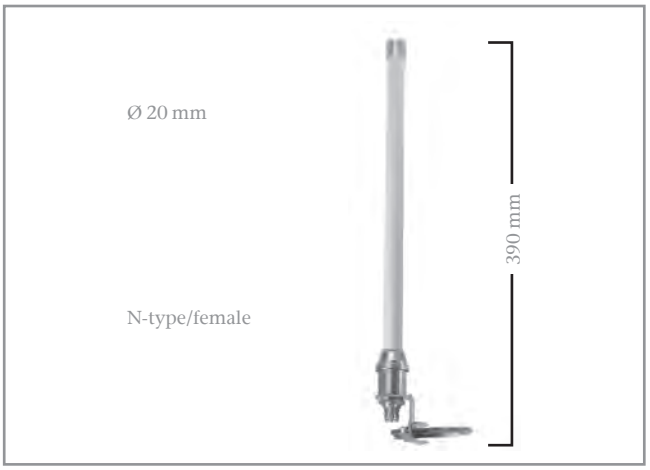
Application example viBlu 200 with 3 radio slaves



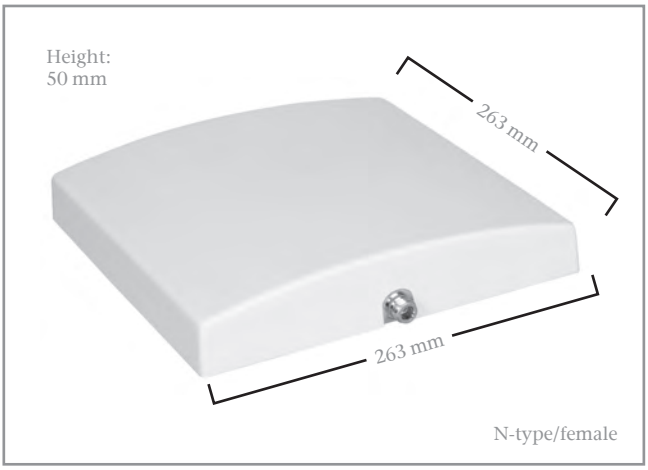
5 dBi magnetic base antenna



Panel 8 dBi antenna



Omni 8 dBi antenna, including wallclamp



Panel 18 dBi antenna

To optimize the reception power of the NETLink® WLAN and the PROFIBUS radio system viBlu, Systeme Helmholz GmbH can provide a selection of different antennas. Depending on the design, connecting cables can be procured to match. When planning a radio link, it is important always to note that, both in a mobile and in a stationary installations, the range is to some degree influenced by obstacles and the surrounding structures. Due to the max. transmission power of 100 mW in the 2.4 GHz band, radio links of 10 to 30 meters can be implemented in buildings. Outdoors, 100 to 300 meters can be considered realistic for an unobstructed radio link. With a directed panel antenna, more than 300 meters are possible in optimum conditions.

Ordering Data	Order No.
2.4 GHz 5 dBi Magnetic base antenna, for WLAN and Bluetooth (with 1.5 m antenna cable)	700-889-ANT01
2.4 GHz Omni 8 dBi antenna for WLAN and Bluetooth (antenna cable required)	700-889-ANT02
2.4 GHz Panel 8 dBi antenna for WLAN and Bluetooth (antenna cable required)	700-889-ANT03
2.4 GHz Panel 18 dBi antenna for WLAN and Bluetooth (antenna cable required)	700-889-ANT04
2.4 GHz antenna cable*, 3 m; 1.7 dB, Ø 5 mm	700-889-ANK01
2.4 GHz antenna cable*, 5 m; 2.8 dB, Ø 5 mm	700-889-ANK02
2.4 GHz antenna cable*, 6 m; 1.4 dB, Ø 10.3 mm	700-889-ANK03
2.4 GHz antenna cable*, 10 m; 2.3 dB, Ø 10.3 mm	700-889-ANK04
*(for WLAN and Bluetooth)	

Magnetic base antenna 5 dBi
For mounting on smooth magnetic surfaces. The permanently mounted 1.5 meter long connecting cable further increases the radius of action. The magnetic base can be unscrewed. In this way, the dipole can also be directly operated on the WLAN module and is especially suitable for unobstructed mid-distance links. The omnidirectional antenna can also be correctly aligned with the integrated knee-joint.

Omnidirectional antenna 8 dBi
This omniantenna protected by the stable GFK conduit is supplied with mounting brackets to be able to mount it on masts or walls – preferably outdoors. To obtain the best omnidirectional emission properties, there should be no metallic surfaces or obstructions near to the emitting antenna. A cable, available as an accessory, is required for a type N connection.

Panel antenna 8 dBi (wall mounting) and panel antenna 18 dBi (mast mounting)
Ideal for use in directional transmission and reception indoors and outdoors. The range and WLAN performance are considerably improved by this design. The appropriate fixtures are supplied. A cable, available as an accessory, is required for a type N connection.

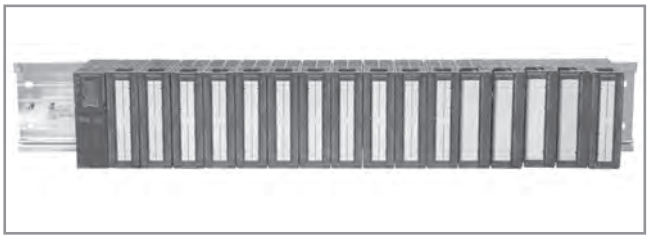
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PAS 153, distributed PROFIBUS Interface

Features

- DIP switch for setting the PROFIBUS address
- Up to 16 modules can be plugged in
- Module diagnostics supported
- Can be used on standard mounting rail
- Any combination of modules is possible (analog/digital)
- PROFIBUS-DP up to 12 Mbps
- GSD file is supplied
- Firmware update for expanding functions possible via USB



Up to 16 modules can be plugged in

The PAS 153 distributed PROFIBUS Interface from Systeme Helmholz GmbH is for linking digital and analog input and output modules to the PROFIBUS-DP. The module can be mounted on a sectional rail.
Up to 16 modules can be connected to the PAS 153. The PAS 153 is integrated into the hardware configurer of the programming system by a GSD file. The PAS 153 Interface performs all communication between the modular I/O device and the higher-level master unit on the PROFIBUS-DP. The inputs and outputs are assigned to the master in the configuration. Diagnostic information from the modules can be read out via the PAS 153 Interface in the usual way.
The PAS 153 Interface supports all input/output modules from Systeme Helmholz GmbH and numerous modules of the same type from other manufacturers.
The scope of modules supported can be extended at any time by a firmware update via the USB.

Technical Data		
Dimensions (D x W x H mm)		116 x 40 x 125
Weight		Approx. 250 g
Power supply Voltage		DC 24 V
Current consumption	max.	625 mA
Output voltage		DC 5 V
Output current at DC 5 V	max.	1.5 A (to backplane)
PROFIBUS Interface Transmission rate	max.	12 Mbps, autodetection
Protocol		PROFIBUS-DP to EN 50 170
Addressrange		128 Bytes for inputs 128 Bytes for outputs
Module count	max.	16, 8 of these analog
Connection		Male, SUB-D, 9-way
Ambient temperature Transport and storage temperature		0 °C ... +60 °C -25 °C ... +60 °C

Ordering Data	Order No.
PAS 153, distributed PROFIBUS Interface (incl. CD with GSD file)	**700-153-1AA03**
Manual PAS 153, German/English	**900-153-1AA03**

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DP/DP Coupler



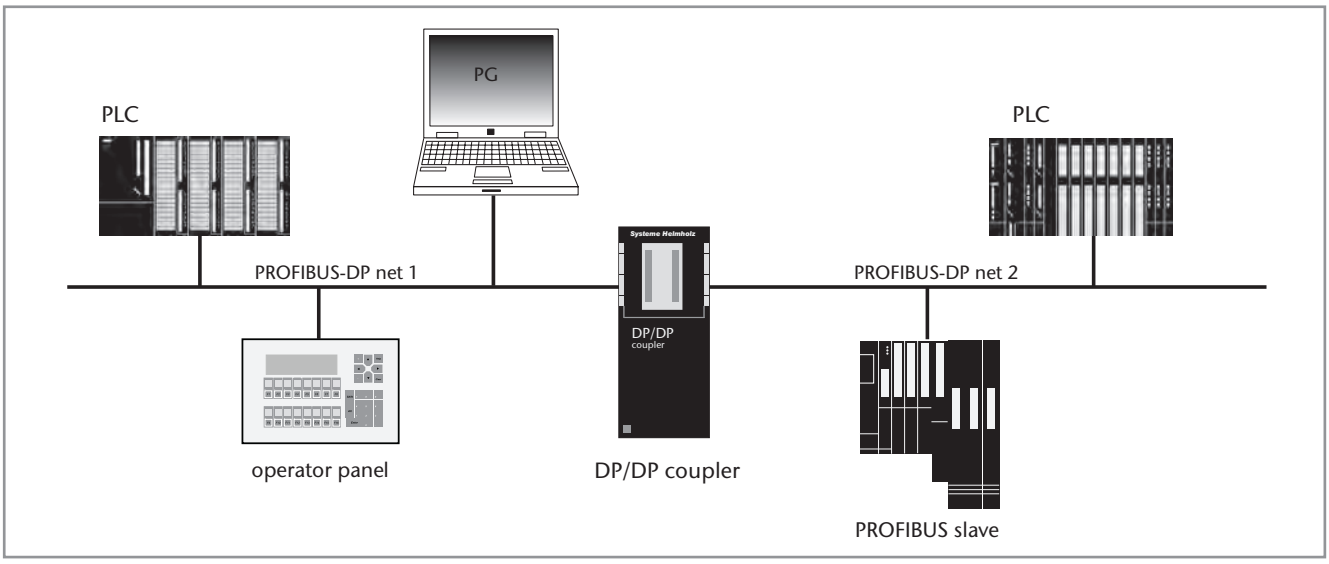
DP/DP Coupler

The DP/DP coupler interlinks two PROFIBUS-DP networks and permits data transmission between the masters and the two DP networks. The maximum size of the transmitted data is 244 Bytes of input data and 244 Bytes of output data. The DP/DP coupler is configured in the S7 software or by means of a GSD file.

Features

- Up to 244 Bytes of input data and 244 Bytes of output data can be exchanged between two PROFIBUS networks
- Dual-redundant power supply
- Electrical isolation between the PROFIBUS networks
- PROFIBUS addresses can be set by DIL switch or software
- PROFIBUS-DP up to 12 Mbps

Technical Data	
Dimensions (D x W x H mm)	116 x 40 x 125
Weight	Approx. 250 g
Power Supply Nominal power supply Current consumption	 24 V DC (20.4 V... 28.8 V) Approx. 150 mA at DC 24 V
Electric isolation of the 24 V power supply To PROFIBUS-DP	 Yes
PROFIBUS interface Transmission rate	 9.6 ... 12 Mbps
Protocol	PROFIBUS-DP
Telegram length I/O data	Max. 244 Bytes inputs/ 244 Bytes outputs
Ambient temperature	0 °C ... 60 °C
Class of protection	IP 20



Application example DP/DP Coupler

Ordering Data	Order No.
DP/DP Coupler (incl. manual)	**700-158-0AD01**
Mounting rail adapter for DIN rail (optional)	**700-390-6BA01**

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FLEXtra® profiPoint, active Termination and Measuring Point

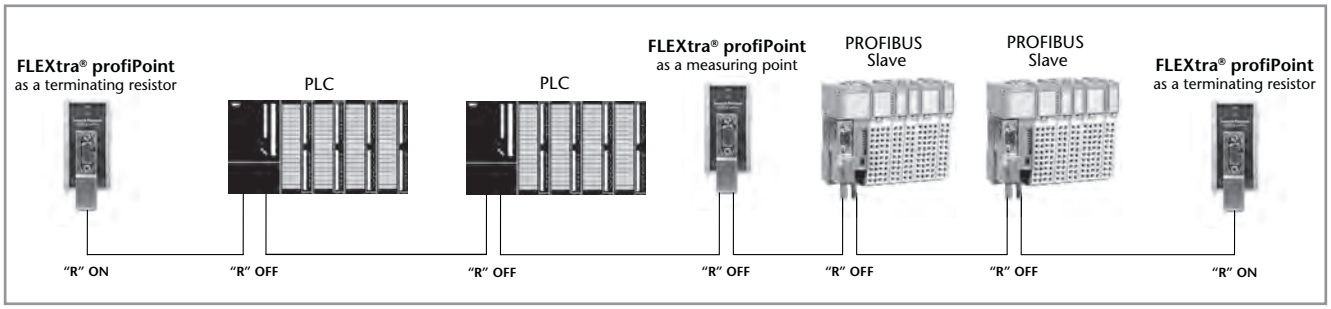
Features

- Power supply independent of bus stations
- Bus termination independent of terminal device due to autonomous power supply
- Can be used as an active measuring point
- Supply to active PROFIBUS components (Compact Repeater, NETLink®, PROFIBUS diagnostic connector)

PROFIBUS

FLEXtra profiPoint

The FLEXtra® profiPoint from Systeme Helmholz GmbH is primarily used for supplying power to the terminating resistor and is designed for mounting on a DIN rail. It can be used in combination with a PROFIBUS connector as an active measuring point or as an active termination. The electric power is supplied independently of the bus stations via a connection socket.
If used as an active terminating resistor, bus system stations can be coupled and decoupled randomly without faults occurring. The correct function of the FLEXtra® profiPoint can be read from an integrated LED. A PROFIBUS connector is required for connection to the PROFIBUS cable (also available as a set).



Application example FLEXtra® profiPoint

Ordering Data	Order No.
FLEXtra® profiPoint, active Termination and Measuring Point (incl. instruction)	**700-972-1AA02**
FLEXtra® profiPoint Set, active Termination and Measuring Point FLEXtra® profiPoint, PROFIBUS connector screw terminals 90° diagnostic LEDs with PG (incl. instruction)	**700-972-1XA02**

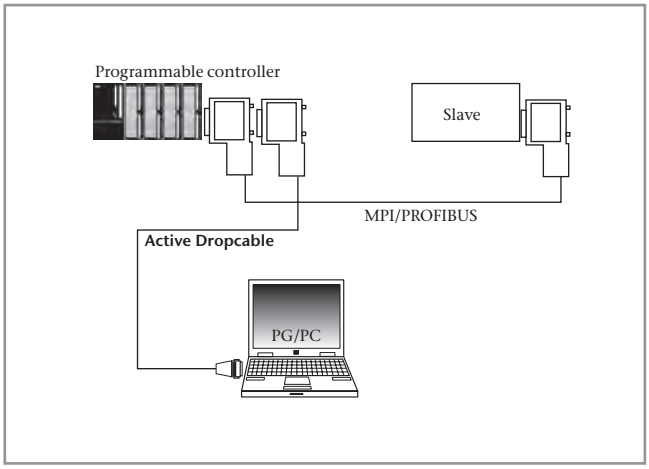
Technical Data	
Dimensions (D x W x H mm)	35 x 32 x 72
Weight	Approx. 85 g
Power supply	18 ... 30 VDC
Output voltage	24 VDC/5 VDC
Potential separation	500 V
Current consumption max.	400 mA
Segment connection	Via PROFIBUS connector
Ambient temperature Transport and storage temperature	0 °C ... +60 °C -25 °C ... +75 °C
Class of protection	IP 20

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Active PROFIBUS Dropcable, PROFIBUS Cable, assembled



Active PROFIBUS dropcable for PG



Application example Active Dropcable

The active PROFIBUS dropcable from the Systeme Helmholz GmbH is used for a failure-free connection of a programming device to an existing PROFIBUS net.
The active cable doesn‘t represent a spur line because of it‘s integrated electronics.

Technical Data	
Dimensions (length)	3 m
Weight	Approx. 260 g
Power supply	DC 5 V
Current consumption max.	100 mA at 5V
PROFIBUS interface Transmission max.	 12 Mbps
Connection	SUB-D, 9-way
Ambient temperature Transport and storage temperature	0 °C ... +60 °C -25 °C ... +75 °C
Class of protection	IP 20

Ordering Data	Order No.
Active PROFIBUS Dropcable for PG with 90° PROFIBUS connector, 3 m (incl. instruction)	**700-901-4BD00**
Active PROFIBUS Dropcable for PG with 35° PROFIBUS connector, 3 m (incl. instruction)	**700-901-4BD10**



PROFIBUS cable assembled, 1 m

Ordering Data	Order No.
PROFIBUS cable assembled (flexible) 2 x PROFIBUS connector 90° without PG	
1 m	**700-970-1VK01**
2 m	**700-970-1VK02**
3 m	**700-970-1VK03**
5 m	**700-970-1VK05**
10 m	**700-970-1VK10**
PROFIBUS cable assembled (flexible) 2 x PROFIBUS connector 90° with PG	
1 m	**700-970-2VK01**
2 m	**700-970-2VK02**
3 m	**700-970-2VK03**
5 m	**700-970-2VK05**
10 m	**700-970-2VK10**

This product is available on request.

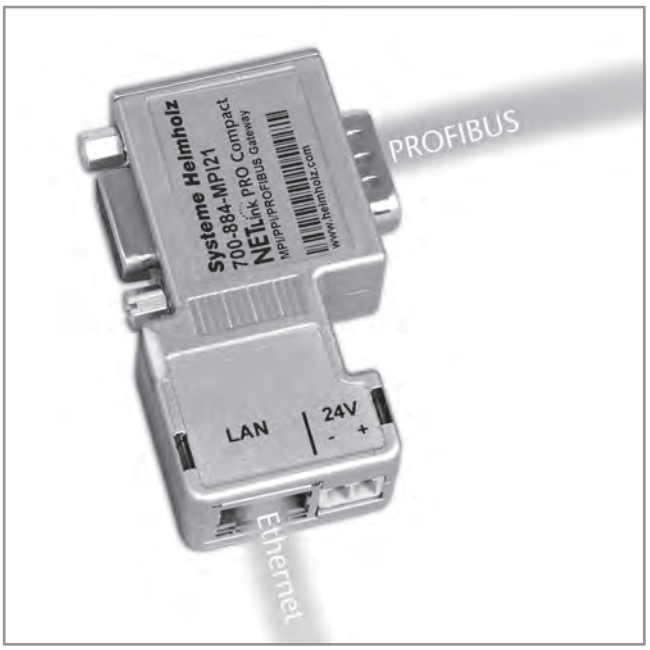
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NETLink® Gateways

Ethernet Gateways
WLAN Gateways
Highspeed USB Gateways
for MPI/PPI/PROFIBUS

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NETLink® PRO Compact, PROFIBUS-Ethernet Gateway

• Now with more diagnostic functions in the web interface

The NETLink® PRO Compact offers flexibility, compact design and even more application benefits. Power is supplied via the CPU of the automation unit or optionally by an external 24 V DC power unit. The network interface can be used with every standard Cat-5 cable, thus, cable lengths up to 100 meters are possible without any further components.
Generally, a connection to every MPI/PROFIBUS interface of the bus system is possible. A direct connection to the interfaces of active or passive bus devices is also feasible. The connector casing has an integrated PG socket, which permits connection of further devices. NETLink® PRO Compact permits conversion from TCP/IP to MPI/PPI/PROFIBUS with a maximum of 32 simultaneous links, and supports the communication to passive participants by activating the switchable Single-Master function. The integration of SCADA, HMI, and OPC applications can be realized via the widely used ISO on TCP (RFC1006) protocol, and NETLink® PRO Compact detects and forwards those requests automatically. The integrated web interface offers now even more parameterization, diagnostics and security features. Additional future functions can be updated independently by the user at any time. For this purpose, we provide our diagnostic software SHTools for free. The latest version is available for download on our web page www.helmholz.com.

Ordering Data	Order No.
NETLink® PRO Compact, PROFIBUS Ethernet Gateway (incl. 3 m Ethernet cable, Quick Start Guide, CD with software and manual)	700-884-MPI21
Manual NETLink® Ethernet Products, German/English	900-88X-MPI21

1) S7-200, S7-300 and S7-400 are registered trademarks of Siemens AG.

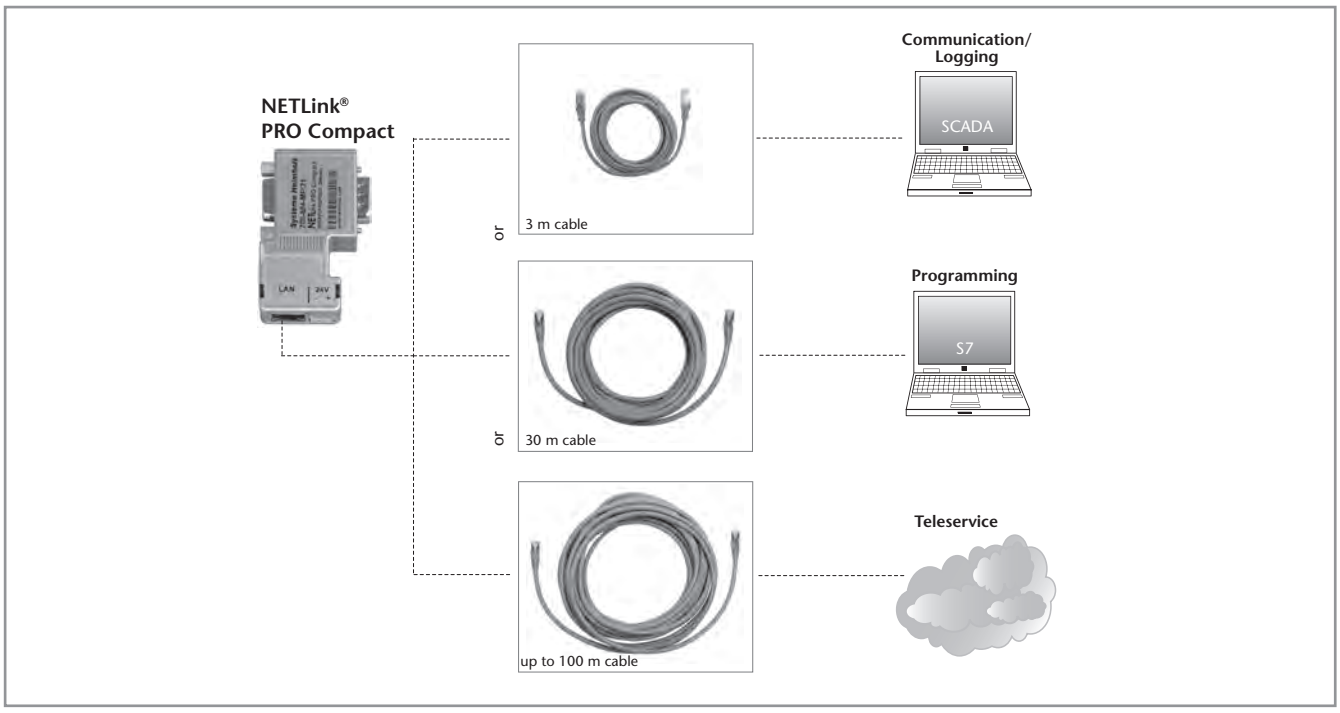
Features

- RFC 1006 (ISO on TCP)
- CPU-to-CPU communication
- Power supply from the CPU or alternatively via external 24 V DC
- Support for all common S7 Engineering Tools
- Dynamic address assignment with DHCP
- Security functions for securing TCP/IP access
- Additional CPU write protection
- For S7-200[1)], S7-300[1)], S7-400[1)]
- Up to 16 TCP connections
- Up to 32 links on MPI/PROFIBUS
- Simple configuration via web interface
- Variable monitoring in the browser window
- Support of slave parameterization
- Electrical isolation to the MPI/PPI/PROFIBUS
- MPI/PPI/PROFIBUS from 9.6 kbps up to 12 Mbps

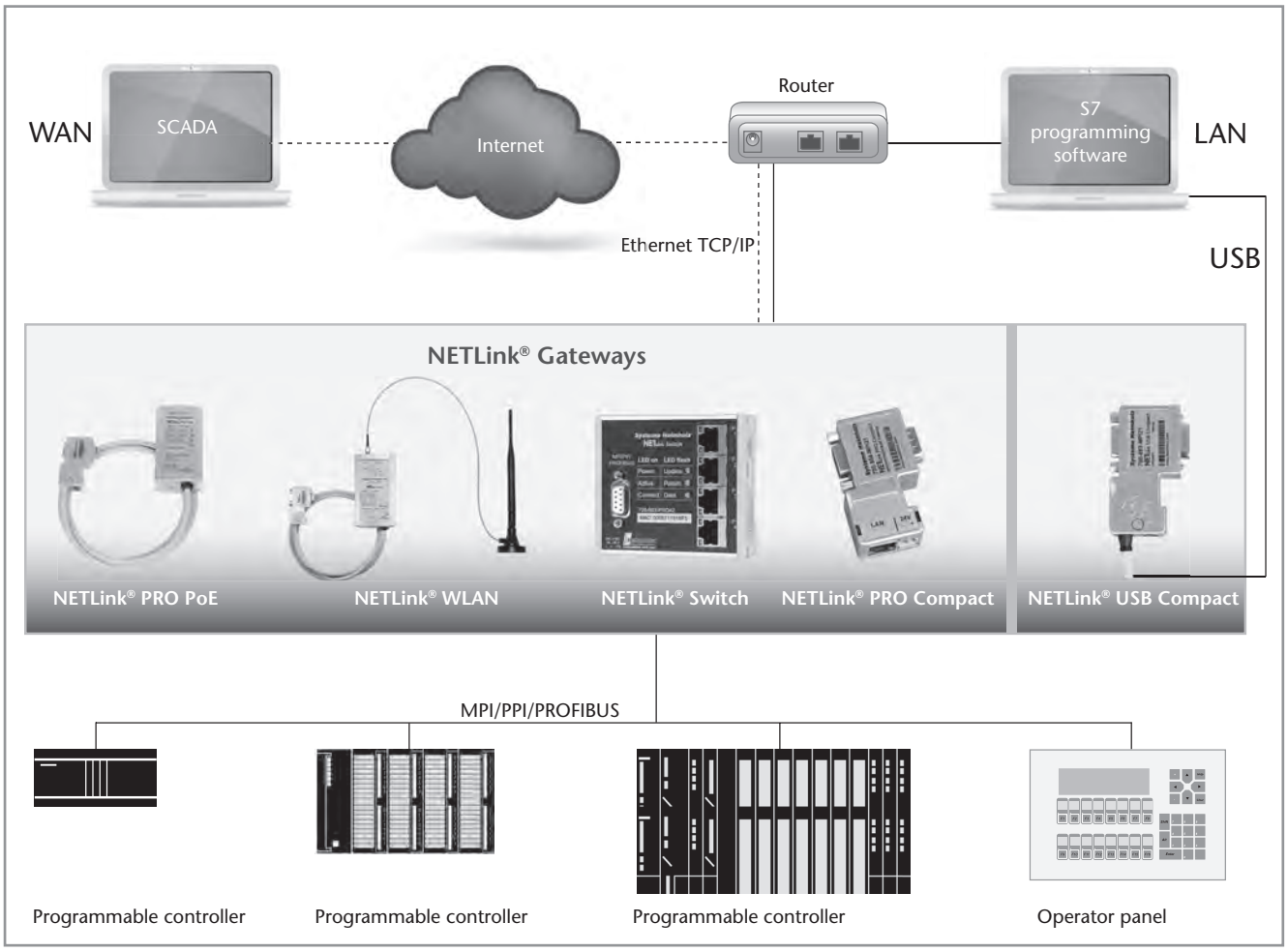
NETLink PRO Compact

Technical Data	
Dimensions (D x W x H mm)	64 x 40 x 17
Weight	Approx. 110 g
Power Supply Voltage	DC 24 V ±25 %
Current consumption max.	200 mA
Communication interface Type	10 Base-T 100 Base-TX
Connector	RJ45
Transmission rate	10/100 Mbps, autodetection
MPI/PPI/PROFIBUS Type	RS485, isolated
Transmission rate max.	12 Mbps, autodetection
Connector	SUB-D, 9-way with PG interface and repeater
Protocols	FDL frames, RFC 1006
Ambient temperature	0 °C ... 60 °C
Indicators	2 LEDs, therefrom one three coloured (for general status information)
Class of protection	IP 20

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Application example NETLink® PRO Compact



Application Example LAN-WAN connection via ISO on TCP



NETLink® PRO PoE, PROFIBUS Ethernet Gateway

• Now available with Power over Ethernet

NETLink® PRO PoE for programming, configuring and visualization of S7 PLCs obtains the power via the CPU interface of the automation unit or optionally by an external 24V DC power unit or via the CAT5 Network-cable with the help of an PoE energy supply unit. The 1.2 meter connecting cable is an active cable and therefore it does not influence any other installed participants in the bus system.
Generally, a connection to every MPI/PROFIBUS interface of the bus system is possible. A direct connection to the interfaces of active or passive bus devices is also feasible. The connector casing has an integrated PG socket, which permits connection of further devices. NETLink® PRO PoE permits conversion from TCP/IP to MPI/PPI/PROFIBUS with a maximum of 32 simultaneous links, and supports the communication to passive participants by activating the switchable Single-Master function. The integration of SCADA, HMI, and OPC applications can be realized via the widely used ISO on TCP (RFC1006) protocol, and NETLink® PRO PoE detects and forwards those requests automatically. The integrated web interface offers now even more parameterization, diagnostics and security features. Additional future functions can be updated independently by the user at any time. For this purpose, we provide our diagnostic software SHTools for free. The latest version is available for download on our web page www.helmholz.com.

Ordering Data	Order No.
NETLink® PRO PoE, PROFIBUS Ethernet Gateway (incl. 3 m Ethernet cable, Quick Start Guide, CD with software and manual)	**700-881-MPI21**
NETLink® PRO PoE, PROFIBUS Ethernet Gateway, 35° cable outlet for S7-400[1] (incl. 3 m Ethernet cable, Quick Start Guide, CD with software and manual)	**700-881-MPI22**
DIN rail adapter short **Power Plug,** 24 V, for SSW7, NETLink® and REX 300 devices (optional)	**700-751-HSH01** **700-751-SNT01**
Manual NETLink® Ethernet Products, German/English	**900-88X-MPI21**

1) S7-200, S7-300 and S7-400 are registered trademarks of Siemens AG.

Features

- RFC 1006 (ISO on TCP)
- CPU-to-CPU communication
- Powered Device (PD) according to the IEEE Standards 802.3af (POE) and IEEE 802.3at (POE+)
- Support for all common S7 Engineering Tools
- Dynamic address assignment with DHCP
- Security functions for securing TCP/IP access
- Additional CPU write protection
- For S7-200[1], S7-300[1], S7-400[1]
- Up to 16 TCP connections
- Up to 32 links on MPI/PROFIBUS
- Simple configuration via the web interface
- Variable monitoring in the browser window
- Support of slave parameterization
- Electrical isolation to the MPI/PPI/PROFIBUS
- MPI/PPI/PROFIBUS from 9.6 kbps up to 12 Mbps

NETLink PRO PoE

Technical Data		
Dimensions (D x W x H mm)		102 x 54 x 30
Weight		Approx. 180 g
Power Supply Voltage		DC 24 V ±25 %
Voltage PoE		48 V according to IEEE 802.3af/at
PoE power class		Class 1 (0.44 to 3.84 Watt)
PoE+		Type 1 (see 802.3af)
Current consumption	max.	150 mA
Communication interface Type		10 Base-T 100 Base-TX
Connector		RJ45
Transmission rate		10/100 Mbps, autodetection
MPI/PPI/PROFIBUS Type		RS485, isolated
Transmission rate	max.	12 Mbps, autodetection
Connector		SUB-D, 9-way with PG interface and repeater
Protocols		FDL frames, RFC 1006
Ambient temperature		0 °C ... 60 °C
Indicators		3 LEDs, therefrom 2 two coloured
Class of protection		IP 20

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NETLink® Switch, Ethernet Gateway with integrated 4-port Switch

Features

- RFC 1006 (ISO on TCP)
- CPU-to-CPU communication
- Integrated 4 port store-and-forward switch
- Support for all common S7 Engineering Tools
- Dynamic address assignment with DHCP
- Security functions for securing TCP/IP access
- Additional CPU write protection
- For S7-200[1)], S7-300[1)], S7-400[1)]
- Up to 16 TCP connections
- Up to 32 links on MPI/PROFIBUS
- Simple configuration via the web interface
- Clear diagnostic page in the web interface
- Variable monitoring in the browser window
- Support of slave parameterization
- Electrical isolation to the MPI/PPI/PROFIBUS
- MPI/PPI/PROFIBUS from 9.6 kbps up to 12 Mbps

• Programming – Visualization – Data acquisition and Switching over Ethernet

The NETLink® Switch is an Ethernet Gateway with integrated Switch for mounting on a DIN rail bracket. Either it is integrated in the bus with a standard PROFIBUS connector, or plugged directly with an active drop cable on the MPI/PPI or PROFIBUS interface of the bus subscribers. The NETLink® Switch is supplied with an external 24 V DC power source. Besides the function as a programming adapter, the 4port 10Base-TX Switch can be used to integrate additional Ethernet subscribers.
Generally, a connection to every MPI/PROFIBUS interface of the bus system is possible. A direct connection to the interfaces of active or passive bus devices is also feasible. NETLink® Switch permits conversion from TCP/IP to MPI/PPI/PROFIBUS with a maximum of 32 simultaneous links, and supports the communication to passive participants by activating the switchable Single-Master function. The integration of SCADA, HMI, and OPC applications can be realized via the widely used ISO on TCP (RFC1006) protocol, and NETLink® Switch detects and forwards those requests automatically. The integrated web interface offers now even more parameterization, diagnostics and security features. Additional future functions can be updated independently by the user at any time. For this purpose, we provide our diagnostic software SHTools for free. The latest version is available for download on our web page www.helmholz.com.

NETLink Switch

Technical Data		
Dimensions (D x W x H mm)		35 x 83 x 72
Weight		Approx. 180 g
Power Supply Voltage		DC 24 V
Current consumption	approx.	120 mA
Communication interfaces Type		10 Base-T 100 Base-TX
Connectors		RJ45
Transmission rate		10/100 Mbps, autodetection
Switch Ports		4
Features		Autonegotiation, Autouplink, Flow Control, MDI/MDI-X Auto Crossover, Spanning Tree
Switching method		Store and foreward
MPI/PPI/PROFIBUS Type		RS485, isolated
Transmission rate	max.	12 Mbps, autodetection
Connector		SUB-D, 9-way
Protocols		FDL frames, RFC 1006
Ambient temperature		0 °C ... 60 °C
Indicators		3 LEDs, therefrom 2 two coloured
Class of protection		IP 20

Ordering Data	Order No.
NETLink® Switch, Ethernet Gateway with integrated 4-port Switch (incl. 3 m Ethernet cable, Quick Start Guide, CD with software and manual)	700-883-PRO42
Manual NETLink® Ethernet Products, German/English	900-88X-MPI21

1) S7-200, S7-300, S7-400 and Simatic are registered trademarks of Siemens AG.



NETLink® WLAN, PROFIBUS Ethernet WLAN Gateway

• Flexible wireless programming using Ad Hoc or Infrastructure mode

The NETLink® WLAN is an Ethernet Gateway with integrated WLAN (Wi-Fi) interface. Alternatively to the RJ45 socket, the „ad hoc“ or „infrastructure“ mode can be parameterized via the web interface. All standard Wireless Security methods such as: WEP, WPA and WPA2 are supported. Power is supplied via the CPU of the automation unit or optionally by an external 24 V DC power pack. The 1.2 meter connecting cable is an active cable and therefore it does not influence any other installed participants in the bus system.
Generally, a connection to every MPI/PROFIBUS interface of the bus system is possible. A direct connection to the interfaces of active or passive bus devices is also feasible. The connector casing has an integrated PG socket, which permits connection of further devices. NETLink® WLAN permits conversion from TCP/IP to MPI/PPI/PROFIBUS with a maximum of 32 simultaneous links, and supports the communication to passive participants by activating the switchable Single-Master function. The integration of SCADA, HMI, and OPC applications can be realized via the widely used ISO on TCP (RFC1006) protocol, and NETLink® WLAN detects and forwards those requests automatically. The integrated web interface offers now even more parameterization, diagnostics and security features. Additional future functions can be updated independently by the user at any time. For this purpose, we provide our diagnostic software SHTools for free. The latest version is available for download on our web page www.helmholz.com.

Ordering Data	Order No.
NETLink® WLAN, PROFIBUS Ethernet WLAN Gateway (incl. 3 m Ethernet cable, Quick Start Guide, CD with software and manual)	**700-882-MPI21**
DIN rail adapter long **Power Plug,** 24 V, for SSW7, NETLink® and REX 300 devices (optional)	**700-751-HSH10** **700-751-SNT01**
Manual NETLink® Ethernet Products, German/English	**900-88X-MPI21**

1) S7-200, S7-300, S7-400 are registered trademarks of Siemens AG.

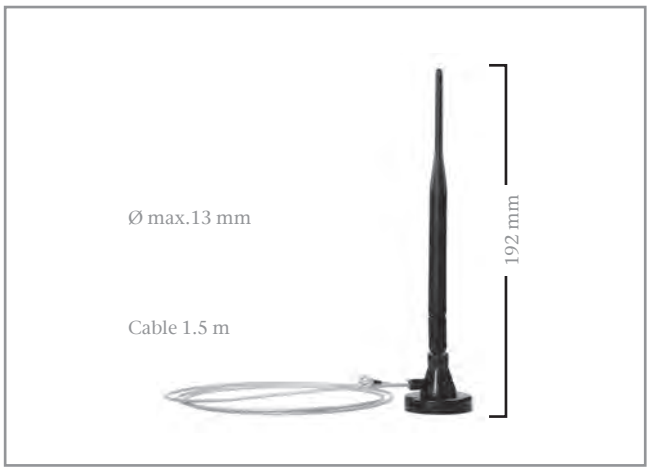
Features

- RFC 1006 (ISO on TCP)
- CPU-to-CPU communication
- Shiftable WLAN interface (802.11 b/g) with up to 54 Mbps
- Support for all common S7 Engineering Tools
- Dynamic address assignment with DHCP
- Security functions for securing TCP/IP access
- Additional CPU write protection
- For S7-200[1)], S7-300[1)], S7-400[1)]
- Up to 16 TCP connections
- Up to 32 links on MPI/PROFIBUS
- Simple configuration via the web interface
- Clear diagnostic page in the web interface
- Variable monitoring in the browser window
- Support of slave parameterization
- Electrical isolation to the MPI/PPI/PROFIBUS
- MPI/PPI/PROFIBUS from 9.6 kbps up to 12 Mbps

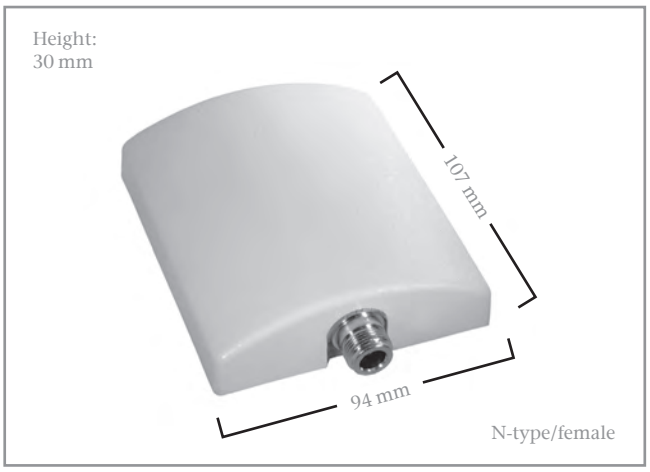
NETLink WLAN

Technical Data	
Dimensions (D x W x H mm)	130 x 68 x 30
Weight	Approx. 280 g
Power Supply Voltage	 DC 24 V ±25 %
Current consumption typ.	200 mA
Communication interface Type	 10 Base-T 100 Base-TX
Connector	RJ45
Transmission rate	10/100 Mbps, autodetection
WLAN Specifications Type	 IEEE 802.11b; 802.11g
Frequency Range	2.412 - 2.484 GHz
Output Power	14 dBm + 1.5 dBm/-1.0 dBm
Data Rates	54 Mbps
Security	WEP, WPA, WPA2
MPI/PPI/PROFIBUS Type	 RS485, isolated
Transmission rate max.	12 Mbps, autodetection
Connector	SUB-D, 9-way with PG interface and repeater
Protocols	FDL frames, RFC 1006
Ambient temperature	0°C ... 60°C
Indicators	5 LEDs, therefrom 2 two coloured
Class of protection	IP 20

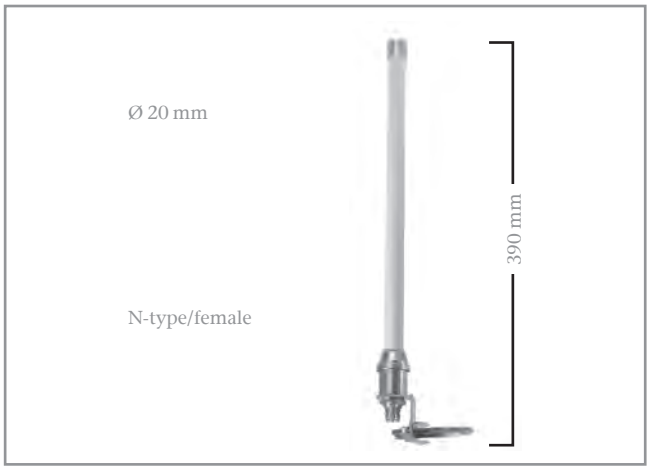
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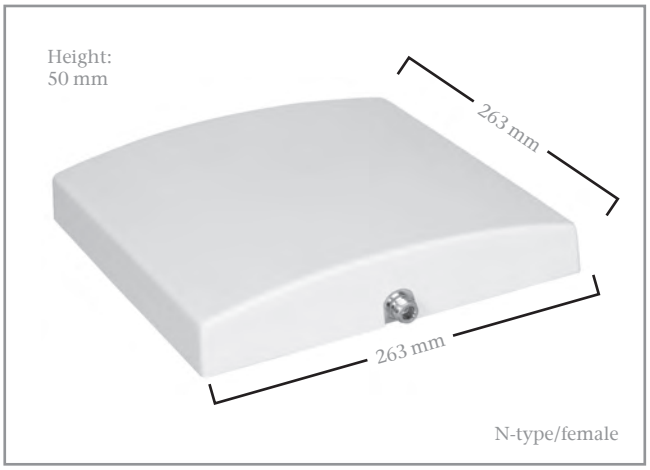
5 dBi magnetic base antenna



Panel 8 dBi antenna



Omni 8 dBi antenna, including wallclamp



Panel 18 dBi antenna

To optimize the reception power of the NETLink® WLAN and the PROFIBUS radio system viBlu, Systeme Helmholz GmbH can provide a selection of different antennas. Depending on the design, connecting cables can be procured to match. When planning a radio link, it is important always to note that, both in a mobile and in a stationary installations, the range is to some degree influenced by obstacles and the surrounding structures. Due to the max. transmission power of 100 mW in the 2.4 GHz band, radio links of 10 to 30 meters can be implemented in buildings. Outdoors, 100 to 300 meters can be considered realistic for an unobstructed radio link. With a directed panel antenna, more than 300 meters are possible in optimum conditions.

Ordering Data	Order No.
2.4 GHz 5 dBi Magnetic base antenna, with 1.5 m antenna cable (for WLAN and Bluetooth)	700-889-ANT01
2.4 GHz Omni 8 dBi antenna, antenna cable required (for WLAN and Bluetooth)	700-889-ANT02
2.4 GHz Panel 8 dBi antenna, antenna cable required (for WLAN and Bluetooth)	700-889-ANT03
2.4 GHz Panel 18 dBi antenna , antenna cable required (for WLAN and Bluetooth)	700-889-ANT04
2.4 GHz antenna cable*, 3 m; 1.7 dB, Ø 5 mm	700-889-ANK01
2.4 GHz antenna cable*, 5 m; 2.8 dB, Ø 5 mm	700-889-ANK02
2.4 GHz antenna cable*, 6 m; 1.4 dB, Ø 10.3 mm	700-889-ANK03
2.4 GHz antenna cable*, 10 m; 2.3 dB, Ø 10.3 mm *(for WLAN and Bluetooth)	700-889-ANK04

Magnetic base antenna 5 dBi
For mounting on smooth magnetic surfaces. The permanently mounted 1.5 meter long connecting cable further increases the radius of action. The magnetic base can be unscrewed. In this way, the dipole can also be directly operated on the WLAN module and is especially suitable for unobstructed mid-distance links. The omnidirectional antenna can also be correctly aligned with the integrated knee-joint.

Omnidirectional antenna 8 dBi
This omni antenna protected by the stable GFK conduit is supplied with mounting brackets to be able to mount it on masts or walls – preferably outdoors. To obtain the best omnidirectional emission properties, there should be no metallic surfaces or obstructions near to the emitting antenna. A cable, available as an accessory, is required for a type N connection.

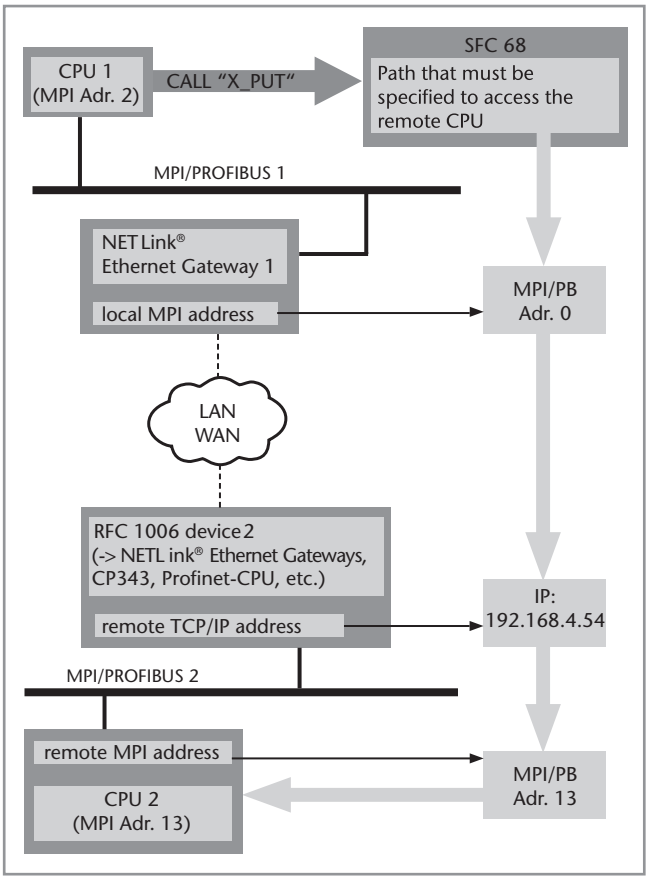
Panel antenna 8 dBi (wall mounting) and panel antenna 18 dBi (mast mounting)
Ideal for use in directional transmission and reception indoors and outdoors. The range and WLAN performance are considerably improved by this design. The appropriate fixtures are supplied. A cable, available as an accessory, is required for a type N connection.

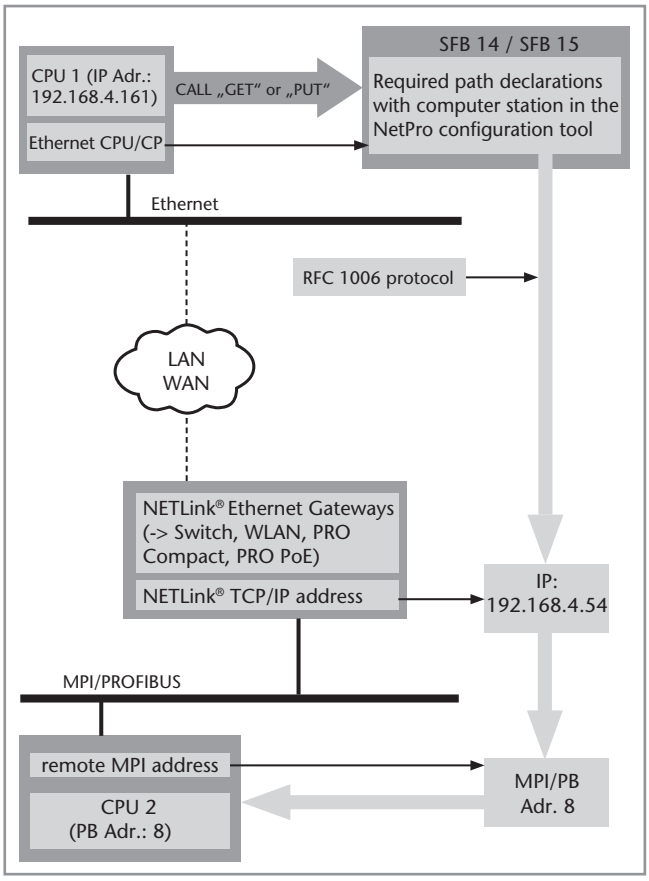
What is CPU-to-CPU communication?

You can use S7 basic communication in order to implement a CPU-to-CPU connection. MPI and PROFIBUS connections to all S7-300[1)] and 400[1)] series PLCs are supported. The firmware used in Siemens CPUs comes with system functions (SFCs) that are used to transfer data between two stations. All Systeme Helmholz GmbH NETLink® Ethernet gateways support the S7 X_PUT and X_GET mechanisms (used to read data from and write data to a communications partner device outside the local S7 station).
The popular RFC 1006 transport protocol (ISO on TCP) is used for this type of client-server communications, making it possible to use, among other devices, CPs and PROFINET CPUs that support the protocol as clients.
Connections are not preconfigured, but are instead explicitly established when an SFC call is made. This ensures that a connection resource for communications will only be assigned permanently on the "active" side. The "passive" side, on the other hand, will simply respond to the requests sent by the active station, and will only assign a corresponding resource when the active station establishes a connection.
The practical advantage of this approach is that function calls only need to be stored on the active side (server).
If a user wants to expand an already programmed X_PUT/X_GET to use TCP/IP, it will only be necessary to add an additional X_PUT (with the parameters for the remote station – see the left figure) to the program sequence in order to open the communications channel via a NETLink® Ethernet gateway.
The maximum amount of payload data that can be transmitted in each communication job is limited by the system to 76 bytes.
Systeme Helmholz GmbH has created a series of simple sample projects showing how to use the STEP[1)] 7 programming software package in order to help both experienced and new users program the solutions they need. All these sample projects are available free of charge, and the corresponding application description makes it possible to implement CPU-to-CPU communications in only a few steps.

Ethernet CPU/CP to MPI/PROFIBUS

All NETLink® Ethernet gateways have now been upgraded to support asynchronous data exchange with the Siemens SFB14 ("GET") and SFB15 ("PUT") communication blocks.
These system function blocks are included in Siemens CPUs and will route read and write tasks through the NETLink® adapter connected to the MPI or PROFIBUS interface on a remote CPU.
For this type of CPU-to-CPU communications, the network cable can be connected directly to an Ethernet CPU/CP with a NETLink® device. The corresponding non-specific S7 connection, meanwhile, is assigned in NetPro Configuration with the help of a computer station. Systeme Helmholz GmbH also has an application description and a simple sample project available for this type of application. Moreover, the original documentation provided by Siemens includes a general functional description.





1) S7-200, S7-300, S7-400, Simatic and STEP are registered trademarks of Siemens AG.

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NETLink® USB Compact, mini PROFIBUS USB Gateway

• The mobile plug and play programming adapter

NETLink® USB Compact offers flexibility and compact design with the advantages of plug and play. It may be connected to any MPI/PROFIBUS interface of the bus system.
The second PG socket permits connection of further devices.The connection with the PC is established using the integrated 3 m high-speed USB cable.
The NETLink® USB Compact is supplied with power from the USB bus. At the USB end, the protocols Fullspeed (12 Mbps) and Highspeed (480 Mbps) are supported. The NETLink® USB Compact permits conversion of a USB interface to MPI/PROFIBUS for programming or visualization with the full transmission rate of up to 12 Mbps with max. 32 simultaneous links.
Baud rate is detected automatically and a Single-Master function enables the communication with passive participants. The supplied driver automatically embeds in the S7 Engineering Tools.
The MPI/PROFIBUS is electrically isolated from the USB interface (functional isolation). Furthermore, you can perform diagnostics and configurations with the supplied SHTools software.
A free download of the latest SHTools version is available on our website www.helmholz.com. Thus, additional functions can be updated at any time by yourself.

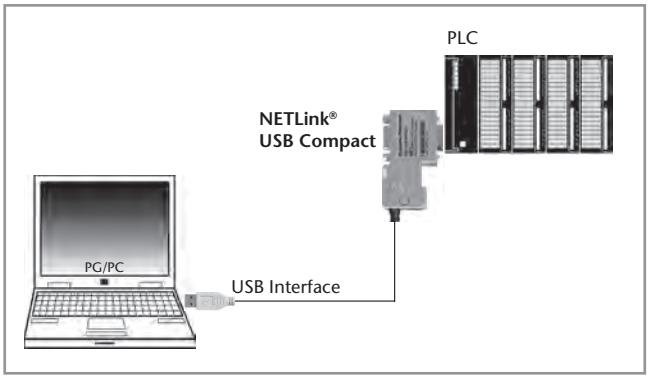
Ordering Data	Order No.
NETLink® USB Compact, mini PROFIBUS USB Gateway (incl. Quick Start Guide, CD with software and manual)	**700-892-MPI21**
Manual NETLink® USB Compact, German/English	**900-892-MPI21**

1) S7-200, S7-300 and S7-400 are registered trademarks of Siemens AG.

Features

- Support for all common S7 Engineering Tools
- For S7-200[1)], S7-300[1)], S7-400[1)]
- Up to 32 links on MPI/PROFIBUS
- Support of slave parameterization
- Electrical isolation to the MPI/PPI/PROFIBUS
- MPI/PPI/PROFIBUS from 9.6 kbps up to 12 Mbps
- USB 2.0 up to 480 Mbps (Highspeed)
- No separate power supply required
- With programming device connector (PG) as standard

NETLink USB Compact



Application Example NETLink® USB Compact

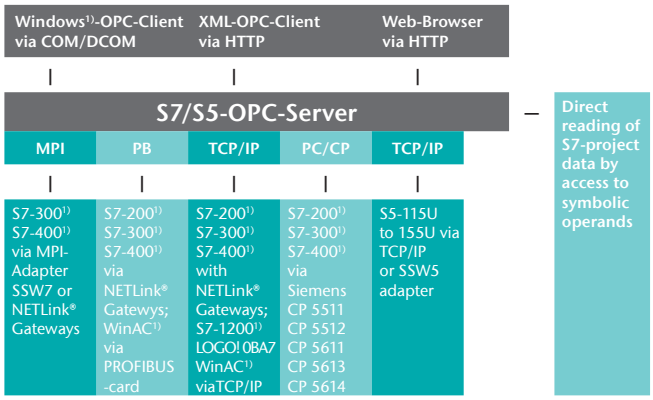
Technical Data		
Dimensions (D x W x H mm)		64x 40 x 17
Weight		Approx. 115 g
Power Supply Voltage		DC 5 V USB
Current consumption	typ.	200 mA at DC 5 V USB
Communication interface Type		USB 2.0
Connector		USB-A-female connector
Transmission rate		12 Mbps Fullspeed/ 480 Mbps Highspeed
MPI/PPI/PROFIBUS Type		RS485, isolated
Transmission rate	max.	12 Mbps, autodetection
Connector		SUB-D, 9-way with PG interface
Protocols		FDL frames
Ambient temperature		0 °C ... 60 °C
Indicators		2 LEDs, therefrom one three coloured (for general status information)
Class of protection		IP 20

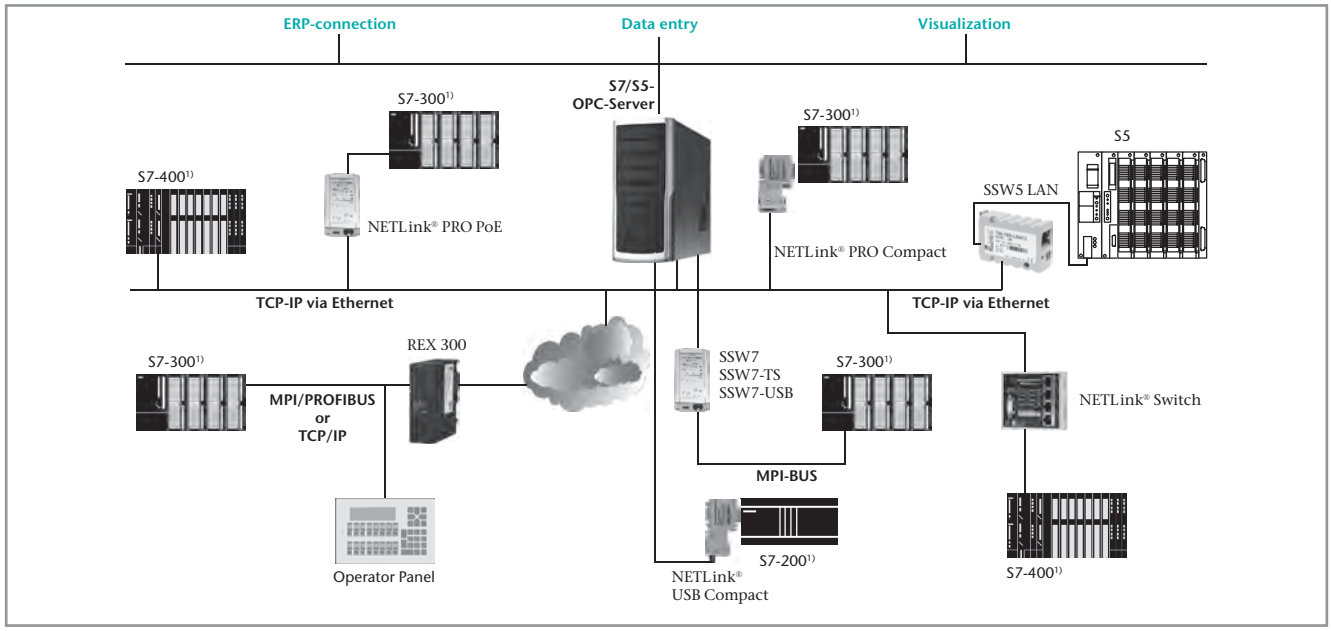
Quick access to S7 and S5 data with 32-bit and 64-bit computer architectures
The number of operating systems supported by S7/S5 OPC Server version 4.10 and higher has been expanded, making it possible to quickly and conveniently access the process data on your PLCs.
After a straightforward installation process on a computer with a Windows operating system (XP/2003/Vista/2007/2008), you will have access to a standardized OPC interface for exchanging data with a number of controllers, including the following:
S7 200[1]/300[1]/400[1] series, LOGO! 0BA7, WinAC[1], C7, and S5 U-series CPUs.
This will enable any OPC-compliant client application to read and write any required input/output data, data blocks, flags, timers, and counters from and to S7/S5 controllers.
Variable addressing is based on S7's well-established addressing syntax, and can be imported directly from an Excel file or an S7 project if necessary.
Existing control programs in your PLC do not need to be modified for communications with an S7/S5 OPC server, meaning that detailed knowledge of the PLC program being executed is not required.

Flexible connection
A variety of options, such as TCP/IP, PROFIBUS, MPI, PPI, and AS511, are available for connecting your controllers to an S7/S5 OPC server. Up to 16 communication devices can be activated in the S7/S5 OPC server configuration menu, making parallel data exchange processing possible. Moreover, up to 256 controllers can be accessed simultaneously with the TCP/IP communications protocol (RFC 1006), provided the maximum number of expansion modules is being used.
Systeme Helmholz GmbH has the following communications adapters available:
- All REX 300 and NETLink® family products
- SSW7, SSW7-TS, SSW7-USB for MPI
- SSW3, SSW4, and SSW5 for AS511

Selected communication modules from other manufacturers, such as Siemens CPs 243, 343, and 443, are also supported.
In addition, an improved license management system has been developed in order to optimize the USB drivers included with the hardware dongle so as to allow the use of licenses in virtual machines (VMWare[3], ESX[3], etc.).

Integrated web server
The S7/S5 OPC server features an integrated web server. This web server can be used to diagnose OPC server functions and to provide original control and monitoring webpages on any standard browser.
The web server's architecture and performance have been designed with small-scale visualization interfaces in mind.
This version (as well as higher versions) not only supports OPC Data Access 1.0a, 2.05 und 3.0, but also allows non-Windows-based applications to use the S7/S5 OPC server with OPC XML-DA.
The latest OPC server version[2] is available for download (incl. all technical information) at www.helmholz.com.





Application example for OPC-Server

Ordering Data	Order No.
S7-OPC-Server with USB-Dongle	**800-880-OPC41**

1) WinAC, S7-200, S7-300, S7-400, S7-1200, and WinCC are registered trademarks of Siemens AG.
Windows is a registered trademark of Microsoft Corporation.
2) Without a USB hardware dongle license, the full version can only be used for 90 minutes in demo mode.
3) VMWare and ESX are registered trademarks of VMware, Inc.

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Teleservice

Ethernet Router
Mediation server
Modems
Adapter for Teleservice
Teleservicemodule

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REX 300, Ethernet Router

REX 300 industrial routers are designed to enable you to establish a simple and secure connection between your remote servicing computer and your equipment in the field. Moreover, REX 300 routers can be easily integrated into S7 systems, and an adapter makes it possible to easily mount them on DIN rails so that you will have a wide array of options to accompany the transparent data communications characterizing these units.

Advantages of REX 300 routers used in conjunction with the myREX24 VPN portal:

1. Quickly and easily configure your REX 300 router
2. Obtain a clearly laid out view of your routers in the field
3. Direct and secure VPN connection through the portal

Configuration-Service for your remote machine access needs

We now offer a wide variety of services designed to further enhance your experience with the REX 300 family of Ethernet routers.
For more information, or to schedule an appointment, please contact us at: +49 9135 7380-0 or sales@helmholz.de

Features

- Remote access to Ethernet capable devices such as PLCs, HMIs, IP cameras, etc.
- Easy and quick configuration using the myREX24 VPN portal
- Integrated firewall
- I/O manager for reading and archiving a maximum of 256 PLC variables
- Redundant management of multiple Internet interfaces (e.g., WAN, UMTS, etc.)
- Directly connect S7-MPI/PROFIBUS devices*
- Service RS-232/RS-485 devices remotely via Internet*
- USB port for firmware updates** and setting up configurations
- A plugged-in USB stick can be shared on the network
- Free S7-MPI/PROFIBUS driver
- Visualization via REX 300 Toolbox
- Use your own scripts

(Antennas and cable extension available as accessories. See page 58)

* Depends on the specific model

** Firmware updates should be applied using the REX 300 web interface so that configuration settings will be retained

Our Services

- Configuration service for REX 300 Ethernet routers
- On-site training at your location, including guided configuration of defined equipment

Accessory-Note
For GSM antennas, see page 58. To connect serial devices to the REX 300 with WAN connection, an adapter cable for the serial interface is required (see Ordering Data).

REX 300 industrial router version overview:

Order No.	VPN	LAN	WAN	analog	GPRS/ EDGE	UMTS (3G)	MPI/ PROFIBUS	COM serial	USB
700-872-MDM02	x	x	x	x			x	x	x
700-872-UMT02	x	x	x		x	x	x	x	x
700-873-WAN02	x	x	x				x	x	x
700-874-WAN02	x	x	x						x
700-874-UMT02	x	x			x	x			x



REX 100, Ethernet Router (similar to illustration)

Features

- LAN/WAN or LAN/3G
- Broadband connection via company LAN or GSM (3G)
- Simple and fast configuration in myREX24 VPN portal
- Integrated 3 or 4 port LAN switch
- Inputs for establishing a connection and issuing alarms
- Room-saving, compact build

REX 100 - The new Ethernet Router

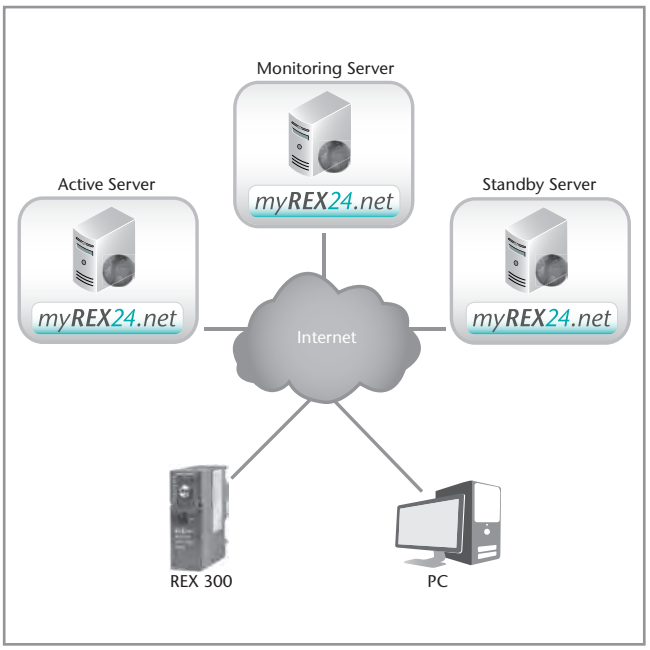
Coming soon - remote access to machines in pocket format!

The new industrial router REX 100 is designed for transparent data transmission and is constructed for a DIN rail. It supports a fast and secure data transmission through myREX24 VPN functionality and integrated firewall. You can provide a user-oriented configuration of the VPN Internet and network connection by using the unrestricted access to the myREX24 VPN portal.
The new REX 100 offers you maximum flexibility for your application and at the same high-end security for your data transmission in a space saving, compact size with integrated 3 or 4 port switch.

Ordering Data	Order No.
REX 300, Ethernet Router	
VPN + WAN, PROFIBUS, analog + serial interface (incl. telephone cable, Ethernet cable, Quick Start Guide)	700-872-MDM02
VPN + WAN, PROFIBUS, UMTS (3G) + serial interface (incl. Ethernet cable, Quick Start Guide)	700-872-UMT02
VPN + WAN + serial interface, PROFIBUS, without Modem (incl. Ethernet cable, Quick Start Guide)	700-873-WAN02
REX 300 eco, VPN + WAN, without MPI interface, without Modem (incl. Ethernet cable, Quick Start Guide)	700-874-WAN02
REX 300 eco, VPN + UMTS (3G), without MPI interface (incl. Ethernet cable, Quick Start Guide)	700-874-UMT02
Adapter cable serial interface (RS232), for REX 300, 3 m, 9-way male connector	700-879-1VK11
Adapter cable serial interface (RS485), for REX 300, 3 m, 9-way male connector	700-879-1VK21
REX 300 USB-Stick with Toolbox and documentation preloaded (8 GB)	700-879-USB01
Mounting rail adapter for DIN rail (optional)	700-390-6BA01
Power Plug, 24 V, for SSW7, NETLink® and REX 300 devices (optional)	700-751-SNT01
Manual REX 300, English (available soon)	900-87x-REX300

Technical Data	
Dimensions (D x W x H mm)	116 x 40 x 124 mm
Weight	Approx. 300 g
Modem	Analog/GSM (GPRS/EDGE) (3G)
Router Functions VPN	 DHCP server and client, firewall, DynDNS, NAT/PAT, SMS-WAKEup, Visualisation IPSec, PPTP, OpenVPN
Authentication PPP VPN	 PAP, CHAP PSK, X.509 certificates
Encryption (VPN)	AES, DES/3DES
Ports LAN/WAN	 100 Mbps for full and half-duplex operation, automatic detection, autosensing
MPI/PROFIBUS	9,6 kbps to 12 Mbps
Serial	RS232, RS485 (2- and 4-wire), RS422
Configuration Web interface	 Local/remote
USB	via USB stick
Network	via REXconf Tool
Power supply Voltage Current consuption	 10 VDC ... 30 VDC max. 500 mA at 24 V
Ambient temperature	0 °C ... +50 °C
Class of protection	IP 20

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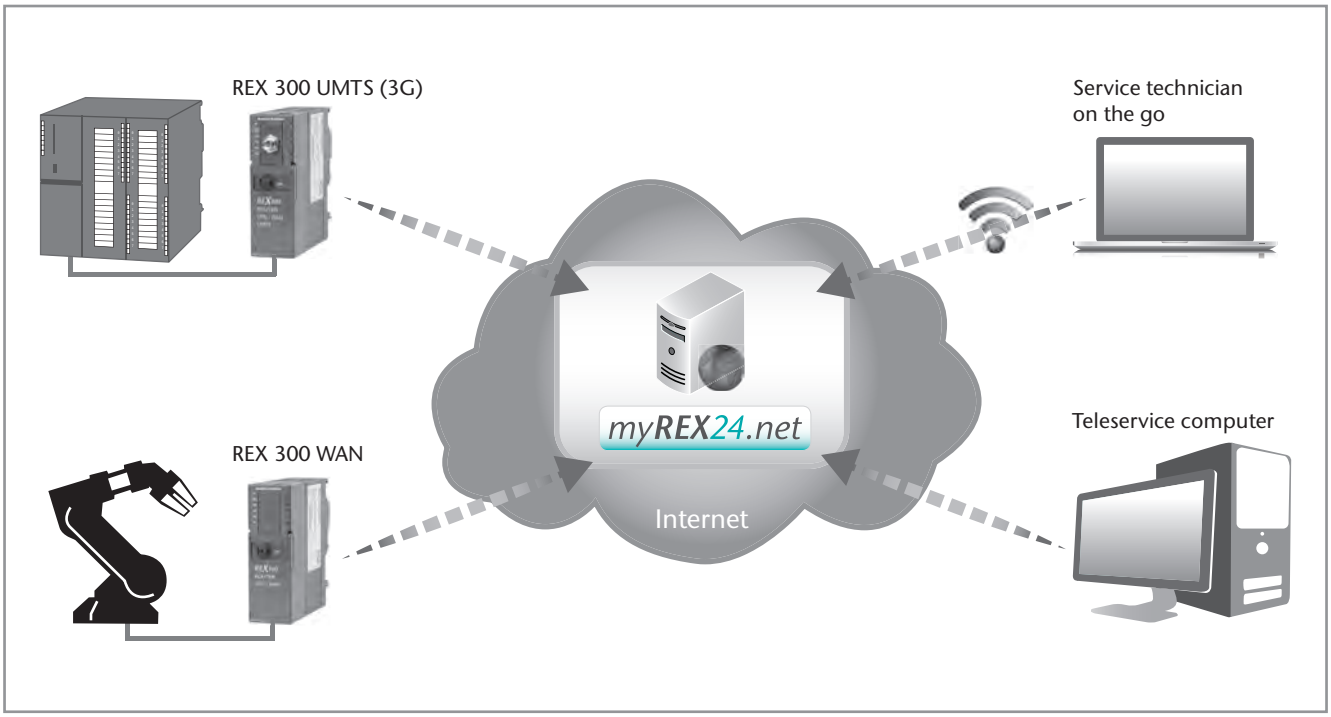
Redundant server architecture

The advantages

- Access via www.myREX24.net
- shDIALUP software for easily establishing a connection from your computer
- Configure your REX 300 router on the myREX24 VPN portal
- Configurations can be downloaded
- User and permissions management system
- SMS text message wake-up with shSMS via myREX24
- Reports on every single connection that is established
- WEB2go makes it possible to keep an eye on your equipment at all times while on the go by using a smartphone or tablet computer

Our intelligent mediation server, which features integrated user and REX 300 management capabilities, makes both user accounts and REX 300 accounts for automation systems available on its portal.
Depending on the configuration used, equipment can remain constantly logged in to the portal or a user can log it in and out as required. Whether the customer's provider assigns dynamic or static IP addresses is of no consequence, as connections to the portal are always established from the corresponding remote servicing computer and from the relevant equipment (as a result, an outgoing connection will be active on both sides). This also has the advantage that firewalls can be configured on both ends in such a way that attempts to establish a connection from the Internet will normally be blocked, thus providing excellent protection against unauthorized access.

Data is transferred via secure VPN connections using the OpenVPN security protocol, and a free client program (shDIALUP) that automatically handles authentication is used to log in to the myREX24 VPN portal.
Connections to equipment can be established in mere seconds. Moreover, the engineering software used makes it possible to remotely service components such as S7 PLCs, drives, control panels, and industrial PCs with complete transparency.
The actual portal is hosted at a high-performance data center. A redundant connection with 365/24/7 monitoring guarantees an average annual network availability of at least 99%.



Keep an eye on your equipment at all times

REX 300 Toolbox



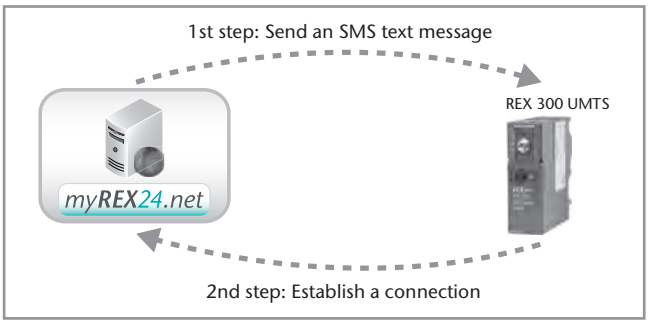
REX 300 Toolbox

REX 300 Toolbox is designed to enable you to access a REX 300 unit's system functions in exactly the way you need. In addition, it can be used to create simple platform-independent visualization interfaces that can be accessed via myREX24, as well as locally.

Features

- Compatible automation protocols:
  - S7 ISO-on-TCP (RFC 1006)
  - Modbus TCP
  - MPI / PROFIBUS
- Available variable displays:
  - List display
  - Gauge
  - Bar/line graph
  - Input field for changing variables
- Monitoring system with SMS (text message) or e-mail alarm
- A REX 300 USB stick with Toolbox and documentation preloaded is available
- Permissions management (read, write, etc.)

shSMS



Effective immediately, you can also use myREX24 to activate REX 300 GSM devices with an SMS text message.

Features

- Cost control
- Activate connections from myREX24
- Easy to use
- Phone number is stored in the configuration

WEB2go



WEB2go is designed to enable you to monitor your equipment even when you are on the go by allowing you to retrieve the most important equipment data on your smartphone or tablet computer. WEB2go works perfectly with REX 300 Toolbox visualization interfaces.

Features

- Easy access through a standard web browser
- No additional software needed
- Ideal for mobile remote diagnostics via smartphones or tablet computers
- HTTPS encryption
- Monitoring and visualization

myREX24.net

myREX24.net Ordering Data	Order No.
myREX24.net free Access account for myREX24.net with **one** free active connection* and **one** WEB2go connection, plus the option of creating **ten** REX 300 devices for free and using **ten** free SMS text messages (once only). • Number of users allowed: 250 • Number of user groups allowed: 250 • Number of devices allowed: 250 (additional charges apply starting with the 11th device) • Number of device groups allowed: 250 • Number of active connections allowed: 1 (additional charges apply starting with the 2nd active connection)	
myREX24.net REX 300 One-time fee for each additional REX 300 router created after the 10th one.	800-870-REX01
myREX24.net ac1 License for 1 additional active connection*; expires 1 year after the invoice date.**	800-870-ACT01
myREX24.net ac3 License for 3 additional active connections*; expires 1 year after the invoice date.**	800-870-ACT03
myREX24.net ac5 License for 5 additional active connections*; expires 1 year after the invoice date.**	800-870-ACT05
myREX24.net ac10 License for 10 additional active connections*; expires 1 year after the invoice date.**	800-870-ACT10
myREX24.net WEB5 License for 5 additional WEB2go connections; expires 1 year after the invoice date.**	800-870-WEB05
myREX24.net WEB10 License for 10 additional WEB2go connections; expires 1 year after the invoice date.**	800-870-WEB10
myREX24.net WEB25 License for 25 additional WEB2go connections; expires 1 year after the invoice date.**	800-870-WEB25
myREX24.net WEB50 License for 50 additional WEB2go connections; expires 1 year after the invoice date.**	800-870-WEB50
myREX24.net shSMS 50 SMS messaging package with 50 messages	800-870-SMS05
myREX24.net shSMS 100 SMS messaging package with 100 messages	800-870-SMS10
myREX24.net shSMS 200 SMS messaging package with 200 messages	800-870-SMS20
myREX24.net shSMS 300 SMS messaging package with 300 messages	800-870-SMS30
myREX24.net shSMS 500 SMS messaging package with 500 messages	800-870-SMS50

* Active connections
The number of active connections is the number of connections between a user and an REX 300 device.
In other words, all users and REX 300 devices can be connected online to myREX24, but an active connection only counts the moment a user connects to an REX 300 device.

** This license will be automatically renewed for one year unless renewal is cancelled at least four weeks before the license expires.



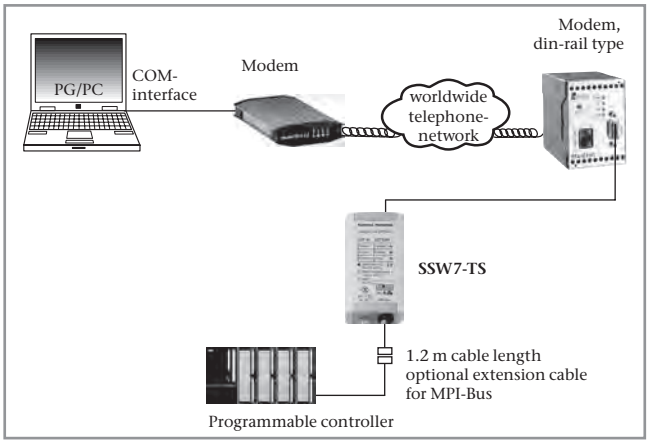
SSW7-TS, MPI Adapter

The SSW7-TS can be used to teleservice your system via a modem connection. For this, you can connect a commercially available external modem (analog, ISDN, GSM) to the RS232-interface of the SSW7-TS. For local use, you simply connect the RS232 interface of the SSW7-TS to your PC. The SSW7-TS automatically detects the baud rate (9.6 – 115.2 kBaud) used by the PC. At the system end, you can connect the SSW7-TS to an MPI network with 187.5 or 19.2 kbps.
The PC must be installed with the teleservice module for the programming software (e.g. TeleService for Simatic STEP[1] 7) so that the SSW7-TS can be parameterized if necessary, and the modem connection maintained. Without modems or the teleservice module the SSW7-TS can be operated at the machine as a SSW7.
The voltage supply for the SSW7-TS is taken from the CPU via the MPI bus. With an optional 24 V connection it can be operated anywhere else in the system.
The SSW7-TS can also be provided with a new firmware via a modem connection. Therefore a function upgrade of an adapter already installed in the system is also possible.

Accessory-Note
By using SHTools software parameterization and diagnostic functions are possible. For firmware update a free download of the latest SHTools version is available on our website www.helmholz.com.

Features

- Teleservice via external modem (analog, ISDN, GSM)
- Usable with Hayes compatible modems
- Password protection
- Call-back function
- Online update function
- In-situ use as programming adapter
- MPI up to 187.5 kbps



Application example for SSW7-TS

Technical Data		
Dimensions (D x W x H mm)		105 x 53 x 29
Weight		Approx. 180 g
Supply voltage		+24 V ±25 % from PLC or extern
Current consumption	typ. max.	30 mA 45 mA
MPI interface Type		 RS485
Transmission rate		19.2 or 187.5 kbps
Cable connector		SUB-D, 9-way with PG interface and terminating resistor
Communication interface Type		 RS232
Transmission type		Serial asynchronous
Transmission rate		9.6 ... 115.2 kbps
Parity		Odd
Data format		8 Bit
Protocols		PC <-> S7 via modem or local
Connection		Connector, SUB-D, 9-way
Class of protection		IP 20

Ordering Data	Order No.
MPI-Adapter with teleservice function SSW7-TS (incl. manual, CD with software)	**700-751-8VK21**
DIN rail adapter short **Power Plug,** 24 V, for SSW7, NETLink® and REX 300 devices (optional)	**700-751-HSH01** **700-751-SNT01**

From STEP[1] 7 version 5.5 SP2 Siemens no longer supports serial COM ports when using Windows 7[2] 64 bit. The TIA Portal[1] also supports no COM ports - no matter what operating system is installed!

1) STEP, Simatic and TIA Portal are registered trademarks of Siemens AG.
2) Windows 7 is a registered trademark of Microsoft Corporation.

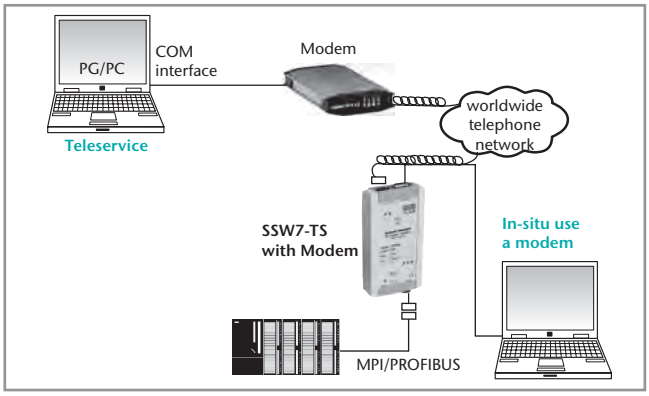
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SSW7-TS with Modem

Features

- MPI up to 187.5 kbps
- Teleservice and in-situ use
- Password protection and call-back function
- RS232-interface
- Online update function
- DIN rail adapter for mounting included in scope of supply



Application example for SSW7-TS with Modem analog

The SSW7-TS with integrated modem is a low-cost alternative for teleservicing a programmable controller via the MPI bus. Depending on the version, an analog, ISDN, or GSM modem is integrated in the housing of the SSW7-TS. The analog modem can be configured for worldwide use. All connecting cables required for operation are included. The SSW7-TS with a GSM modem (quadband) is the right choice for mobile use or if a telephone connection is not available.
Via the serial interface, the SSW7-TS with modem can also be used as a PC adapter for local use. The modem can be used for teleservicing a VISU/SCADA application even without a TS adapter function. The SSW7-TS with modem receives its power supply from the CPU via the MPI cable or via an external power supply. With the free SHTools software the SSW7-TS with modem can also be updated with new firmware via a modem link.
That enables functional expansion of an adapter already installed in the system.

Accessory-Note
The SSW7-TS with GSM modem requires a mini SIM card with CSD service (Circuit Switched Data) activated and a suitable GSM antenna (see page 58).

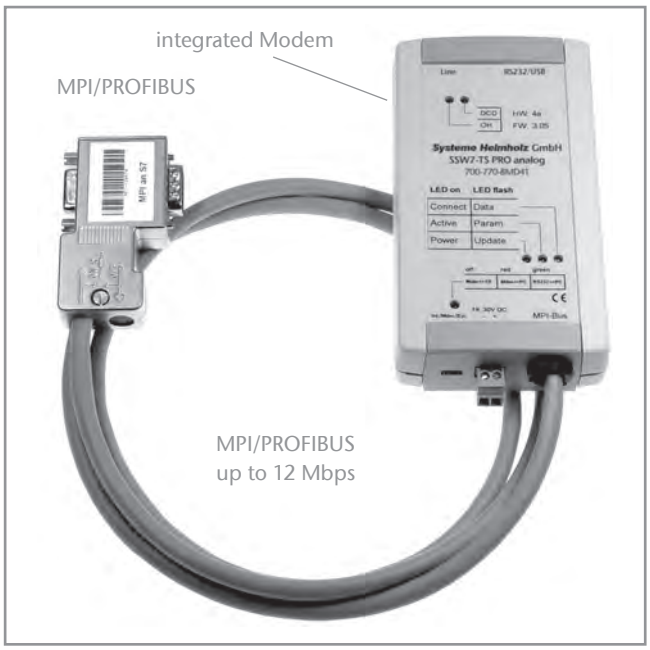
Ordering Data	Order No.
MPI-Adapter **SSW7-TS with modem analog** (incl. DIN rail adapter, 2 x telephone cable RJ11 + TAE each 3 m; 3 m programming cable, manual, CD with software)	**700-751-8MD21**
SSW7-TS with modem ISDN (incl. DIN rail adapter, RJ11 telephone cable 3 m; 3 m programming cable, manual, CD with software)	**700-751-8IS21**
SSW7-TS with modem GSM (incl. DIN rail adapter, 3 m programming cable, manual, CD with software) (**GSM antennas** see page 58)	**700-751-8GS21**
Power Plug, 24 V, for SSW7, NETLink® and REX 300 devices (optional)	**700-751-SNT01**

Technical Data	
Dimensions (D x W x H mm)	135 x 67 x 30
Weight	Approx. 240 g
Supply voltage	+24 V ±25 % from PLC or extern
Current consumption	Analog/ISDN approx. 100 mA, GSM approx. 150 mA
MPI interface Type	RS485
Transmission rate	19.2 or 187.5 kbps
Cable connector	SUB-D, 9-way with PG interface and terminating resistor
Communication interface Type	RS232; 2-wire dial-up (analog); ISDN S_0
GSM-Frequency	Quadband: GSM850, EGSM900, DCS1800, PCS1900
Transmission type	Serial asynchronous
Transmission rate	9.6 ... 115.2 kbps
Protocols	PC <-> S7 via modem or local
Connection	Connector, SUB-D, 9-way RJ11 or SIM card slot
Class of protection	IP 20

From STEP[1] 7 version 5.5 SP2 Siemens no longer supports serial COM ports when using Windows 7[2] 64 bit.
A parameterization and remote maintenance is no longer possible with the integrated teleservice module in TIA portal[1].

1) STEP and TIA Portal are registered trademarks of Siemens AG.
2) Windows 7 is a registered trademark of Microsoft Corporation.

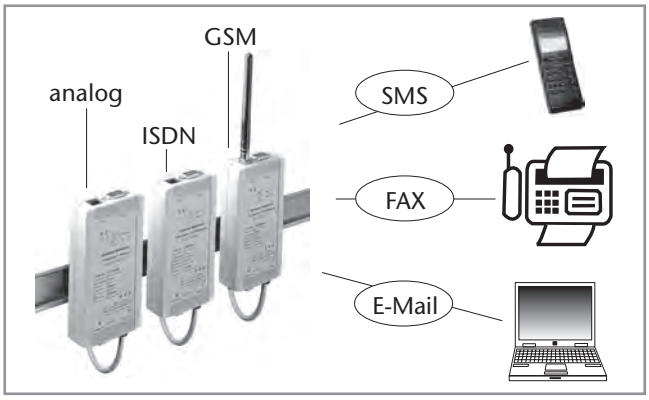
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SSW7-TS PRO; analog

Features

- MPI/PROFIBUS up to 12 Mbps; autobaud
- Teleservice and in-situ use
- Password protection and call-back function
- RS232 and USB interface
- Remote updating possible
- Transmission of any SMS messages from the PLC



Application example for SSW7-TS PRO analog/ISDN/GSM

The SSW7-TS PRO can be used for teleservicing a S7 system via a modem connection and supports connection of the system to an MPI or PROFIBUS network with up to 12 Mbps.
Depending on the version, an analog, ISDN, or GSM modem is integrated in the housing of the SSW7-TS PRO. The analog modem can be configured for worldwide use. The SSW7-TS PRO GSM is the right choice for mobile use or if a telephone connection is not available.
In addition to use as a remote service solution, the SSW7-TS PRO can also be used locally as a PC adapter via its RS232 or USB interface.
The MPI/PROFIBUS connecting cable of the SSW7-TS PRO is not a spur line because of the repeater integrated into the connector. It allows the adapter to be connected at any point along the bus even at 12 Mbps.
The SSW7-TS PRO draws its power supply via the MPI/PROFIBUS connecting cable or, if necessary, via the external power source. Using the free software SHTools, firmware updates can be transmitted directly and via the modem connection.
As a new feature, the SSW7-TS PRO now also supports transmission of any SMS messages. SMS transmission is triggered by calling the SMS_SEND function block from the programmable controller.

Ordering Data	Order No.
MPI-Adapter **SSW7-TS PRO analog** (incl. DIN rail adapter, 2 x telephone cable RJ11 + TAE each 3 m, 3 m programming cable, USB cable, manual, CD with software)	700-770-8MD41
SSW7-TS PRO ISDN (incl. DIN rail adapter, RJ11 telephone cable 3 m, 3 m programming cable, USB cable, manual, CD with software)	700-770-8IS41
SSW7-TS PRO GSM (incl. DIN rail adapter, 3 m programming cable, USB cable, manual, CD with software) (**GSM antennas** see page 58)	700-770-8GS41
Power Plug, 24 V, for SSW7, NETLink® and REX 300 devices (optional)	700-751-SNT01

Accessory-Note
The SSW7-TS PRO GSM additionally requires a mini SIM card with the CSD service (Circuit Switched Data) activated and a suitable GSM antenna. (see page 58)

Technical Data	
Dimensions (D x W x H mm)	130 x 67 x 30
Weight	Approx. 240 g
Supply voltage	+24 V ±25 % from PLC or extern
Current consumption	Approx. 130 mA
MPI interface Type	RS485
Transmission rate	9.6 kbps - 12 Mbps
Cable connector	SUB-D, 9-way with PG interface and terminating resistor
Communication interfaces Type	RS232; 2-wire dial-up (analog), ISDN S_0; USB
GSM-Frequency	Quadband: GSM850, EGSM900, DCS1800, PCS1900
Transmission type	Serial asynchronous/USB
Transmission rate	9.6 ... 115 kbps
Data format	8 Bit
Protocols	PC <-> S7 via modem or local
Connection	Connector, SUB-D, 9-way RJ11; Mini-USB female connector
Class of protection	IP 20

From STEP[1] 7 version 5.5 SP2 Siemens no longer supports serial COM ports when using Windows 7[2] 64 bit.
When using the TIA portal[1] a parameterization of these products can only be carried out by SHTools. The dial-in and remote control of a programmable controller is then also possible with the TIA Portal[1].

1) STEP and TIA Portal are registered trademarks of Siemens AG.
2) Windows 7 is a registered trademark of Microsoft Corporation.

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TS 300, Teleservicemodule for the S7 Rack



TS 300, Teleservicemodule for the PLC-Rack

Features

- MPI up to 187.5 kbps
- TS adapter in the S7 rack for Teleservice
- Analog, ISDN, GSM
- USB interface for parameterization or in-situ use
- Password protection
- Call-back function
- Online update function
- Alert functions and switch outputs usable via back plane bus
- Mode change via Teleservice
- Up to two alarm messages can be transmitted by SMS per module
- Communication via the backplane bus possible[3)]

With the TS 300, teleservice of a system can be performed via the MPI bus.
The TS 300 has a single-width S7-300[1)] housing for mounting on the sectional rail. A 56k modem is integrated into the housing of the TS 300 that is prepared for use worldwide. A flash update is no longer necessary. TAE and RJ11 cables are included in the scope of supply. As alternatives, versions with ISDN or GSM modem are also available.
The TS 300 can establish an MPI link with the CPU via the backplane bus. The power supply is also drawn from the backplane bus. Therefore, for installation of a teleservice solution, only the phone line is required.
The TS 300 does not need to be configured in the hardware configuration of the PLC and can therefore be retrofitted at any time. Alternately, the TS 300 can be powered from an external 24 V source. The MPI connection can also be established via the 9-way sub D jack on the front.
An additional USB connection is used to parameterize the TS 300, for in-situ use as a PC adapter, or for direct use of the internal modem.

The TS 300 can also be updated with a new operating system via a remote link. That enables functional expansion of a TS 300 already installed in the system.
By using SHTools software parameterization and diagnostic functions are possible. For firmware update a free download of the latest SHTools version is available on our website www.helmholz.com.

Accessory-Note
For GSM antennas, see page 58.

Ordering Data	Order No.
TS 300, Teleservicemodule for the S7 Rack	
TS 300 with modem analog (incl. 3 m USB cable, 2 x telephone cable RJ11+TAE each 3m, manual, CD with software)	700-753-8MD21
TS 300 with modem ISDN (incl. 3 m USB cable, 1 x RJ11 telephone cable 3m, manual, CD with software)	700-753-8IS21
TS 300 with modem GSM (incl. 3 m USB cable, manual, CD with software) (**GSM antennas** see page 58)	700-753-8GS21
MPI-connecting cable, 0.5 m	700-753-6VK11
Mounting rail Adapter for DIN rail (optional)	700-390-6BA01
Mounting rail 40 mm	700-390-1XA04

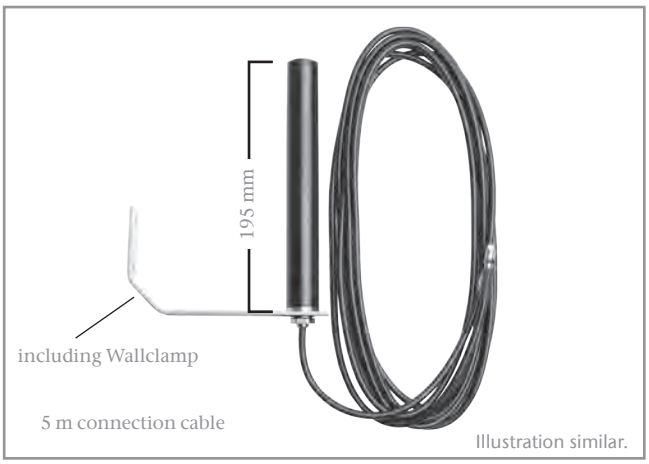
From STEP[1)] 7 version 5.5 SP2 Siemens no longer supports serial COM ports when using Windows 7[2)] 64 bit.
A parameterization and remote maintenance is no longer possible with the integrated teleservice module in TIA portal[1)].

1) S7-300, STEP and TIA portal are registered trademarks of Siemens AG.
2) Windows 7 is a registered trademark of Microsoft Corporation.
3) It is advised against a MPI functionality at the back plane bus when using the following CPUs: S7-315 2 DP/PN, S7-317, S7-318 and S7-319 (State: 11-2011)

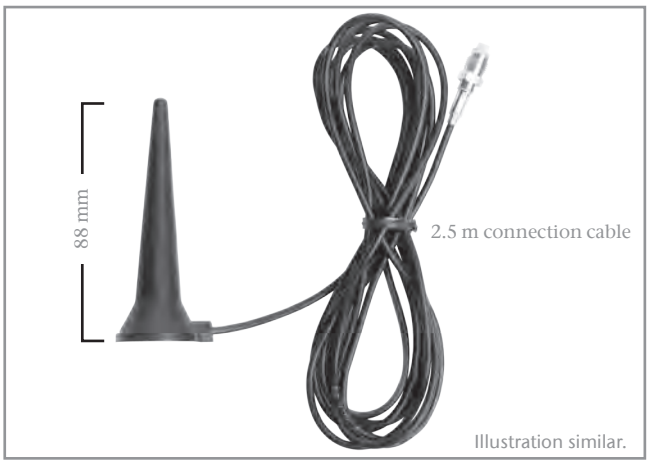
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Technical Data			
	TS 300 analog	**TS 300 ISDN**	**TS 300 GSM**
Class of protection	IP 20	IP 20	IP 20
Dimensions (D x W x H)	116 x 40 x 124 mm	116 x 40 x 124 mm	116 x 40 x 124 mm
Weight	Approx. 280 g	Approx. 280 g	Approx. 280 g
Operating voltage	DC +24 V ± 25 %, external or 5 V via backplane bus	DC +24 V ± 25 %, external or 5 V via backplane bus	DC +24 V ± 25 %, external
Current consumption	Approx. 500 mA (backplane bus) Approx. 140 mA (external	Approx. 500 mA (backplane bus) Approx. 140 mA (external	Approx. 50 mA (backplane bus) Approx. 170 mA (external)
Ambient temperature	0 °C to +60 °C	0 °C to +60 °C	0 °C to +60 °C
MPI interface Type	RS485	RS485	RS485
Transmission rate	19.2 or 187.5 kbps	19.2 or 187.5 kbps	19.2 or 187.5 kbps
Connection	SUB-D, 9-way socket or via backplane bus	SUB-D, 9-way socket or via backplane bus	SUB-D, 9-way socket or via backplane bus
USB communication interface Type Connection	USB 2.0, USB 1.1 compliant USB-B socket for internal modem or TS adapter	USB 2.0, USB 1.1 compliant USB-B socket for internal modem or TS adapter	USB 2.0, USB 1.1 compliant USB-B socket for internal modem or TS adapter
Transmission rate	9.6 kbps to 115.2 kbps via virtual COM port	9.6 kbps to 115.2 kbps via virtual COM port	9.6 kbps to 115.2 kbps via virtual COM port
Modem	Analog interface 56 kbps (V.92)	ISDN S0 interface acc. to ITU I.430, 64 kbps	Quadband: GSM850, EGSM900, DCS1800, PCS1900
Modem connection	RJ-11 socket	RJ-11 socket	3 V mini SIM card, FME connector for antenna
SMS transmission	2	2	2
Transmission standards	V.90, V.34+, V.34, V.32bis, V.32, V.22, V.22bis, V.21, V.23, BELL standard 103, 212 Fax Class 1, Fax Class 2	Transmission in D channel at 9,600 bps (X.31-D) Transmission in B channel at 64.000 bps (X.31-B))	Class 4 (2 W) for GSM850/ EGSM900 Class 1 (1W) for DCS1800/PCS1900
Protocols		B channel: V.110, X75, X25/ X31, HDLC (transparent) D channel: DSS1, X.31	

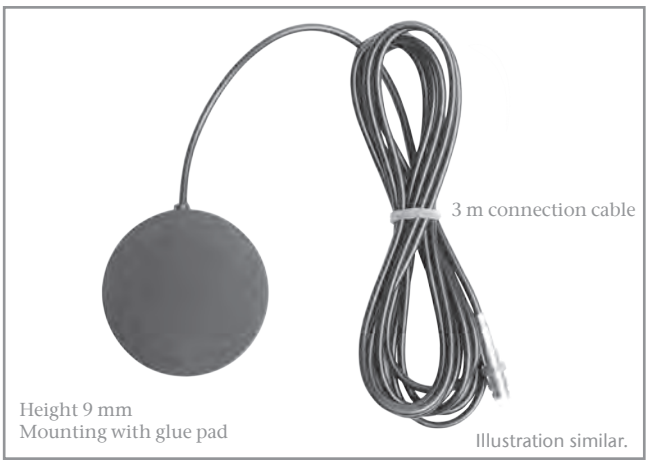
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Stationary quadband antenna for wall mounting (in- and outside)



Magnetic base quadband antenna (inside)



Self-adhesive triband antenna for wall- or glass mounting (inside)



Portable quadband antenna for mobile use (inside)

To ensure the function of the GSM radio system in a – in most cases special – industrial environment, it is important to select a Systeme Helmholz GSM antenna an advance for the greatest possible reliability.
Despite careful planning, the quality and speed of transmission always also depend on the level of development of and load on the GSM network.
To increase the flexibility still further, corresponding GSM extensions of various lengths are available as accessories for the antennas offered.

Stationary quadband antenna
The stationary quadband antenna is a non-directional station antenna with a gain of up to 2 dBi.

Ordering Data	Order No.
Stationary quadband antenna, GSM/3G, 2 dBi, 5 m cable	700-751-ANT11
Magnetic base quadband antenna, GSM/3G, 2 dBi, 2.5 m cable	700-751-ANT12
Self-adhesive triband antenna, GSM/3G, 3 m cable	700-751-ANT13
Portable quadband antenna with knee-joint, GSM/UMTS, 2 dBi	700-751-ANT14
GSM antenna extension cable, 3.4 dB/10 m at 100 MHz, 5 m	700-751-ANTK01
GSM antenna extension cable, 3.4 dB/10 m at 100 MHz, 10 m	700-751-ANTK02
GSM antenna extension cable, 3.4 dB/10 m at 100 MHz, 15 m	700-751-ANTK03
GSM antenna extension cable, 3.4 dB/10 m at 100 MHz, 20 m	700-751-ANTK04

It is protected in a robust and weatherproof GFK conduit, is supplied with a wall mount, and is therefore especially suitable for mounting on vertical surfaces, such as building walls etc. It can be used equally well both outdoors and indoors. Metal surfaces should not be located in proximity to the emitting antenna. The 5 m long connecting cable is permanently connected to the antenna.

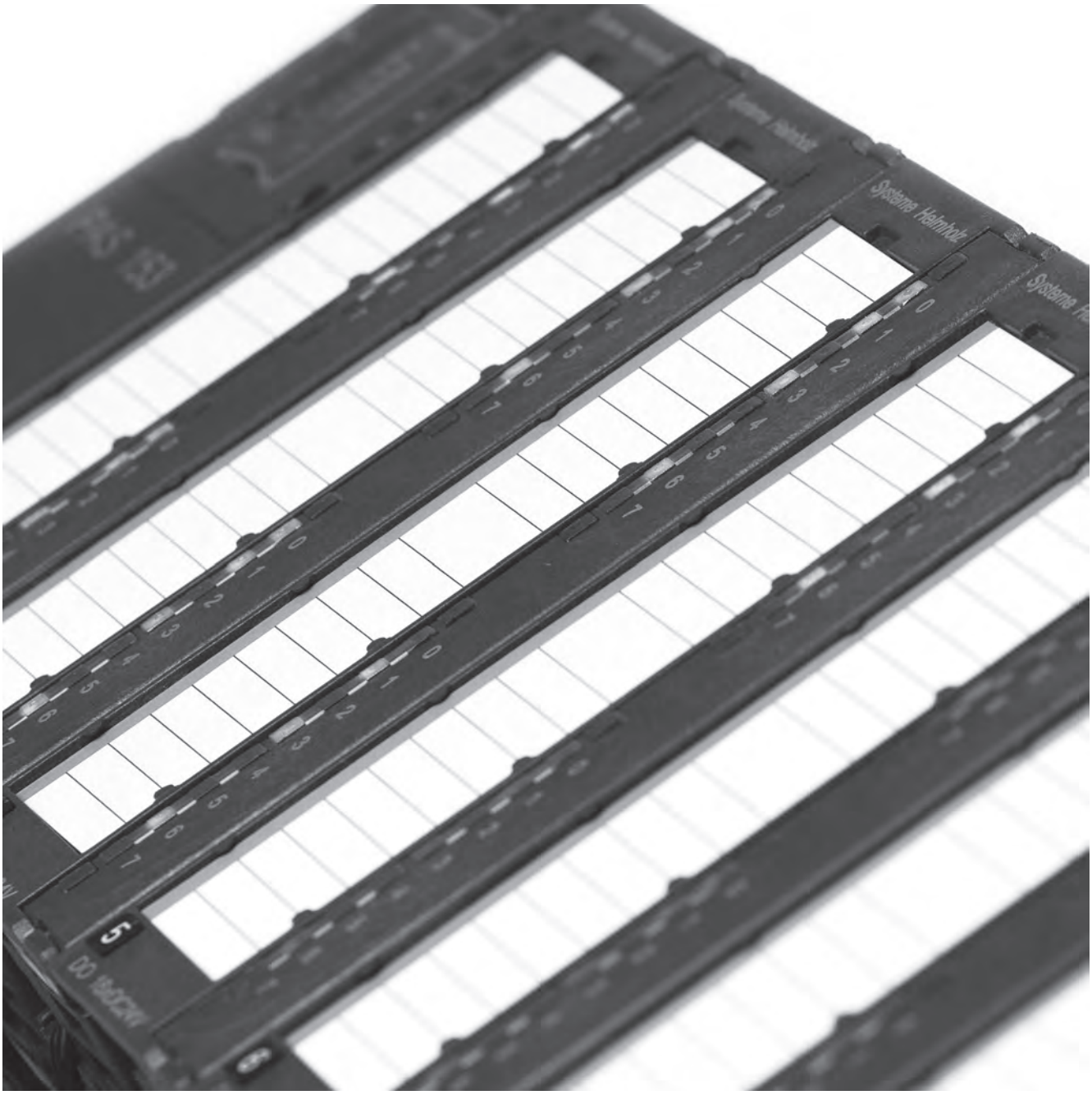
Magnetic base quadband antenna
The quadband magnetically adhering antenna supports all relevant GSM radio frequencies. It adheres reliably to all magnetic surfaces because of its strong permanent magnet. Due to its compact dimensions, this omnidirectional antenna is ideal for mounting on the top or side of a cabinet. The 2.5 m long connecting cable provides a sufficient radius of action for this and is permanently connected to the antenna.

Self-adhesive triband antenna
Patch antenna with a flat, robust design for indoor use. It is fixed by means of an adhesive pad on preferably horizontal surfaces. It functions independently of external grounding surfaces and can be mounted on nearly any material. The 3 m long connecting cable is permanently attached and can exit in the horizontal or vertical direction.

Portable quadband antenna
Small quadband omnidirectional antenna for direction connection to the GSM modem. For this type of antenna, a minimum clearance of 60 cm from other antennas and standing metal parts must be ensured on all sides in the application.

The antennas can be used in conjunction with the following products: REX 300, SSW7-TS PRO, SSW7-TS with modem and TS 300 in the GSM variant in each case.

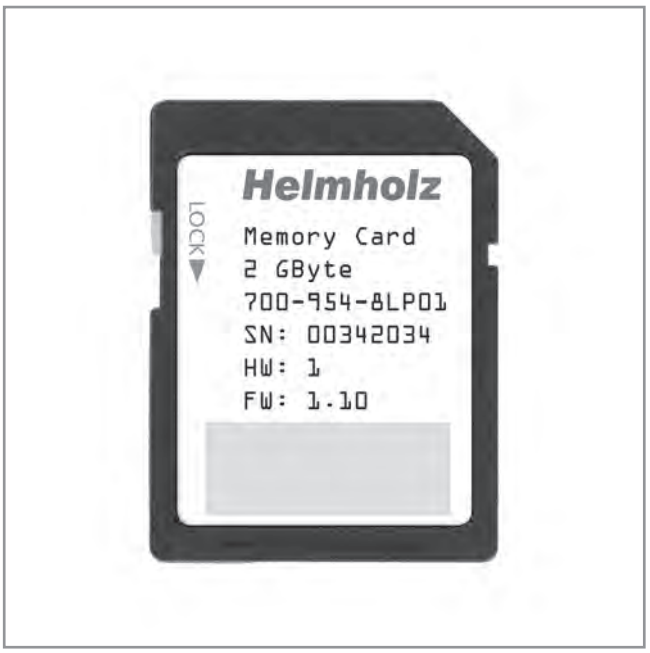
Note
All antennas are 3G compatible.



Components for S7

Memory Cards
Micro Memory Cards
Flash EPROM Cards/RAM Cards
Digital Modules
Analog Modules
Front Connectors

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Memory Cards for S7-1200/1500[1] from Siemens

The Memory Cards from the Systeme Helmholz GmbH are suitable for use in S7-1200[1]/S7-1500[1] controllers of Siemens AG. The Memory Cards are available with the following memory capacities: 4 MB, 12 MB, 24 MB, 2 GB.

Ordering Data	Order No.
Memory Cards, for 1200/1500[1] series	
4 MByte	**700-954-8LC01**
12 MByte	**700-954-8LE01**
24 MByte	**700-954-8LF01**
2 GByte	**700-954-8LP01**

Technical Data	
Memory Cards	
Memory capacity	4 MByte 12 MByte 24 MByte 2 GByte
Applications	CPU 1200 CPU 1500

1) S7-1200 and S7-1500 are registered trademarks of Siemens AG.

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Micro Memory Cards



Micro Memory Card for S7-300[1] from Siemens

The Micro Memory Cards from the Systeme Helmholz GmbH are suitable for use in S7 controllers.
Our product program includes the whole range of the most commonly required modules plus the special variants 256 kB and 1 MB.
The Micro Memory Cards are available with the following memory capacities: 64 kB, 128 kB, 256 kB, 512 kB, 1 MB, 2 MB, 4 MB, 8 MB.

Ordering Data	Order No.
Micro Memory Cards	
64 kByte	**700-953-8LF30**
128 kByte	**700-953-8LG30**
256 kByte	**700-953-8LH30**
512 kByte	**700-953-8LJ30**
1 MByte	**700-953-8LK30**
2 MByte	**700-953-8LL30**
4 MByte	**700-953-8LM30**
8 MByte	**700-953-8LP30**

Technical Data	
Micro Memory Cards	
Memory capacity	64 kByte 128 kByte 256 kByte 512 kByte 1 MByte 2 MByte 4 MByte 8 MByte
Applications	CPU 312C CPU 313C CPU 314C CPU 312 ... 317, new type IM 151, IM 153, IM 154 CPU C7

1) S7-300 is a registered trademarks of Siemens AG.

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Memory Card, long type



Memory Card for S7-400[1] from Siemens

Memory Cards from the Systeme Helmholz GmbH are designed for use in CPU modules CPU 412 to CPU 417.
We have been able to achieve top quality standards and a very advantageous price-performance ratio with the use of modern manufacturing methods.
Our product program covers the range of the most common submodules.

Ordering Data	Order No.
Flash EPROM Cards, long	
for 400 series	
256 kByte	**700-952-0KH00**
1 MByte	**700-952-1KK00**
2 MByte	**700-952-1KL00**
4 MByte	**700-952-1KM00**
RAM Cards, long, for 400 series	
256 kByte	**700-952-1AH00**
1 MByte	**700-952-1AK00**
4 MByte	**700-952-1AM00**
8 MByte	**700-952-1AP00**

Technical Data	
Flash EPROM Cards, long Memory capacity	256 kByte, 1 MByte, 2 MByte, 4 MByte
Applications	CPU 412 to 417
RAM Cards, long Memory capacity	256 kByte, 1 MByte, 4 MByte, 8 MByte
Applications	CPU 412 to 417

1) S7-400 is a registered trademarks of Siemens AG.

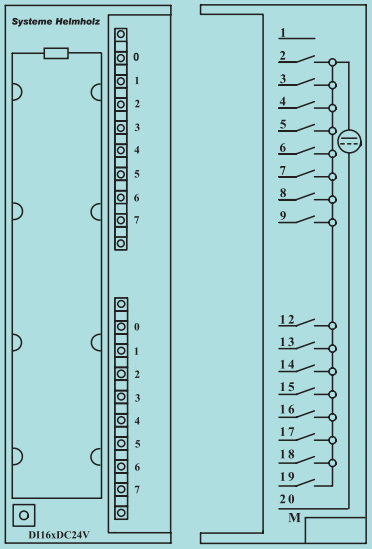
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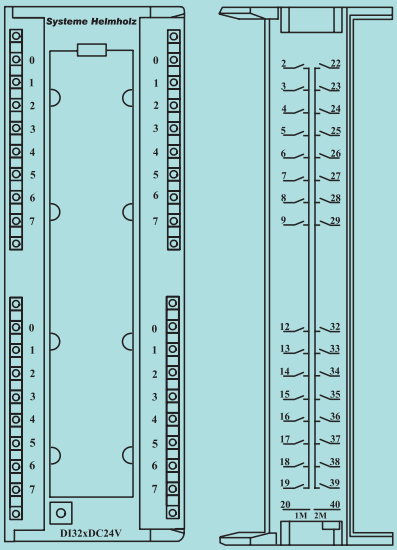
Digital input modules with 16 and 32 inputs

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 88-90).

Open type Programmable Controllers, for use in Hazardous Locations, Class I, Div. 2 Groups A, B, C, D T4 including Class I Zone 2 IIC.



700-321-1BH02



700-321-1BL00

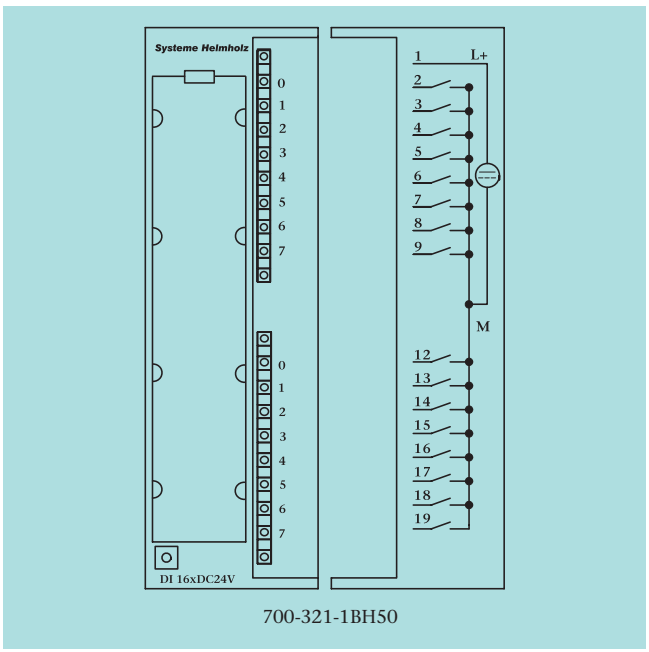
Ordering Data	Order No.
DEA 300, Digital Input Module, 16 inputs (DC 24 V) 32 inputs (DC 24 V)	 **700-321-1BH02** **700-321-1BL00**
Manual DEA 300, German/English	**900-321-1DE11**

Technical Data			
		700-321-1BH02	**700-321-1BL00**
Number of inputs		**16**	**32**
Isolation (from backplane bus) In groups of		Yes (optocoupler) 16	Yes (optocoupler) 16
Input voltage • nom. value • for “0” signal • for “1” signal		 DC 24 V -3 ... +5 V +13 ... +30 V	 DC 24 V -3 ... +5 V +13 ... +30 V
Input current • for “1” signal	typ.	 7 mA	 7 mA
Delay time	typ.	1.2 ... 4.8 ms	1.2 ... 4.8 ms
Connection of 2-wire initiator Perm. quiescent current for ”0” signal	 max.	Yes 1.5 mA	Yes 1.5 mA
Cable length • unshielded • shielded	 max. max.	 600 m 1000 m	 600 m 1000 m
Current consumption • internal (backplane bus) • external (from +24 V)	 typ. max.	 20 mA 140 mA	 30 mA 290 mA
Power loss (rated operation)	typ.	3.5 W	6.8 W
Front connector		20-way	40-way
Ambient temperature Transport and storage temperature		0 °C ... 60 °C -25 °C ... 75 °C	0 °C ... 60 °C -25 °C ... 75 °C

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DEA 300, m-reading



700-321-1BH50

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 88-90).

Ordering Data	Order No.
DEA 300, Digital Input Module, 16 inputs, m-reading	**700-321-1BH50**
Manual DEA 300, German/English	**900-321-1DE11**

Technical Data	
Number of inputs	**16**
Isolation against backplane bus In groups of	Yes (optocoupler) 16
Input voltage, reference potential is L+ • nom. value • for Signal “0” • for Signal “1”	 DC 24 V +30 ... -5 V -13 ... -30 V
Input current • for Signal “1”	 7 mA
Delay time	1.2 ... 4.8 ms
Cable length • unshielded • shielded	 600 m 1000 m
Current consumption • internal (backplane bus)	 10 mA
Power loss (nominal operation)	3.5 W
Front connector	20-way
Ambient temperature Transport and storage temperature	0 °C ... 60 °C -25 °C ... 75 °C

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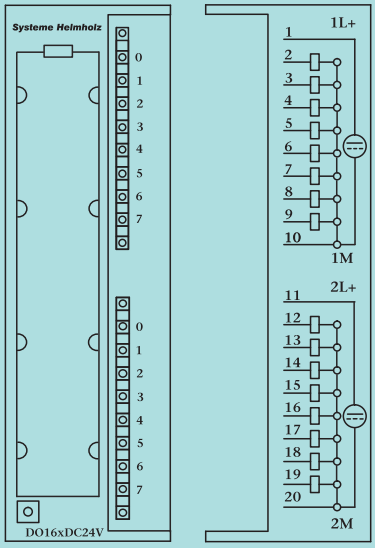
DEA 300, Digital Output Modules



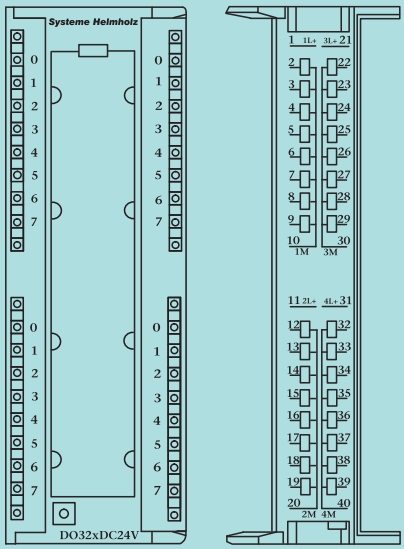
Digital output modules with 16 and 32 outputs

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 88-90).

Open type Programmable Controllers, for use in Hazardous Locations, Class I, Div. 2 Groups A, B, C, D T4 including Class I Zone 2 IIC.



700-322-1BH01



700-322-1BL00

Ordering Data	Order No.
DEA 300, Digital Output Module, 16 outputs (DC 24 V, 0.5 A) 32 outputs (DC 24 V, 0.5 A)	 **700-322-1BH01** **700-322-1BL00**
Manual DEA 300, German/English	**900-321-1DE11**

Technical Data			
		700-322-1BH01	**700-322-1BL00**
Number of outputs		**16**	**32**
Isolation against backplane bus In groups of		Yes (optocoupler) 8	Yes (optocoupler) 8
Supply voltage V_P, V_S • nom. value • ripple V_{PP} • permissible range (with ripple) • value at t < 10 ms	 max.	 DC 24 V 3.6 V 20 ... 30 V 50 V	 DC 24 V 3.6 V 20 ... 30 V 50 V
Output current • nom. value		 0.5 A	 0.5 A
Short-circuit protection		Electrical	Electrical
Voltage induced on circuit interruption limited to		- 48 V	- 48 V
Cable length • unshielded • shielded	 max. max.	 600 m 1000 m	 600 m 1000 m
Current consumption • internal (backplane bus) • ext. w/o load (from +24 V)	 max. typ.	 100 mA 120 mA	 125 mA 200 mA
Power loss (nominal operation)	typ.	5 W	6.8 W
Front connector		20-way	40-way
Ambient temperature Transport and storage temperature		0 °C ... 60 °C -25 °C ... 75 °C	0 °C ... 60 °C -25 °C ... 75 °C

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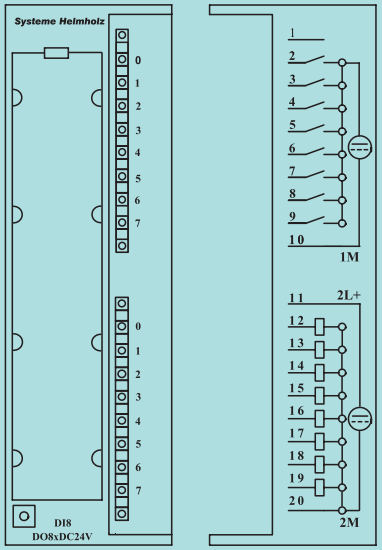
DEA 300, Digital Input/Output Modules



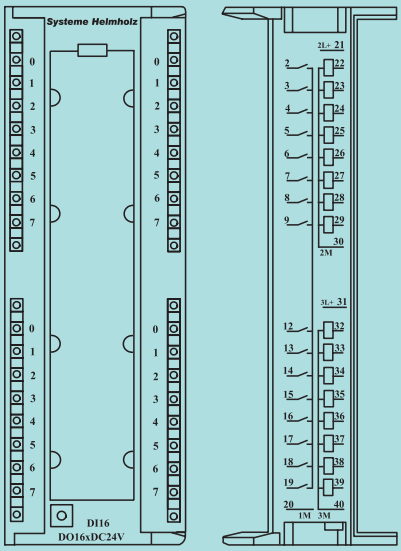
Digital input/output modules

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 88-90).

Open type Programmable Controllers, for use in Hazardous Locations, Class I, Div. 2 Groups A, B, C, D T4 including Class I Zone 2 IIC.



700-323-1BH01



700-323-1BL00

Ordering Data	Order No.
DEA 300, Digital Input/Output Module, 8 inputs (DC 24 V)/ 8 outputs (DC 24 V, 0.5 A)	**700-323-1BH01**
16 inputs (DC 24 V)/ 16 outputs (DC 24 V, 0.5 A)	**700-323-1BL00**
Manual DEA 300, German/English	**900-321-1DE11**

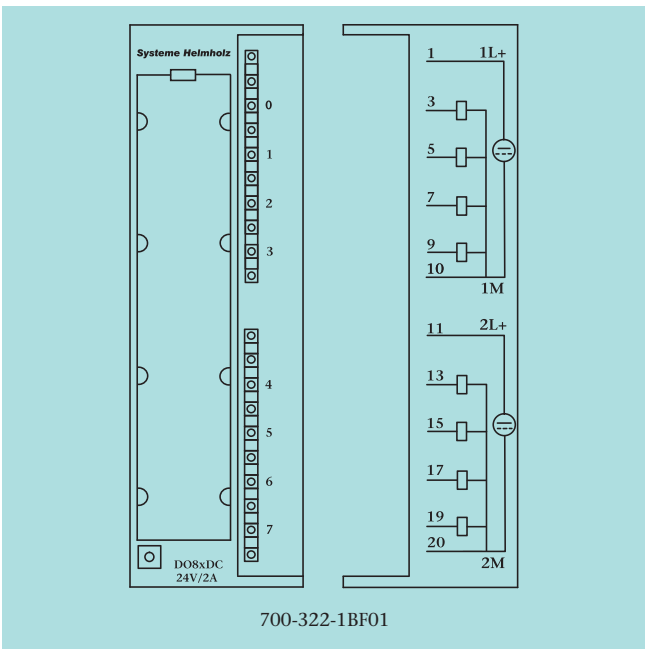
Technical Data			
		700-323-1BH01	**700-323-1BL00**
Number of inputs		**8**	**16**
Isolation (from backplane bus) In groups of		Yes (optocoupler) 8	Yes (optocoupler) 16
Input voltage • nom. value • for Signal “0” • for Signal “1”		 DC 24 V -3 ... +5 V +13 ... +30 V	 DC 24 V -3 ... +5 V +13 ... +30 V
Input current • **for “1” signal**	typ.	 7 mA	 7 mA
Delay time	typ.	1.2 ... 4.8 ms	1.2 ... 4.8 ms
Connection of 2-wire initiator Perm. quiescent current for ”0” signal	max.	Yes 1.5 mA	Yes 1.5 mA
Cable length • unshielded • shielded	max. max.	 600 m 1000 m	 600 m 1000 m
Number of outputs		**8**	**16**
Isolation (from backplane bus) in groups of		Yes (optocoupler) 8	Yes (optocoupler) 8
Output current • nom. value		 0.5 A	 0.5 A
Short-circuit protection		Electronic	Electronic
Voltage induced on circuit interruption limited to		- 48 V	- 48 V
Cable length • unshielded • shielded	max. max.	 600 m 1000 m	 600 m 1000 m
Supply voltage V_P, V_S • nom. value • ripple V_{PP} • permissible range (with ripple) • value at t < 10 ms	 max. max.	 DC 24 V 3.6 V 20 ... 30 V 50 V	 DC 24 V 3.6 V 20 ... 30 V 50 V
Current consumption • internal (backplane bus) • external (without load, from +24 V)	max. typ.	 55 mA 60 mA	 90 mA 120 mA
Power loss (nominal operation)	typ.	3.5 W	6.8 W
Front connector		20-way	40-way
Ambient temperature Transport and storage temperature		0 °C ... 60 °C -25 °C ... 75 °C	0 °C ... 60 °C -25 °C ... 75 °C

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DEA 300, Digital Output Module; 2 Amps



Digital output module; 8 outputs, 2 amps



700-322-1BF01

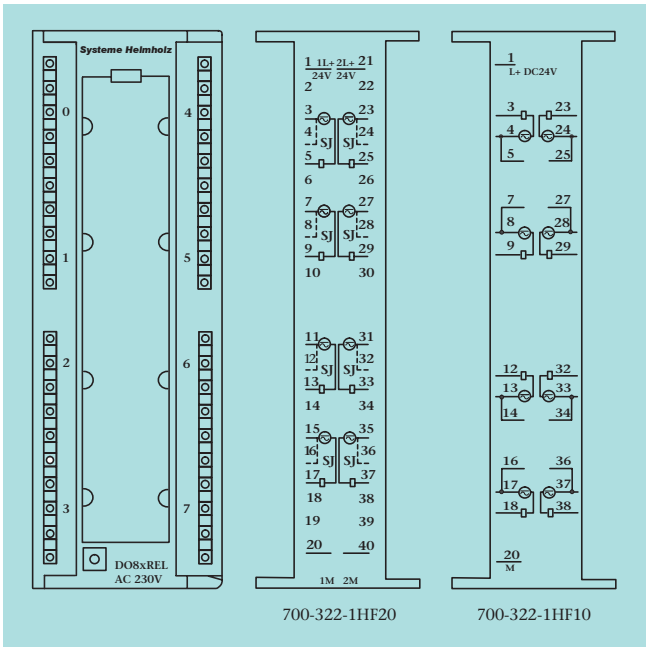
Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 88-90).

Ordering Data	Order No.
DEA 300, Digital Output Module, 8 outputs (DC 24 V, 2 A)	**700-322-1BF01**
Manual DEA 300, German/English	**900-321-1DE11**

Technical Data	
Number of outputs	**8**
Isolation (from backplane bus) In groups of	Yes (optocoupler) 4
Supply voltage V_P, V_S • nom. value • ripple V_{PP} max. • permissible range (with ripple) • value at t < 10 ms max.	 DC 24 V 3.6 V 20 ... 30 V 40 V
Output current • nom. value	 2 A
Aggregate current of the outputs (per group, horizontal mounting) • to 40 °C • to 55 °C	 8 A 6 A
Short-circuit protection	Electronic
Short-circuit current typ.	12 A clocked
Voltage induced on circuit interruption limited to	- 23 V
Cable length • unshielded max. • shielded max.	 600 m 1000 m
Current consumption • internal (backplane bus) max. • ext.(without load, from +24 V) typ.	 40 mA 60 mA
Power loss (nominal operation) typ.	6.8 W
Front connector	20-way
Ambient temperature Transport and storage temperature	0 °C ... 60 °C -25 °C ... 75 °C



Digital output convert; 8 relays



Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 88-90).

Technical Data		
Number of outputs		**8**
Nom. load voltage L+/L-		DC 24 V
Switching voltage		AC to 230 V DC to 120 V
Output current Aggregate current of the output (per group)	max.	5 A
Isolation to • backplane bus • in groups		Optocoupler 1
Switching frequency • resistive load • inductive load • lamp load • mechanical	max. max. max. max.	2 Hz 0.5 Hz 2 Hz 10 Hz
Rated load • resistive load • inductive load	max. max.	8 A (AC 230 V) 8 A (DC 24 V) 3 A (AC 230 V) 2 A (DC 24 V)
Expected life • mechanical • resistive load		10 Mio. 5 A, 0.2 Mio.
Ambient temperature Transport and storage temperature		0 °C ... 60 °C -25 °C ... 75 °C

Ordering Data	Order No.
DEA 300, Digital Output Module, 8 outputs, relays, 5 A 8 outputs, relays, 5 A, snubber	 **700-322-1HF10** **700-322-1HF20**
Manual DEA 300, German/English	**900-321-1DE11**

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DEA 300, Digital Output; Relays, 2 Amps



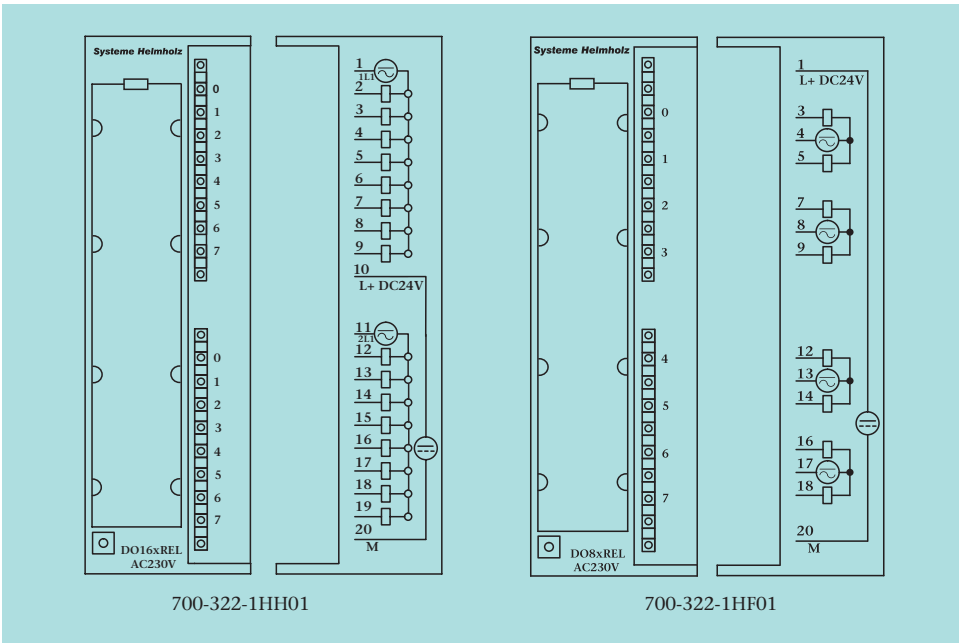
Digital output convert, 16 relays

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 88-90).

Order No. 700-322-1HH01:
Open type Programmable Controllers, for use in Hazardous Locations, Class I, Div. 2 Groups A, B, C, D T6 including Class I Zone 2, IIC.

Technical Data	700-322-1HH01	700-322-1HF01
Number of outputs	**16**	**8**
Nom. load voltage L+/L-	DC 24 V	DC 24 V
Switching voltage	AC to 230 V DC to 120 V	AC to 230 V DC to 120 V
Output current Aggregate current of the output (per group) max.	8 A	4 A
Isolation to backplane bus • in groups	Optocoupler 8	Optocoupler 2
Continuos thermal current	2 A	3 A
Switching frequency • resistive load max. • inductive load max. • lamp load max. • mechanical max.	 1 Hz 0,5 Hz 1 Hz 10 Hz	 2 Hz 0,5 Hz 2 Hz 10 Hz
Rated load • resistive load max. • inductive load max.	 2 A (AC 230 V) 2 A (DC 24 V) 2 A (AC 120 V) 2 A (DC 24 V)	 2 A (AC 230 V) 2 A (DC 24 V) 2 A (AC 120 V) 2 A (DC 24 V)
Expected life • mechanical • resistive load	 10 Mio. 2 A, 1 Mio.	 10 Mio. 2 A, 0.7 Mio.
Ambient temperature Transport and storage temperature	0 °C ... 60 °C -25 °C ... 75 °C	0 °C ... 60 °C -25 °C ... 75 °C

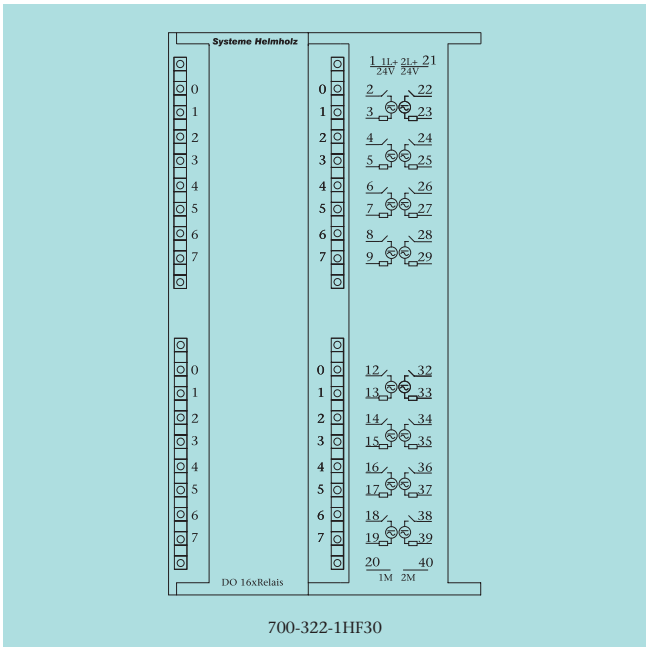
Ordering Data	Order No.
DEA 300, Digital Output Module, 16 outputs, relays, 2 A 8 outputs, relays, 2 A	 **700-322-1HH01** **700-322-1HF01**
Manual DEA 300, German/English	**900-321-1DE11**



700-322-1HH01 700-322-1HF01



DEA 300, Digital Output; Relays Bistable



700-322-1HF30

Our DEA 300 bistable module holds its' outputs state even when supply current is switched off or suffers breakdown.

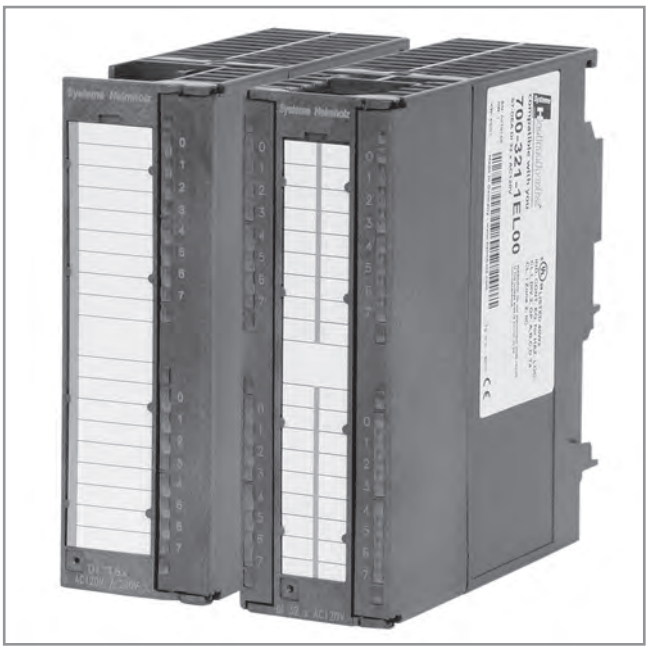
Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 88-90).

Ordering Data	Order No.
DEA 300 16 outputs, relays, bistable	**700-322-1HF30**
Manual DEA 300, German/English	**900-321-1DE11**

Technical Data		
Number of outputs		**16**
Nom. load voltage L+/L-		DC 24 V
Switching voltage	max. max.	AC to 50 V DC to 60 V
Isolation (from backplane bus)		Optocoupler
Continuos thermal current		0.5 A
Switching frequency • resistive load • mechanical	 max. max.	 20 Hz 180 Hz
Energisation of the solenoid to ensure relay switching	min	10 ms
Switching capacity and lifetime of contacts • resistive load		0.5 A; 0.7 Mio.
Front connector		40-way
Ambient temperature Transport and storage temperature		0 °C ... 60 °C -25 °C ... 75 °C

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DEA 300, Digital Input Modules; 120/230 V



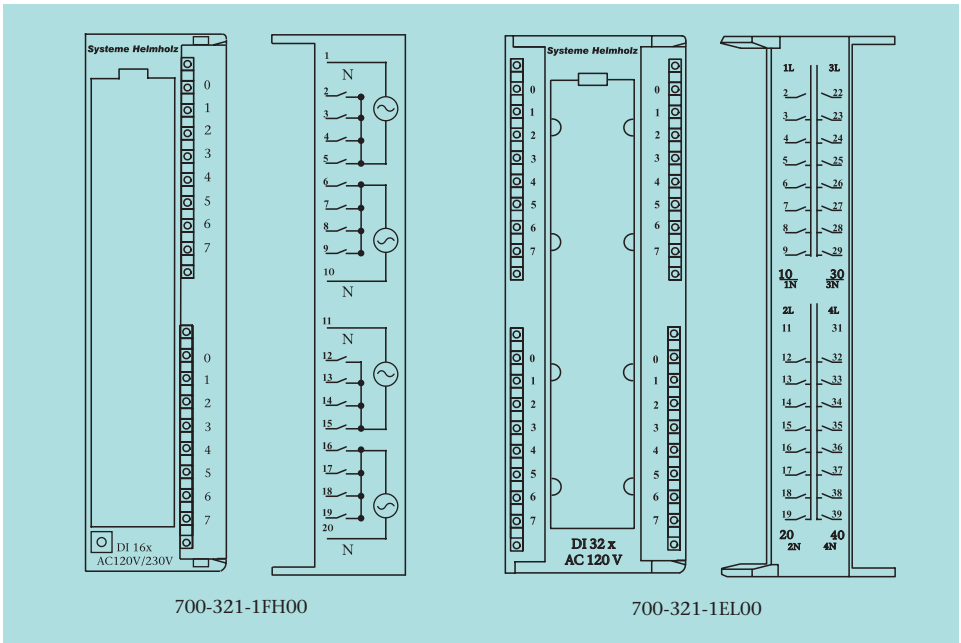
Digital input convert, 120/230 V

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 88-90).

Open type Programmable Controllers, for use in Hazardous Locations, Class I, Div. 2 Groups A, B, C, D T4 including Class I Zone 2 IIC.

Technical Data	700-321-1FH00	700-321-1EL00
Number of inputs	**16**	**32**
Isolation to backplane bus • in groups	Yes (optocoupler) 4	Yes (optocoupler) 8
Input voltage • nom. value (input voltage must be equal on all phases) • for Signal "0" • for Signal "1" • frequency range	120/230 V AC 0 ... 40 V 79 ... 264 V 47 ... 63 Hz	120 V AC 0 ... 20 V 74 ... 132 V 47 ... 63 Hz
Input current for signal "1" • 120 V, 60 Hz typ. • 230 V, 50 Hz typ.	 8 mA 13 mA	 22 mA -
Delay time • from "0" to "1" typ. • from "1" to "0" typ.	 25 ms 25 ms	 15 ms 25 ms
Cable length • unshielded max. • shielded max.	 600 m 1000 m	 600 m 1000 m
Current consumption • internal max	30 mA	16 mA
Power loss typ.	4.5 W	5.8 W
Ambient temperature Transport and storage temperature	0 °C ... +60 °C -25 °C ... +75 °C	0 °C ... +60 °C -25 °C ... +75 °C

Ordering Data	Order No.
DEA 300, Digital Input Module, 16 inputs, AC 120 V/230 V 32 inputs, AC 120 V	 **700-321-1FH00** **700-321-1EL00**
Manual DEA 300, German/English	**900-321-1DE11**

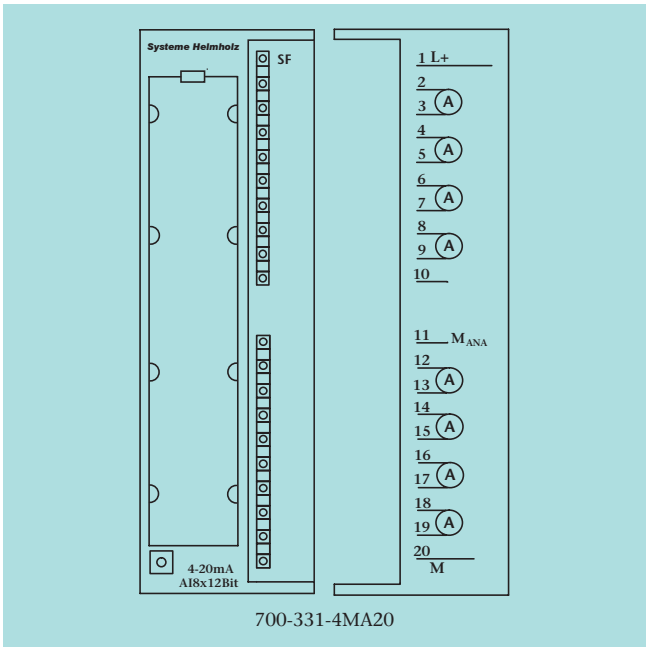


700-321-1FH00 700-321-1EL00

AEA 300, Analog Input Module for Connecting Sensors with Current Signals



Analog input module



700-331-4MA20

The analog input modules from the Systeme Helmholz GmbH are suitable for connection of sensors with current signals in the range up to ±20 mA.
The signal lines are connected to the corresponding front connectors. You can identify them on the labeling strip.
The modules can be fully parameterized with the hardware configurator of the programming software. Hardware configuration is not necessary (**no** range card).

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 88-90).

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Open type Programmable Controllers, for use in Hazardous Locations, Class I, Div. 2 Groups A, B, C, D T6 including Class I Zone 2, IIC.

Technical Data	
Number of inputs	**8**
Alarms • limit value alarm • diagnostic alarm	 Parameterizable Parameterizable for channels 0 and 2
Diagnostics	Red LED for group error display
Nom. load voltage L+/L-	DC 24 V
Polarity reversal protection	Yes
Input ranges • current, 4 DMU • current, 2 DMU	 ±3.2 mA/25 Ω ±10 mA/25 Ω 0 ... 20 mA/25 Ω 4 ... 20 mA/25 Ω ±20 mA/25 Ω 4 ... 20 mA/25 Ω
Permissible input current for current input max.	40 mA
Isolation against backplane bus	Yes
Conversion time/resolution (per chann.) • integration time • noise suppression for interference frequency • resolution (SG = sign) (depends on integration time)	 2.5/16.6/20/100 ms 400/60/50/10 Hz 9 + VZ / 12 + VZ / 12 + VZ / 14 + VZ Bit
Operational limit max.	±0.6 %
Basic error limit at 25 °C max.	±0.5 %
Cable length (shielded)	200 m
Current consumption • internal (backplane bus) typ. • external (L+) max.	 120 mA 200 mA
Power loss typ.	1.8 W
Front connector	20-way
Ambient temperature Transport and storage temperature	0 °C ... +60 °C -25 °C ... +75 °C

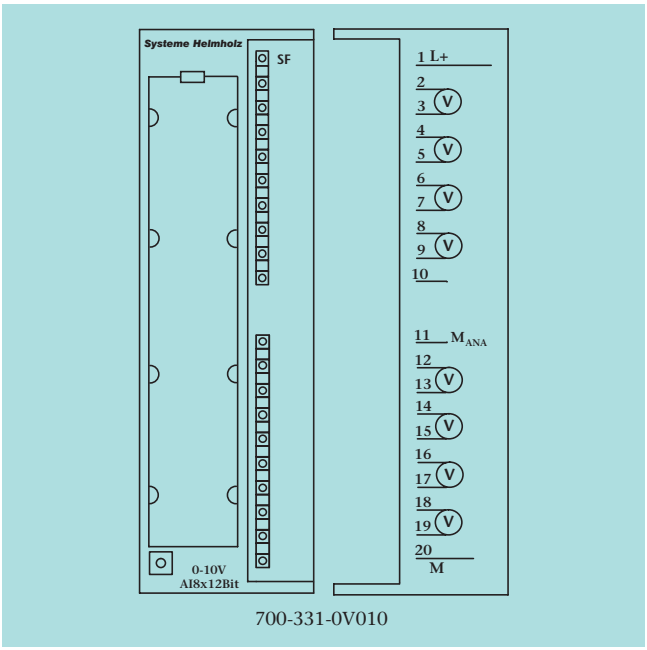
Ordering Data	Order No.
AEA 300, Analog Input Module, 8 current inputs for connecting current sensors, 4-20 mA	**700-331-4MA20**
Manual AEA 300, German/English	**900-331-0AA01**

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AEA 300, Analog Input Module for Connecting Sensors with Voltage Signals



Analog input module



700-331-0V010

The analog input modules from the Systeme Helmholz GmbH are suitable for connection of sensors with voltage signals in the range up to ±10 V.
The signal lines are connected to the corresponding front connectors. You can identify them on the labeling strip.
The modules can be fully parameterized with the hardware configurator of the programming software. Hardware configuration is not necessary (**no** range card).

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 88-90).

Open type Programmable Controllers, for use in Hazardous Locations, Class I, Div. 2 Groups A, B, C, D T6 including Class I Zone 2, IIC.

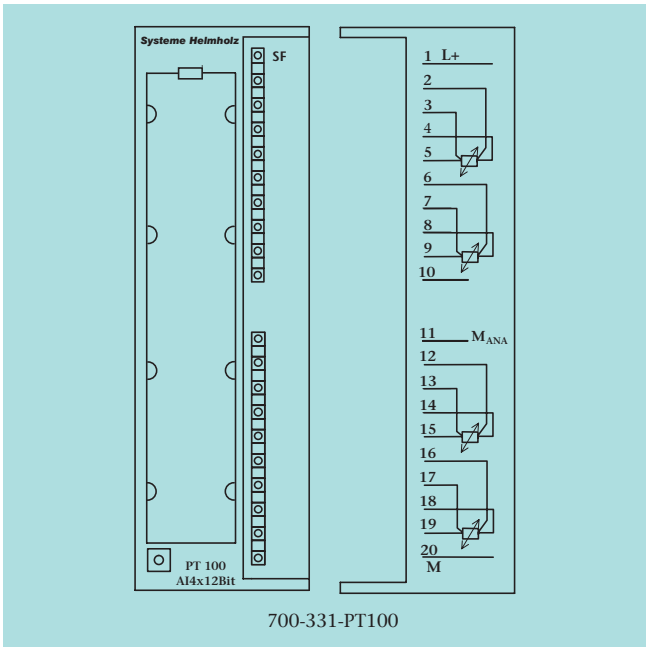
Technical Data		
Number of inputs		**8**
Alarms • diagnostic alarm • limit value alarm		 Parameterizable Parameterizable for channels 0 and 2
Diagnostics		Red LED for group error display
Nom. load voltage L+/L-		DC 24 V
Polarity reversal protection		Yes
Input ranges Voltage/input impedance		 ±80 mV/10 M Ω ±250 mV/10 M Ω ±500 mV/10 M Ω ±1 V/10 M Ω ±2.5 V/100 k Ω ±5 V/100 k Ω 1 ... 5 V/100 k Ω ±10 V/100 k Ω
Permiss. input voltage for voltage input	max.	 20 V
Isolation against backplane bus		Yes
Conversion time/resolution (per channel) • integration time • noise suppression for interference frequency • resolution (SG = sign) (depends on integration time)		 2.5/16.6/20/100 ms 400/60/50/10 Hz 9 + VZ / 12 + VZ / 12 + VZ / 14 + VZ Bit
Operational limit	max.	±0.6 %
Basic error limit at 25 °C	max.	±0.5 %
Cable length (shielded)	max.	200 m (50 m at ±80 mV)
Current consumption • internal (backplane bus) • external (L+)	typ. max.	 120 mA 200 mA
Power loss	typ.	1.8 W
Front connector		20-way
Ambient temperature Transport and storage temperature		0 °C ... +60 °C -25 °C ... +75 °C

Ordering Data	Order No.
AEA 300, Analog Input Module, 8 voltage inputs, for connection of voltage sensors, 0-10 V	**700-331-0V010**
Manual AEA 300, German/English	**900-331-0AA01**

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Analog input module



700-331-PT100

The analog input modules from the Systeme Helmholz GmbH are suitable for connection of Pt100/Ni100 sensors and resistors.
The signal lines are connected to the corresponding front connectors. You can identify them on the labeling strip.
The modules can be fully parameterized with the hardware configurator of the programming software. Hardware configuration is not necessary (**no** range card).

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 88-90).

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Open type Programmable Controllers, for use in Hazardous Locations, Class I, Div. 2 Groups A, B, C, D T6 including Class I Zone 2, IIC.

Ordering Data	Order No.
AEA 300, Analog Input Module, 4 inputs, Pt100/Ni100 for connecting resistance thermometers	**700-331-PT100**
Manual AEA 300, German/English	**900-331-0AA01**

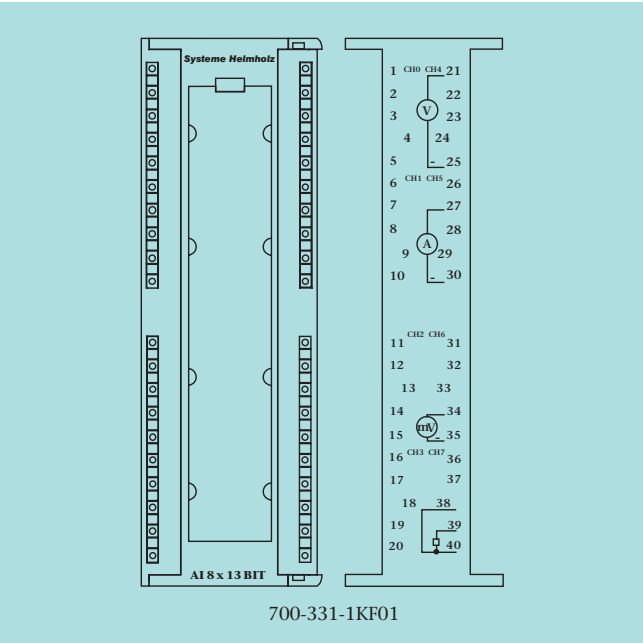
Technical Data		
Number of inputs		**4**
Alarms • limit value alarm • diagnostic alarm		 Parameterizable Parameterizable for channels 0 and 2
Diagnostics		Red LED for group error display
Nom. load voltage L+/L-		DC 24 V
Polarity reversal protection		Yes
Input resistance		10 MΩ
Resistance thermometer		Pt100, Ni100 (standard and climatic range)
Resistance range		150, 300, 600 Ω
Sensor connection		2-, 3- or 4-wire connection
Isolation against backplane bus		Yes
Conversion time/resolution (per channel) • integration time • noise suppression for interference frequency • resolution (SG = sign) (depends on integration time)		 2,5/16,6/20/100 ms 400/60/50/10 Hz 9 + VZ/12 + VZ/ 12 + VZ/14 + VZ Bit
Operational limit	max.	±0.6 %
Basic error limit at 25 °C	max.	±0.5 %
Cable length (shielded)	max.	200 m
Current consumption • internal (backplane bus) • external (L+)	 typ. max.	 120 mA 200 mA
Power loss	typ.	1,8 W
Front connector		20-way
Ambient temperature Transport and storage temperature		0 °C ... +60 °C -25 °C ... +75 °C

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AEA 300, Analog Input Module
Current Signals, Voltage Signals, Resistance, Resistance Thermometer



Analog input module, 8 channel, current signals, voltage signals, resistance, resistance thermometer



700-331-1KF01

Example configuration

The analog input modules from the Systeme Helmholz GmbH are suitable for connection of sensors with current signals in the range up to ±20 mA, of sensors with voltage signals in the range up to ±10 V, of Pt100/Ni100 sensors and resistors.
All inputs are freely configurable as voltage or current input, resistance or resistance thermometer Pt100/Ni100, in any desired combination.
The signal lines are connected to the corresponding front connectors. You can identify them on the labeling strip.
The modules can be fully parameterized with the hardware configurator of the programming software. Hardware configuration is not necessary (**no** range card).

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 88-90).

Ordering Data	Order No.
AEA 300, Analog Input Module, 8 inputs, for connecting current sensors, voltage sensors, resistance thermometer	**700-331-1KF01**
Manual AEA 300, German/English	**900-331-0AA01**

Technical Data	
Number of inputs	**8**
Measurement • voltage	 ±50 mV, ±500 mV, ±1 V, ±5 V, ±10V, 1 ... 5V, 0 ... 10 V
• current	±20 mA, 0 ... 20 mA, 4 ... 20 mA
• resistance	0 ... 6 kΩ, 0 ... 600 Ω
• resistance thermometer (standard and climate)	Pt100, Ni100, Ni1000, LG-Ni1000
Resolution incl. overrange	13 Bit
Error limit Basic error limit • voltage input • current input • resistance • resistance thermometer	 at 25 °C ±0.4 % ±0.4 % ±0.4 % ±0.8 K Pt100 standard, ±K
Operator limit • current input • resistance • resistance thermometer • voltage input	In the whole temperature range ±0.6 % ±0.6 % ±1 K; Pt100, Ni100 standard ±1.2 K ±0.6 %
Supply voltage Nominal voltage	 DC 5 V by backplane bus
Current demand	Typ. 160 mA at 5 V (from backplane bus)
Power loss	Approx. 0.8 W
Front connector	32 Bit-DEA300 Front connector (40-way)
Ambient temperature Transport and storage temperature	0 °C ... +60 °C -25 °C ... +75 °C

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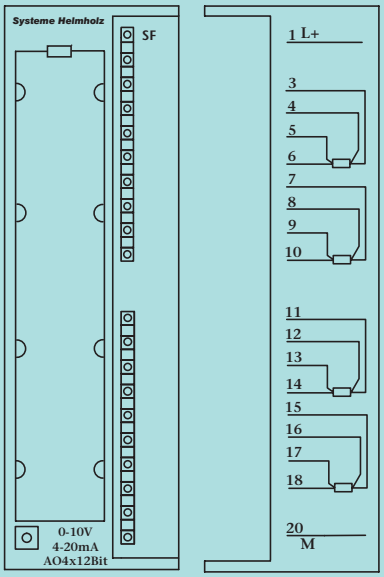
4-channel analog output module

The analog output modules from the Systeme Helmholz GmbH are suitable for connection of analog actuators for voltage and current outputs in the range up to ±10 V or ±20 mA.
The signal lines are connected to the corresponding front connectors. You can identify them on the labeling strip.
The modules can be fully configured with the programming software. Hardware switchover is not necessary.

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 88-90).

Open type Programmable Controllers, for use in Hazardous Locations, Class I, Div. 2 Groups A, B, C, D T6 including Class I Zone 2, IIC.

Ordering Data	Order No.
AEA 300, Analog Output Module, **4-channel** 4 outputs for connecting analog actuators, 0-10 V/4-20 mA	**700-332-5HD01**
Manual AEA 300, German/English	**900-331-0AA01**



700-332-5HD01

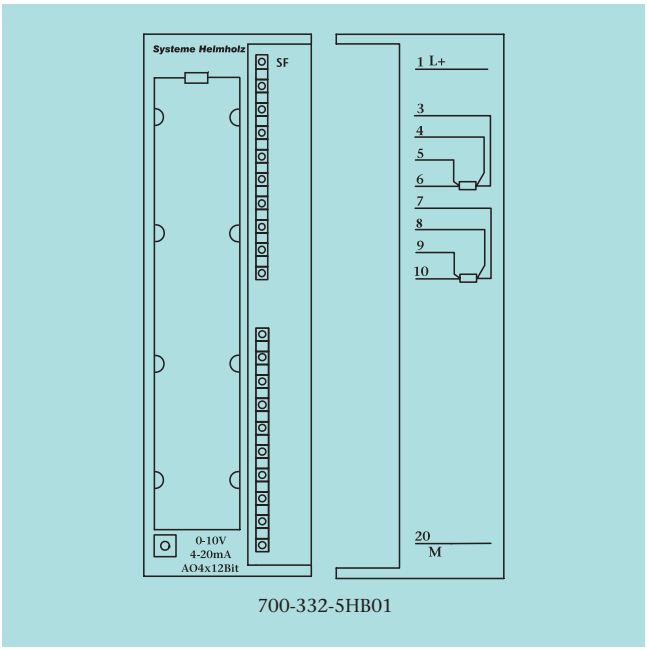
Technical Data		
Number of outputs		**4**
Diagnostics alarm		Yes, parameterizable
Diagnostics		Red LED for group error display
Nom. load voltage		DC 24 V
Output ranges		
• voltage outputs		0 ... 10 V; ±10 V; 1 ... 5 V
• current outputs		4 ... 20 mA; ±20 mA; 0 ... 20 mA
Load impedance		
• for voltage outputs	min.	1 kΩ
• for current outputs	max.	500 Ω
• at capacitive load	max.	1 µF
• at inductive load	max.	10 mH
Voltage output		
• short-circuit protection		Yes
• short-circuit current	max.	25 mA
Current output		
• open-circuit voltage	max.	18 V
Isolation against backplane bus		Yes
Operational limit (0 to 60 °C, with reference to output range)		
• voltage		±0.5 %
• current		±0.6 %
Basic error limit (operational limit at 25 °C, with reference to output range)		
• voltage		±0.4 %
• current		±0.5 %
Cable length (shielded)	max.	200 m
Current consumption		
• internal (from backplane bus)	typ.	100 mA
• external, without load	max.	240 mA
Power loss	typ.	3 W
Front connector		20-way
Ambient temperature		0 °C ... +60 °C
Transport and storage temperature		-25 °C ... +75 °C

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AEA 300, Analog Output Module; 2-Channel



2-channel analog output module



700-332-5HB01

The analog output modules from the Systeme Helmholz GmbH are suitable for connection of analog actuators for voltage and current outputs in the range up to ±10 V or ±20 mA.
The signal lines are connected to the corresponding front connectors. You can identify them on the labeling strip.
The modules can be fully configured with the programming software. Hardware switchover is not necessary.

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 88-90).

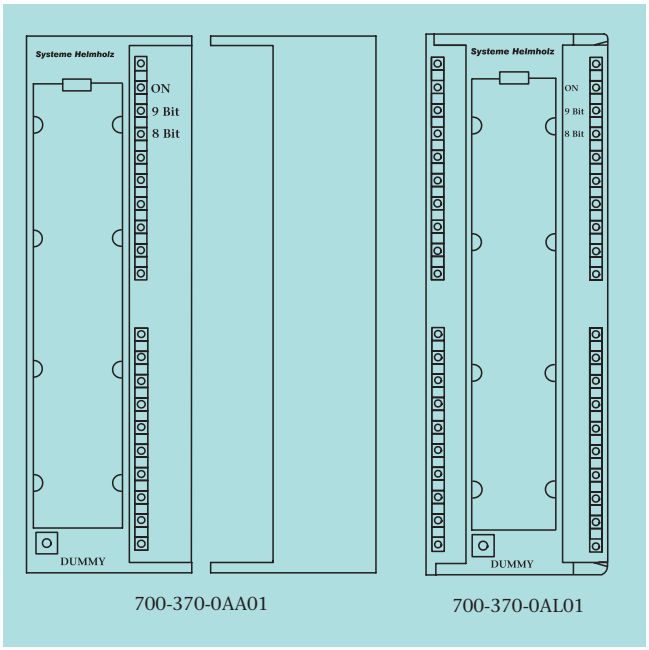
Open type Programmable Controllers, for use in Hazardous Locations, Class I, Div. 2 Groups A, B, C, D T6 including Class I Zone 2, IIC.

Ordering Data	Order No.
AEA 300, Analog Output Module, **2-channel** 2 outputs for connecting analog actuators, 0-10 V/4-20 mA	**700-332-5HB01**
Manual AEA 300, German/English	**900-331-0AA01**

Technical Data		
Number of outputs		**2**
Diagnostics alarm		Yes, parameterizable
Diagnostics		Red LED for group error display
Nom. load voltage		DC 24 V
Output ranges		
• voltage outputs		0 ... 10 V; ±10 V; 1 ... 5 V
• current outputs		4 ... 20 mA; ±20 mA; 0 ... 20 mA
Load impedance		
• for voltage outputs	min.	1 kΩ
• for current outputs	max.	500 Ω
• at capacitive load	max.	1 µF
• at inductive load	max.	10 mH
Voltage output		
• short-circuit protection		Yes
• short-circuit current	max.	25 mA
Current output		
• open-circuit voltage	max.	18 V
Isolation against backplane bus		Yes
Operational limit (0 to 60 °C, with reference to output range)		
• voltage		±0.5 %
• current		±0.6 %
Basic error limit (operational limit at 25 °C, with reference to output range)		
• voltage		±0.4 %
• current		±0.5 %
Cable length (shielded)	max.	200 m
Current consumption		
• internal (from backplane bus)	typ.	100 mA
• external, without load	max.	240 mA
Power loss	typ.	3 W
Front connector		20-way
Ambient temperature Transport and storage temperature		0 °C ... +60 °C -25 °C ... +75 °C



Dummymodule



The Dummymodule from the Systeme Helmholz GmbH is for reserving slots for unparameterized signal modules.
The structure and address assignment is retained when it is eventually replaced by a signal module.
For 20-way or 40-way front connectors.

Ordering Data	Order No.
Dummymodule, 20-way	**700-370-0AA01**
Dummymodule, 40-way	**700-370-0AL01**
Manual DEA 300, German/English	**900-321-1DE11**

Technical Data	
Current consumption Internal	 5 mA
Power loss (nominal operation)	0.03 W
Front connector	-
Ambient temperature Transport and storage temperature	0 °C ... 60 °C -25 °C ... 75 °C

1) S7-300 is a registered trademark of Siemens AG

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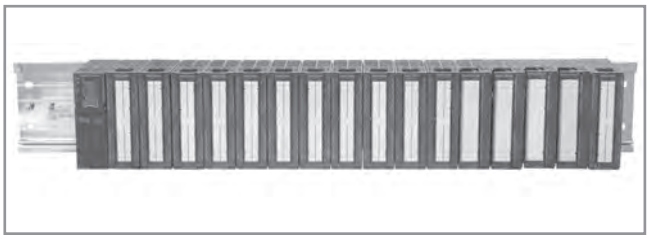
PAS 153, distributed PROFIBUS Interface



PAS 153, distributed PROFIBUS Interface

Features

- DIP switch for setting the PROFIBUS address
- Up to 16 modules can be plugged in
- Module diagnostics supported
- Can be used on standard sectional rail
- Any combination of modules is possible (analog/digital)
- PROFIBUS-DP up to 12 Mbps
- GSD file is supplied
- Firmware update for expanding functions possible via USB



Up to 16 modules can be plugged in

The PAS 153 distributed PROFIBUS Interface from Systeme Helmholz GmbH is for linking digital and analog input and output modules to the PROFIBUS-DP. The module can be mounted on a sectional rail.
Up to 16 modules can be connected to the PAS 153. The PAS 153 is integrated into the hardware configurer of the programming system by a GSD file. The PAS 153 Interface performs all communication between the modular I/O device and the higher-level master unit on the PROFIBUS-DP. The inputs and outputs are assigned to the master in the configuration. Diagnostic information from the modules can be read out via the PAS 153 Interface in the usual way.
The PAS 153 Interface supports all input/output modules from Systeme Helmholz GmbH and numerous modules of the same type from other manufacturers.
The scope of modules supported can be extended at any time by a firmware update via the USB.

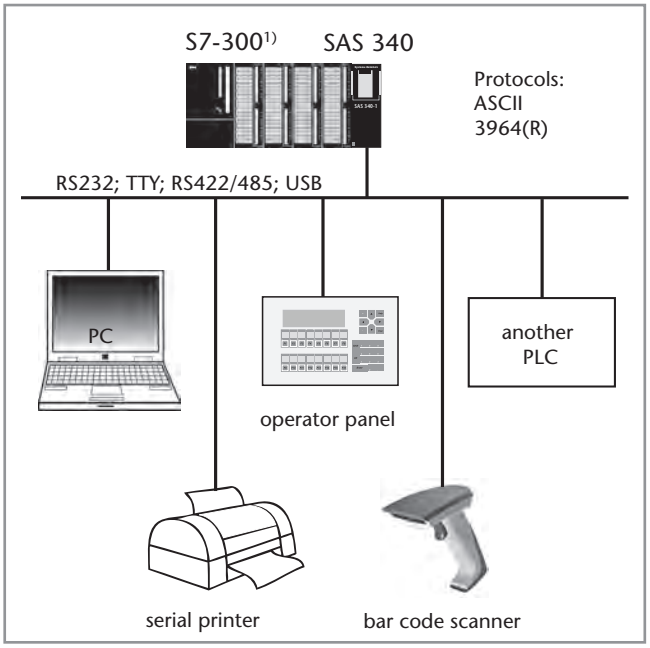
Technical Data		
Dimensions (D x W x H mm)		116 x 40 x 125
Weight		Approx. 250 g
Power supply Voltage		DC 24 V
Current consumption	max.	625 mA
Output voltage		DC 5 V
Output current at DC 5 V	max.	1.5 A (to backplane)
PROFIBUS Interface Transmission rate	max.	12 Mbps, autodetection
Protocol		PROFIBUS-DP to EN 50 170
Addressrange		128 Bytes for inputs 128 Bytes for outputs
Module count	max.	16, 8 of these analog
Connection		Male, SUB-D, 9-way
Ambient temperature Transport and storage temperature		0 °C ... +60 °C -25 °C ... +60 °C

Ordering Data	Order No.
PAS 153, distributed PROFIBUS Interface (incl. CD with GSD file)	**700-153-1AA03**
Manual PAS 153, German/English	**900-153-1AA03**

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SAS 340, Communication Module



Application example for SAS 340

The SAS 340 is a serial communication module for use in S7-300[1)] systems. The SAS 340 permits the linking to the PLC of serial devices, such as barcode scanners, operator terminals, serial printers, PCs, PLCs of other manufacturers, and supports the ASCII and 3964R protocols.
The serial devices can be connected via RS232, TTY (20 mA), or RS422/RS485. The 9-way Sub-D socket (15-way in the case of RS422/485) with standard pin assignment is provided for connecting communicating devices.
The additional USB-device interface permits the connection of the PLC to PC systems, many of which no longer have a conventional physical port. A virtual COM port driver enables the use of software that still expects a COM port.
Extended functions, such as support for higher baud rates up to 115 kBaud, make the SAS 340 all the more versatile without any loss of compatibility.
The data handling blocks supplied enable simple and flexible integration into the PLC. The module is parameterized in the Hardware Configurator of the PLC. Extended functions (e.g. higher baud rates) can be activated with the data handling blocks without any problem.

Note
To permit a higher integration density in the cabinet, the SAS 340 is also available with 2 serial interfaces. Both interfaces can be parameterized independently and are used in the PLC.

Ordering Data	Order No.
Communication Module,	
SAS 340-1*, 1 x RS232, 1 x USB	**700-340-1AH02**
SAS 340-1*, 1 x TTY	**700-340-1BH02**
SAS 340-1*, 1 x RS422/RS485	**700-340-1CH02**
SAS 340-2*, 2 x RS232, 2 x USB	**700-340-2AH02**
SAS 340-2*, 2 x TTY	**700-340-2BH02**
SAS 340-2*, 2 x RS422/RS485	**700-340-2CH02**
*(incl. CD with data handling blocks and manual; Protocols: ASCII, 3964R)	
Manual SAS 340, German/English	**900-340-1XH02**

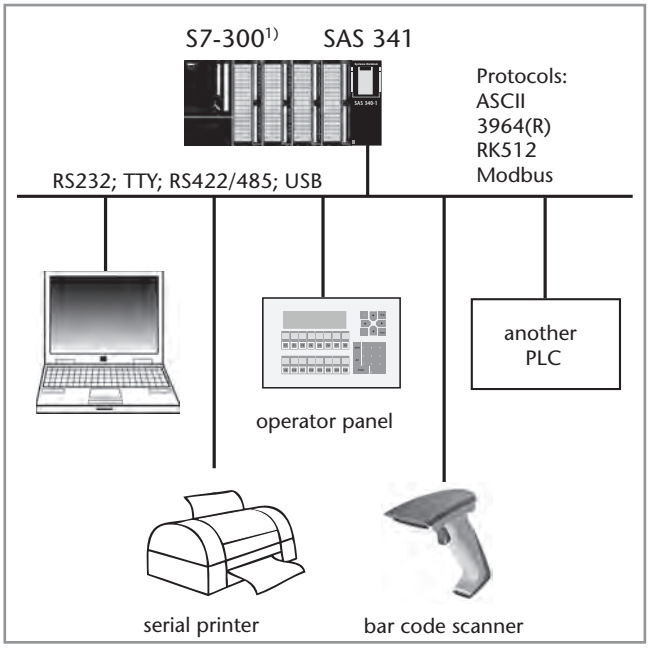
1) S7-300 is a registered trademark of Siemens AG.

Technical Data		
Dimensions (D x W x H mm)		116 x 40 x 125
Weight		Approx. 280 g
Power supply Voltage		+5 V DC via backplane bus
Current consumption	typ. max.	160 mA 190 mA
Interfaces Type		V.24 (RS232) TTY (20 mA) RS422/RS485 (X27) USB
Transmission rate		300 Baud ... 115 kBaud
Protocol		ASCII 3964(R)
Connection		Connector, SUB-D, 9-way; 15-way (RS422/485)
Status display		6 LEDs
Ambient temperature Transport and storage temperature		0 °C ... 60 °C -25 °C ... 75 °C

SAS 341, Communication Module



SAS 341, Communication Module



Application example for SAS 341

The SAS 341 is a serial communication module for use in S7-300[1)] systems. The SAS 341 permits the linking to the PLC of serial devices, such as barcode scanners, operator terminals, serial printers, PCs, PLCs of other manufacturers, and supports the ASCII, 3964R, and RK512 protocols.
The serial devices can be connected via RS232, TTY (20 mA), or RS422/RS485. The 9-way Sub-D socket (15-way in the case of RS422/485) with standard pin assignment is provided for connecting communicating devices.
The additional USB interface permits the connection of the PLC to PC systems, many of which no longer have a conventional physical port. A virtual COM port driver enables the use of software that still expects a COM port.
Extended functions, such as support for higher baud rates up to 115 kBaud, make the SAS 341 all the more versatile without any loss of compatibility.
Using the standardized RK512 computer link protocol, the linking of different types of PLC to the S7-300[1)] can be flexibly implemented.
The data handling blocks supplied enable simple and flexible integration into the PLC. The module is parameterized in the Hardware Configurator of the PLC.

Note
To permit a higher integration density in the cabinet, the SAS 341 is also available with 2 serial interfaces. Both interfaces can be parameterized independently and are used in the PLC.

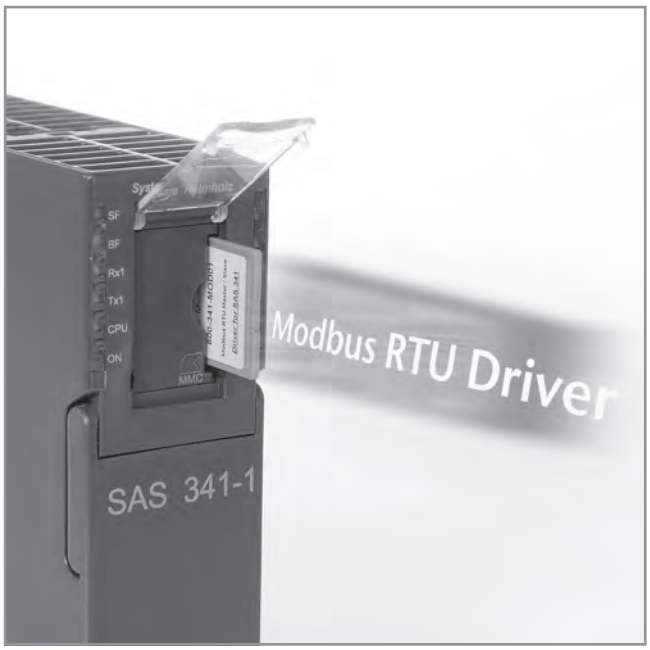
Do you require a special protocol for your device? Just ask us!

Ordering Data	Order No.
Communication Module,	
SAS 341-1*, 1 x RS232, 1 x USB	**700-341-1AH02**
SAS 341-1*, 1 x TTY	**700-341-1BH02**
SAS 341-1*, 1 x RS422/RS485	**700-341-1CH02**
SAS 341-2*, 2 x RS232, 2 x USB	**700-341-2AH02**
SAS 341-2*, 2 x TTY	**700-341-2BH02**
SAS 341-2*, 2 x RS422/RS485	**700-341-2CH02**
*(incl. CD with data handling blocks and manual; Protocols: ASCII, 3964R, RK512 and loadable drivers (MMC))	
Manual SAS 341, German/English	**900-341-1XH02**

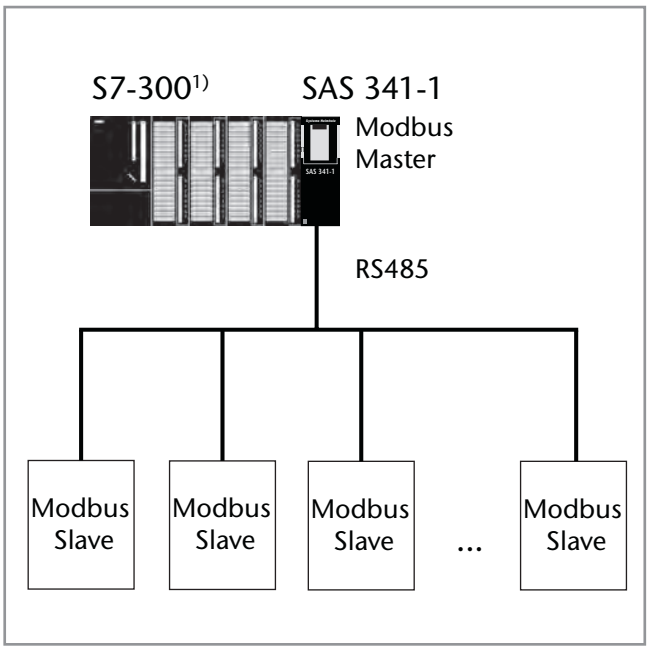
1) S7-300 is a registered trademark of Siemens AG.

Technical Data		
Dimensions (D x W x H mm)		116 x 40 x 125
Weight		Approx. 280 g
Power supply Voltage		+5 V DC via backplane bus
Current consumption	typ. max.	160 mA 190 mA
Interfaces Type		V.24 (RS232) TTY (20 mA) RS422/RS485 (X27) USB
Transmission rate		300 Baud ... 115 kBaud
Protocol		ASCII 3964(R) RK512 Modbus Master/Slave
Connection		Connector, SUB-D, 9-way; 15-way (RS422/485)
Status display		6 LEDs
Ambient temperature Transport and storage temperature		0 °C ... 60 °C -25 °C ... 75 °C

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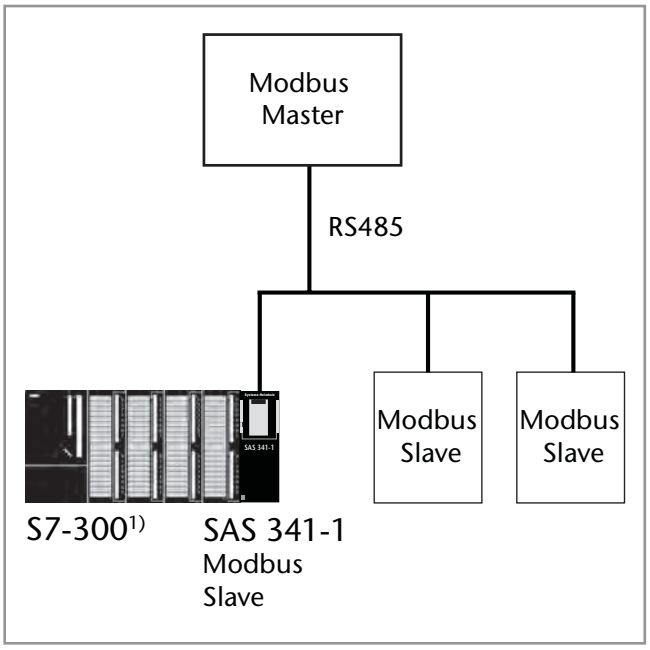
SAS 341-1 with Modbus RTU Driver



SAS 341-1 as a Modbus Master

The „Modbus Master/Slave“ driver add-on facilitates communication with Modbus RTU capable devices. Using this driver the SAS 341 can work as either a Modbus RTU Master or Modbus RTU Slave.
The driver can be used with a SAS 341-1 with RS232 interface (700-341-1AH02) or with a SAS 341-1 with RS485 interface (700-341-1CH02). Point to point connections can be set up using the RS232 interface and using the RS485 interface, up to 32 users can be addressed in 2-wire half duplex mode.
When communicating with remote systems the Modbus RTU function codes 01, 02, 03, 04, 05, 06, 07, 08, 11, 12, 15 and 16 are supported.
Data transfer to and from the S7 CPU is handled block-wise via the accompanying function blocks.

Do you require a special protocol for your device? Just ask us!



SAS 341-1 as a Modbus Slave

Ordering Data	Order No.
Modbus Master/Slave Driver for SAS 341-1 (on Micro Memory Card, can only be used with SAS 341-1)	800-341-MOD01
Manual SAS 341 - Modbus Driver, German/English	900-341-MOD01

1) S7-300 is a registered trademark of Siemens AG.

EIB 300, Communication Module for Twisted Pair EIB/KNX



EIB 300, Communication Module for Twisted Pair EIB/KNX

Features

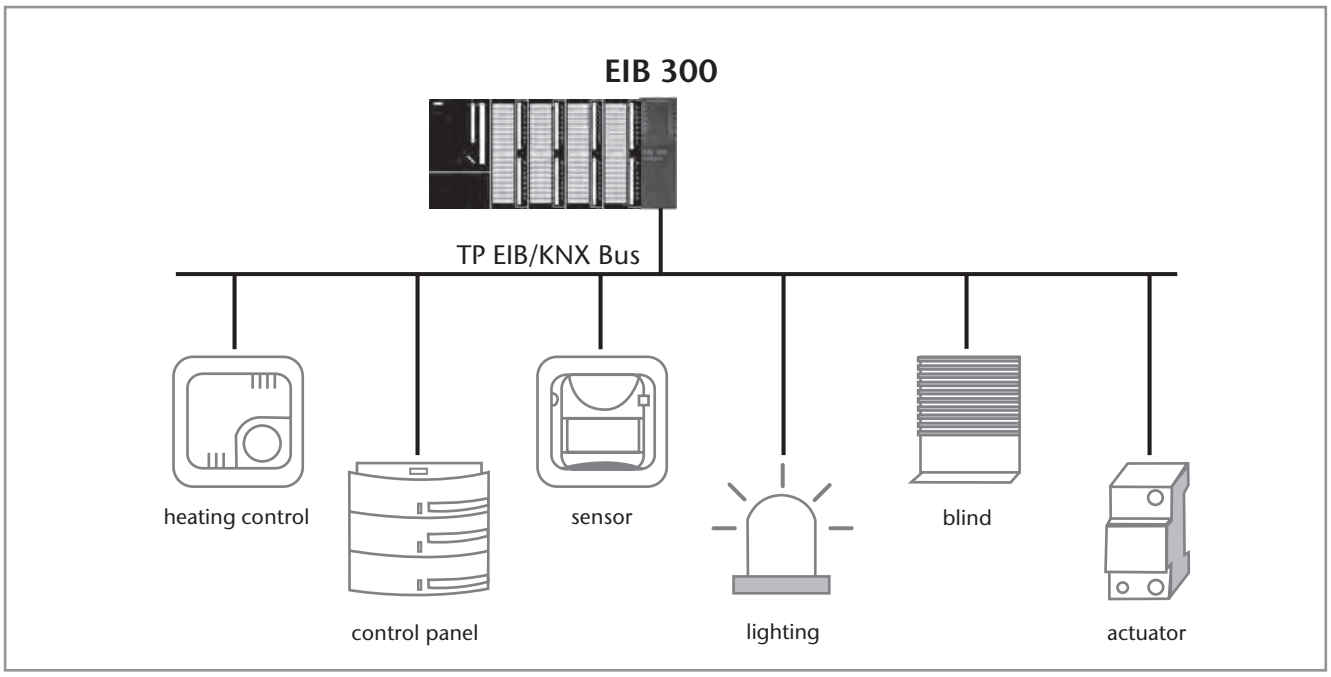
- Access to the EIB/KNX bus directly from the PLC
- Realisation of complex control and monitoring functions using PLC programming
- Configurable object operation with up to 240 objects
- Telegram mode for the transparent EIB/KNX communication (in preparation)
- Easy integration and handling
- Supports ETS[2)]3 and ETS[2)]4

The EIB 300 is a communication module for use in S7-300[1)] systems. It enables the connection of an EIB/KNX bus to the PLC whereby the bus is directly attached to the module. Due to the possibilities of PLC programming, complex control and monitoring functions can also be realised easily on the EIB/KNX bus.
Two different operating modes are supported for flexible use of the EIB 300.
In the "object mode", the EIB 300 is an active participant on the EIB/KNX bus with up to 240 objects whereby all object types from 1 bit to 4 bytes data size are supported. The current object values are mapped in a data module in the PLC and exchanged with each PLC cycle. In this way, value changes on the EIB side are applied in the PLC and changed values in the PLC are transmitted on the EIB/KNX bus. This can also be influenced using event and control flags targeted to the communications behaviour.
In the "telegram mode" (in preparation), all telegrams transmitted on the EIB/KNX bus are transparently forwarded to the PLC and any telegrams can be sent out on the EIB/KNX bus from the PLC. This operating mode enables maximum flexibility, also in the case of complex systems or communications processes.
The management of the EIB 300 is performed in the PLC as CP module. The handling modules contained in the standard delivery enable simple integration of the EIB 300 in the PLC program. The integration of the EIB 300 in the ETS software as a new device is performed using a supplied example project. In the object mode, the objects organised there in different profiles can be configured and thus adapted to the respective application.
Six coloured LEDs provide information about the current operating status of the EIB 300 and the EIB/KNX bus. The installed USB port is provided for firmware updates and in-depth diagnostics.

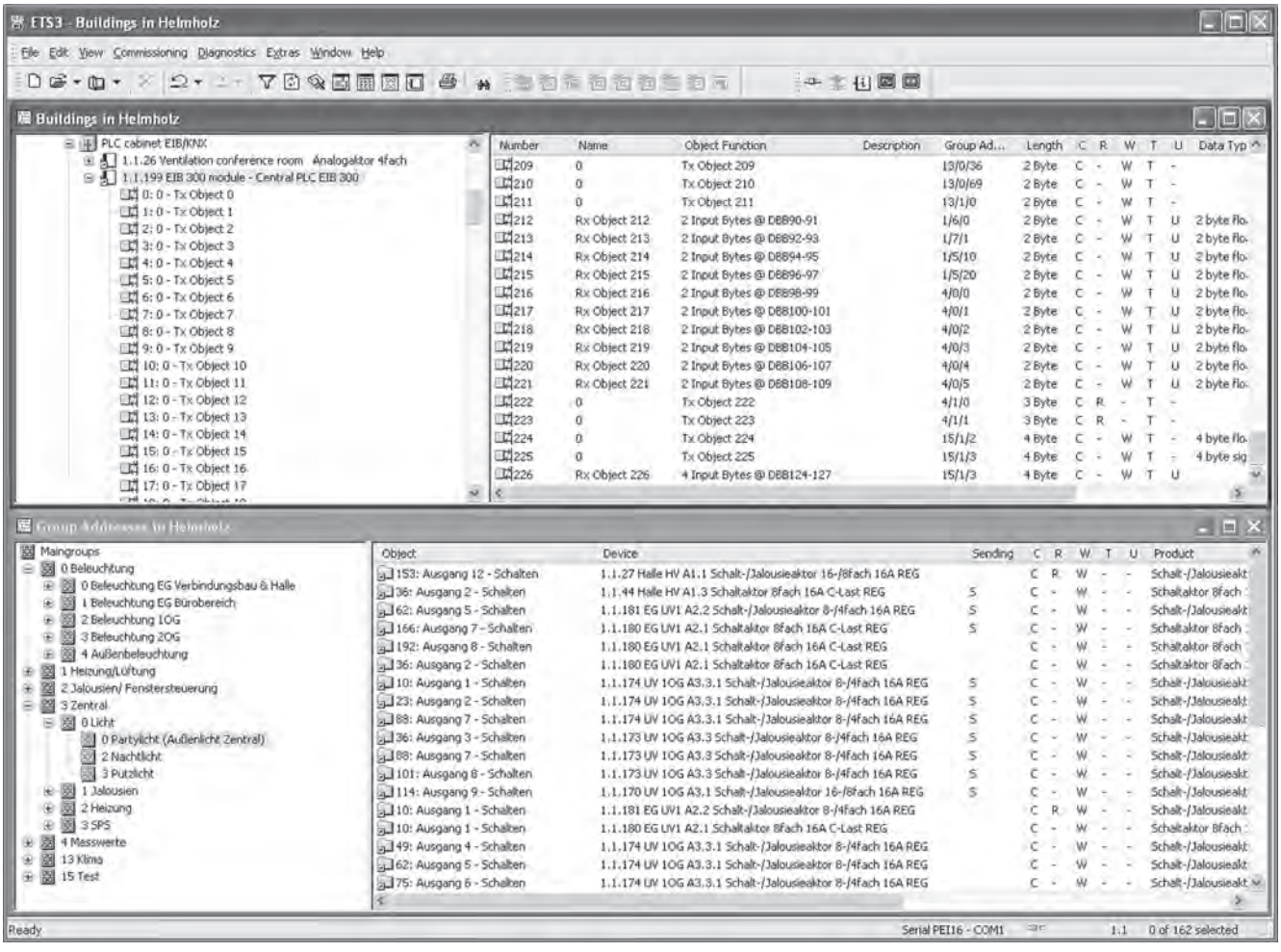
Technical Data		
Dimensions (D x W x H mm)		116 x 40 x 125
Weight		Approx. 280 g
Power supply Voltage		DC +5 V via backplane bus
Current consumption	typ. max.	160 mA 190 mA
Interface Type		Twisted Pair EIB/KNX
Transmission rate		9600 Baud
Protocol		EIB/KNX; up to 240 objects or telegram mode
Connection		2-pin
Status display		6 LEDs
Ambient temperature Transport and storage temperature		0 °C ... 60 °C -25 °C ... 75 °C

Ordering Data	Order No.
EIB 300, Communication Module for Twisted Pair EIB/KNX	**700-820-EIB01**
Manual EIB 300, German/English	**900-820-EIB01**

1) S7-300 is a registered trademark of Siemens AG.
2) ETS is a registered trademark of KNX Association.

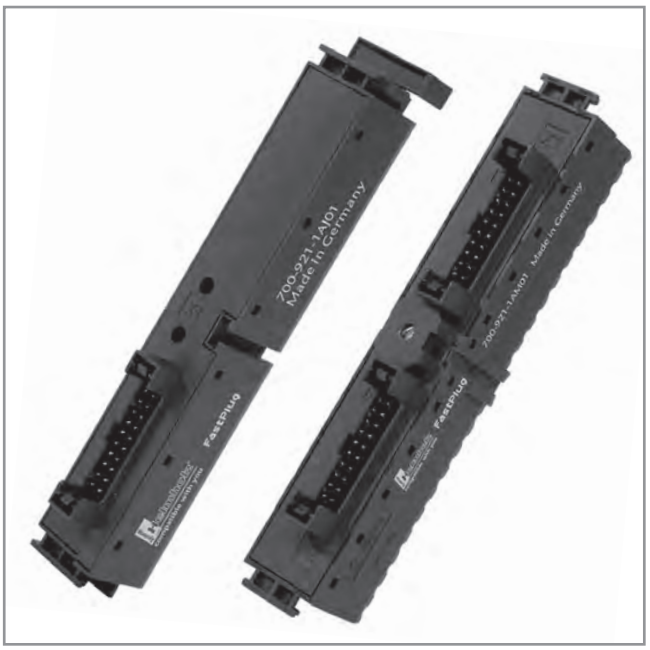


Application Example EIB 300



Configuration of EIB 300 at ETS3

FastPlug, Frontadapter for S7 modules



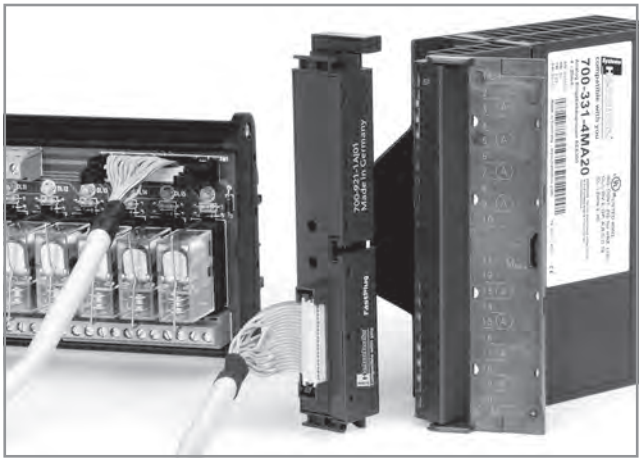
FastPlug – Frontadapter for S7 modules

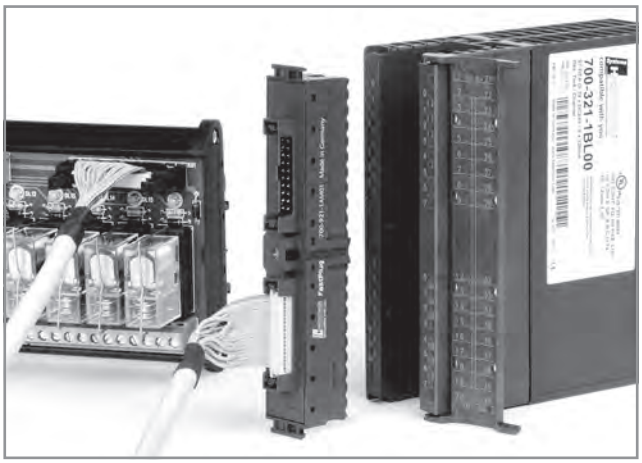
The new professional **FastPlug** Frontadapter from the Systeme Helmholz GmbH are intended for insertion or clipping on a 16 or 32 Bit S7 Input/Output module. They are reducing the wiring effort. Through the use of prefabricated system cables, connection errors are excluded. Therefore the interface modules/transfer modules can be connected fast & safe to the S7 PLC.

The new **FastPlug** Frontadapter are available to be connected to a 16 Bit Input/Output module with a 20pin ribbon connector and a 2 x 20pin ribbon connector for 32 Bit Input/Output module.

Features

- Frontadapter for ribbon connector
- 20-way and 40-way
- Fast, safe and cost-effective wiring
- Connection errors excluded





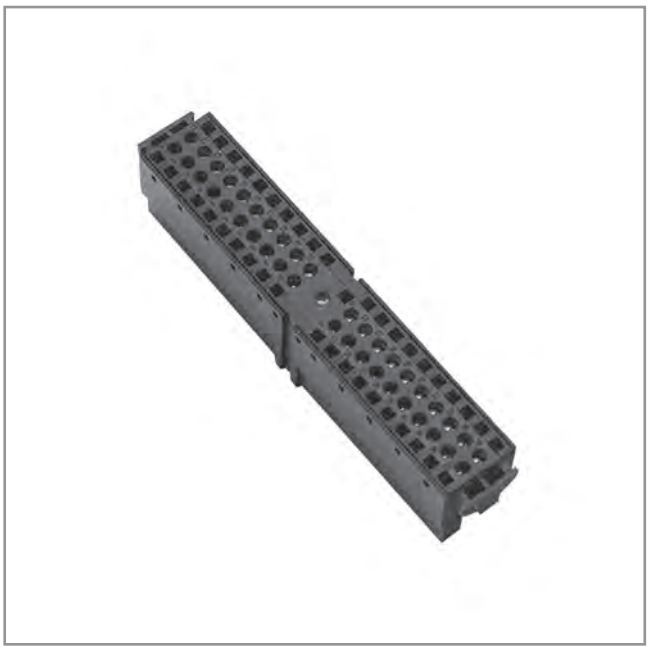
Ordering Data	Order No.
Front Connector for DEA/AEA 300	
FastPlug 20-way, S7 Front Adapter	**700-921-1AJ01**
FastPlug 40-way, S7 Front Adapter	**700-921-1AM01**
Twisted ribbon cable, unshielded, 20-way, 2 ID-connectors	
0.5 m	**700-923-2BA50**
1.0 m	**700-923-2BB00**
1.5 m	**700-923-2BB50**
2.0 m	**700-923-2BC00**
2.5 m	**700-923-2BC50**
3.0 m	**700-923-2BD00**
4.0 m	**700-923-2BE00**
5.0 m	**700-923-2BF00**

Technical Data	
Front Connector Connection 700-921-1AJ01 700-921-1AM01	 **FastPlug** 1 x 20-way IDC 2 x 20-way IDC
Weight	Approx. 50 g
Dimensions (D x W x H mm) 700-921-1AJ01 700-921-1AM01	 131 x 23 x 31 116 x 22 x 30
Voltage	Max. 48 V AC/DC between any terminals
Current consumption	Max. 600 mA per terminal
Ambient temperature Transport and storage temperature Relative humidity max.	0 °C ... +60 °C -25 °C ... +80 °C 75 % at +25 °C

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Front Connectors, 20-way and 40-way with screw contacts



Front Connector, 40-way with **EasyConnect®** technology

Front Connector with screw contacts
The 20-way and 40-way front connector from the Systeme Helmholz GmbH uses time-tested screw contacts.
The front connector permits simple connection of sensors and actuators to input/output modules of Systeme Helmholz GmbH or other manufacturers.
The wiring can thus be retained even in the event of module replacement.

Front Connector with EasyConnect® technology
The 40-way front connector from the Systeme Helmholz GmbH is supplied with **EasyConnect®** technology. The connector is quickly wired up simply by opening and closing the spring-loaded terminal by turning the screw head (180° counterclockwise to open, clockwise to close). That not only saves the user money but also installation time.
No wire end ferrule is needed!
The flat design permits optimum closing of the module front cover even with the connector fully wired.

Technical Data	
Front Connector 20-way Connection	 screw contacts
Connectable cables W/o wire end ferrule	Flexible, solid 0.25 - 1.5 mm²
Strip length	6 mm
Max. tightening torque	0.5 Nm
Weight	Approx. 60 g
Current at 60 °C	3 A
Voltage	230 V AC
Ambient temperature Transport and storage temperature Relative humidity max.	0 °C ... +60 °C -25 °C ... +80 °C 75 % at +25 °C
Front Connector 40-way Connection	 screw contacts
Connectable cables W/o wire end ferrule	Flexible, solid 0.125 - 1.5 mm²
Strip length	6 - 8 mm
Max. tightening torque	0.5 Nm
Weight	Approx. 120 g
Current at 60 °C	3 A
Voltage	230 V AC
Ambient temperature Transport and storage temperature Relative humidity max.	0 °C ... +60 °C -25 °C ... +80 °C 75 % at +25 °C

Technical Data	
Front Connector 40-way Connection	 **EasyConnect®**
Connectable cables	Flexible 0.34 - 1 mm²
Strip length	8 - 10 mm
Weight	Approx. 70 g
Current at 60 °C	3 A
Voltage	230 V AC
Ambient temperature Transport and storage temperature Relative humidity max.	0 °C ... +60 °C -25 °C ... +80 °C 75 % at +25 °C

Ordering Data	Order No.
Front Connector for DEA/AEA 300	
20-way with screw contacts	**700-392-1AJ10**
40-way with screw contacts	**700-392-1AM01**
40-way with **EasyConnect®** technology	**700-392-1AM10**



Front Connectors, 20-way and 40-way with spring contacts



Ready-wired Front Connectors

Front Connector with spring contacts
The 20-way and 40-way front connector from the Systeme Helmholz GmbH uses spring contacts. The front connector permits simple connection of sensors and actuators to input/output modules of Systeme Helmholz GmbH or other manufacturers. The wiring can thus be retained even in the event of module replacement.

Ready-wired Front Connector
The Ready-wired front connectors are available for easy connection of sensors and actuators to input/output modules of Systeme Helmholz GmbH.
The cabeling can be kept when modules are replaced.

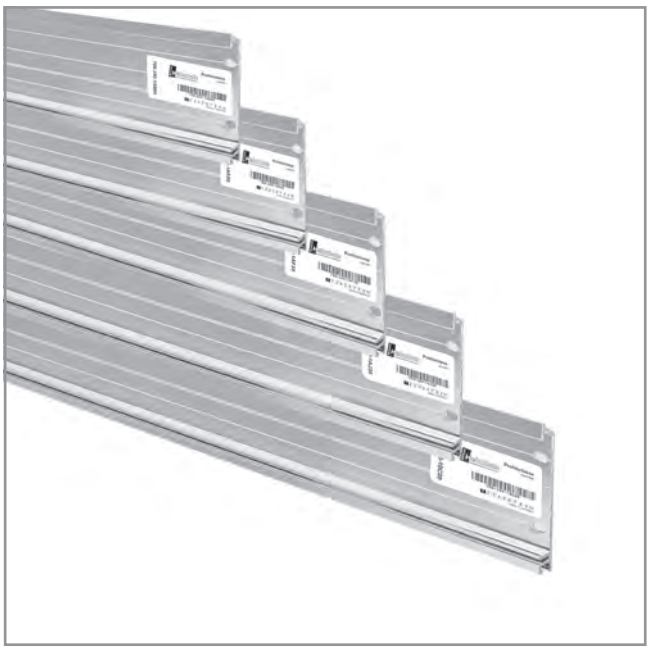
Technical Data	
Front Connector 20-way Connection type	 Spring contacts
Connectable cables	Flexible, solid 0.34 - 1.5 mm²
Insulation stripping length	8 mm
Weight	Approx. 50 g
Current at 60 °C	3 A
Voltage	230 V AC
Ambient temperature Transport and storage temperature Relative humidity max.	0 °C ... +60 °C -25 °C ... +80 °C 75 % at +25 °C
Front Connector 40-way Connection type	 Spring contacts
Connectable cables	Flexible, solid 0.34 - 1.5 mm²
Insulation stripping length	8 mm
Weight	Approx. 70 g
Current at 60 °C	3 A
Voltage	230 V AC
Ambient temperature Transport and storage temperature Relative humidity max.	0 °C ... +60 °C -25 °C ... +80 °C 75 % at +25 °C

Ordering Data	Order No.
Front Connector for DEA/AEA 300 20-way with spring contacts 40-way with spring contacts	 **700-392-1BJ01** **700-392-1BM01**

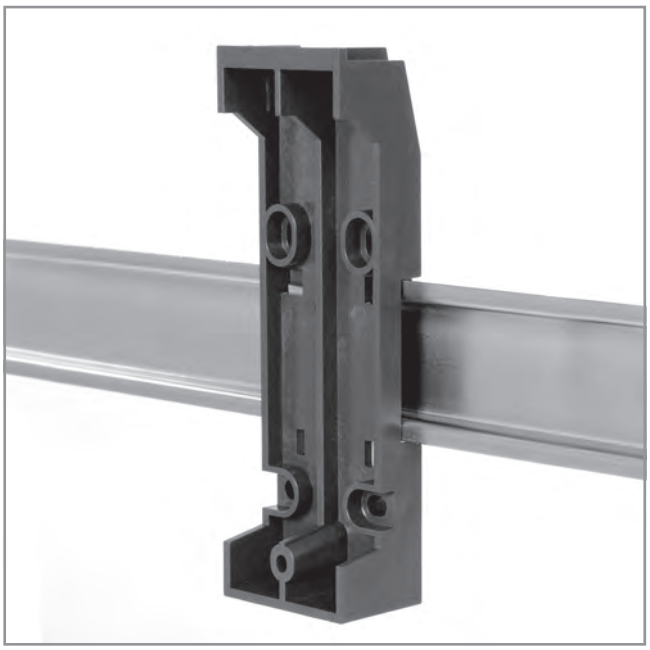
Ordering Data	Order No.
Ready-wired Front Connectors[1)] **DEA/AEA300**	
for screw contacts, 20-way, 2 m	**700-392-1AJ10A**
for screw contacts, 20-way, 3 m	**700-392-1AJ10B**
for screw contacts, 20-way, 5 m	**700-392-1AJ10C**
for **EasyConnect**® connection, 40-way, 2 m	**700-392-1AM10A**
for **EasyConnect**® connection, 40-way, 3 m	**700-392-1AM10B**
for **EasyConnect**® connection, 40-way, 5 m	**700-392-1AM10C**
for spring contacts, 20-way, 2 m	**700-392-1BJ01A**
for spring contacts, 20-way, 3 m	**700-392-1BJ01B**
for spring contacts, 20-way, 5 m	**700-392-1BJ01C**
for spring contacts, 40-way, 2 m	**700-392-1BM01A**
for spring contacts, 40-way, 3 m	**700-392-1BM01B**
for spring contacts, 40-way, 5 m	**700-392-1BM01C**

1) Strands 0.5 mm² blue (RAL 5010); Labeling as on connector

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Mounting Rail

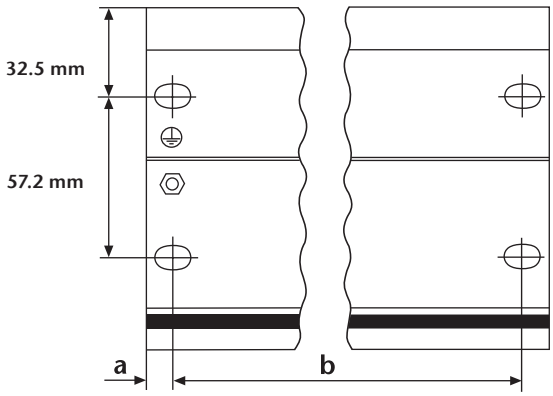


Mounting Rail Adapter for DIN rail

For all DEA and AEA etc., we offer the mechanical module subrack for the S7-300[1)] as an accessory in various lengths.

We offer for all communication modules (e.g. REX 300, DP/DP-Coupler, TS 300) which are designed for assembling on mounting rail a mountig rail adapter for DIN rail as an accessory.

Standard mounting rail



length mounting rail	distance a	distance b
160 mm	10 mm	140 mm
320 mm	15 mm	290 mm
482.6 mm	8.3 mm	466 mm
530 mm	15 mm	500 mm
830 mm	15 mm	800 mm

Ordering Data	Order No.
Mounting Rail	
length 160 mm	**700-390-1AB60**
length 320 mm	**700-390-1SO01**
length 482 mm	**700-390-1AE80**
length 530 mm	**700-390-1AF30**
length 830 mm	**700-390-1AJ30**
length 2000 mm	**700-390-1BC00**

Ordering Data	Order No.
Mounting Rail Adapter for DIN rail	**700-390-6BA01**

1) S7-300 is a registered trademark of Siemens AG.



CAN Bus

CAN Bus Modules for S7-300[1)], S7-400[1)]
DP/CAN Coupler
CAN Bridge
CAN Bus Connector

1) S7-300 and S7-400 are registered trademarks of Siemens AG.

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CAN 300 PRO, communication module

Features

- Layer 2, 11 Bit and 29 Bit (CAN 2.0 A/B)
- CANopen® Master on the module
- DIP switch for adress + baud rate
- Micro Memory Card for saving a project (optional)
- USB Interface for parameterization and diagnostics
- Extensive CAN Bus diagnostics
- Can also be used as a CANopen® slave
- Extended ambient temperature range

Member of:

The CAN 300 PRO module of Systeme Helmholz GmbH for use in an S7-300[1)] from Siemens permits connection of CAN stations with the programmable controller.
The module can be slotted either in the central controller or in the expansion unit.
The CAN 300 PRO module supports CAN 2.0A (11 Bit) and CAN 2.0B (29 Bit) frames with a freely selectable baud rate of 10 kbps to 1 Mbps.
The CAN 300 PRO module can send and receive CAN frames in Layer 2 operating mode. The data of the CANopen® slaves can be processed as a process image in CANopen® Master operating mode in the PLC. Applications as a CANopen® Slave is also possible. Application examples are provided for standard applications including motor control with CANopen®. Data handling blocks for the SAE J1939 protocol are also available.
The CAN 300 PRO module contains 16 freely settable timers. Each timer can trigger a freely programmable CAN telegram. That way, it is easy to implement the synchronous protocols in common use in drive and servo systems using the CAN 300 PRO module.
The DIP switch for setting the baud rate and the station address facilitate commissioning. An optional micro memory card stores the project so that the parameterization or the module is quickly replaced during servicing.
6 LEDs indicate the operating status of the module. A USB interface is available for diagnostics and parameterization tasks.
The CAN 300 PRO also works in the extended ambient temperature range of -25 °C to +60 °C.
A USB cable is included.

Note
On page 96 you will find information about the parameterization software CANParam and about the data handling blocks for the PLC.

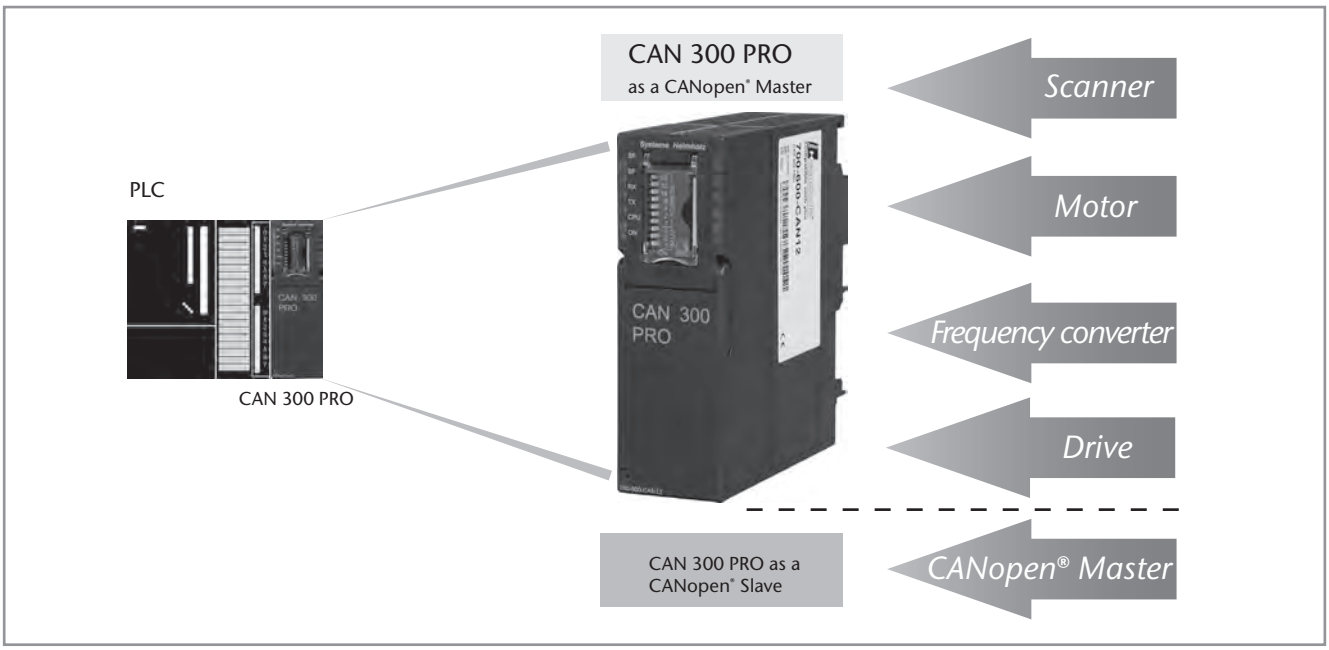
When first used, data handling blocks are required for the PLC.

Ordering Data	Order No.
CAN 300 PRO, Communication Module (incl. USB programming cable)	**700-600-CAN12**
Micro Memory Card, 256 kByte	**700-953-8LH30**
Manual CAN 300 PRO, German/English **CAN Training Course** (see page 110)	**900-600-CAN12** **400-600-CAN01**

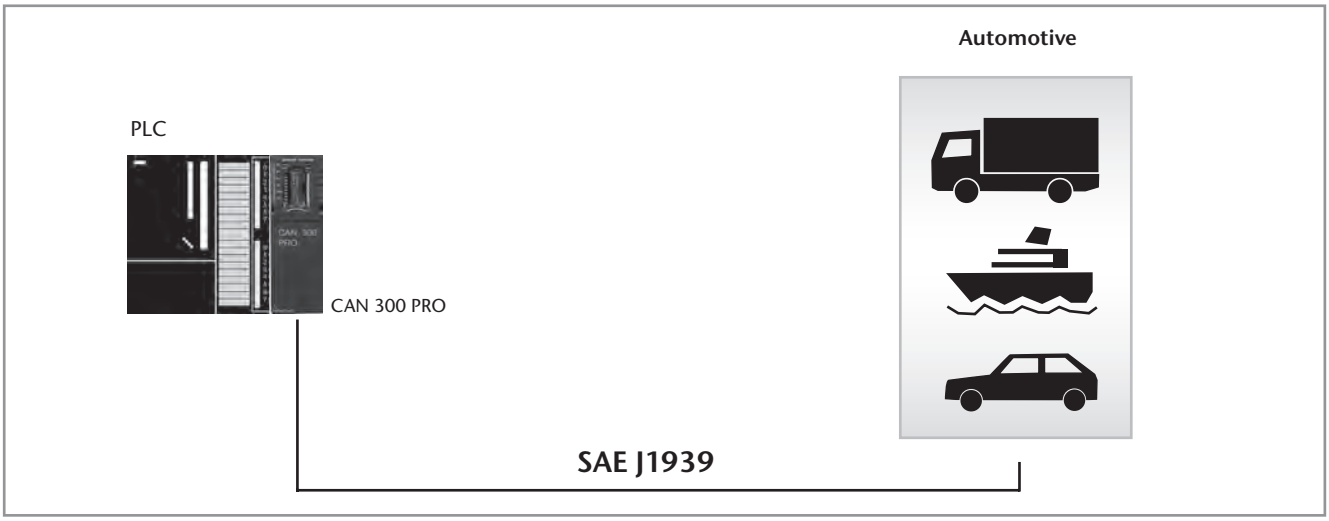
1) S7-300 is a registered trademark of Siemens AG

Technical Data		
Dimensions (D x W x H mm)		116 x 40 x 125
Weight		Approx. 280 g
Power supply Voltage		+5 V DC via backplane bus
Current consumption	typ. max.	160 mA 190 mA
CAN interfaces Type		ISO/DIN 11898-2 CAN High Speed physical Layer
Transmission rate		10 kbps to 1 Mbps
Protocol		CAN 2.0A (11 Bit) CAN 2.0B (29 Bit) CANopen® Master CANopen® Slave SAE J1939 DeviceNet Slave (on request)
Connection		Connector, SUB-D, 9-way
Status display		6 LEDs
Configuration interfaces Type		USB 1.1
Connection		USB-B female connector
Ambient temperature Transport and storage temperature		-25 °C ... 60 °C -25 °C ... 75 °C

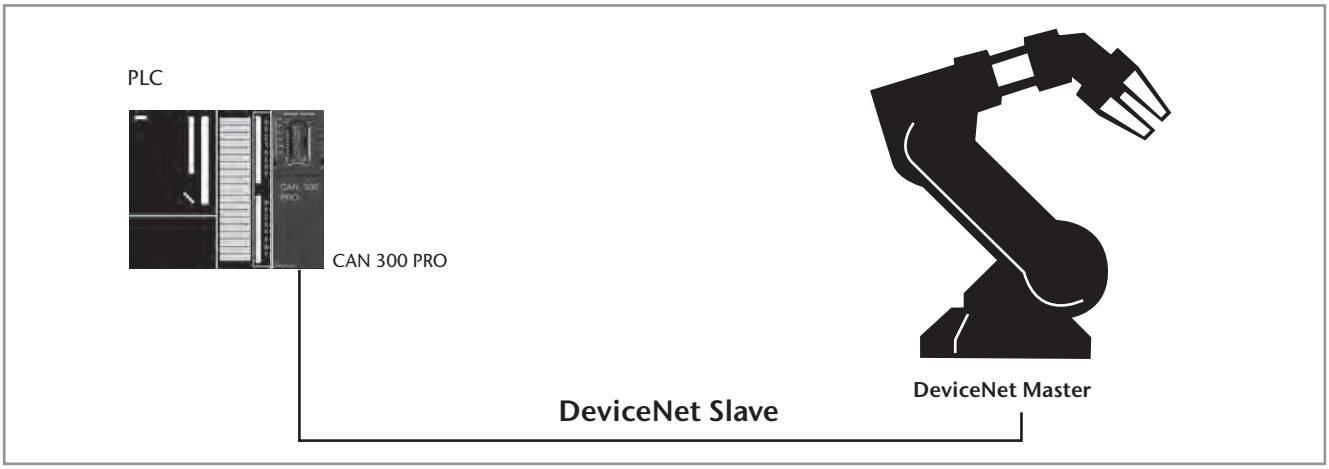
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Application Example CAN 300 PRO as a CANopen® Master/Slave



Application Example CAN 300 PRO SAE J1939 Protocol



Application Example CAN 300 PRO as a DeviceNet Slave



CAN 400, communication module

Features

- Layer 2, 11 Bit and 29 Bit (CAN 2.0 A/B)
- DIP switch for adress + baud rate
- USB Interface for parameterization and diagnostics
- Extensive CAN Bus diagnostics
- Can also be used as a CANopen® master or CANopen® slave

Member of:

The CAN 400 module from the Systeme Helmholz GmbH for use in a S7-400[1)] from Siemens permits connection of CAN stations with the programmable controller. The module can be slotted either into the central controller or into the expansion unit.
The CAN 400 modules support both CAN 2.0A (11 Bit) and CAN 2.0B (29 Bit) frames with a free selectable baud rate of 10 kbps to 1 Mbps.
The CAN 400 module can also be run as Layer 2, CANopen® Master or CANopen® Slave.
The CAN 400 module contains the scripts “Power On”, “Stop -> Run”, “Run-> Stop”, “Power Off”. IDs relevant to the programmable controller can be prefiltered using a 5-level acceptance mask. In CAN 400 modules, 16 free settable timers up to a resolution of 1ms are available. Each timer can trigger a free programmable CAN frame. In that way, it is simple to implement synchronous protocols commonly used in drive and servo control using the CAN 400 module.

Note
Information about software and handling blocks is available on page 96.

When first used, data handling blocks are required for the PLC.

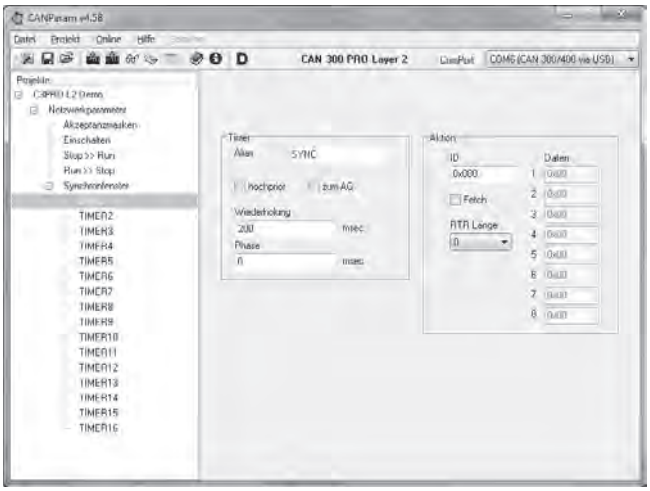
Ordering Data	Order No.
CAN 400-1, Communication Module with 1 CAN interface	700-640-CAN11
CAN 400-2, Communication Module with 2 CAN interfaces	700-640-CAN21
Manual CAN 400, German/English	900-640-CAN21
CAN Training Course (see page 110)	400-600-CAN01

1) S7-400 is a registered trademark of Siemens AG

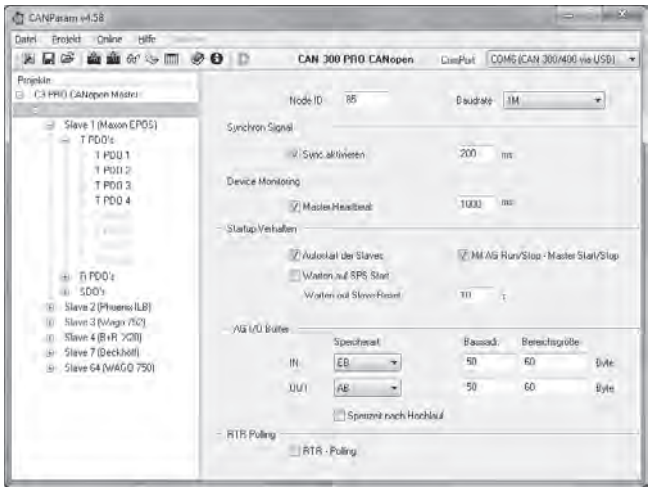
Technical Data		
	CAN 400-1	**CAN 400-2**
Dimensions (D x W x H mm)	290 x 210 x 25	290 x 210 x 25
Weight	Approx. 900 g	Approx. 900 g
Power supply Voltage	DC +5 V via backplane bus	DC +5 V via backplane bus
Current consumption	560 mA	600 mA
CAN interfaces		
Number	1	2
Type	ISO/DIN 11898-2 CAN High Speed physical Layer	ISO/DIN 11898-2 CAN High Speed physical Layer
Transmission rate	10 kbps to 1 Mbps	10 kbps to 1 Mbps
Protocol	CAN 2.0A (11 Bit) CAN 2.0B (29 Bit) CANopen® Master CANopen® Slave SAE J1939	CAN 2.0A (11 Bit) CAN 2.0B (29 Bit) CANopen® Master CANopen® Slave SAE J1939
Connection	SUB-D connector, 9-way	2 x SUB-D connector, 9-way
Status signal	6 LEDs	10 LEDs
Configuration interfaces Type	USB 1.1	USB 1.1
Connection	USB B-female	USB B-female
Ambient temperature Transport and storage temperatur	0 °C ... 60 °C -25 °C ... 75 °C	0 °C ... 60 °C -25 °C ... 75 °C

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Parameterization Tool CANParam
The CAN modules are parameterized on the PC using the CANParam parameterization tool (contained in the 800-600-1AA11 software package). That makes setting the communication parameters easy. The parameterization of a module can be stored in a project on the PC.
The CAN modules support both the protocol format CAN 2.0A (11 Bit) and CAN 2.0B (29 Bit).



The CAN modules contain acceptance masks. These masks can be used to enable or disable various telegram IDs for reception. Express masks filter high-priority CAN telegrams so that they can be forwarded directly to the PLC.
For time-dependent events, such as the SYNC telegram in the case of CANopen®, up to 16 timers are available in the CAN modules with a resolution up to 1ms. Each timer can transmit any CAN telegram. The timers can be started, stopped, and changed from the PLC.
The timer 0 can also be used for synchronized transmission of CAN telegrams. It defines the time window in which all data will be transmitted synchronously.
CAN telegrams can be transmitted or timers started via freely programmable scripts on certain events such as “Power ON” or “PLC Stop -> Run”.
An integrated diagnostic function facilitates troubleshooting on commissioning of the module.
For CAN 300 PRO’s CANopen® Master Function it’s both possible to define the masters properties as to parameterize the slaves existing on the CAN bus.
In order to facilitate projection EDS-files can be read from CANopen® Slaves by CANParam Software.



Handling blocks
The CAN module is entered in the hardware configuration of the programming software as a CP- module (CAN 300, CAN 300 PRO) or an FM-module (CAN 400) and addressed in the STEP®7 / TIAPortal[1)] program via handling blocks.
For the CAN modules, handling blocks are available for layer 2 communication and for CANopen® Master (DS301 V4). If CAN modules are to be used as a CANopen® Slave, data handling functions are available for the profiles DS401 (IO modules) and DS420 (Corrugator). Further profiles can be set up on request.

Function scope of layer 2 data handling function:
- Transmit CAN telegram
- Read CAN telegram from the module
- Transmit CAN telegram to a timer
- Timer start/stop
- module reset

Various CAN protocols in 11 Bit or 29 Bit mode can be implemented with the handling blocks for layer 2.

Function scope of the CANopen® Master data handling function:
- Read SDO
- Transmit SDO
- SDO segmented download
- SDO segmented upload
- Spontaneous receive (NMT,PDO, Emergency)
- Transmit PDO
- Request PDO
- Nodeguarding/Heartbeat
- Network management

Application examples for controlling drives according to the DS402 profile are also supplied.
Furthermore handling blocks are available to utilize CAN 300 PRO as DeviceNet Slave.

Ordering Data	Order No.
Handling blocks for CAN CD with parameterization software “CANParam”, handling blocks “Layer 2”, “CANopen®” and “SAE J1939”	**800-600-1AA11**
CANopen® Slave handling blocks	**on request**
Devicenet Slave handling blocks	**on request**
CAN Trainig Course (see page 110)	**400-600-CAN01**

1) STEP and TIA Portal are registered trademarks of Siemens AG.

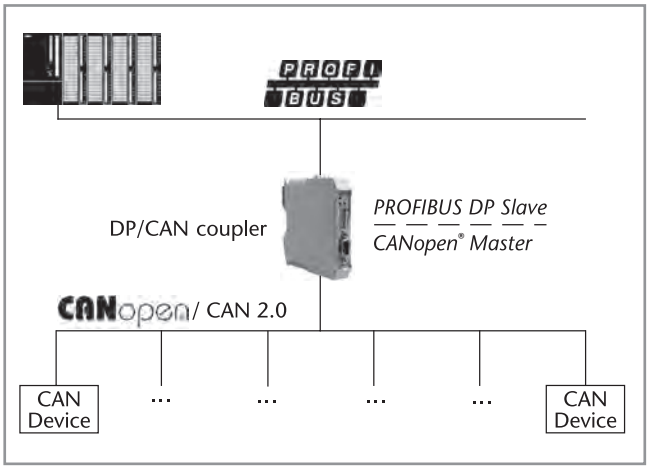


DP/CAN Coupler CANopen® Layer 2

Features

- Up to 15 CANopen® participants
- Up to 1 Mbps CAN baud rate
- Up to 12 Mbps PROFIBUS-DP
- Address setting via DP switch
- Simple configuration via GSD file
- CANopen® Master and CAN Layer 2 possible
- Address and function settable via dip switches
- 3 status LEDs
- Extended ambient temperature range

The DP/CAN coupler links CANopen® devices into a PROFIBUS-DP network.
The DP/CAN coupler is a full-function CANopen® Master. It supports network management, SYNC telegrams and nodeguarding for monitoring the nodes.
On the PROFIBUS-DP, the DP/CAN coupler is a normal node. The IO data of the CANopen® nodes are placed on the PROFIBUS in a transparent and freely configurable way.
The DP/CAN coupler is linked into the hardware configuration software via a GSD file and can be configured completely there. Further tools are not necessary.
On the PROFIBUS all standard baud rates up to 12 Mbps are supported; on the CAN bus, up to 1 Mbps.
The PROFIBUS address is set via a DIP switch.
Parameterization of the CANopen® nodes via SDO telegrams and management of emergency messages is also possible.
Alternatively the DP/CAN coupler can also be used as a CAN Layer 2 device on the CAN bus. This enables the connection of customer-specific CAN protocols via the PROFIBUS, too.
The DP/CAN coupler is intended for mounting on the DIN sectional rail and requires a 24 V power supply. Because of its small width it fits even into the smallest cabinets.



Application example DP/CAN Coupler CANopen®

Technical Data	
Dimensions (D x W x H mm)	114 x 18 x 108
Weight	Approx. 110 g
Power supply Voltage	 24 V
Current consumption	Approx. 180 mA
CAN interfaces Type	 ISO/DIN 11898 -2 CAN High Speed physical Layer
Transmission rate	10 kbps to 1 Mbps
Protocol	CANopen® Master CAN 2.0A (11 Bit)
Connection	Clamp, 3-way
Status display	3 LEDs
Configuration interfaces Transmission rate max.	 12 Mbps, autodetection
Protocol	PROFIBUS-DP to EN 50 170
Connection	SUB-D female, 9-way
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... 70 °C -40 °C ... 75 °C 80 % at +20 °C, non-condensing
Degree of protection	IP 20

Ordering Data	Order No.
DP/CAN Coupler CANopen® Layer 2 (incl. manual, CD with software)	**700-650-CAN01**

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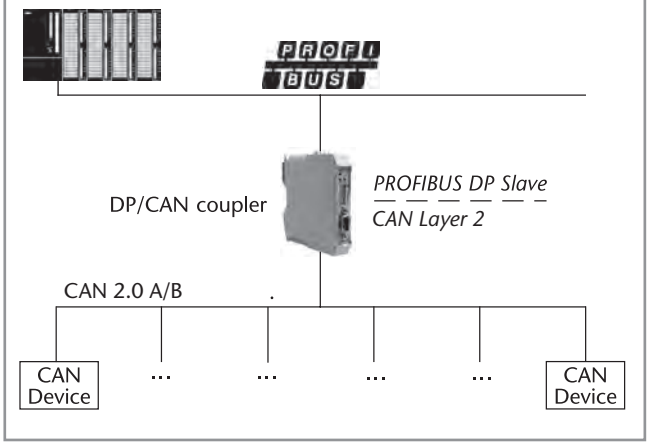
DP/CAN Coupler Layer 2

The DP/CAN coupler layer 2 of Systeme Helmholz GmbH allows you to connect any number of CAN nodes to the PROFIBUS-DP. The DP/CAN coupler layer 2 must be parameterized in the hardware configurator as a PROFIBUS node. The GSD files required for this purpose are supplied with the device.
The PROFIBUS side is configured as a DP slave. The interfaces meets EN 50170 and are electrically isolated. Baud rates of 9.6 kbps to 12 Mbps are automatically detected. The size of the input and output information is up to 312 Bytes.
The CAN bus interface meets ISO/DIN 11898-2 and is electrically isolated.
The DP/CAN coupler can send and receive any number of CAN messages. Messages can be defined with a fixed identifier, whose data are always visible in the PROFIBUS as an I/O image. Alternatively the DP/CAN coupler layer 2 can be equipped with a receive buffer for any number of CAN messages.

Ordering Data	Order No.
DP/CAN Coupler Layer 2 (incl. manual, CD with software)	**700-651-CAN01**

Features

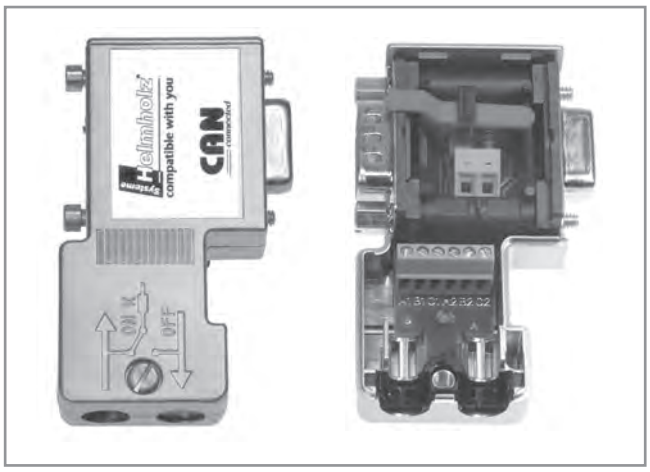
- Up to 1 Mbps CAN baud rate
- Up to 12 Mbps PROFIBUS-DP
- Address setting via DP switch
- Simple configuration via GSD file
- Any protocols possible via layer 2
- CAN 2.0 A (11Bit)
- CAN 2.0 B (29 Bit)
- Timer for cyclic telegrams
- 3 Status LEDs
- Extended ambient temperature range



Application example DP/CAN Coupler Layer 2

Technical Data	
Dimensions (D x W x H mm)	114 x 18 x 108
Weight	Approx. 110 g
Power supply Voltage	 24 V
Current consumption	Approx. 180 mA
CAN interfaces Type	 ISO/DIN 11898 -2 CAN High Speed physical Layer
Transmission rate	10 kbps to 1 Mbps
Protocol	CAN 2.0A (11 Bit) / CAN 2.0B (29 Bit)
Connection	Clamp, 3-way
Status display	3 LEDs
Configuration interfaces Transmission rate max.	 12 Mbps, autodetection
Protocol	PROFIBUS-DP to EN 50 170
Connection	SUB-D female, 9-way
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... 70 °C -40 °C ... 75 °C 80 % at +20 °C, non-condensing
Class of protection	IP 20

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CAN bus connector, 90° cable outlet



CAN bus connector, axial

The bus connectors for CAN bus are used to connect a CAN bus station to the CAN bus cable. The connector is quickly mounted and has integrated, connectable terminating resistors.
The Systeme Helmholz GmbH offers the bus connector with a vertical outgoing cable and for transmission rates up to 1 Mbps.
The bus connector is plugged directly onto the CAN bus interface (SUB-D connector, 9-way) of the CAN bus stations. The CAN bus cables are connected using 6-way screw terminals.
Using a slide switch, you can set whether the connector is to be used as a node or segment end. The switch can also be operated when the connector is installed. The setting can be clearly seen.
The connector must be operated in node setting ("OFF") when the incoming bus and the outgoing bus are to be interconnected. The terminating resistors are then bypassed.
The connector must be set as a segment end ("ON"), on the first and last (extreme) stations of the segement. In that case the terminating resistors are connected on the incoming bus, the outgoing bus is disconnected.
The bus connectors for CAN are also available with axial cable outlet and 24 V for user supply.
The CAN connector also works in the extended ambient temperature range of -25 °C to +85 °C*.

Features

- 24 V for user supply (only for 90°)
- Metalized housing
- No loosable parts
- 90° and axial cable outlet available
- Small housing

Member of:

Ordering Data	Order No.
CAN Bus Connector 90° without additional connection jack	**700-690-1BA12**
CAN Bus Connector 90° with additional connection jack	**700-690-1BB12**
CAN Bus Connector axial	**700-690-0CA12**

Technical Data	
Connection jack Order No. 700-690-1BB12 Order No. 700-690-1BA12 Order No. 700-690-0CA12	 **Yes** **No** **No**
Dimensions (D x W x H mm) 700-690-1BB12/690-1BA12 700-690-0CA12	 64 x 40 x 17 68 x 35 x 17
Weight	Approx. 40 g
Terminating resistor	Resistance 120 Ω; integrated and connectable with slide switch
Transmission rate max.	1 Mbps
Interfaces CAN bus station	 SUB-D connector, 9-way
CAN bus cable	6 terminals for wires up to 0.5 mm²
Max. outside diameter	8.0 mm
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C* -25 °C ... +85 °C 75 % at +25 °C
Class of protection	IP 20

* The maximum ambient temperature for UL is 60 °C.

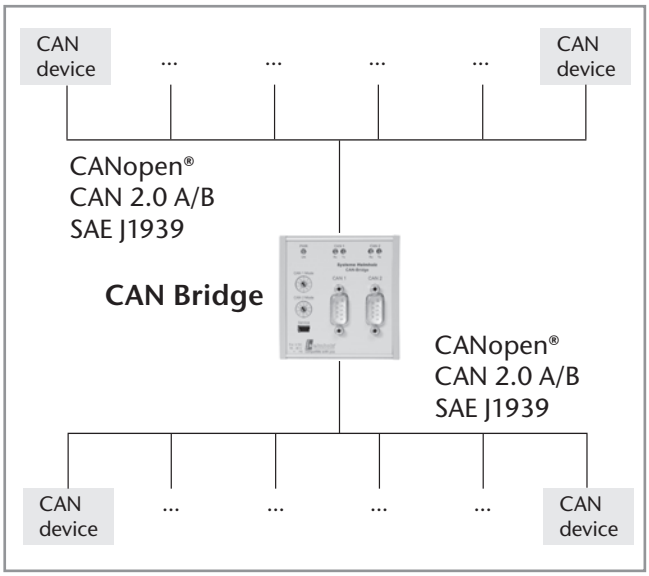


CAN Bridge, connecting CAN networks

CAN bus systems have become widely distributed in automation technology and are also being used more and more frequently in complex applications.
The CAN Bridge from Systeme Helmholz GmbH enables the coupling of two CAN networks of the same or different types.
Thereby, the CAN Bridge can operate both as message repeater for increasing the network expansion as well as connecting different CAN networks with each other. It is not significant thereby whether the CAN networks have different baud rates or operate with different protocols, e.g. CANopen® and a proprietary protocol.
A flexible, configurable filtering logic can adopt freely selectable identifiers and implement on the other network. The CAN messages are forwarded to the respective other network according to the Store-Forward principle and sent out again.
Using the CAN Bridge, the CAN networks are both physically decoupled (electrical isolation) as well as reducing the bus load on both CAN networks. The CAN Bridge enables a flexible design of the network topology; star and tree structures can also be implemented as expanded line structures.
The CAN Bridge can be configured for simple applications using the two rotary encoding switches. In the case of more complex applications, the filtering and forwarding of the CAN telegrams can be flexibly adjusted using the supplied CAN Bridge configuration software. Up to 256 range filters and up to 4 bit filters for address filtering are available. The configuration is read in using a USB port and can also be read out again.
The CAN Bridge operates both in 11-bit as well as 29-bit mode and can communicate with baud rates of 10 KBaud up to 1 MBaud. It has a powerful micro controller which can also operate at the highest data rates and bus loads without loss of the messages. 5 LEDs signal the status of the device and the connected CAN networks.

Features

- Increasing the network expansion
- Connecting different CAN networks with each other (different baud rates/different protocols)
- Physical decoupling (electrical isolation)
- Reduces the bus load on both CAN networks
- Autobaud detection
- Easy configuration mode
- Can be used with CAN 2.0A & 2.0B, CANopen®, DeviceNet, SAE J1939
- DIN rail mounting



Technical Data		
Dimensions in mm (D x W x H)		31 x 74 x 75
Weight		Approx. 130 g
Power supply Voltage		 18 - 30 V DC
Current consumption	typ. max.	35 mA 60 mA
CAN interfaces Type		 2 x ISO/DIN 11898-2 CAN High Speed physical Layer
Transmission rate		10 kbps up to 1 Mbps
Protocol		CAN 2.0A (11 Bit) CAN 2.0B (29 Bit) CANopen® SAE J1939 DeviceNet
Connection		2 x Connector, SUB-D, 9-way
Status display		5 LEDs
Configuration interfaces Type		 USB 1.1
Connection		Mini USB socket
Ambient temperature Transport and storage temperature		-25 °C ... 60 °C -25 °C ... 75 °C

Ordering Data	Order No.
CAN Bridge 2 x CAN bus interfaces (incl. manual, software and USB programming cable)	**700-660-2AA01**

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Interface Converters

Programming Adapter
RK512 and HMI Adapter
S5 Interface Converters

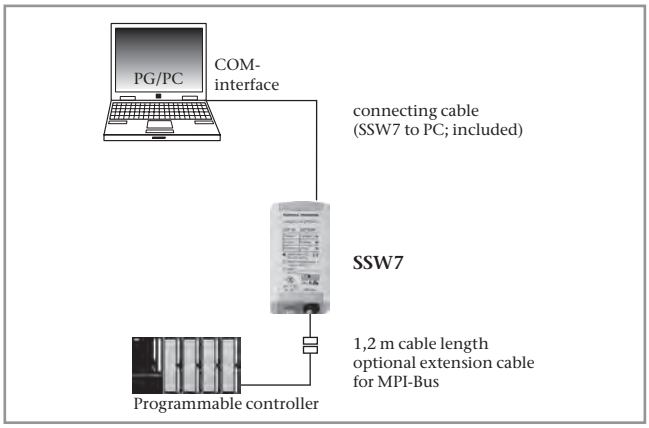
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SSW7, MPI-Programming Adapter

Features

- Programming and visualization
- Transmission rate up to 115 kBaud
- MPI up to 187.5 kbps
- Power supply via programming device or via external 24 V supply



Application example for SSW7

The SSW7 permits connection of a PC or laptop with programming software to programmable controllers via any standard COM port.
The RS232 interface of the SSW7 has automatic baud rate detection for adaptation to the set baud rate (between 9.6 to 115 kbps). The MPI interface operates with 187.5 kbps or 19.2 kbps.
The SSW7 receives it´s voltage supply from the CPU via the MPI bus. With an optional 24 V connection it can be used anywhere else in the system.
With the included speed-up tool you can attain the max. transmission rate of the SSW7 with every programming software.

Accessory-Note
By using SHTools software parameterization and diagnostic functions are possible. For firmware update a free download of the latest SHTools version is available on our website www.helmholz.com.

Technical Data		
Dimensions (D x W x H mm)		105 x 53 x 29
Weight		Approx. 180 g
Supply voltage		+24 V ±25 % from PLC or extern
Current consumption	typ. max.	30 mA 45 mA
MPI-Interface Type		 RS485
Transmission rate		19.2 or 187.5 kbps
Cable connector		SUB-D, 9-way
Communication interface Type		 RS232/RS422
Transmission type		Serial asynchronous
Transmission rate		19.2 kbps to 115.2 kbps
Parity		odd
Data format		8 Bit
Protocols		PC <-> S7
Connection		Connector, SUB-D, 9-way
Class of protection		IP 20

Ordering Data	Order No.
MPI-Programming Adapter **SSW7, RS232** (incl. 3 m programming cable, manual, CD with software) **SSW7, RS422** (incl. manual, CD with software)	 **700-751-1VK21** **700-752-1VK21**
DIN rail adapter short **Power Plug** 24 V, for SSW7, NETLink® and REX 300 devices (optional)	**700-751-HSH01** **700-751-SNT01**

From STEP[1] 7 version 5.5 SP2 Siemens no longer supports serial COM ports when using Windows 7[2] 64 bit.
The TIA Portal[1] also supports no COM ports - no matter what operating system is installed.

1) STEP and TIA Portal are registered trademarks of Siemens AG.
2) Windows 7 is a registered trademark of Microsoft Corporation.

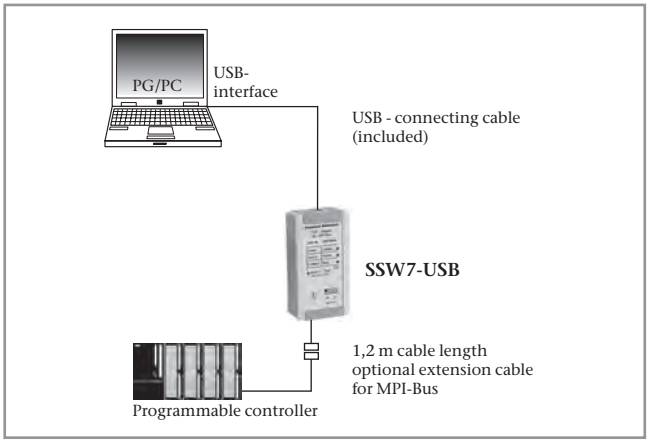
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SSW7-USB, MPI-Programming Adapter USB

Features

- Programming and visualization via USB
- MPI up to 187.5 kbps
- Supply Voltage via USB
- Virtual COM-port for flexible applications



Application example for SSW7-USB

The SSW7-USB permits conversion from a USB interface to the MPI bus for programming software or visualization.
The SSW7 has a 1.2 m long MPI connecting cable, which can be directly plugged into the CPU socket of the programmable controller or at any other point in the MPI network.
The housing of the SSW7-USB contains a type “B” USB socket. The SSW7-USB can be connected to the PC via the USB cable supplied. The SSW7-USB is powered from the PC. The SSW7-USB can therefore be used at any point in the MPI bus.
A driver for creating a virtual COM-port is included.

Accessory-Note
By using SHTools software parameterization and diagnostic functions are possible. For firmware update a free download of the latest SHTools version is available on our website www.helmholz.com.

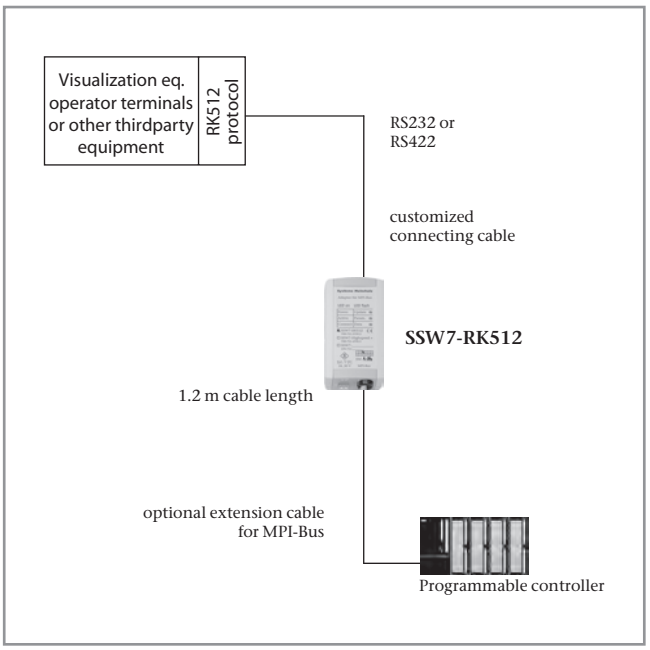
Technical Data	
Dimensions (D x W x H mm)	105 x 53 x 29
Weight	Approx. 180 g
Supply voltage	5 V via USB
Current consumption	Approx. 150 mA
MPI interface Type	 RS485
Transmission rate	19.2 or 187.5 kbps
Cable connector	SUB-D, 9-way
Communication interface Type	 USB 1.1
Protocols	PC <-> S7
Connection	USB-B female
Class of protection	IP 20

Ordering Data	Order No.
MPI-Programming Adapter SSW7-USB (incl. 3 m USB cable, manual, CD with software)	**700-755-1VK21**
DIN rail adapter short	**700-751-HSH01**

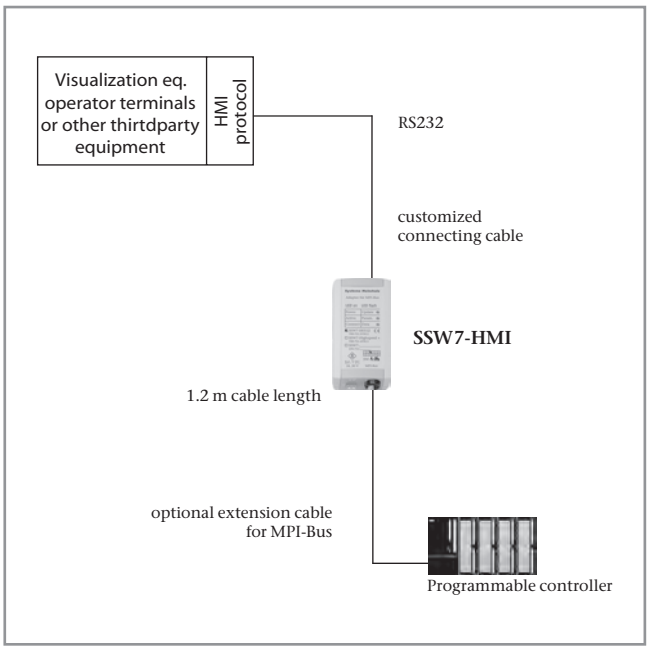
From STEP[1] 7 version 5.5 SP2 Siemens no longer supports serial COM ports when using Windows 7[2] 64 bit.
The TIA Portal[1] also supports no COM ports - no matter what operating system is installed.

1) STEP and TIA Portal are registered trademarks of Siemens AG.
2) Windows 7 is a registered trademark of Microsoft Corporation.

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SSW7-RK512



SSW7-HMI

SSW7-RK512
With the SSW7-RK512 you can connect any operator terminal, visualization equipment, or other third-party equipment to the S7 without adapting the software, if they support the RK512 protocol.
The SSW7-RK512 transmits data blocks, flags, inputs and outputs. The MPI settings of the SSW7-RK512 can be changed with a parameterization program or with special RK512 frames in order to connect several SSW7-RK512s or several PLCs to an MPI bus.
The RS232 interface of the SSW7-RK512 has automatic baud rate detection for adapting itself to the connected device (between 9.6 and 115 kbps). The MPI interface operates with 187.5 kbps.
The voltage supply for the SSW7-RK512 is taken from the CPU via the MPI bus. With an optional 24 V connection it can be operated anywhere else in the system.
We supply the SSW7-RK512 with an additional programming interface on the connector including switchable terminating resistor.

Accessory-Note
By using SHTools software parameterization and diagnostic functions are possible. For firmware update a free download of the latest SHTools version is available on our website www.helmholz.com.

SSW7-HMI
The SSW7-HMI is intended for use with operator terminals, visualization equipment or other third-party equipment that supports the Siemens HMI protocol.
The baud rate of the adapter is set by the protocol (between 9.6 and 115 kbps).
The voltage supply for the SSW7-HMI is taken from the CPU via the MPI bus. With an optional 24 V connection it can be operated anywhere else in the system.
We supply the SSW7-HMI with an additional programming interface on the connector including switchable terminating resistor.

Accessory-Note
By using SHTools software parameterization and diagnostic functions are possible. For firmware update a free download of the latest SHTools version is available on our website www.helmholz.com.

Ordering Data	Order No.
MPI-Programming Adapter **SSW7-RK512** (incl. manual) **SSW7-RK512** with RS422 interface (incl. manual)	 **700-751-5VK21** **700-752-5VK21**
DIN rail adapter short **Power Plug** 24 V, for SSW7, NETLink® and REX 300 devices (optional)	**700-751-HSH01** **700-751-SNT01**

Ordering Data	Order No.
MPI-Programming Adapter **SSW7-HMI** (incl. manual)	 **700-751-9VK21**
DIN rail adapter short **Power Plug** 24 V, for SSW7, NETLink® and REX 300 devices (optional)	**700-751-HSH01** **700-751-SNT01**

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Technical Data			
	SSW7-RK512	**SSW7-RK512 with RS422**	**SSW7-HMI**
	700-751-5VK21	**700-752-5VK21**	**700-751-9VK21**
Dimensions (D x W x H mm)	105 x 53 x 29	105 x 53 x 29	105 x 53 x 29
Weight	Approx. 180 g	Approx. 180 g	Approx. 180 g
Supply voltage (from AG or current supply)	+24 V ±25 %	+24 V ±25 %	+24 V ±25 %
Current consumption	Approx. 70 mA	Approx. 70 mA	Approx. 70 mA
MPI-Schnittstelle Type	RS485	RS485	RS485
Transmission rate	187.5 kbps	187.5 kbps	19.2 or 187.5 kbps
Cable connector	SUB-D, 9-way with PG interface and witerminating resistor	SUB-D, 9-way with PG interface and witerminating resistor	SUB-D, 9-way with PG interface and witerminating resistor
Communication interface Type	RS232	RS422	RS232
Transmission type	Serial asynchronous	Serial asynchronous	Serial asynchronous
Transmission rate	19.2 ... 115.2 kbps	19.2 ... 115.2 kbps	4.800 ... 115.2 kbps
Parity	Even	Even	Odd
Data format	8 Bit	8 Bit	8 Bit
Protocols	RK512 with 3964/R	RK512 with 3964/R	HMI
Connection	Connector, SUB-D, 9-way	Connector, SUB-D, 9-way	Connector, SUB-D, 9-way
Class of protection	IP 20	IP 20	IP 20

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SSW5/LAN, S5 Ethernet Converter

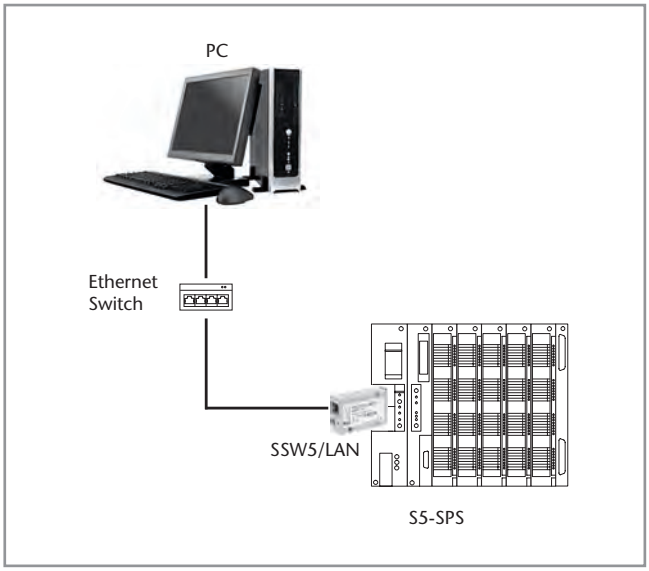


SSW5/LAN, S5 Ethernet Converter

The SSW5/LAN is an S5 Ethernet converter suitable for programming S5 controllers via the Ethernet.
A special virtual COM-port driver enables the usage of common programming tools, e.g. STEP[1] 5 V7.2 from Siemens.
The power is drawn from the CPU or from an external source (24 V). A virtual COM port is available for all common installation tools.

Features

- S5 programming via TCP/IP
- Virtual COM port for all common installation tools
- Power supply from the CPU or external 24 V
- Compatible with every common S5 CPU
- Clearly recognition in the network by device name



Application example SSW5/LAN

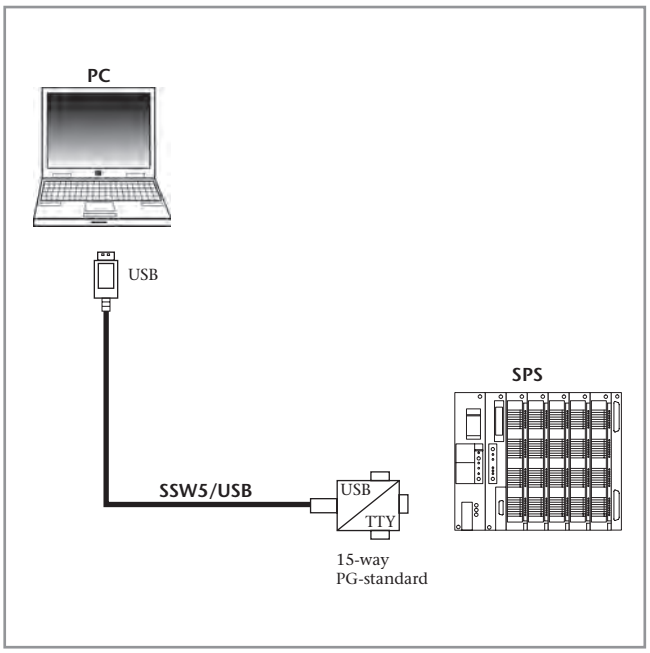
Ordering Data	Order No.
SSW5/LAN, S5 Ethernet Converter (incl. 3 m Ethernet cable, manual, CD with software)	**700-750-LAN13**

1) STEP is a registered trademark of Siemens AG.

Technical Data	
Dimensions (D x W x H mm)	65 x 21 x 42
Weight	Approx. 50 g
Power Supply Voltage	 24 V DC via AG-interface or extern
Current consumption	Approx. 55 mA (typ.)
S5-AG Interface Type	 TTY, 20 mA
Transmission rate	9.6 kBaud
Protocol	AS 511
Connection	15-way Sub-D connector
Ethernet interface Type	 10 Base-T/100 Base-T; RJ45 female
Transmission rate	10/100 Mbps
Ambient temperature Transport and storage temperature	0 °C ... 60 °C -25 °C ... 75 °C
Class of protection	IP 20



SSW5/USB programming cable



Application example SSW5/USB

The SSW5/USB programming cable enables a connection between a PC or Laptop via USB to an S5 PLC.
A special virtual COM-port driver enables the usage of common programming tools, e.g. STEP[1)]5 V7.2 from Siemens.
The SSW5/USB is equipped with a 15-pole Sub-D connector.

Ordering Data	Order No.
SSW5/USB, S5 USB Programming Cable, length 3 m (incl. manual, CD with software)	**700-750-0US13**
SSW5/USB, S5 USB Programming Cable, length 5 m (incl. manual, CD with software)	**700-750-1US13**

1) STEP is a registered trademark of Siemens AG.

Technical Data	
Conversion Interface	USB to TTY USB
Transmission	USB
TTY interface	SUB-D male connector, 15-way
Max. transmission rate	38400 Bps
Max. cable length	5 m
Source of supply voltage	USB-sided

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SSW3 Converter Cable



SSW3 interface converter cable

The SSW3 converter cable permits a connection between a PC and a PLC.
The RS232/TTY converter is completely integrated in the 15-way connector housing. An external power supply is therefore not required.
The data signals are transmitted via an **RS232** link.

Application in conjunction with:
- Any programming software on a PC
- Online link with the PLC with data exchange
- Visualization and communication software

Ordering Data	Order No.
Interface Converter Cable (RS232/TTY)	
SSW3, length 5 m	**700-750-0AA13**
SSW3, length 10 m	**700-750-1AA13**
SSW3, length 15 m	**700-750-2AA13**

Technical Data	
Conversion	RS232 to TTY
Transmission	RS232
RS232 interface	SUB-D female connector, 9-way
TTY interface	SUB-D male connector, 15-way
Max. transmission rate	38400 Bps
Max. cable length	15 m
Source of supply voltage	PG

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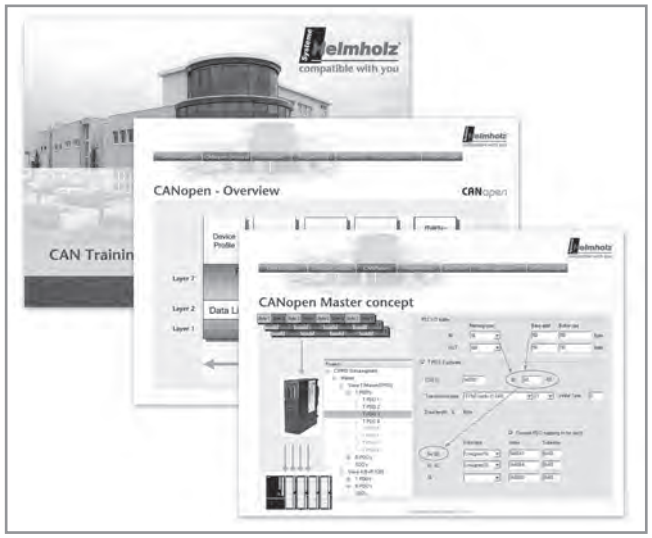


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- NETLink® and OPC-server

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- CANopen® protocol
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- CAN 300/CAN 400 programming in STEP[1] 7
- DP/CAN Coupler

Ordering Data	Order No.
Training Course CAN/CANopen®/CAN products, 1 day	**400-600-CAN01**

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... achieve a high level of availability?

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- Ethernet basics
- VPN basics
- Remote maintenance of MPI/PROFIBUS and Ethernet devices
- Remote maintenance over web portal (on-the-job)

At our REX 300 workshops you'll learn about prerequisites for internet remote maintenance, which problems need to be foreseen and how you can circumvent or solve them.
For maximum learning efficiency you will be required to put the trainings' concepts into practice yourself by establishing remote connections with test equipment.

Places/Dates
REX 300 workshops are held over the whole German-speaking area. The number of participants is limited to 18 people.
You'll find a schedule with coming events on the support page of our website www.helmholz.de.
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