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Catalog

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Connection type	Orientation	Product image	without PG	with PG	Page
Screw terminal	90°		700-972-0BA12	700-972-0BB12	9
	90° diagnosis		700-972-7BA12	700-972-7BB12	17
	35°		700-972-0BA41	700-972-0BB41	10
	Axial		700-972-0CA12		11
	90° with ATEX approval		700-973-0BA12	700-973-0BB12	19
EasyConnect®	90°		700-972-0BA50	700-972-0BB50	12
	90° diagnosis		700-972-7BA50	700-972-7BB50	15
	Angled, for solid cables		700-972-0BA51	700-972-0BB51	13
	Angled, for flexible cables		700-972-0FA51	700-972-0FB51	13
	Angled diagnosis, for solid cables			700-972-7BB51	16
	Axial		700-972-0CA50		14
M12	90°		700-974-0BA12	700-974-0BB12	18
	90° diagnosis			700-974-7BB12	18

PROFIBUS connector 90° with (l.) and without (r.) PG interface

The PROFIBUS connector 90° is equipped with a proven and reliable screw terminal. It is quickly mounted and has integrated, connectable terminating resistors.
For improved EMC compatibility, the housing of the plug is metalized.
The PROFIBUS connectors also work in the extended ambient temperature range of -25 °C to +85 °C[1].

Features

- Metalized housing
- No parts that can be lost
- Integrated switchable terminating resistor
- 90° cable outlet
- Proven screw terminal

Ordering Data	Order No.
PROFIBUS connector, 90°	
without PG socket, screw terminal	**700-972-0BA12**
with PG socket, screw terminal	**700-972-0BB12**
Stripping tool for PROFIBUS	**700-972-6AA00**

The PROFIBUS connectors are also available in packs of 10 or 50 pieces.

Technical specifications	
PG socket Order No. 700-972-0BB12 Order No. 700-972-0BA12	**Yes** **No**
Dimensions in mm (D x W x H)	64 x 40 x 17
Weight	Approx. 40 g
Cable outlet	Vertical cable outlet, suitable for FastConnect[2] stripping tool
Terminating resistor	Resistor combination integrated and switchable using slide switch
Transfer rate max.	12 Mbps
Interfaces PROFIBUS participants	SUB-D, 9-pin
Maximum outside diameter	8.0 mm
PROFIBUS cable	60/75 °C copper cable up to 1.0 mm^2
Connector type	4 serial terminals
Supply voltage	4.75 ... 5.25 V DC (must come from the device)
Current draw max.	12.5 mA
Pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C[1] -25 °C ... +85 °C 75% at +25 °C
Protection rating	IP 20

1) The maximum ambient temperature for UL is 60 °C.
2) FastConnect is a registered trademark of Siemens AG.

PROFIBUS connector, 35° screw terminal

PROFIBUS connector 35° with (l.) and without (r.) PG interface

The PROFIBUS connector 35° is equipped with a proven and reliable screw terminal. It is quickly mounted and has integrated, connectable terminating resistors.
For improved EMC compatibility, the housing of the plug is metalized.
The PROFIBUS connectors also work in the extended ambient temperature range of -25 °C to +85 °C[1].

Features

- Metalized housing
- No parts that can be lost
- Integrated switchable terminating resistor
- 35° cable outlet
- Proven screw terminal

Technical specifications	
PG socket Order No. 700-972-0BB41 Order No. 700-972-0BA41	**Yes** **No**
Dimensions in mm (D x W x H)	54 x 40 x 17
Weight	Approx. 40 g
Cable outlet	35° angled cable outlet
Terminating resistor	Resistor combination integrated and switchable using slide switch
Transfer rate max.	12 Mbps
Interfaces PROFIBUS participants	SUB-D, 9-pin
Maximum outside diameter	8.0 mm
PROFIBUS cable	60/75 °C copper cable up to 1.0 mm²
Connector type	4 serial terminals
Supply voltage	4.75 ... 5.25 V DC (must come from the device)
Current draw max.	12.5 mA
Pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C[1] -25 °C ... +85 °C 75% at +25 °C
Protection rating	IP 20

Ordering Data	Order No.
PROFIBUS connector, 35° without PG socket, screw terminal with PG socket, screw terminal	**700-972-0BA41** **700-972-0BB41**

The PROFIBUS connectors are also available in packs of 10 or 50 pieces.

1) The maximum ambient temperature for UL is 60 °C.

PROFIBUS connector with axial cable outlet

The PROFIBUS connector with axial cable outlet is equipped with a proven and reliable screw terminal.
It is quickly mounted and has integrated, connectable terminating resistors.
For improved EMC compatibility, the housing of the plug is metalized.
The PROFIBUS connectors also work in the extended ambient temperature range of -25 °C to +85 °C[1].

Features

- Metalized housing
- No parts that can be lost
- Integrated switchable terminating resistor
- Axial cable outlet
- Proven screw terminal

Technical specifications	
Dimensions in mm (D x W x H)	68 x 35 x 17
Weight	Approx. 40 g
Cable outlet, axial	Axial cable outlet, suitable for FastConnect[2] stripping tool
Terminating resistor	Resistor combination integrated and switchable using slide switch
Transfer rate max.	12 Mbps
Interfaces PROFIBUS participants	SUB-D, 9-pin
Maximum outside diameter	8.0 mm
PROFIBUS cable	60/75 °C copper cable up to 1.0 mm^2
Connector type	4 serial terminals
Supply voltage	4.75 ... 5.25 V DC (must come from the device)
Current draw max.	12.5 mA
Pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C[1] -25 °C ... +85 °C 75% at +25 °C
Protection rating	IP 20

Ordering Data	Order No.
PROFIBUS connector, axial Axial cable outlet, screw terminal	700-972-0CA12
Stripping tool for PROFIBUS	700-972-6AA00

The PROFIBUS connectors are also available in packs of 10 or 50 pieces.

1) The maximum ambient temperature for UL is 60 °C.
2) FastConnect is a registered trademark of Siemens AG.

PROFIBUS connector, 90° *EasyConnect*®

PROFIBUS connector, 90° *EasyConnect*®

The PROFIBUS connector 90° *EasyConnect*® features quick-connect technology, making stripping of the bus wires unnecessary. With the aid of a visual connection control, it is also possible to check that the PROFIBUS cable is correctly connected after it is mounted.

For improved EMC compatibility, the housing of the plug is metalized.

The *EasyConnect*® connectors also work in the extended ambient temperature range of -25 °C to +85 °C[1].

Features

• Metalized housing
• No parts that can be lost
• Integrated switchable terminating resistor
• 90° cable outlet
• Quick-connect technology *EasyConnect*®
• Visual connection control

Technical specifications	
PG socket Order No. 700-972-0BB50 Order No. 700-972-0BA50	**Yes** **No**
Dimensions in mm (D x W x H)	72 x 40 x 17
Weight	Approx. 40 g
Cable outlet	Vertical cable outlet, suitable for FastConnect[2] stripping tool
Terminating resistor	Resistor combination integrated and switchable using slide switch
Transfer rate max.	12 Mbps
Interfaces PROFIBUS participants	SUB-D, 9-pin
Maximum outside diameter	8.0 mm
PROFIBUS cable	FC standard cable, solid or flexible; 0.64 mm Ø 60/75 °C copper cable
Connector type	*EasyConnect*®
Supply voltage	4.75 ... 5.25 V DC (must come from the device)
Current draw max.	12.5 mA
Pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C[1] -25 °C ... +85 °C 75% at +25 °C
Protection rating	IP 20

Ordering Data	Order No.
PROFIBUS connector, 90° *EasyConnect*® for solid/flexible cable without PG socket with PG socket	700-972-0BA50 700-972-0BB50
Stripping tool for PROFIBUS	700-972-6AA00

The PROFIBUS connectors are also available in packs of 10 or 50 pieces.

1) The maximum ambient temperature for UL is 60 °C.
2) FastConnect is a registered trademark of Siemens AG.

PROFIBUS connector, angled **EasyConnect**®

Features

- Metalized housing
- No parts that can be lost
- Integrated switchable terminating resistor
- Angled cable outlet
- Quick-connect technology **EasyConnect**®
- Visual connection control

The PROFIBUS connector angled **EasyConnect**® features quick-connect technology, making stripping of the bus wires unnecessary.
With the aid of a visual connection control, it is also possible to check that the PROFIBUS cable is correctly connected after it is mounted.
For improved EMC compatibility, the housing of the plug is metalized.
The **EasyConnect**® connectors also work in the extended ambient temperature range of -25 °C to +85 °C[1].

Technical specifications	
PG socket Order No. 700-972-0BB51/-0FB51 Order No. 700-972-0BA51/-0FA51	**Yes** **No**
Dimensions in mm (D x W x H)	68 x 60 x 17
Weight	Approx. 50 g
Cable outlet	Angled cable outlet
Terminating resistor	Resistor combination integrated and switchable using slide switch
Transfer rate max.	12 Mbps
Interfaces PROFIBUS participants	SUB-D, 9-pin
Maximum outside diameter	8.0 mm
PROFIBUS cable	FC standard cable, solid or flexible; 0.64 mm Ø 60/75 °C copper cable
Connector type	**EasyConnect**®
Supply voltage	4.75 ... 5.25 V DC (must come from the device)
Current draw max.	12.5 mA
Pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C[1] -25 °C ... +85 °C 75% at +25 °C
Protection rating	IP 20

Ordering Data	Order No.
PROFIBUS connector, angled EasyConnect® for solid cable without PG socket with PG socket	700-972-0BA51 700-972-0BB51
PROFIBUS connector, angled EasyConnect® for flexible cable without PG socket with PG socket	700-972-0FA51 700-972-0FB51

The PROFIBUS connectors are also available in packs of 10 or 50 pieces.

1) The maximum ambient temperature for UL is 60 °C.

14   PROFIBUS connector, axial EasyConnect®

PROFIBUS connector, axial EasyConnect®

The PROFIBUS connector axial **EasyConnect®** features quick-connect technology, making stripping of the bus wires unnecessary With the aid of a visual connection control, it is also possible to check that the PROFIBUS cable is correctly connected after it is mounted.

For improved EMC compatibility, the housing of the plug is metalized.

The **EasyConnect®** connectors also work in the extended ambient temperature range of -25 °C to +85 °C[1].

Features

- Metalized housing
- No parts that can be lost
- Integrated switchable terminating resistor
- Axial cable outlet
- Quick-connect technology **EasyConnect®**
- Visual connection control

Technical specifications	
Dimensions in mm (D x W x H)	70 x 35 x 17
Weight	Approx. 50 g
Cable outlet	Vertical cable outlet, suitable for FastConnect[2] stripping tool
Terminating resistor	Resistor combination integrated and switchable using slide switch
Transfer rate max.	12 Mbps
Interfaces PROFIBUS participants	SUB-D, 9-pin
Maximum outside diameter	8.0 mm
PROFIBUS cable	FC standard cable, solid or flexible; 0.64 mm Ø 60/75 °C copper cable
Connector type	**EasyConnect®**
Supply voltage	4.75 ... 5.25 V DC (must come from the device)
Current draw max.	12.5 mA
Pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C[1] -25 °C ... +85 °C 75% at +25 °C
Protection rating	IP 20

Ordering Data	Order No.
PROFIBUS connector, axial EasyConnect® for solid/flexible cable	**700-972-0CA50**
Stripping tool for PROFIBUS	**700-972-6AA00**

The PROFIBUS connectors are also available in packs of 10 or 50 pieces.

1) The maximum ambient temperature for UL is 60 °C.
2) FastConnect is a registered trademark of Siemens AG.

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

Features

- 3 status LEDs to indicate "bus operation," "participant is sending," "terminating resistor inserted"
- Metalized housing
- No parts that can be lost
- Integrated switchable terminating resistor
- 90° cable outlet
- Quick-connect technology **EasyConnect**®
- Visual connection control

The PROFIBUS connector 90° with diagnostic LEDs **EasyConnect**® features quick-connect technology, making stripping of the bus wires unnecessary.

With the aid of a visual connection control, it is also possible to check that the PROFIBUS cable is correctly connected after it is mounted.

For improved EMC compatibility, the housing of the plug is metalized.

Using the PROFIBUS connector diagnosis, a PROFIBUS network can be established in which the user can at any time check the state of the bus system 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 present (**green**) and whether the addressed participant is participating in the bus traffic (**blue**) are displayed.

In this way you can immediately recognize error states such as bus interrupts, missing or incorrectly connected terminating resistors, and malfunctioning or failed bus participants.

The **EasyConnect**® connectors also work in the extended ambient temperature range of -25 °C to +85 °C[1].

Technical specifications	
PG socket Order No. 700-972-7BB50 Order No. 700-972-7BA50	**Yes** **No**
Dimensions in mm (D x W x H)	72 x 40 x 17
Weight	Approx. 40 g
Cable outlet	Vertical cable outlet, suitable for FastConnect[2] stripping tool
Terminating resistor	Resistor combination integrated and switchable using slide switch
Transfer rate max.	12 Mbps
Interfaces PROFIBUS participants	SUB-D, 9-pin
Maximum outside diameter	8.0 mm
PROFIBUS cable	FC standard cable, solid or flexible; 0.64 mm Ø 60/75 °C copper cable
Connector type	**EasyConnect**®
Supply voltage	4.75 ... 5.25 V DC (must come from the device)
Current draw max.	35 mA
Pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C[1] -25 °C ... +85 °C 75% at +25 °C
Protection rating	IP 20

Ordering Data	Order No.
PROFIBUS connector, 90° diagnosis **EasyConnect**® **for solid/flexible cable** without PG socket with PG socket	 **700-972-7BA50** **700-972-7BB50**
Stripping tool for PROFIBUS	**700-972-6AA00**

The PROFIBUS connectors are also available in packs of 10 or 50 pieces.

1) The maximum ambient temperature for UL is 60 °C.
2) FastConnect is a registered trademark of Siemens AG.

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

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

The PROFIBUS connector angled with diagnostic LEDs **EasyConnect**® features quick-connect technology, making stripping of the bus wires unnecessary.
With the aid of a visual connection control, it is also possible to check that the PROFIBUS cable is correctly connected after it is mounted.
For improved EMC compatibility, the housing of the plug is metalized.
Using the PROFIBUS connector diagnosis, a PROFIBUS network can be established in which the user can at any time check the state of the bus system 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 present (**green**) and whether the addressed participant is participating in the bus traffic (**blue**) are displayed.
In this way you can immediately recognize error states such as bus interrupts, missing or incorrectly connected terminating resistors, and malfunctioning or failed bus participants.
The **EasyConnect**® connectors also work in the extended ambient temperature range of -25 °C to +85 °C.

Features

- 3 status LEDs to indicate "bus operation," "participant is sending," "terminating resistor inserted"
- Metalized housing
- No parts that can be lost
- Integrated switchable terminating resistor
- Angled cable outlet
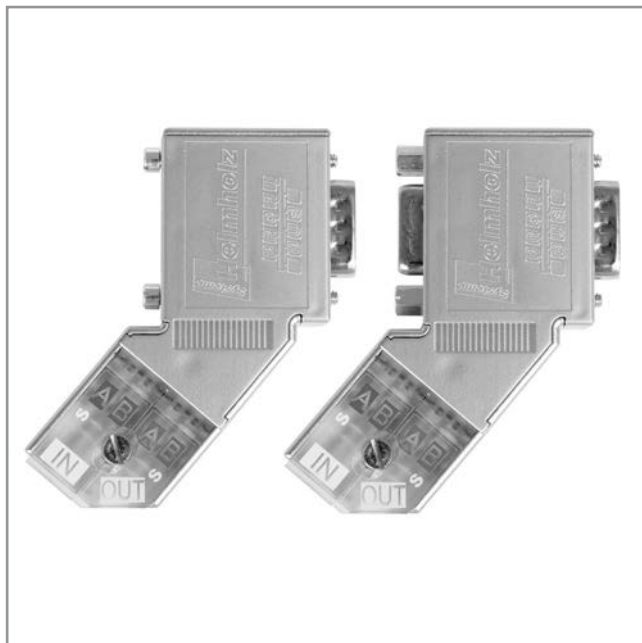- Quick-connect technology **EasyConnect**®
- Visual connection control

Technical specifications	
PG socket	**Yes**
Dimensions in mm (D x W x H)	68 x 60 x 17
Weight	Approx. 50 g
Cable outlet	Angled cable outlet
Terminating resistor	Resistor combination integrated and switchable using slide switch
Transfer rate max.	12 Mbps
Interfaces PROFIBUS participants	SUB-D, 9-pin
Maximum outside diameter	8.0 mm
PROFIBUS cable	FC standard cable, solid, 0.64 mm Ø 60/75 °C copper cable
Connector type	**EasyConnect**®
Supply voltage	4.75 ... 5.25 V DC (must come from the device)
Current draw max.	35 mA
Pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C -25 °C ... +85 °C 75% at +25 °C
Protection rating	IP 20

Ordering Data	Order No.
PROFIBUS connector, angled with diagnostic LEDs, EasyConnect® for solid cable with PG socket	700-972-7BB51

The PROFIBUS connectors are also available in packs of 10 or 50 pieces.

PROFIBUS connector, 90° with diagnostic LEDs, screw terminal

Features

- 3 status LEDs to indicate "bus operation," "participant is sending," "terminating resistor inserted"
- Metalized housing
- No parts that can be lost
- Integrated switchable terminating resistor
- 90° cable outlet
- Proven screw terminal

The PROFIBUS connector 90° diagnosis is equipped with a proven and reliable screw terminal. It is quickly mounted and has integrated, connectable terminating resistors.

For improved EMC compatibility, the housing of the plug is metalized.

Using the PROFIBUS connector diagnosis, a PROFIBUS network can be established in which the user can at any time check the state of the bus system 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 present (**green**) and whether the addressed participant is participating in the bus traffic (**blue**) are displayed.

In this way you can immediately recognize error states such as bus interrupts, missing or incorrectly connected terminating resistors, and malfunctioning or failed bus participants.

The PROFIBUS connectors also work in the extended ambient temperature range of -25 °C to +85 °C[1].

Technical specifications

PG socket Order No. 700-972-7BB12 Order No. 700-972-7BA12	**Yes** **No**
Dimensions in mm (D x W x H)	64 x 40 x 17
Weight	Approx. 40 g
Cable outlet	Vertical cable outlet, suitable for FastConnect[2] stripping tool
Terminating resistor	Resistor combination integrated and switchable using slide switch
Transfer rate max.	12 Mbps
Interfaces PROFIBUS participants	SUB-D, 9-pin
Maximum outside diameter	8.0 mm
PROFIBUS cable	60/75 °C copper cable up to 1.0 mm^2
Connector type	4 serial terminals
Supply voltage	4.75 ... 5.25 V DC (must come from the device)
Current draw max.	35 mA
Pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C[1] -25 °C ... +85 °C 75% at +25 °C
Protection rating	IP 20

Ordering Data	Order No.
PROFIBUS connector, 90° with diagnostic LEDs without PG socket, screw terminal with PG socket, screw terminal	**700-972-7BA12** **700-972-7BB12**
Stripping tool for PROFIBUS	**700-972-6AA00**

The PROFIBUS connectors are also available in packs of 10 or 50 pieces.

1) The maximum ambient temperature for UL is 60 °C.
2) FastConnect is a registered trademark of Siemens AG.

PROFIBUS connector 90° M12

PROFIBUS connector 90° with diagnostic LEDs M12

The PROFIBUS M12 plug is used to connect PROFIBUS participants to a PROFIBUS cable with M12 connector. Through the use of pre-assembled system cables, connection errors are excluded. Installation costs are reduced to a minimum.
The connector has two M12 connections and integrated terminating resistors. For improved electromagnetic compatibility, the housing is metalized.

With the variant with diagnostic LEDs, a PROFIBUS network can be established in which the user can at any time check the state of the bus system 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 present (**green**) and whether the addressed participant is participating in the bus traffic (**blue**) are displayed.
In this way you can immediately recognize error states such as bus interrupts, missing or incorrectly connected terminating resistors, and malfunctioning or failed bus participants.
The PROFIBUS connectors also work in the extended ambient temperature range of -25 °C to +85 °C[1].

Features
- Metalized housing
- No parts that can be lost
- Integrated switchable terminating resistor
- 90° cable outlet
- M12 connectors

Technical specifications	
PG socket Order No. 700-974-0BB12 Order No. 700-974-0BA12 Order No. 700-974-7BB12	**Yes** **No** **Yes**
Dimensions in mm (D x W x H)	70 x 41 x 17
Weight	Approx. 60 g
Cable outlet	Vertical cable outlet
Terminating resistor	Resistor combination integrated and switchable using slide switch
Transfer rate max.	12 Mbps
Interfaces PROFIBUS participants	SUB-D, 9-pin
Connector type	M12
Supply voltage	4.75 ... 5.25 V DC (must come from the device)
Current draw Order No. 700-974-0BB12 max. Order No. 700-974-0BA12 max. Order No. 700-974-7BB12 max.	12.5 mA 12.5 mA 35 mA
Pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C[1] -25 °C ... +85 °C 75% at +25 °C
Protection rating	IP 20

PROFI BUS®

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

c**UL**us®

Ordering Data	Order No.
PROFIBUS connector, 90° M12 without PG socket with PG socket	**700-974-0BA12** **700-974-0BB12**
PROFIBUS connector, 90° with diagnostic LEDs M12 with PG socket	**700-974-7BB12**

The PROFIBUS connectors are also available in packs of 10 or 50 pieces.

1) The maximum ambient temperature for UL is 60 °C.

PROFIBUS connector, 90° with ATEX approval

PROFIBUS connector 90° with ATEX approval is suitable for use in hazardous areas of zone 2 (explosive gas atmosphere occurs only rarely and briefly).
The bus connector is plugged directly into the PROFIBUS interface (SUB-D socket, 9-pin) of the PROFIBUS participants. The PROFIBUS cables are connected using 4-pin screw terminals. A slide switch is used to set whether the connector is to be used as a node or at the segment end. The switch can also be operated in the installed condition. The setting is clearly visible.
The plug is quickly mounted and has integrated, connectable terminating resistors.

Features

- Metalized housing
- No parts that can be lost
- Integrated switchable terminating resistor
- 90° cable outlet
- ATEX approval (II 3 G Ex nA II T4)
- Proven screw terminal

Technical specifications	
PG socket Order No. 700-973-0BB12 Order No. 700-973-0BA12	**Yes** **No**
Dimensions in mm (D x W x H)	64 x 40 x 17
Weight	Approx. 40 g
Cable outlet	Vertical cable outlet, suitable for FastConnect[1] stripping tool
Terminating resistor	Resistor combination integrated and switchable using slide switch
Transfer rate max.	12 Mbps
Interfaces PROFIBUS participants	SUB-D, 9-pin
Maximum outside diameter	8.0 mm
PROFIBUS cable	60/75 °C copper cable up to 1.0 mm²
Connector type	4 serial terminals
Supply voltage	4.75 ... 5.25 V DC (must come from the device)
Current draw max.	12.5 mA
Pollution degree	2
Ambient temperature Transport and storage temperature Relative humidity max.	-20 °C ... +60 °C -25 °C ... +85 °C 75% at +25 °C
Protection rating	IP 20

Ordering Data	Order No.
PROFIBUS connector, 90° **with ATEX approval** without PG socket, screw terminal with PG socket, screw terminal	 **700-973-0BA12** **700-973-0BB12**
Stripping tool for PROFIBUS	**700-972-6AA00**

The PROFIBUS connectors are also available in packs of 10 or 50 pieces.

1) FastConnect is a registered trademark of Siemens AG.

FLEXtra® twinRepeater, PROFIBUS repeater

FLEXtra® twinRepeater, PROFIBUS repeater

Features

- Can be used for bus extension or as a spur line
- Increase the number of participants
- System expansion
- Can also be used in MPI networks
- Status LEDs for each segment
- Repeating function can be switched off
- Electrical isolation

Despite its small size, the FLEXtra® twinRepeater is a full PROFI-BUS repeater designed for mounting on a DIN rail.
It regenerates the incoming electrical signal on a bus line and retransmits it (bit reshaping and retransmission).
The signals are restored in level, slope, and duty cycle.
The FLEXtra® twinRepeater supports data rates of 9.6 kbps to 12 Mbps and recognizes them automatically.
It can be used for bus extension (up to 1 km with 2 FLEXtra® twin-Repeaters), to increase the number of participants, and to expand the system. At the same time, use in MPI networks is possible. As a special application option, the FLEXtra® twinRepeater allows the setup of spur lines as separate segments.
The status LEDs integrated for each segment provide a quick overview of the current bus status. Furthermore, the FLEXtra® twinRepeater provides electrical isolation between the two PRO-FIBUS segments.
In addition, it has a switch to turn off the repeating function. The segments are separated but continue to function for themselves.
For connection to the PROFIBUS cable, PROFIBUS connectors are required (also available in a set).

Transition 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 specifications	
Dimensions in mm (D x W x H)	35 x 51 x 72
Weight	Approx. 110 g
Supply voltage	18 ... 30 VDC
Output voltage	5 V
Electrical isolation	500 V
Current draw max.	60 mA
Segment connection	Via PROFIBUS connector
PROFIBUS interface Transfer rate max.	12 Mbps Autom. detection
Protocol	PROFIBUS-DP as per EN 61 158-2
Ambient temperature Transport and storage temperature	0 °C ... +60 °C -25 °C ... +75 °C
Protection rating	IP 20

Ordering Data	Order No.
FLEXtra® twinRepeater, PROFIBUS repeater (incl. instruction)	700-972-2AA02
FLEXtra® twinRepeater set FLEXtra® twinRepeater, 2 PROFIBUS connector 90° screw terminal with PG (incl. instruction)	700-972-2XA02

PLC

PROFIBUS Slave

PC

FLEXtra® twinRepeater

"R" ON

"R" ON "R" ON

"R" OFF

"R" ON

Subnetwork 1
up to 32 stations

Subnetwork 2
up to 32 stations

Application example of FLEXtra® twinRepeater with more than 32 participants

PROFIBUS Slave

PROFIBUS Slave

PLC

PC

FLEXtra® twinRepeater

"R" ON

"R" OFF

"R" ON

"R" OFF

"R" OFF

"R" ON

Subnetwork 1
up to 32 stations

PROFIBUS Slave

PROFIBUS Slave

PC

"R" OFF

"R" OFF

"R" ON

Subnetwork 2
up to 32 stations
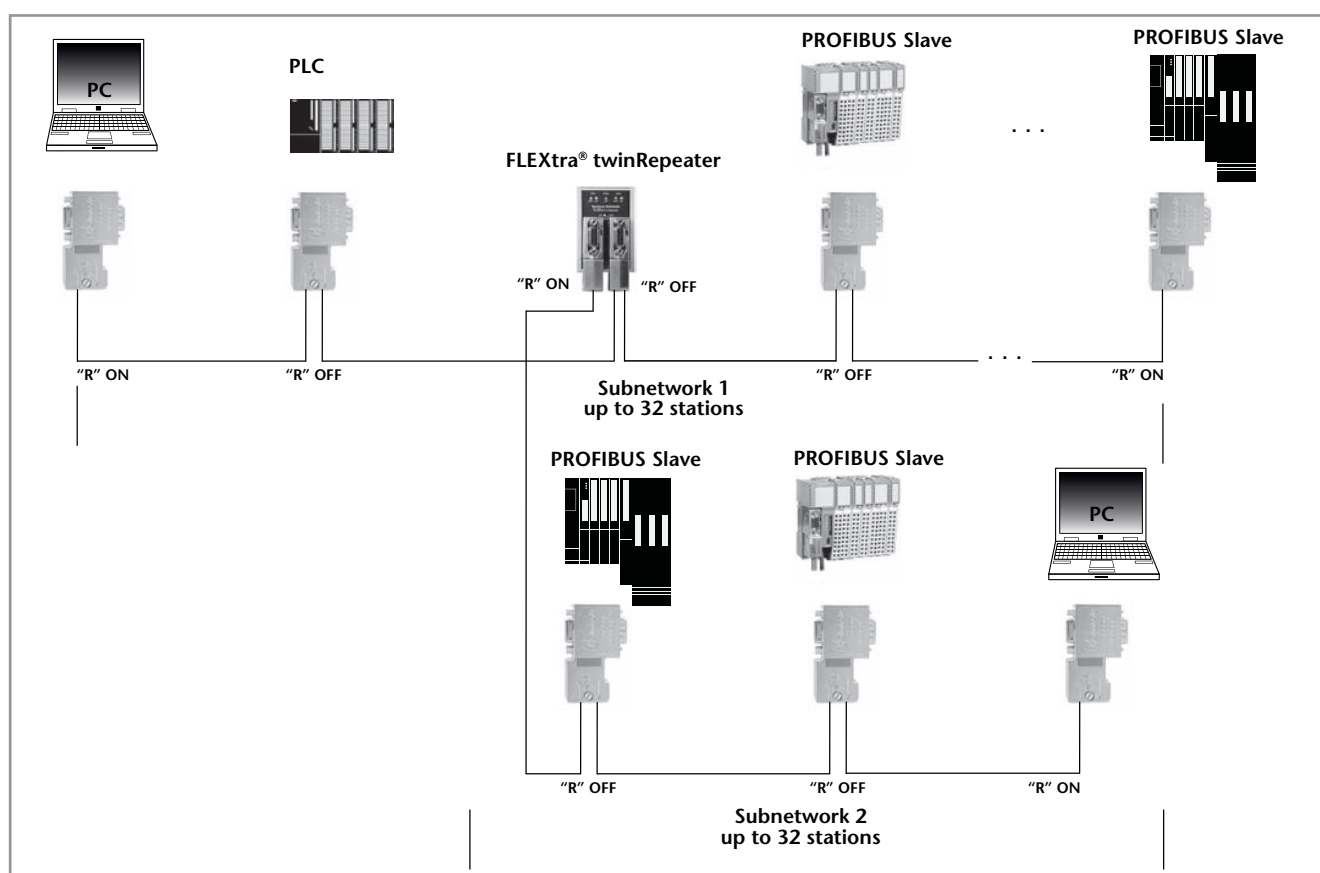
Application example FLEXtra® twinRepeater spur line

PROFIBUS Slave

PLC

FLEXtra® twinRepeater

FLEXtra® twinRepeater

up to 1000 m
(similarly at 12 MBit)

"R" ON

"R" ON "R" ON

"R" ON "R" ON

"R" ON
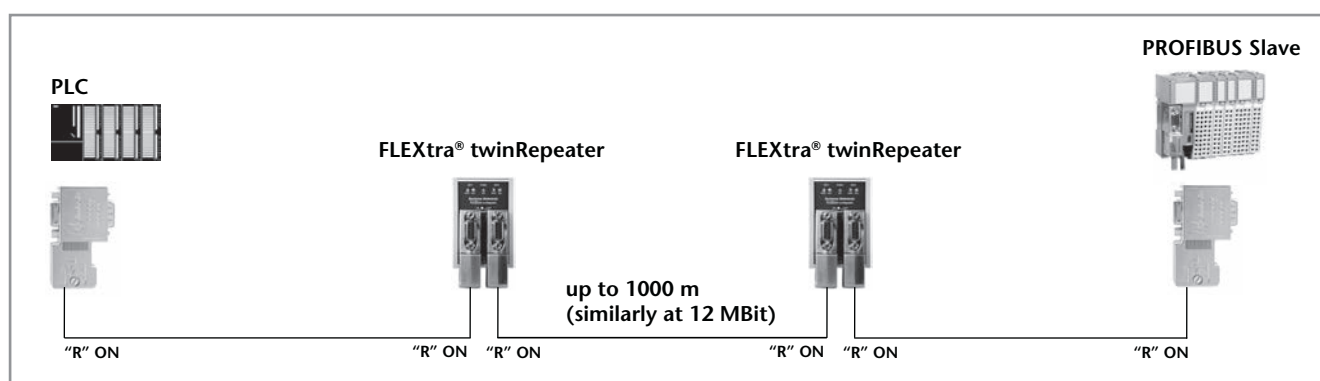
Application example FLEXtra® twinRepeater long distance

FLEXtra® multiRepeater 4-way/6-way, PROFIBUS repeater

FLEXtra® multiRepeater 4-way/6-way, PROFIBUS repeater

The FLEXtra® multiRepeater is a multi-PROFIBUS repeater designed for mounting on a DIN rail.
It regenerates the incoming electrical signal on a bus line and retransmits it (bit reshaping and retransmission).
The signals are restored in level, slope, and duty cycle.
The multiRepeater supports data rates of 9.6 kbps to 12 Mbps and recognizes them automatically.
It can be used for bus extension, to increase the number of participants, and to expand the system. At the same time, use in MPI networks is possible.
As a special application option, the multiRepeater allows the setup of a star network with independent segments.
The status LEDs integrated for each segment provide a quick overview of the current bus status. Furthermore, the FLEXtra® multiRepeater provides electrical isolation between the PROFIBUS segments. In addition, it has a DIP switch for switching off the individual segments and a switch for turning off all segments. The segments are separated but continue to function for themselves.
For connection to the PROFIBUS cable, PROFIBUS connectors are required.

Features

- Setup of star networks
- System expansion by up to six segments with one device
- Increase the number of participants
- Can be used for bus extension or as a spur line
- Can also be used in MPI networks
- Status LEDs for each segment
- Repeating function for each segment or totally disabled
- Electrical isolation of all segments

Transition 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 specifications		
	4-way	**6-way**
Dimensions in mm (D x W x H)	35 x 94 x 72	35 x 137 x 72
Weight	Approx. 180 g	Approx. 275 g
Supply voltage	18 ... 30 VDC	18 ... 30 VDC
Output voltage	5 V, 150 mA per segment	5 V, 150 mA per segment
Electrical isolation	500 V	500 V
Current draw max.	280 mA	400 mA
Segment connection	Via PROFIBUS connector	Via PROFIBUS connector
PROFIBUS interface Transfer rate max.	12 Mbps Autom. detection	12 Mbps Autom. detection
Protocol	PROFIBUS-DP as per EN 61 158-2	PROFIBUS-DP as per EN 61 158-2
Ambient temperature Transport and storage temperature	0 °C ... +60 °C -25 °C ... +75 °C	0 °C ... +60 °C -25 °C ... +75 °C
Protection rating	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**
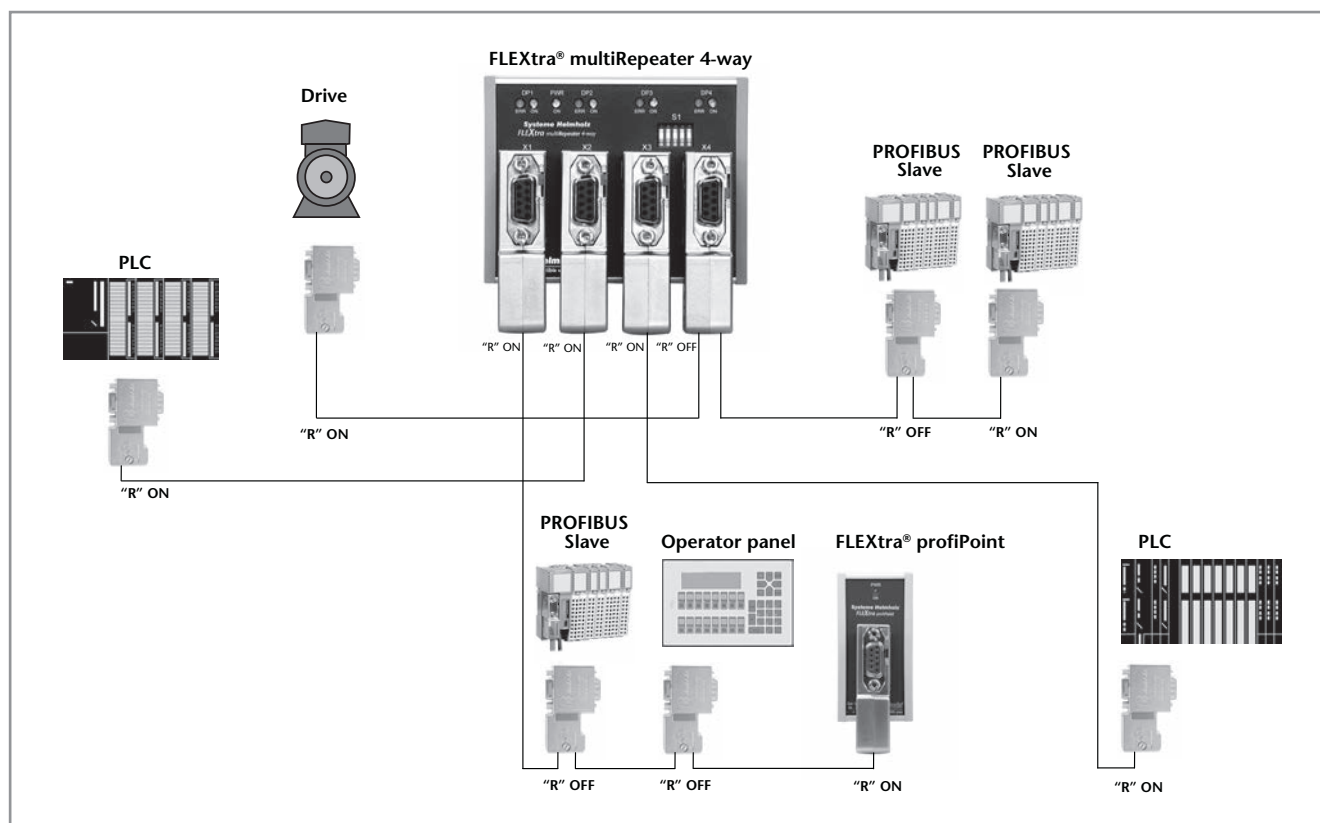
FLEXtra® multiRepeater 4-way

Drive

PLC

PROFIBUS Slave   **PROFIBUS Slave**

PROFIBUS Slave   **Operator panel**   **FLEXtra® profiPoint**   **PLC**

Application example FLEXtra® multiRepeater 4-way

FLEXtra® multiRepeater 6-way

PLC

PLC   **PROFIBUS Slave**   **PROFIBUS Slave**   **Operator panel**   **PLC**
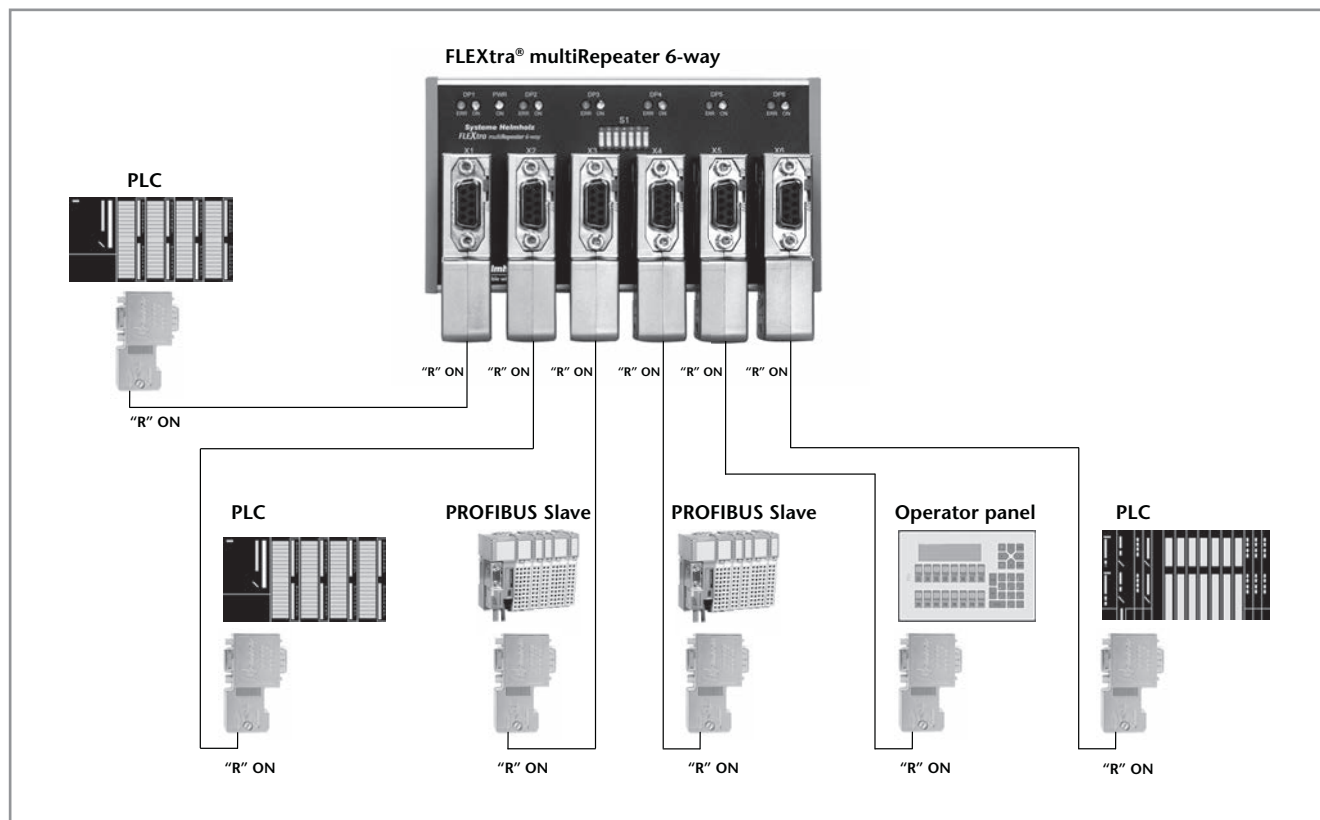
Application example FLEXtra® multiRepeater 6-way

PROFIBUS compact repeater

PROFIBUS compact repeater

Features

- Alternative to conventional PROFIBUS repeaters
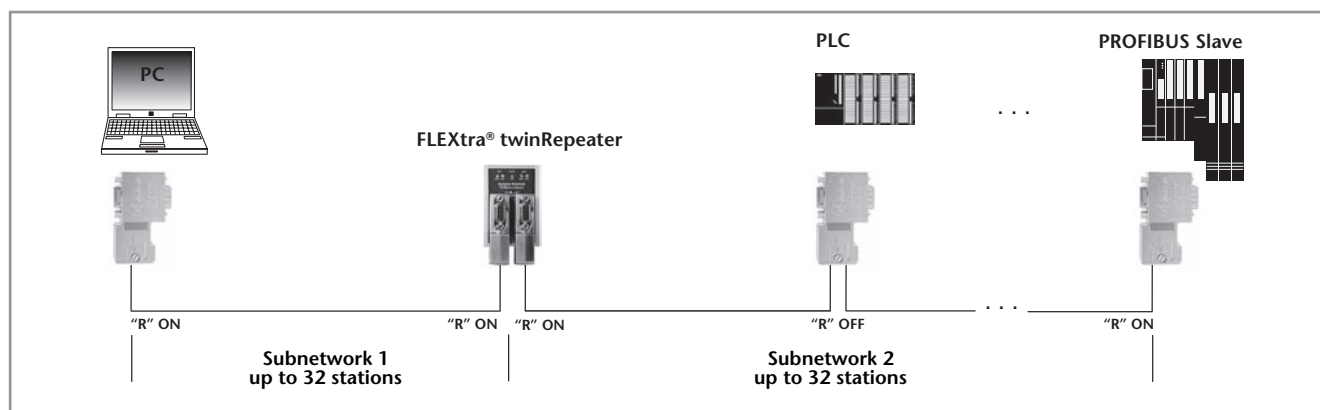- No additional space required in the control cabinet
- Can be used for bus extension or as a spur line
- Increase the number of participants
- System expansion
- Can also be used in MPI networks
- Status LEDs
- No 24 V supply required
- 5 V power supply directly from the PROFIBUS connection, making it usable on every PROFIBUS device
- Electrical isolation

The patented PROFIBUS compact repeater is a full PROFIBUS repeater that is versatile due to its very small size. It enables transfer rates of 9.6 kbps to 12 Mbps.

The transmission signals are regenerated by the repeater and re-sent (bit-reshaping and retransmission) so that faults in the line are largely eliminated.

The PROFIBUS compact repeater is a great alternative to conventional repeaters for a large number of applications, both technically and in terms of price. It can be used for bus extension (up to 1 km with 2 PROFIBUS compact repeaters), to increase the number of participants, and to expand the system. Use in MPI networks is also possible. As a special application option, the PROFIBUS compact repeater allows the setup of spur lines as separate segments. For this it can be plugged directly into the PG connection of an existing PROFIBUS connector.

Due to the compact design, no additional space is needed in the control cabinet, as the PROFIBUS compact repeater can be used instead of a PROFIBUS connector and is simply plugged into a participant on the PROFIBUS network. Furthermore, no separate power supply is required, because the PROFIBUS compact repeater uses the 5 V power supply, which every PROFIBUS device makes available for the terminating resistor. The PROFIBUS compact repeater establishes a potential separation between the two PROFIBUS segments.

The integrated status LEDs provide a quick overview on the current bus status.

Transition 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 specifications	
Dimensions in mm (D x W x H)	64 x 40 x 17
Weight	Approx. 40 g
Power supply Voltage	+ 5 V DC
Current draw typ.	100 mA
Socket	SUB-D 9-pin
PROFIBUS interface Transfer rate max.	9.6 kbps to 12 Mbps Autom. detection
Protocol	PROFIBUS-DP as per EN 50 170
Connector	Socket, SUB-D, 9-polig
Maximum outside diameter	8.0 mm
PROFIBUS cable	60/70 °C copper cable up to 1.0 mm^2
Connector type	4 serial terminals
Pollution degree	2
Ambient temperature Transport and storage temperature	-25 °C ... +85 °C[1] -25 °C ... +85 °C
Protection rating	IP 20

1) The maximum ambient temperature for UL is 60 °C.

Ordering Data	Order No.
PROFIBUS compact repeater with PG socket, screw terminal (incl. instruction)	700-972-0RB12
Stripping tool for PROFIBUS	700-972-6AA00

SUB-D female connector

SUB-D male connector

5 V

GND

Repeater

electrical isolation

A_1 B_1 A_2 B_2

Internal design

PLC

PROFIBUS device

Repeater 1 Subnetwork 1
up to 32 stations in Subnetwork 1

"R" ON

Subnetwork 2 max. 1000 m

PROFIBUS device

PROFIBUS device

Repeater 2 Subnetwork 3
up to 32 stations in Subnetwork 3

"R" ON

Application example long distance

PC

PLC

PROFIBUS device

PROFIBUS device

PROFIBUS device

. . .

Compact Repeater

"R" ON   "R" OFF   "R" OFF   "R" OFF   "R" OFF   . . .   "R" ON

Subnetwork 1 up to 32 stations

PROFIBUS device

PROFIBUS device

PC

"R" OFF   "R" OFF   "R" ON

Subnetwork 2 up to 32 stations
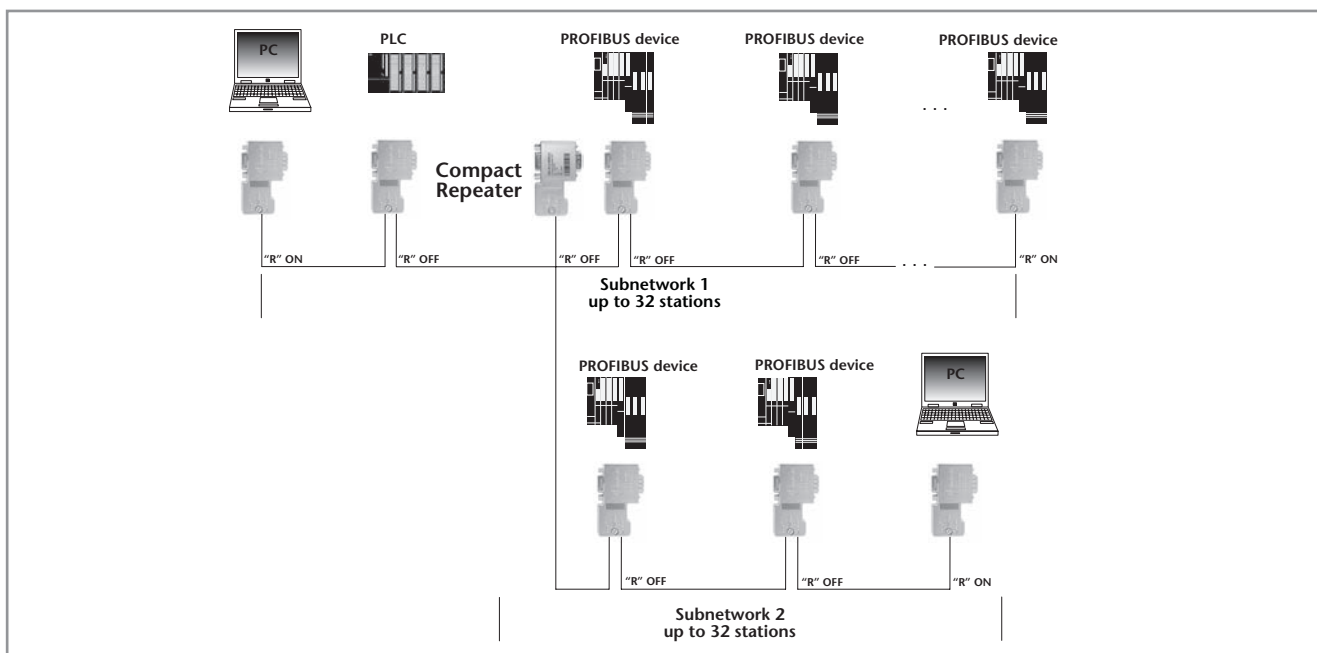
Application example spur line

PC

PLC

PROFIBUS device

PROFIBUS device

. . .

Compact Repeater

"R" ON   "R" ON   "R" OFF   . . .   "R" ON

Subnetwork 1 up to 32 stations

Subnetwork 2 up to 32 stations
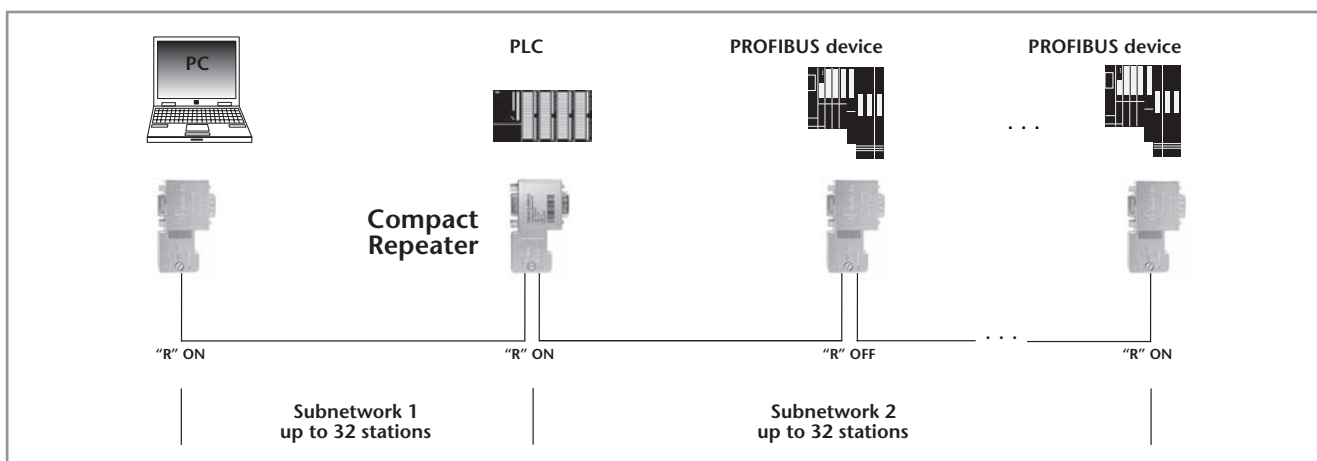
Application example of more than 32 participants

OPTopus, PROFIBUS optical link

OPTopus, PROFIBUS optical link

The OPTopus PROFIBUS optical link is a full PROFIBUS repeater with integrated FO interface. It enables PROFIBUS transmission rates from 9.6 kbps to 12 Mbps with automatic baud rate detection.

Due to the optical signal transmission, it offers complete electrical isolation between the PROFIBUS participants and PROFIBUS subnets. Another advantage of OPTopus is the insensitivity to EMC influences.

Due to the compact design, no additional space is needed in the control cabinet, as it can be used instead of a PROFIBUS connector and is simply plugged into a participant on the PROFIBUS network.

Furthermore, no separate power supply is required, because the OPTopus uses the 5 V power supply, which every PROFIBUS device makes available for the terminating resistor.

The transmission signals are converted into optical signals by the OPTopus and are transmitted on the fiber-optic link; in addition, they are also regenerated with slope, level, and duty cycle.

The OPTopus is available with 3 different optical interfaces and is therefore perfectly compatible with existing transmission systems. It is suitable for POF[1] and PCF[1] FO. For the short range up to 65 m, an optical transmission link can be established very quickly and without much effort using the POF. For this purpose, the matching connector is included with the OPTopus. All that is needed is a standard POF[1] FO. For longer distances up to 250 m, PCF[1] FO can be used.

The optical interface of the OPTopus sends in the visible range (650 nm red light), which allows an initial check of the optical transmission link without expensive instruments.

The OPTopus offers the advantages of a normal repeater, such as: Bus extension, increasing the number of participants and expanding the system. Use in MPI networks is also possible.

As a special application option, the OPTopus allows the setup of spur lines as separate segments. For this it can be plugged directly into the PG connection of an existing PROFIBUS connector.

For diagnostic purposes, the OPTopus has one Traffic and one Error LED for the PROFIBUS interface, along with one of each for the optical interface. In this way you are always informed about the bus state, and targeted troubleshooting is ensured.

There is also a Power LED that provides information about the operating state and the status of the terminating resistor.

Features

- PROFIBUS baud rate (9.6 kbps ... 12 Mbps) automatic detection
- Compact design, no bigger than a Helmholz PROFIBUS connector
- Display of traffic/bus errors separately for the FO and PROFIBUS segment
- Switchable terminating resistor with optical display
- Complete electrical isolation
- Insensitive to EMC influences
- No 24 V voltage supply required
- 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 connectors included

Technical specifications	
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 draw typ.	100 mA
Socket	SUB-D 9-pin
PROFIBUS interface Transmission rate	9.6 kbps to 12 Mbps Autom. detection
Protocol	PROFIBUS-DP as per EN 61 158-2:2011-09
Connector	Socket, SUB-D, 9-polig
Optical interface Wavelength	650 nm
Numerical aperture of the transmitting diode	0.50
Integrable 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 of the receiver	-3 dBm
Bridgeable 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
Protection rating	IP 20
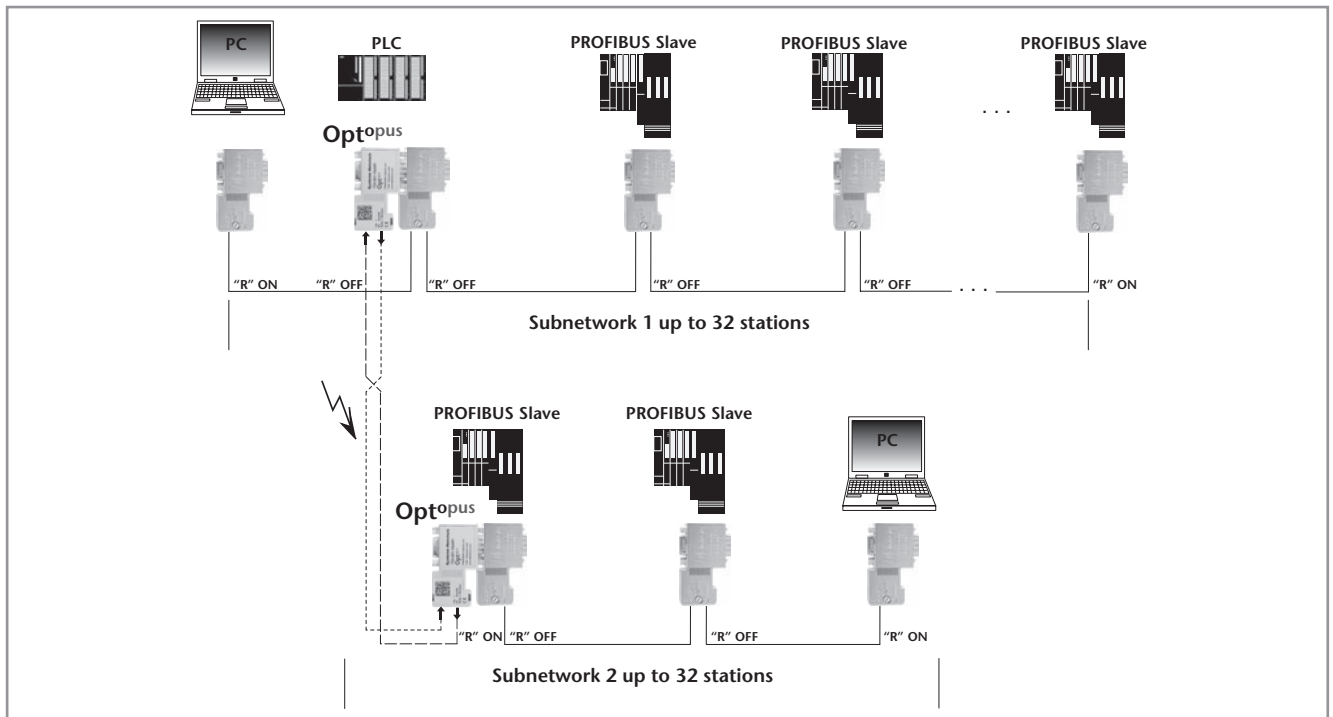
Generate a SUB network that is fully isolated electrically.
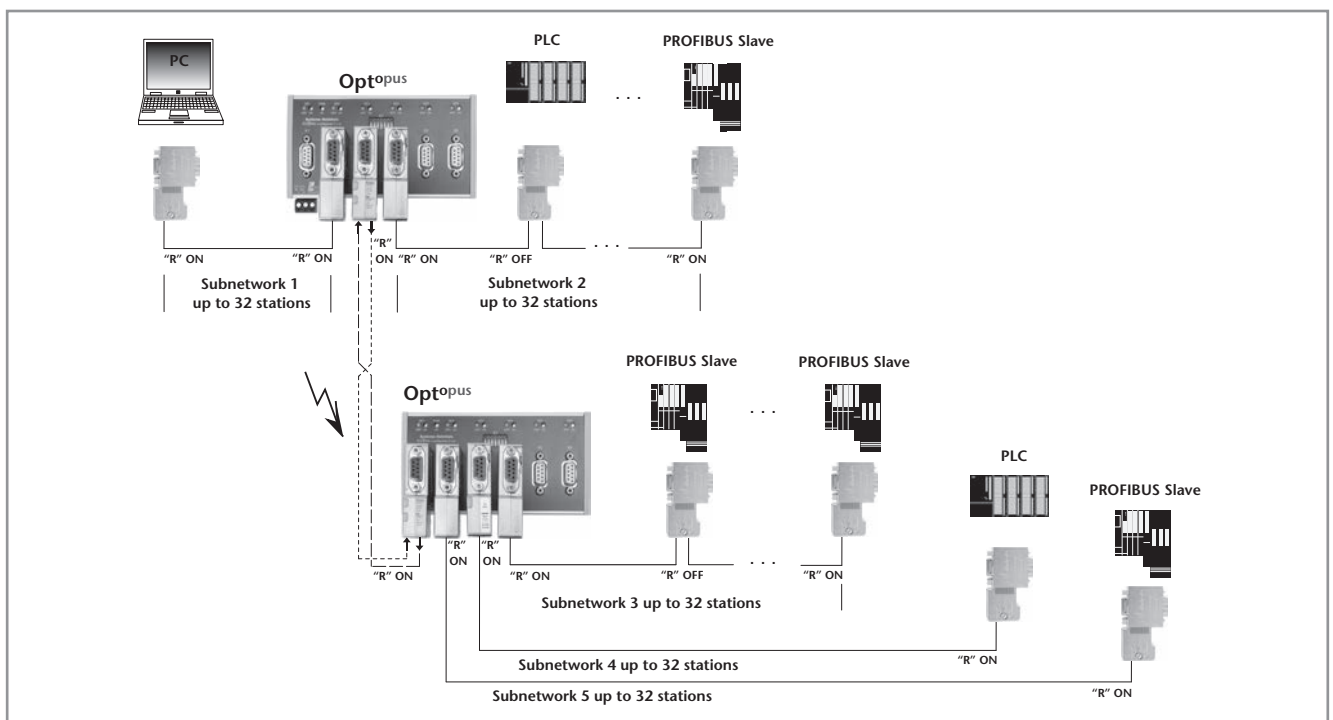
Establish a connection between two repeaters without being influenced by EMI interference.

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

Note

1) **PCF** stands for polymer cladded fiber and is synonymous with HCS. **POF** stands for polymeric optical fiber.
For the PCF/HCS assembly, extra PCF/HCS connectors are required, along with a special assembly tool according to the required connector technology. You get the appropriate PCF/HCS connector from your fiber-optic cable supplier.

2) BFOC stands for bayonet fiber-optic connector. This type of connector is functionally compatible with ST connectors.

3) The connector type Versatile Link is functionally compatible with HP Simplex/Duplex connectors.

FLEXtra® FO, PROFIBUS optical hub

FLEXtra® FO, PROFIBUS optical hub

Features

- PROFIBUS repeater with 2/5 optical MPI/PROFIBUS segments
- Perfect to combine with existing transmission systems
- PROFIBUS baud rate (9.6 kbps ... 12 Mbps) automatic detection
- Switching off of individual or all segments possible
- For use in EMC-hazardous environments
- 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
- Display of traffic/bus errors for each FO and PROFIBUS segment

The FLEXtra® FO is a PROFIBUS repeater expanded by 2 (with the FLEXtra® FO 650-2) and 5 (with the FLEXtra® FO 650-5) optical MPI/PROFIBUS segments.

It enables conversion of electrical MPI/PROFIBUS interfaces into optical MPI/PROFIBUS interfaces.

On PROFIBUS, the FLEXtra® FO reaches transmission rates from 9.6 kbps to 12 Mbps with automatic baud rate detection. Due to the optical signal transmission, it offers complete electrical isolation between the PROFIBUS participants and PROFIBUS subnets. Another advantage of the FLEXtra® FO is its insensitivity to EMC influences.

The transmission signals are converted by the FLEXtra® FO into optical signals and sent across the fiber-optic link. In addition, the signals are regenerated in slope, level, and duty cycle.

The FLEXtra® FO is perfect with existing transmission systems, since it is available with 3 different optical interfaces. It is also suitable for POF[1] and PCF[1] FO.

For the short range up to 65 m, an optical transmission link can be established very quickly and without much effort using the POF[1]. For longer distances up to 250 m, PCF[1] FO can be used.

The optical interface of the FLEXtra® FO sends in the visible range (650 nm red light), which allows an initial check of the optical transmission link without expensive instruments.

The FLEXtra® FO features integrated status LEDs for each segment for diagnostic purposes. In this way you are always informed about the state of the bus and the optical interface, and targeted troubleshooting is ensured.

In addition, the FLEXtra® FO has DIP switches for turning off individual or all segments. The segments are separated but continue to function for themselves.

Note

1) **PCF** stands for polymer cladded fiber and is synonymous with HCS. **POF** stands for polymeric optical fiber.
For the PCF/HCS assembly, extra PCF/HCS connectors are required, along with a special assembly tool according to the required connector technology. You get the appropriate PCF/HCS connector from your fiber-optic cable supplier.

2) BFOC stands for bayonet fiber-optic connector. This type of connector is functionally compatible with ST connectors.

3) The connector type Versatile Link is functionally compatible with HP Simplex/Duplex connectors.

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**
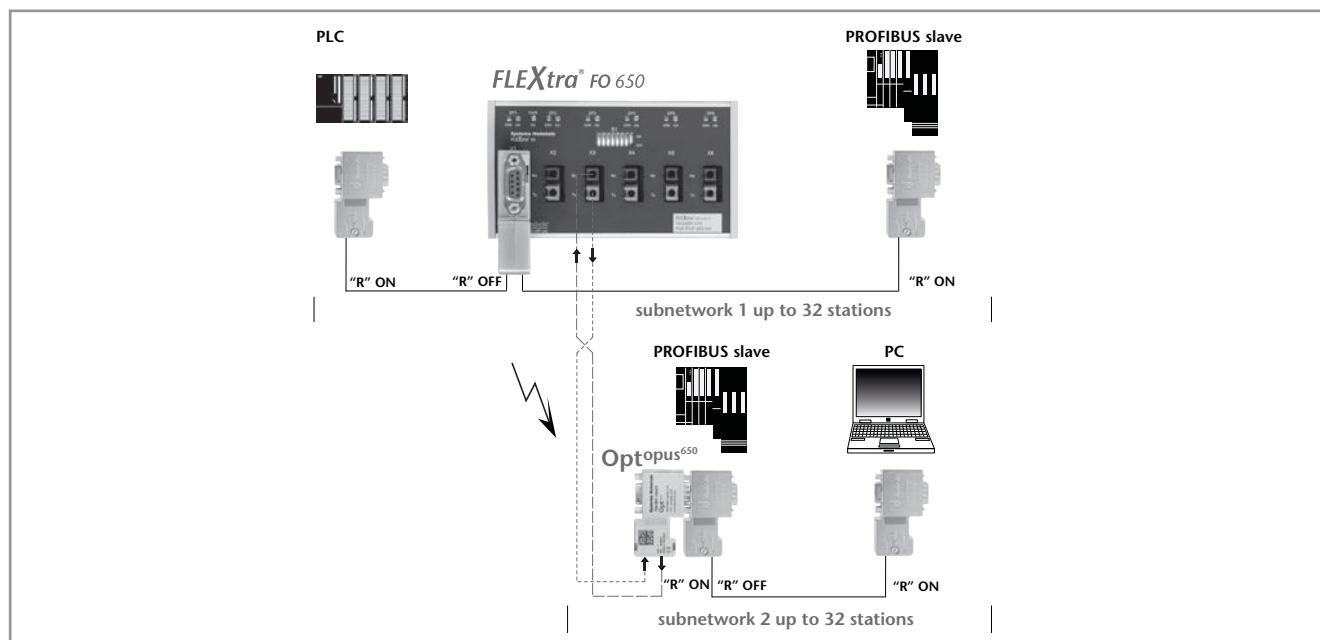
Generate a SUB network that is fully isolated electrically.

Technical specifications		
	650-2	650-5
Dimensions in mm (D x W x H)	35 x 70 x 72	35 x 137 x 72
Weight	Approx. 125 g	Approx. 250 g
Power supply • Voltage • Electrical isolation • Current draw • incl. 5 V loads • incl. 24 V loads	+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 (as with supply voltage)	5 V, max. 150 mA +18–30 V DC, max. 200 mA (as with supply voltage)
Electrical isolation	500 V	500 V
Current draw max.	200 mA	400 mA
Socket Port 1 Port 2–5	SUB-D 9-pin BFOC[2], SMA, Versatile Link[3]	SUB-D 9-pin 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 automatic detection	9.6 | 19.2 | 45.45 | 93.75 |187.5 | 500 kbps 1.5 | 3 | 6 and 12 Mbps automatic detection
Protocol	PROFIBUS-DP as per EN 61 158-2:2011-09	PROFIBUS-DP as per EN 61 158-2:2011-09
Optical interface Wavelength	650 nm	650 nm
Numerical aperture of the transmitting diode	0.50	0.50
Integrable 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 of the receiver	-3 dBm	-3 dBm
Bridgeable 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 ... +60 °C -25 °C ... +75 °C	0 °C ... +60 °C -25 °C ... +75 °C
Protection rating	IP 20	IP 20

30

viBlu, PROFIBUS radio system

All accessories shown here
are not included!

viBlu, PROFIBUS radio system

The PROFIBUS radio system viBlu is a virtual cable that enables the connection of distributed peripherals/intelligence (such as turntables, conveyor systems, etc.) by radio.

The data transfer takes place in the unlicensed 2.4 GHz band via Bluetooth and supports PROFIBUS baud rates from 9.6 kbps to 1.5 Mbps. Depending on local conditions, transmission links up to 100 m are possible.

The use of the PROFIBUS radio module is possible in single-master as well as in multi-master systems and permits full expansion on the PROFIBUS side. Behind a viBlu slave, only PROFIBUS-DP slaves are currently supported.

The radio system is powered by an external voltage supply of 24 V DC. A 9-pin Sub-D socket is used for the PROFIBUS connection. A USB interface is also integrated, which is used to parameterize the radio link.

Five LEDs on the device provide information about the operating status on PROFIBUS and the radio side.

Through a RP-SMA socket on the device, antennas with a larger gain can optionally be connected with the radio module for range optimization.

Outside Europe, the use of antennas with a gain over 10 dBi is permitted, so that radio relay systems with a range of up to several km should be possible, for example.

Accessories note
For antennas, see page 32.

Features

- Adjustable transmission power
- Up to 3 radio slaves on a radio master
- Bluetooth in the license-free 2.4 GHz band
- Up to 1.5 Mbps PROFIBUS-DP
- Easy configuration via USB interface
- No configuration in STEP[1] 7 necessary
- Comprehensive diagnosis of the wireless interface
- Ranges up to 100 m

Technical specifications	
Dimensions in mm (D x W x H)	130 x 68 x 30
Weight	Approx. 170 g
Power supply Voltage	DC 24 V (18 ... 30 V)
Current draw	Typ. 100 mA
PROFIBUS Typ.	RS485, isolated
Number of slaves	3 slaves
Transmission rate	9.6 kbps ... 1.5 Mbps, autom. detection
Connector type	SUB-D socket, 9-pin
Wireless 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
Display	5 LEDs
Protection rating	IP 20

1) STEP is a registered trademark of Siemens AG.

Ordering Data	Order No.
viBlu 200 master, PROFIBUS radio system 2.4 GHz Bluetooth; connection of up to 3 slaves; 1.5 Mbps (incl. manual, CD with software)	700-762-PFM11
viBlu 200 slave, PROFIBUS radio system 2.4 GHz Bluetooth (incl. manual, CD with software)	700-762-PFS11

PLC

PROFIBUS Slave

PROFIBUS max. 1.5 Mbps

viBlu 200 Master

viBlu 200 Slave

PROFIBUS Slave

PROFIBUS Slave

PAS 153
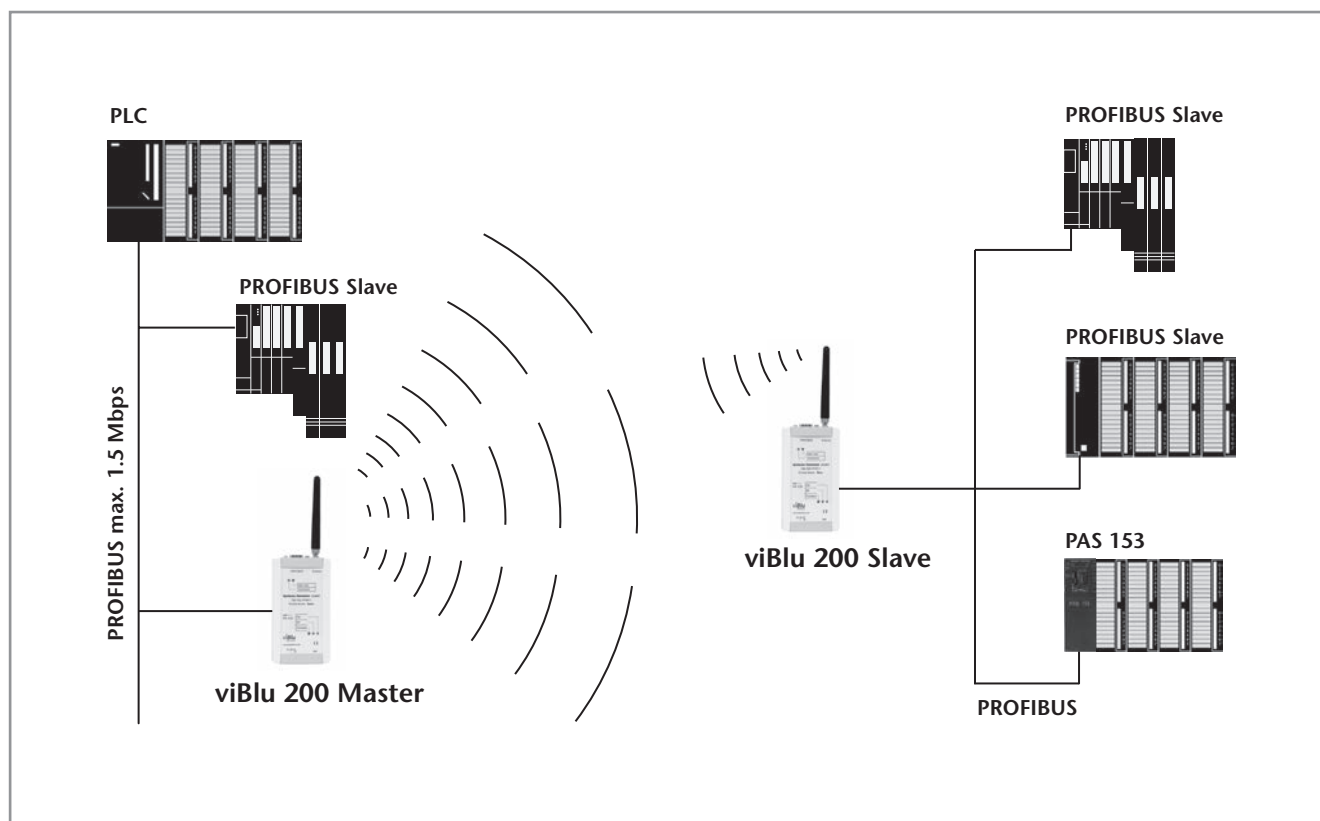
PROFIBUS

Application example viBlu 200 with a radio slave and up to three PROFIBUS-DP participants

PLC

PROFIBUS Slave

PROFIBUS max. 1.5 Mbps

viBlu 200 Master

viBlu 200 Slave

PROFIBUS

PROFIBUS Slave

viBlu 200 Slave

PROFIBUS

PROFIBUS Slave

viBlu 200 Slave

PROFIBUS

PAS 153
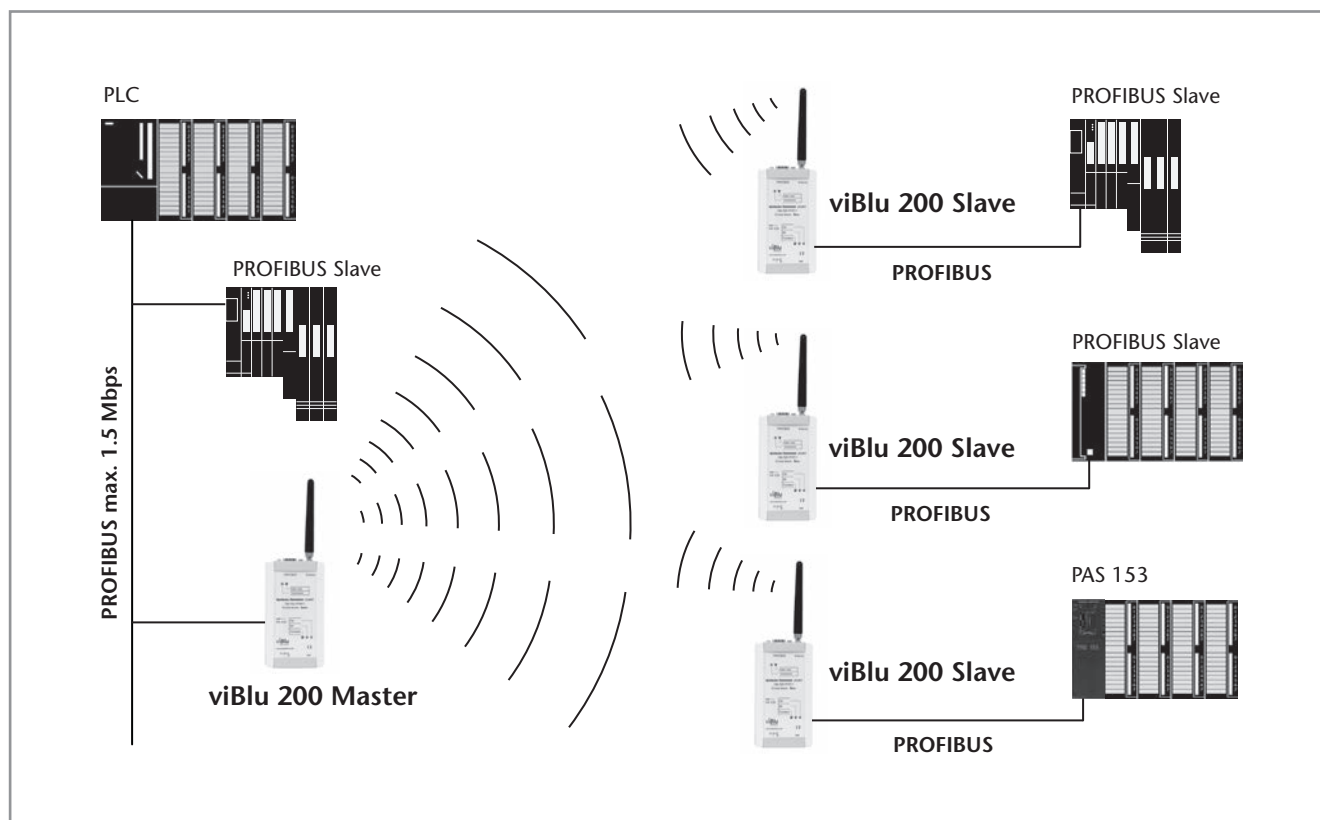
Application example viBlu 200 with 3 radio slaves

5 dBi magnetic base antenna
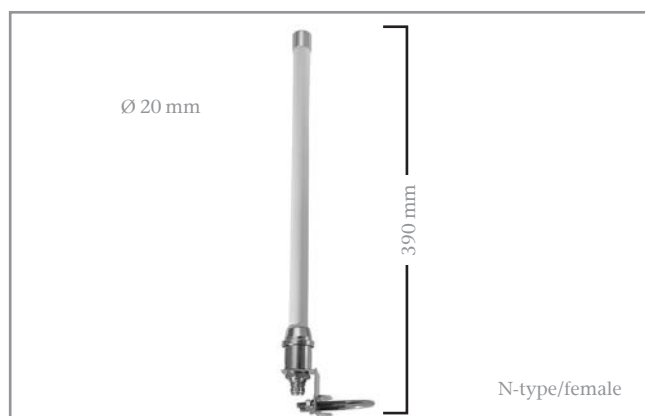
Omni 8 dBi antenna; incl. wall mount
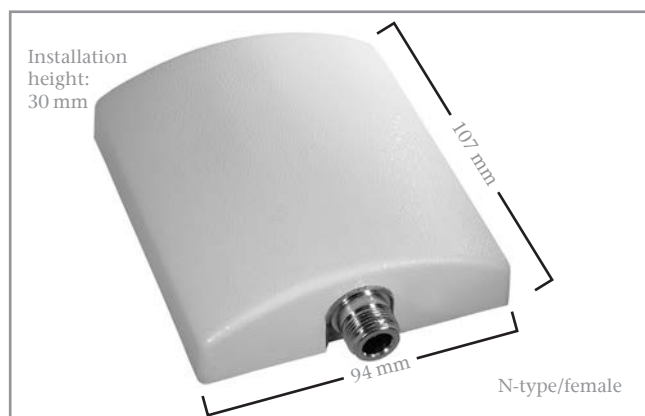
Panel 8 dBi antenna

Panel 18 dBi antenna

To optimize the reception performance of the PROFIBUS wireless system viBlu and NETLink® WLAN, we offer a selection of different antennas. Depending on the antenna design, appropriate connection cables can be purchased.

When planning a wireless link, it is necessary to consider both with a mobile and stationary installation that the range may be influenced more or less by obstacles and the surrounding buildings. Due to the maximum transmission power of 100 mW in the 2.4 GHz range, wireless links of 10 to 30 meters are possible in buildings. Outdoors, 100 to 300 meters are considered realistic with line-of-sight connections.

With a directional panel antenna, wireless links exceeding 300 meters are also possible under optimum conditions.

Magnetic base antenna 5 dBi
For mounting on smooth magnetic surfaces. The action radius is increased by the permanently mounted 1.5-meter-long connecting cable. The magnetic base can be unscrewed. In this way the dipole can also be operated directly on the WLAN module, which is especially suitable for medium distances with clear line of sight. With the integrated articulated joint, the circular antenna can always be aligned correctly.

Omni-directional antenna 8 dBi
This omni-directional antenna protected by the sturdy GRP pipe is delivered with a mounting bracket for mounting it on masts or walls – preferably outdoors.
For best omni-directional characteristics, metallic surfaces and obstacles in the vicinity of the antenna should be avoided. For the N-type connector, a cable available in the accessories is required.

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 is significantly improved by this design. The corresponding fixtures are included. For the N-type connector, a cable available in the accessories is required.

Ordering Data	Order No.
Antennas for WLAN/Bluetooth	
2.4 GHz antenna with magnetic base, 5 dBi incl. 1.5 m cable	700-889-ANT01
2.4 GHz Omni 8 dBi antenna, antenna cable required	700-889-ANT02
2.4 GHz Panel 8 dBi antenna, antenna cable required	700-889-ANT03
2.4 GHz Panel 18 dBi antenna, antenna cable required	700-889-ANT04
Antenna cable for WLAN/Bluetooth	
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

DP/DP coupler

Features

- Exchange of up to 244 bytes of input and 244 bytes of output data between two PROFIBUS networks
- Redundant power supply
- Electrical isolation between the PROFIBUS networks
- Setting of the PROFIBUS addresses using DIP switches or software
- PROFIBUS-DP up to 12 Mbps

The DP/DP coupler interlinks two PROFIBUS DP networks and enables data transfer between the masters of 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 with a GSD file.
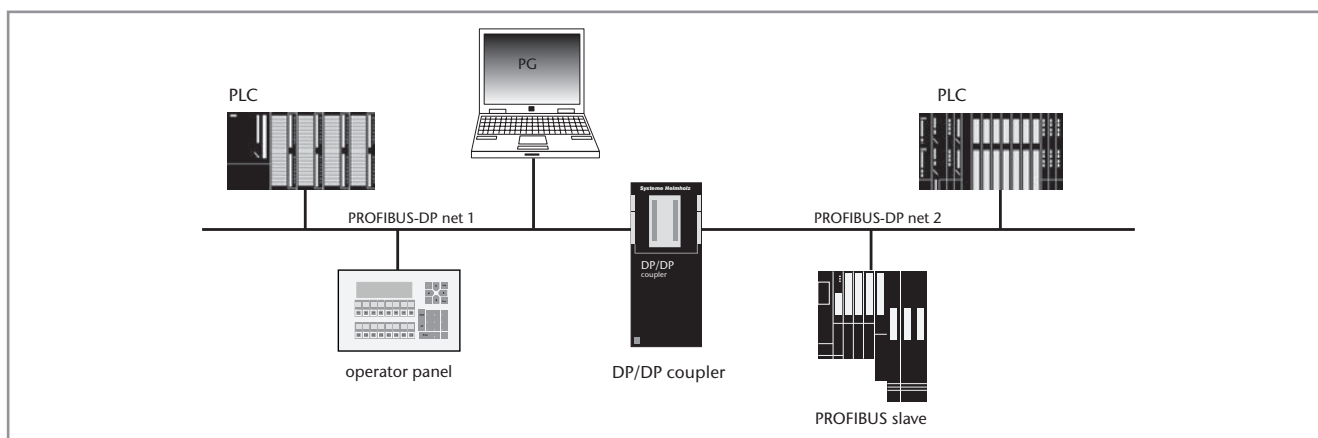
Application example DP/DP coupler

Technical specifications	
Dimensions in mm (D x W x H)	116 x 40 x 125
Weight	Approx. 250 g
Power supply Voltage Current draw	 24 VDC (20.4 V ... 28.8 V) Approx. 150 mA with 24 VDC
Isolation of the 24 V power supply • To PROFIBUS • To each other	 Yes Yes
PROFIBUS interface Transmission rate	 9.6 ... 12 Mbps
Protocol	PROFIBUS-DP
Message length I/O data	Max. 244 bytes inputs / 244 Byte outputs
Ambient temperature	0 °C ... 60 °C
Protection rating	IP 20

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

FLEXtra® profiPoint, active termination and measuring point

FLEXtra® profiPoint, active termination and measuring point

Features

- Power supply independent of the bus participants
- Device-independent bus termination due to a separate power supply
- Suitable for use as an active measurement point
- Supply of active PROFIBUS components (compact repeater, NETL ink®, PROFIBUS diagnostic connector)

The FLEXtra® profiPoint is used primarily to supply the terminating resistor and is designed for mounting on a DIN rail.

It can be used in conjunction with a PROFIBUS connector as the active measurement point or as an active terminator. Power is supplied independent of the bus via a socket.

Through the use of an active terminating resistor, participants of the bus system can optionally be switched on and off without causing malfunctions.

An integrated LED allows the correct function of the profiPoint to be read. For connection to the PROFIBUS cable, a PROFIBUS connector is required (also available in a set).
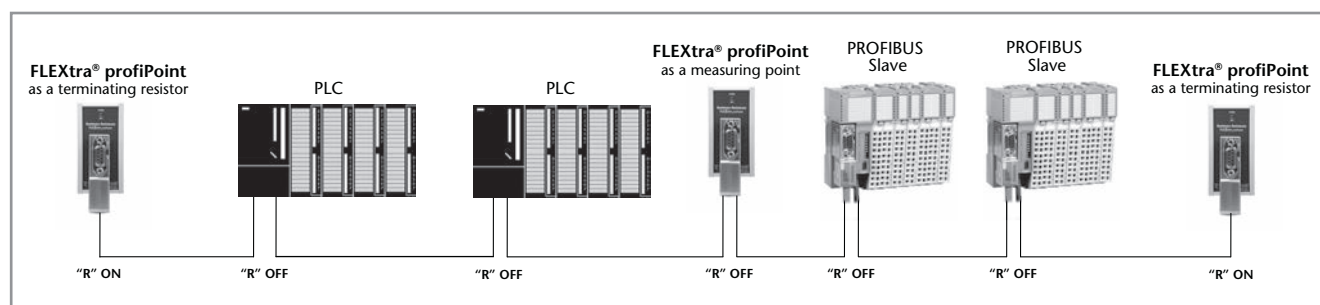
Application example FLEXtra® profiPoint

Ordering Data	Order No.
FLEXtra® profiPoint, active termination and measuring point (incl. manual)	700-972-1AA02
FLEXtra® profiPoint set, FLEXtra® profiPoint + 90° PROFIBUS connector, diagnostic screw terminal with PG (incl. manual)	700-972-1XA02

Technical specifications	
Dimensions in mm (D x W x H)	35 x 32 x 72
Weight	Approx. 85 g
Supply voltage	18 ... 30 VDC
Output voltage	24 VDC / 5 VDC
Electrical isolation	500 V
Current draw max.	400 mA
Segment connection	Via PROFIBUS connector
Ambient temperature Transport and storage temperature	0 °C ... +60 °C -25 °C ... +75 °C
Protection rating	IP 20

Active PROFIBUS connecting cable for PG
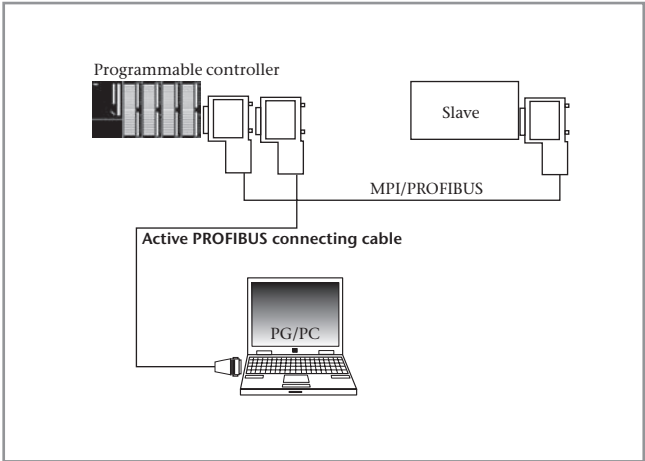
Example of active connecting cable

The active PROFIBUS connecting cable is used for easy connection of a PG to an existing PROFIBUS network.
Due to the integrated electronics, it is not a spur line.

Technical specifications	
Dimensions in m (length)	3
Weight	Approx. 260 g
Supply voltage	DC 5 V
Current draw max.	100 mA at 5V
PROFIBUS interface Transfer rate max.	12 Mbps
Connector	SUB-D, 9-pin
Ambient temperature Transport and storage temperature	0 °C ... +60 °C -25 °C ... +75 °C
Protection rating	IP 20

Ordering Data	Order No.
Active PROFIBUS connecting cable for PG with 90° PROFIBUS connector, 3 m (incl. manual)	**700-901-4BD00**
for PG with 35° PROFIBUS connector, 3 m (incl. manual)	**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.
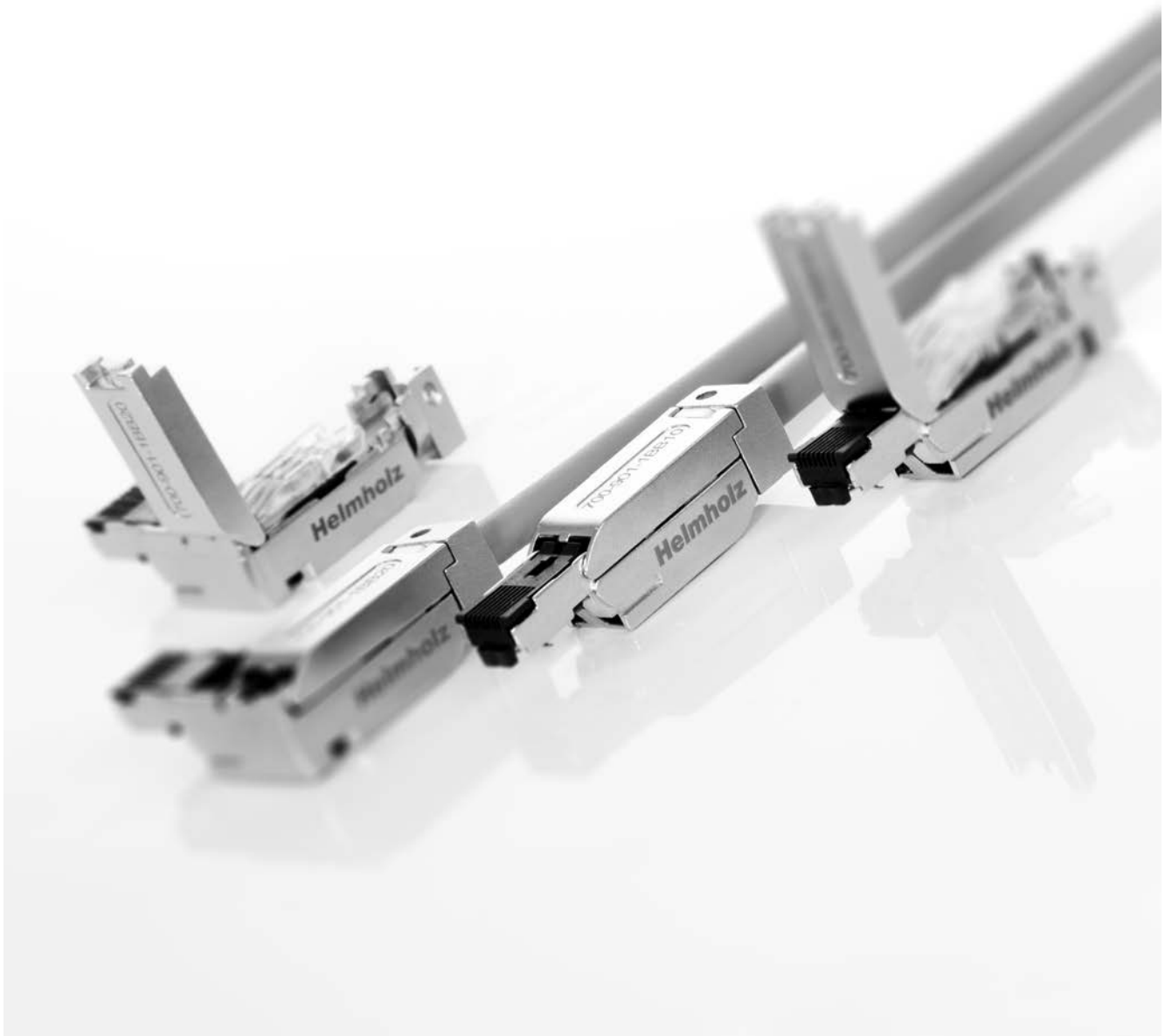
PROFINET

Connectors
PN/CAN Gateway

PROFINET connector, RJ45, **EasyConnect**®

Features

- **EasyConnect**® connection for 4-wire twisted-pair cable
- Color-coded connector contact elements help to prevent connection errors
- Visual connection control
- Industrial-grade metal housing
- Transmission rates up to 100 Mbps
- **EasyConnect**® RJ45 connection for industrial applications

Using quick-connect technology **EasyConnect**®, the PROFINET connectors connect components such as a PROFINET station with a PROFINET cable of up to 100 m length.
The PROFINET connectors are available with axial and angled cable outlet. They are quick to install and are designed in the protection rating IP20.

Technical specifications	
Dimensions in mm (D x W x H) Order No. 700-901-1BB10 Order No. 700-901-1BB20	56.5 x 16.4 x 14.0 43.5 x 40.5 x 16.2
Weight Order No. 700-901-1BB10 Order No. 700-901-1BB20	Approx. 30 g Approx. 35 g
Cable outlet Order No. 700-901-1BB10 Order No. 700-901-1BB20	180° 90°
Transfer rate max.	100 Mbps
Interfaces PROFINET	RJ45
Maximum outside diameter	6.7 mm
PROFINET cable	4 x AWG 24 or AWG 22
Connector type	**EasyConnect**®
Ambient temperature Transport and storage temperature Relative humidity max.	-20 °C ... +70 °C -40 °C ... +80 °C 95 %
Protection rating	IP 20

Ordering Data	Order No.
PROFINET connector, RJ45, 180° **EasyConnect**®, 10/100 Mbps	**700-901-1BB10**
PROFINET connector, RJ45, 90° **EasyConnect**®, 10/100 Mbps	**700-901-1BB20**

The PROFINET connectors are also available in packs of 10 pieces.

PN/CAN Gateway

Features

- PROFINET IO device as per IEC 61158-6-10
- Integrated 2-port switch
- Full duplex 100 Mbps transmission rate
- Conformance class B
- Media Redundancy Protocol (MRP)
- Up to 127 CANopen® participants
- Up to 1 Mbps CAN baud rate
- Easy configuration via GSDML file, no handling blocks or parameterization software necessary
- CANopen® master and CAN layer 2 possible
- Up to 16 PDOs per CANopen® slave
- SDO communication, emergency messages, participant monitoring with heartbeat and node guarding
- Extensive diagnostic functions
- 3 two-color status LEDs
- USB interface for online diagnostics and firmware update
- DIN rail mounting

The PN/CAN Gateway connects CANopen® devices in a PRO-FINET network. At the same time, it is a full-fledged CANopen® master.

As the master, it supports gateway network management, SYNC telegrams, and node guarding / heartbeat for monitoring the participants.

On the PROFINET network, the PN/CAN Gateway is a PROFINET IO device that supports transfer rates up to 100 Mbps full duplex, and on the CAN Bus up to 1 Mbps is supported.

The IO data (PDOs) of the CANopen® participants is transparently displayed in a freely configurable manner in the PROFINET network and can be processed directly in the PLC.

The PN/CAN Gateway is integrated with a GSDML file in the hardware configurator and can be completely configured there. Other software tools for parameterization or handling blocks for programming are not required.

Parameterization of the CANopen® participants using SDO telegrams and management of emergency messages is also possible.

Technical specifications	
Dimensions in mm (D x W x H)	35 x 83 x 72
Weight	Approx. 160 g
Power supply Voltage	24 V
Current draw max.	250 mA
CAN interface Type	ISO/DIN 11898-2 CAN high-speed physical layer
Transmission rate	10 kbps to 1 Mbps
Protocol	CANopen® master
Connection	Connector, SUB-D, 9-pin
PROFINET interfaces	
Protocol	PROFINET IO as per IEC 61158-6-10
Equipment	Ethernet
Transmission rate	100 Mbps full duplex
I/O image size	Up to 1440 bytes
Connection	2 x RJ45, integrated switch
Features	Conformance class B, Media Redundancy Protocol (MRP), automatic addressing / topology detection (LLDP, DCP)
Status indicator	3 two-color LEDs
Ambient temperature Transport and storage temperature	0 °C ... 60 °C -25 °C ... 75 °C
Protection rating	IP 20

Ordering Data	Order No.
PN/CAN Gateway, PROFINET/CANopen® (incl. CD with software and manual)	700-670-PNC01

Application example PN/CAN Gateway

NETLink® gateways

Ethernet gateways
WLAN gateways
High-speed USB gateways
for MPI/PPI/PROFIBUS

NETLink® PRO PoE, PROFIBUS Ethernet gateway

Features

- RFC 1006 (ISO on TCP)
- CPU-to-CPU communication (with S7-300[1] and S7-400[1])
- Powered Device (PD) as defined in IEEE Standards 802.3af (POE) and 802.3at (POE+)
- Support for all common S7 engineering tools
- Dynamic address assignment using DHCP
- Security functions for securing TCP/IP access
- PLC write protection feature can be enabled and disabled
- Up to 16 TCP connections
- Up to 32 MPI/PROFIBUS connections
- Easy configuration via web interface
- Variables can be monitored on a browser window
- Support for configuring slave parameters
- Electrical isolation for MPI/PPI/PROFIBUS
- MPI/PPI/PROFIBUS from 9.6 kbps to 12 Mbps
- For S7-200[1], S7-300[1], S7-400[1]

• With Power over Ethernet capabilities

The NETLink® PRO PoE for programming, configuring, and visualizing S7 PLCs draws its supply voltage through the CPU of the automation device, or optionally via externally supplied DC 24 V or a CAT5 network cable using a PoE power supply unit.
The 1.2 m long connecting cable is designed as an active cable and therefore does not affect bus participants installed in the system.
In general, the connection to each MPI/PROFIBUS connection of the bus system or directly at the interfaces of active and passive participants is also possible. The PG socket integrated in the connector housing allows connection of additional devices.
The NETLink® PRO PoE enables the implementation of TCP/IP on MPI/PPI/PROFIBUS with up to 32 simultaneous connection channels. With the switchable single-master operation, passive bus participants can be addressed. The integration of SCADA, HMI, and OPC applications is possible via the widely used ISO on TCP (RFC 1006) protocol. The applications are automatically detected and forwarded by the NETLink® PRO PoE.
The integrated web interface offers parameterization, diagnostic, and security features, and for functional enhancements the user can use our free diagnostic software SHTools to automatically perform firmware updates, for example. The software's latest version is available for download at 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, 35° cable connector 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 adapter,** 24 V, for SSW7, NETLink® and REX 300 devices	700-751-HSH01 700-751-SNT01
NETLink® Ethernet Variants Manual, German/English	900-88X-MPI21

Technical specifications	
Dimensions in mm (D x W x H)	102 x 54 x 30
Weight	Approx. 180 g
Power supply Voltage	DC 24 V ±25 %
Operating voltage PoE	48 V as per IEEE 802.3af/at
PoE power class	Class 1 (0.44 to 3.84 Watt)
PoE+	Type 1 (see 802.3af)
Current draw max.	150 mA
Communication interface Type	10 Base-T 100 Base-TX
Socket	RJ45
Transmission rate	10/100 Mbps autom. detection
MPI/PPI/PROFIBUS Type	RS485, isolated
Transfer rate max.	12 Mbps autom. detection
Connector	SUB-D, 9-pin with PG interface and repeater
Protocols	FDL, RFC 1006
Ambient temperature	0 °C ... 60 °C
Displays	3 LEDs, 2 of them bi-color
Protection rating	IP 20

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

NETLink® PRO Compact, PROFIBUS Ethernet gateway

NETLink® PRO Compact, PROFIBUS Ethernet gateway

Features

- RFC 1006 (ISO on TCP)
- CPU-to-CPU communication (with S7-300[1] and S7-400[1])
- Power can be supplied by the CPU or, alternatively, by an external DC 24 V supply
- Support for all common S7 engineering tools
- Dynamic address assignment using DHCP
- Security functions for securing TCP/IP access
- PLC write protection feature can be enabled and disabled
- Up to 16 TCP connections
- Up to 32 MPI/PROFIBUS connections
- Easy configuration via web interface
- Variables can be monitored on a browser window
- Support for configuring slave parameters
- Electrical isolation for MPI/PPI/PROFIBUS
- MPI/PPI/PROFIBUS from 9.6 kbps to 12 Mbps
- For S7-200[1], S7-300[1], S7-400[1]

• Featuring an integrated, web inter-face-based diagnostics function

The NETLink® PRO Compact combines flexibility with a compact design. Power is supplied to the NETLink® through the CPU of the automation device or externally with DC 24 V as an option. The network connection can be used with any standard Cat-5 cable, making cable lengths up to 100 meters feasible without additional components.
In general, the connection to each MPI/PROFIBUS connection of the bus system or directly at the interfaces of active and passive participants is also possible.
The PG socket integrated in the connector housing allows connection of additional devices. The NETLink® PRO Compact enables conversion from TCP/IP to MPI/PPI/PROFIBUS with up to 32 simultaneously open connection channels, and passive bus participants can be addressed with the switchable single-master operation.
The integration of SCADA, HMI, and OPC applications is possible via the widely used ISO on TCP (RFC 1006) protocol. The applications are automaticall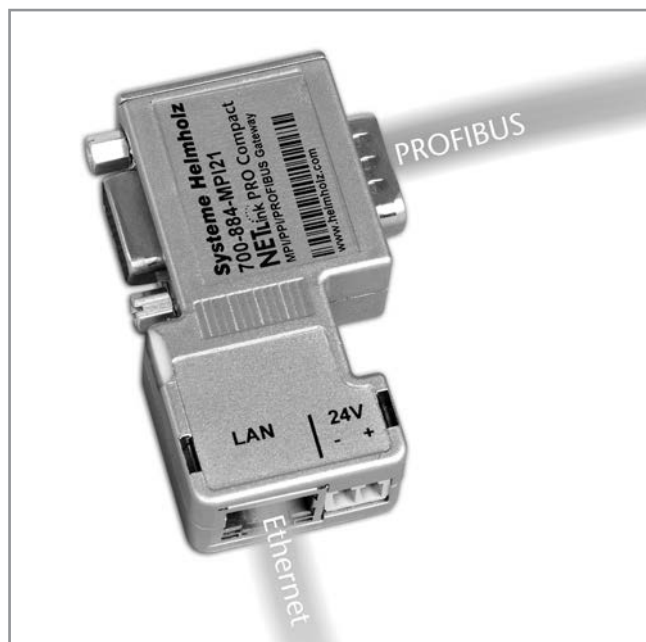y detected and forwarded by the NETLink® PRO Compact. The integrated web interface offers parameterization, diagnostic, and security features, and for functional enhancements the user can use our free diagnostic software SHTools to automatically perform firmware updates, for example. The software's latest version is available for download at www.helmholz.com.

Technical specifications	
Dimensions in mm (D x W x H)	64 x 40 x 17
Weight	Approx. 110 g
Power supply Voltage	DC 24 V ±25 %
Current draw max.	200 mA
Communication interface Type	10 Base-T 100 Base-TX
Socket	RJ45
Transmission rate	10/100 Mbps Autom. detection
MPI/PPI/PROFIBUS Type	RS485, isolated
Transfer rate max.	12 Mbps, autom. detection
Connector	SUB-D, 9-pin with PG interface and repeater
Protocols	FDL, RFC 1006
Ambient temperature	0 °C ... 60 °C
Displays	2 LEDs, including a three-color LED (for general status information)
Protection rating	IP 20

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
NETLink® Ethernet Variants Manual, German/English	900-88X-MPI21

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

NETLink®
PRO Compact

Communication/
Logging

SCADA

3 m cable

or

Programming

S7

30 m cable

or

Teleservice

up to 100 m cable

Application example NETLink® PRO Compact

SCADA

WAN

Internet

Router

LAN

S7
programming
software

Ethernet TCP/IP

USB

NETLink® Gateways

NETLink® PRO PoE

NETLink® WLAN

NETLink® PRO Compact

NETLink® USB Compact

MPI/PPI/PROFIBUS

PLC

PLC

PLC

Operator Panel

Application Example Using a LAN-WAN Connection via ISO on TCP

NETLink® WLAN, PROFIBUS Ethernet WLAN gateway

The antenna shown here is not included!

NETLink® WLAN, PROFIBUS Ethernet WLAN gateway

Features

- RFC 1006 (ISO on TCP)
- CPU-to-CPU communication (with S7-300[1] and S7-400[1])
- WLAN port (802.11 b/g) with speeds of up to 54 Mbps can be enabled and disabled
- Support for all common S7 engineering tools
- Dynamic address assignment using DHCP
- Security functions for securing TCP/IP access
- PLC write protection feature can be enabled and disabled
- Up to 16 TCP connections
- Up to 32 MPI/PROFIBUS connections
- Easy configuration via web interface
- Web interface diagnostic page with a layout that is easy to follow and understand
- Variables can be monitored on a browser window
- Support for configuring slave parameters
- Electrical isolation for MPI/PPI/PROFIBUS
- MPI/PPI/PROFIBUS from 9.6 kbps to 12 Mbps
- For S7-200[1], S7-300[1], S7-400[1]

• Flexible wireless communications in "ad-hoc" or "infrastructure mode"

The NETLink® WLAN is an Ethernet Gateway with integrated WLAN function. As an alternative to the RJ45 socket, the required "Ad-hoc" or "Infrastructure" mode can be parameterized using the web interface. There is support for all standard wireless security methods, such as WEP, WPA, and WPA2. The NETLink® WLAN obtains its supply voltage from the CPU of the automation device or optionally from externally supplied DC 24 V.

The 1.2 m long connecting cable is designed as an active cable and therefore does not affect bus participants installed in the system. In general, connection to each MPI/PROFIBUS connection of the bus system or directly at the interfaces of active and passive participants is also possible. The PG socket integrated in the connector housing allows connection of additional devices. The NETLink® WLAN enables implementation of TCP/IP on MPI/PPI/PROFIBUS with up to 32 simultaneous connection channels. With the switchable single-master operation, passive bus participants can be addressed. The integration of SCADA, HMI, and OPC applications is possible via the widely used ISO on TCP (RFC 1006) protocol. They are automatically recognized and forwarded by NETLink® WLAN.

The integrated web interface offers parameterization, diagnostic, and security features, and for functional enhancements the user can use our free diagnostic software SHTools to automatically perform firmware updates, for example. The software's latest version is available for download at www.helmholz.com.
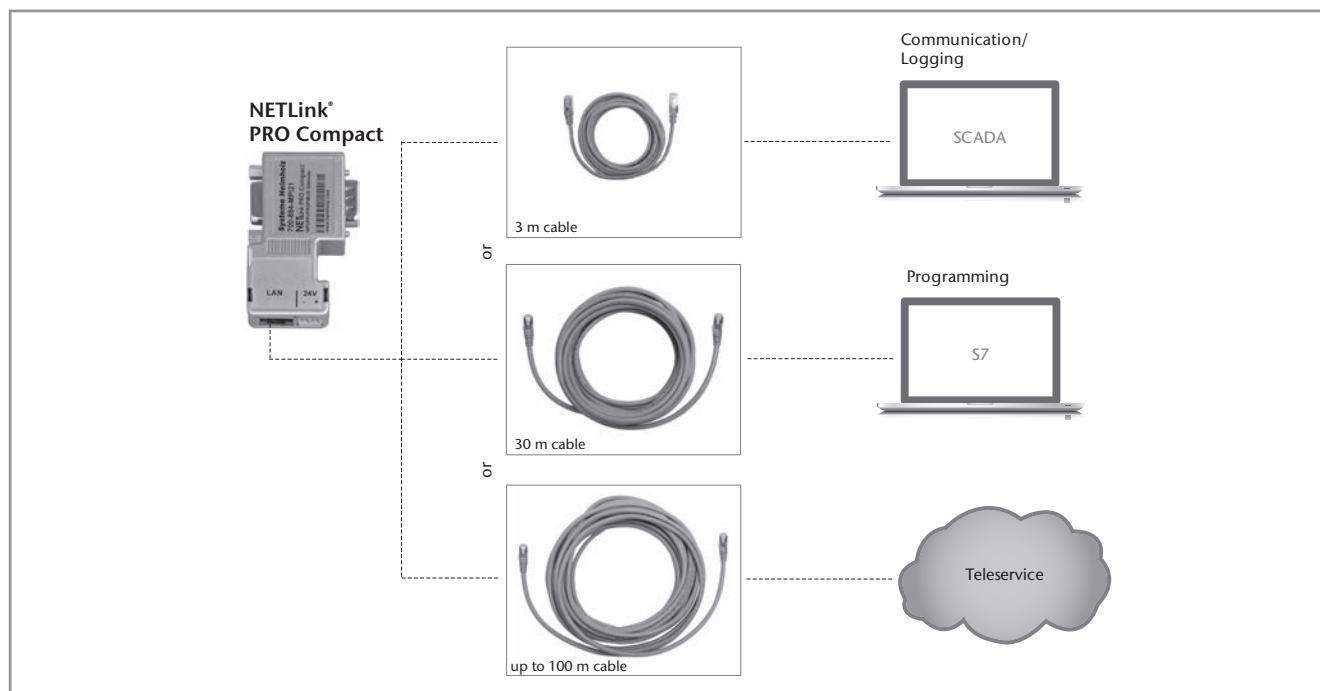
Accessories note
For antennas, see page 46.

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 adapter**, 24 V, for SSW7, NETLink®, and REX 300 devices	700-751-HSH10 700-751-SNT01
NETLink® Ethernet Variants Manual, German/English	900-88X-MPI21

Technical specifications	
Dimensions in mm (D x W x H)	130 x 68 x 30
Weight	Approx. 280 g
Power supply Voltage	DC 24 V ±25%
Current draw typ.	200 mA
Communication interface Type	10 Base-T 100 Base-TX
Socket	RJ45
Transmission rate	10/100 Mbps autom. detection
WLAN Type	IEEE 802.11b; 802.11g
Frequency range	2.412 ... 2.484 GHz
Transmission power	14 dBm +1.5 dBm/-1.0 dBm
Transmission speed	54 Mbps
Wireless security methods	WEP, WPA, WPA2
MPI/PPI/PROFIBUS Type	RS485, isolated
Transfer rate max.	12 Mbps autom. detection
Connector	SUB-D, 9-pin with PG interface and repeater
Protocols	FDL, RFC 1006
Ambient temperature	0 °C ... 60 °C
Displays	5 LEDs, 2 of them bi-color
Protection rating	IP 20

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

Application example NETLink® WLAN "Infrastructure" mode

Application example NETLink® WLAN "Ad hoc" mode

Ø max. 13 mm

192 mm

Cable 1.5 m

5 dBi magnetic base antenna

Ø 20 mm

390 mm

N-type/female

Omni 8 dBi antenna; incl. wall mount

Installation height: 30 mm

107 mm

94 mm

N-type/female

Panel 8 dBi antenna

Installation height: 50 mm

263 mm

263 mm

N-type/female

Panel 18 dBi antenna

To optimize the reception performance of the PROFIBUS wireless system viBlu and NETLink® WLAN, we offer a selection of different antennas. Depending on the antenna design, appropriate connection cables can be purchased.

When planning a wireless link, it is necessary to consider both with a mobile and stationary installation that the range may be influenced more or less by obstacles and the surrounding buildings. Due to the maximum transmission power of 100 mW in the 2.4 GHz range, wireless links of 10 to 30 meters are possible in buildings. Outdoors, 100 to 300 meters are considered realistic with line-of-sight connections.

With a directional panel antenna, wireless links exceeding 300 meters are also possible under optimum conditions.

Magnetic base antenna 5 dBi
For mounting on smooth magnetic surfaces. The action radius is increased by the permanently mounted 1.5-meter-long connecting cable. The magnetic base can be unscrewed. In this way the dipole can also be operated directly on the WLAN module, which is especially suitable for medium distances with clear line of sight. With the integrated articulated joint, the circular antenna can always be aligned correctly.

Omni-directional antenna 8 dBi
This omni-directional antenna protected by the sturdy GRP pipe is delivered with a mounting bracket for mounting it on masts or walls – preferably outdoors.
For best omni-directional characteristics, metallic surfaces and obstacles in the vicinity of the antenna should be avoided. For the N-type connector, a cable available in the accessories is required.

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 is significantly improved by this design. The corresponding fixtures are included. For the N-type connector, a cable available in the accessories is required.

Ordering Data	Order No.
Antennas for WLAN/Bluetooth	
2.4 GHz antenna with magnetic base, 5 dBi incl. 1.5 m cable	700-889-ANT01
2.4 GHz Omni 8 dBi antenna, antenna cable required	700-889-ANT02
2.4 GHz Panel 8 dBi antenna, antenna cable required	700-889-ANT03
2.4 GHz Panel 18 dBi antenna, antenna cable required	700-889-ANT04
Antenna cable for WLAN/Bluetooth	
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

What is CPU-to-CPU communication?

You can use S7 basic communication in order to implement a CPU-to-CPU connection. The MPI and PROFIBUS connection types are supported on all S7-300[1] and 400[1] PLCs.

The firmware of Siemens CPUs has system functions (SFCs) for transmitting data between two stations. All NETLink® Ethernet gateways support the S7 mechanisms X_PUT and X_GET (read and write data from/to a communication partner outside the local S7 station).

For this type of client-server communication, the well-known RFC1006 transport protocol (ISO on TCP) is used. On the receiving side (client), CPs or PROFINET CPUs that also support this protocol can also be used, for example.

The connections are not configured, but are explicitly established for the SFC call. A connection resource is therefore permanently assigned only for communication on the "active" side. The "passive" side responds to the requests of the active party and therefore only requires a resource when it establishes a connection. In use, this results in the advantage that function calls only need to be saved on the active side (server).

If a previously configured X_PUT/X_GET process is to be expanded by TCP/IP, only one additional X_PUT (with the parameters for the remote station – see graph on the bottom left) will be included in the program execution to open the communication channel via a NETL ink® Ethernet gateway.

The amount of transferable useful data per communication order is limited to 76 bytes throughout the system.

For configuration support (also for beginners), Helmholz provides simple example projects for the STEP[1] 7 programming software at no cost. Based on the associated application description, the CPU-to-CPU communication can be realized in just a few steps.
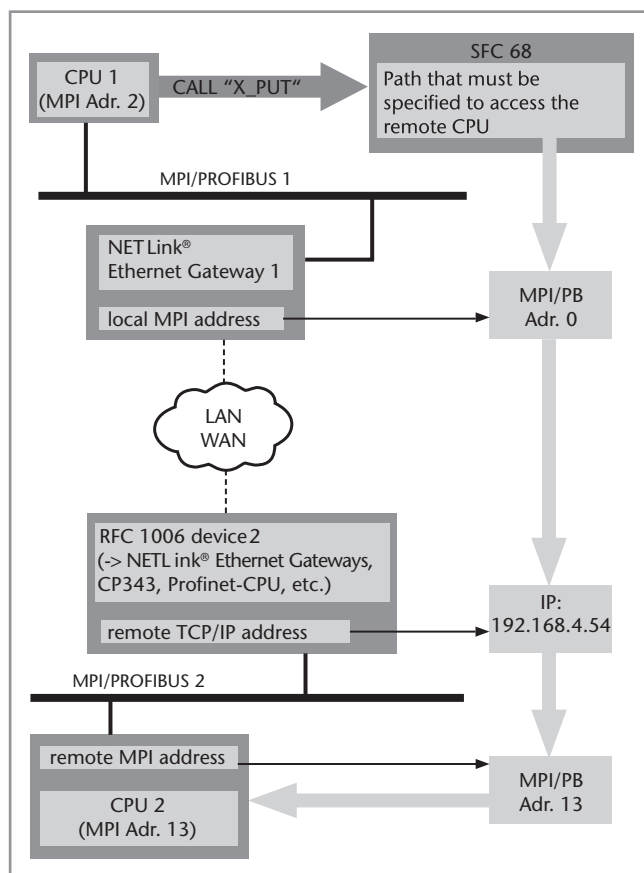
Ethernet CPU/CP to MPI/PROFIBUS

As a function extension, all NETL ink® Ethernet gateways now support the asynchronous data exchange function with the Siemens communication modules SFB14 ("GET") and SFB15 ("PUT").

These system function blocks are available in the Siemens CPUs and forward the readout or writing tasks through the NETL ink® adapter, which is connected to the MPI or PROFIBUS interface of a remote CPU.

For this type of CPU-to-CPU communication, the network cable can be connected directly to an Ethernet CPU/CP with NETL ink®. The corresponding non-specific S7 connection is assigned in the NetPro configurator using a PC station. Helmholz also provides an application description and a simple example project for this. A general function description can also be found in the original Siemens documentation.
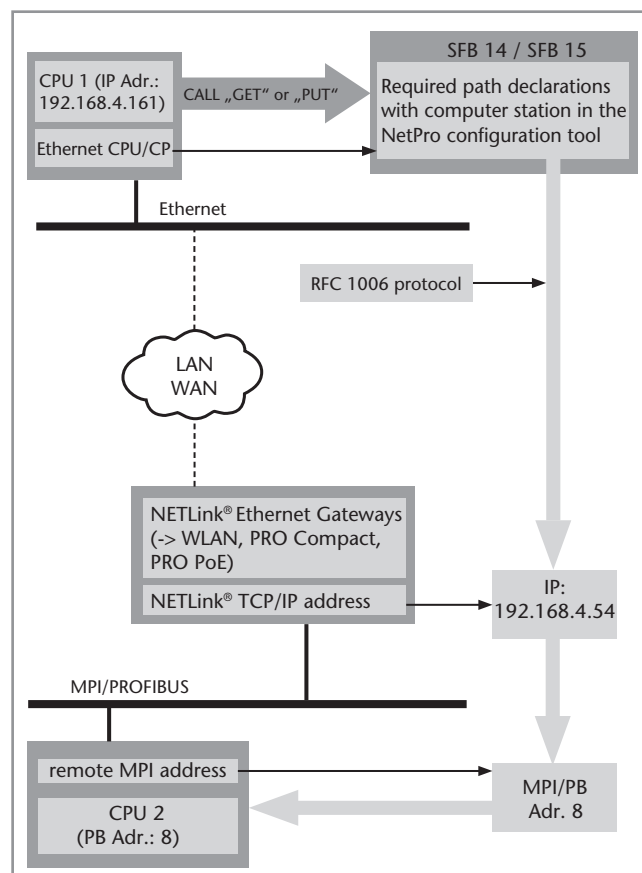
1) S7-200, S7-300, S7-400, and STEP are registered trademarks of Siemens AG.

NETLink® USB Compact, mini PROFIBUS USB gateway

• The industry's mobile plug-and-play programming tool of choice

The NETLink® USB Compact combines flexibility and a compact design with the advantages of plug and play. It can be integrated on each MPI/PROFIBUS interface of the bus system.
The PG socket integrated in the housing allows connection of additional devices. The connection to the PC is established with the 3 m high-speed USB cable.
The NETLink® USB Compact is supplied with voltage by the USB bus; on the USB side, the full-speed (12 Mbps) and high-speed (480 Mbps) protocols are supported.
The NETLink® USB Compact enables the implementation of a USB interface to the MPI/PROFIBUS for programming or visualization, with the full transmission rate of up to 12 Mbps and a maximum of 32 simultaneous links.
The baud rate is detected automatically, and in single-master operation passive bus participants can be addressed. The supplied driver automatically integrates with the S7 Engineering Tools.
In addition, the MPI/PPI/PROFIBUS is electrically isolated from the USB interface (function separation).
SHTools is included as configuration and diagnostics software. This means that a firmware update can be performed automatically at any time for function extensions.
The software's latest version is available for download at no charge at www.helmholz.com.

Features

- Support for all common S7 engineering tools
- Up to 32 MPI/PROFIBUS connections
- Support for configuring slave parameters
- Electrical isolation for MPI/PPI/PROFIBUS
- MPI/PPI/PROFIBUS from 9.6 kbps to 12 Mbps
- USB 2.0 with speeds of up to 480 Mbps (high-speed)
- Does not require a separate power supply
- Comes with female PG connector as standard
- For S7-200[1], S7-300[1], S7-400[1]
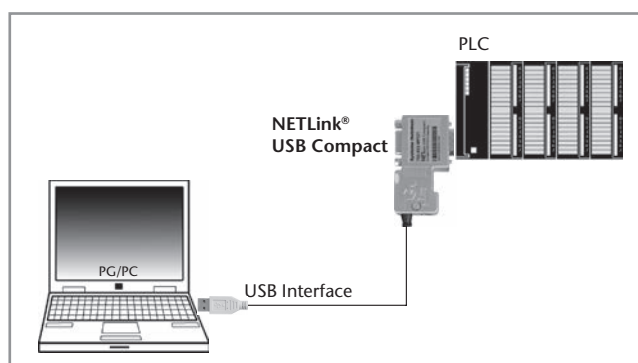
Application example for NETLink® USB Compact

Technical specifications	
Dimensions in mm (D x W x H)	64 x 40 x 17
Weight	Approx. 115 g
Power supply Voltage	DC 5 V USB
Current draw typ.	200 mA with DC 5 V USB
Communication interface Type	USB 2.0
Connector	USB-A socket
Transmission rate	12 Mbit full-speed/ 480 Mbit high-speed
MPI/PPI/PROFIBUS Type	RS485, electrically isolated
Transfer rate max.	12 Mbps, autom. detection
Connector	SUB-D, 9-pin with PG interface
Protocols	FDL
Ambient temperature	0 °C ... 60 °C
Displays	2 LEDs, including a three-color LED (for general status information)
Protection rating	IP 20

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

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

Quick access to S7/S5 data with 32/64-bit PC architecture

In the S7/S5 OPC server from version 4.10, the number of supported operating systems has been extended. It provides quick and convenient access to the process data of your PLCs.
After installation on a Windows PC (XP/2003/Vista/2007/2008), the standardized OPC interface is available for data exchange with the following controllers, among others: S7-200[1]/300[1]/400[1], LOGO! 0BA7, WinAC[1], C7, and S5-CPUs of the U series.
In this way any OPC-compliant client application can read and write the required input/output data, data blocks, markers, timers, and counters into the S7/S5 controllers.
Addressing of the variables is consistently carried out in the familiar S7 semantics and can, if desired, be imported directly from an Excel file or an S7 project.
An existing control program in your PLC does not need to be adapted for communication with the S7/S5 OPC server. This means that no detailed knowledge about the specific PLC program is required.

Flexible connectivity

For connecting your controllers to the S7/S5 OPC server, there are a variety of options available, such as TCP/IP, PROFIBUS, MPI, PPI, or AS511. In the S7/S5 OPC server configuration menu, up to 16 communication devices can be activated, with which parallel data exchange can then be implemented. Using the communication protocol TCP/IP (RFC1006), simultaneous access to up to 256 controllers is also possible in the maximum expansion stage.
For communication, Helmholz offers the following communication adapters:

- All products in the REX and NETLink® family
- SSW7, SSW7-TS, SSW7-USB for MPI
- SSW3, SSW4 and SSW5 for AS511

Some communication modules from other manufacturers, such as Siemens CP 243, 343, and 443, are also supported. Through improved license management, the USB driver supplied with the hardware dongle has been optimized for use in virtual machines (vmware[3], ESX[3], etc.).

Integrated web server

The S7/S5 OPC server has a built-in web server. This can be used for diagnosing the OPC server functions as well as for providing their own websites for operation and monitoring using any standard browser.
The architecture and performance of the Web server is designed for smaller visualizations.
In addition to supporting OPC Data Access 1.0a, 2.05, and 3.0, starting with this version non-Windows-based applications can use the S7/S5 OPC server using OPC XML DA.
The current OPC server version[2] (incl. all technical information) is available for download at www.helmholz.com.

Windows[1] OPC client via COM/DCOM	XML OPC client via HTTP	Web browser via HTTP	

S7 / S5 OPC server					
MPI	PB	TCP/IP	PC/CP	TCP/IP	
S7-300[1] S7-400[1] via MPI adapter SSW7 or NETLink® gateways	S7-200[1] S7-300[1] S7-400[1] via NETLink® gateways; WinAC[1] via PROFIBUS card	S7-200[1] S7-300[1] S7-400[1] with NETLink® gateways; S7-1200[1] LOGO! 0BA7 WinAC[1] via TCP/IP	S7-200[1] S7-300[1] S7-400[1] via Siemens CP 5511 CP 5512 CP 5611 CP 5613 CP 5614	S5-115U up to 155U via TCP/IP or SSW5 adapter	Direct reading of the S7 project file through access to symbolic operands

Application example for OPC Server

Ordering Data	Order No.
S7 OPC server with USB dongle	800-880-OPC41

Teleservice

VPN portal
Ethernet routers
Modems
Adapters for teleservice
Teleservice modules
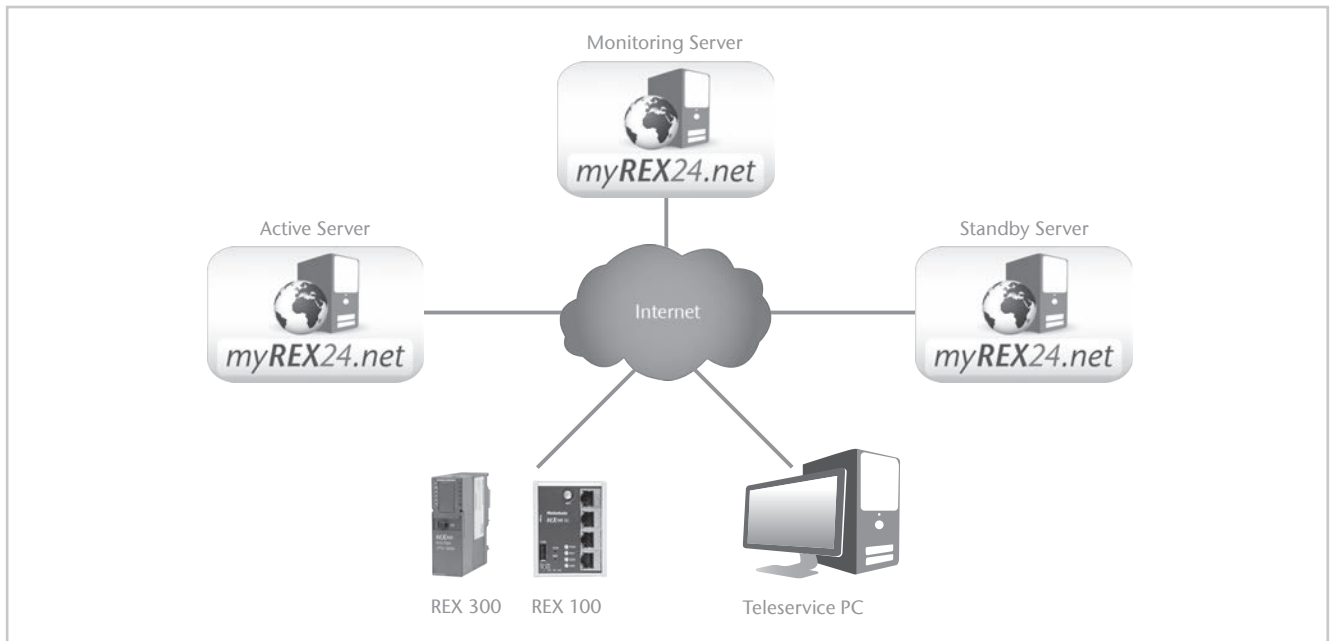
Redundant server architecture

myREX24, VPN Portal

The VPN portal myREX24 serves as a mediation server for VPN communication between the provider of teleservice and the customer facility:

This means both sides can establish the VPN tunnel as an outgoing connection.

Firewalls and limitations of services or mobile operators are thus no longer an issue, because these only limit data traffic into the network and not out of the network. The outgoing connections are briefly on hold until the VPN tunnel is established, and then the actual communication takes place there.

In order to use the myREX24 system, all that is required is an Internet connection and an access account, which is set up once. The configuration of the router is also created on the portal and can then be easily transferred onto the REX router.

The myREX24 VPN 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 %.

The advantages

- Redundant portal hosting (>99 % availability)
- shDIALUP software for easily establishing a connection from your computer
- Configuration of the REX router on the myREX24 VPN portal
- User and permissions management system
- 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
- SMS wake-up with shSMS via myREX24

Note
For more information and ordering data, see page 57.

myREX24 company edition

Do you want your own mediation server for your company?
Is your IT department demanding a closed system?
Do you need complete system performance for your own teleservice applications?
Do you need special functions?
Then use the "company edition" of myREX24. We host the system exclusively for you in a professional data center.

How you benefit

- High reliability through exclusive redundancy
- Individual customized design
- Exclusively for your business
- A variety of service options

Note
For more information and ordering data, see page 57.

REX 100, Ethernet router

Features

- Easy and quick configuration using the myREX24 VPN portal
- Using "CTM," download and activate the configuration directly from the VPN portal
- WAN/LAN and 3G/LAN variants are available
- Integrated 3- or 4-port LAN switch
- Digital inputs for establishing a connection and issuing alarms
- Space-saving compact size
- Integrated firewall
- 3G; GSM; GPRS; EDGE; UMTS; HSPA

The new industrial router REX 100 presents itself in a compact design. The less-than-palm-sized devices can be snapped into the control cabinet on every DIN rail. Nevertheless, they offer all the features you expect from a state-of-the-art teleservice solution. Regardless of the manufacturer, Ethernet participants such as PLCs can be reached with the router.
On the connection side, REX 100 variants for the transmission standards 3G (GSM) or WAN (DSL) are currently available.
The Ethernet variant of the router is equipped with a 3-port switch, and the cellular network variant with a 4-port switch.
The model series REX 100 is systematically designed to operate in conjunction with the VPN portal myREX24:
All programming and teleservice is carried out on the portal.
Data transmission is via encrypted VPN tunnel on the basis of the secure OpenVPN protocol.
In addition, the new routers have digital inputs: One serves as the trigger for establishing the connection to the portal server.

Another input can be assigned to a function for issuing alarms. This enables sending of configured REX 100 router alarm SMS text messages and e-mails. The data packets are directly forwarded to the automation network.
Another new feature is what is known as shSMS wake-up. This triggering function makes it unnecessary to send an SMS text message or press the "DIAL OUT" button to initiate the connection to myREX24 with cellular network routers. The SMS text message is instead sent to the defined cellular network number autonomously by the myREX24 portal using shSMS. Then the previously selected REX router connects with the myREX24 portal. This allows the online times of the routers to be reduced, along with the transmission costs.
The router is also configured exclusively on the myREX24 portal.

Accessories note
For GSM antennas, see page 63.

Cyclic check whenever there is an Internet connection

2. The configuration is downloaded and activated

1. Create/edit the REX 100 configuration and deposit it in the CTM

myREX24.net

Internet

Service technician on the go

Teleservice PC
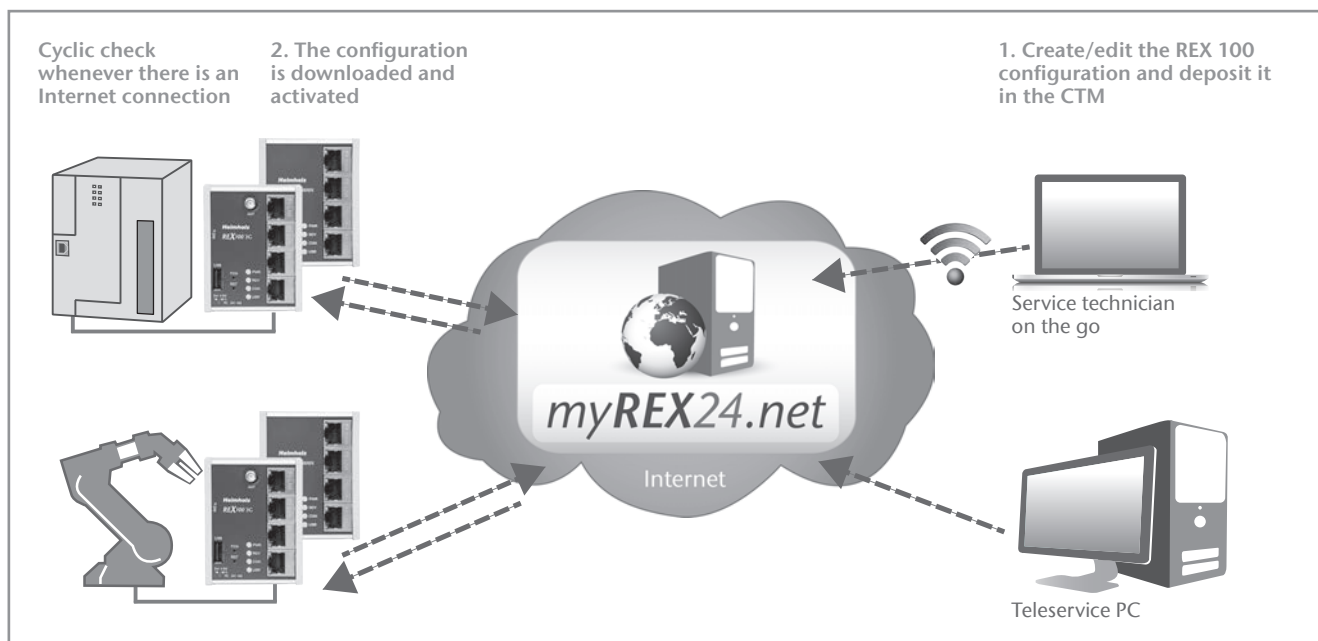
REX 100 – Comparison of variants	3G	WAN
WAN port		✓ 1 x
LAN port	✓ 4 x	✓ 3 x
3G connection (via GPRS/EDGE/3G/HSDPA+)	✓ 1 x	
USB port	✓ 1 x	✓ 1 x
Digital input	✓ 2 x	✓ 2 x
Configuration using the myREX24 VPN portal	✓	✓
SMS wake-up functionality	✓	✓
WEB2go (access via mobile devices)	✓	✓
Inputs for issuing alarms (alarm SMS text messages and e-mails)	✓	✓

Technical specifications	
Dimensions (D x W x H)	35 x 59 x 75 mm
Weight	3G = 270 g | WAN = 250 g
GSM modem Antenna connection SIM card type GSM frequency bands UMTS frequency bands	Quad-band GPRS/EDGE data interface SMA connector (external thread) Standard Mini-SIM, 1.8 V/3 V GSM/GPRS/EDGE: 850, 900, 1800, 1900 UMTS/HSPA: 800/850, 900, AWS 1700, 1900, 2100
Data transfer rates	HSPA+ (upload: 5.76 Mbps | download: 21.0 Mbps)
Number of inputs / switching point	2/DC 24 V, as per DIN EN 61131-2 Type 2
Routers Features VPN	Firewall, NAT/PAT, SMS wake-up OpenVPN
Interfaces	3x or 4x LAN 10/100 Mbps 1x WAN 10/100 Mbit/s USB 2.0 Type A port
Voltage	DC 18 V ... DC 30 V
Current draw	Max. 250 mA with DC 24 V
Ambient temperature	0 ... +55 °C
Transport and storage temperature	-20 ... +60 °C
Protection rating	IP20
Certifications	CE, GCF, FCC, PTCRB, IC

Ordering Data	Order No.
REX 100 3G, Ethernet router, 4 x LAN (switch)/1 x 3G modem (UMTS), incl. Quick Start Guide	700-875-UMT01
REX 100 WAN, Ethernet router, 3 x LAN (switch)/1 x WAN interface, incl. Quick Start Guide	700-875-WAN01

REX 300, Ethernet router

Features

- Easy and quick configuration using the myREX24 VPN portal
- Using "CTM," download and activate the configuration directly from the VPN portal
- Remote access to Ethernet-capable devices such as PLCs, HMIs, IP cameras, etc.
- Service RS-232/RS-485 devices remotely via Internet
- Directly connect S7-MPI/PROFIBUS devices
- 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.)
- Free S7-MPI/PROFIBUS drivers
- Visualization via REX 300 Toolbox and functional enhancements possible with Lua scripts

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.
Due to its design, the REX 300 can easily be integrated into an S7 system, but if you want to mount the REX 300 on a DIN rail, this is easily possible with this mounting rail adapter for DIN rails.

Advantages of REX 300 routers used in conjunction with the myREX24 VPN portal:
1. Quick and easy configuration
2. Clearly laid-out view of your routers in the field
3. Direct and secure VPN connection through the portal

Accessories note
For GSM antennas, see page 63. In order to connect serial devices to the REX 300 with WAN port, an adapter cable is required for the serial interface required (see ordering data).

Cyclic check whenever there is an Internet connection

2. The configuration is downloaded and activated

1. Create/edit the REX 300 configuration and deposit it in the CTM

Service technician on the go

myREX24.net

Internet

Teleservice PC

REX 300 – Comparison of variants

	VPN	LAN	WAN	Analog	GPRS/ EDGE	UMTS (3G)	MPI/ PROFIBUS	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

Technical specifications	
Dimensions (D x W x H)	125 x 40 x 128 mm
Weight	Approx. 300 g
GSM modem Antenna connection SIM card type GSM frequency bands UMTS frequency bands	GPRS/EDGE/UMTS/HSDPA FME connector Standard Mini-SIM, 1.8 V/3 V GSM/GPRS/EDGE: 850, 900, 1800, 1900 UMTS/HSPA: 800/850, 900, AWS 1700, 1900, 2100
Analog modem Transmission rate Modem port Modem type Transmission standards / protocols	Hayes-compatible modem Set speed of 115.2 kbps RJ-12 port Analog interface, max. 56 kbps (V.92) V.90, V.34+, V.34, V.32bis, V.32, V.22, V.22bis, V.21, V.23
Routers Features VPN	DHCP server and client, firewall, DynDNS, NAT/PAT, SMS wake-up, visualization IPSec, PPTP, OpenVPN
Authentication PPP VPN	PAP, CHAP PSK, X.509 certificates
Encryption (VPN)	AES, DES/3DES
Interfaces	RS-232/RS-485 (device-specific) MPI/PROFIBUS up to 12 Mbps (device-specific) 10/100 Mbps LAN 10/100 Mbps WAN (device-specific) USB 2.0 Type A port
Voltage	DC 10 V … DC 30 V
Current draw	Max. 500 mA with DC 24 V
Ambient temperature	0 … +50 °C
Transport and storage temperature	-20 … +60 °C
Protection rating	IP20

Ordering Data	Order No.
REX 300, VPN + WAN, PROFIBUS, analog + serial interface (incl. telephone cable, Ethernet cable, Quick Start Guide)	700-872-MDM02
REX 300, VPN + WAN, PROFIBUS, UMTS + serial port (incl. Ethernet cable, Quick Start Guide)	700-872-UMT02
REX 300, VPN + WAN + serial port, 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, without MPI interface (incl. Ethernet cable, Quick Start Guide)	700-874-UMT02
Adapter cable serial interface (RS232) for REX 300, 3 m, 9-pin connector **Adapter cable serial interface (RS485)** for REX 300, 3 m, 9-pin connector	700-879-1VK11 700-879-1VK21
REX 300 USB stick preloaded with Toolbox and documentation (8 GB)	700-879-USB01
Mounting rail adapter for DIN rail (optional)	700-390-6BA01
Power adapter, 24 V, for SSW7, NETLink® and REX 300 devices (optional)	700-751-SNT01
REX 300 Manual, German	700-87x-REX300

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.

In addition, the ToolBox allows you to extend the functions using the simple scripting language Lua (such as for storing process data in files and sending them via e-mail or sending alarm SMS text messages)

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 messages or e-mail alarm
- Permissions management (read, write, etc.)
- A REX 300 USB stick with Toolbox and documentation preloaded is available
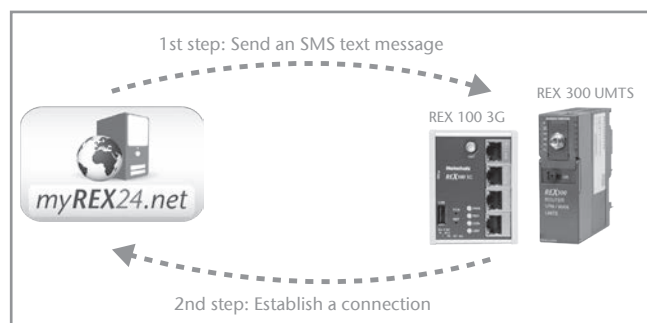
shSMS

You can use myREX24 to activate a REX GSM router with an SMS text message. The SMS text message is sent to the defined cellular network number autonomously by the myREX24 portal using shSMS.

Features

- Cost control
- Activate connections from myREX24
- Easy to use
- Phone number stored in the configuration
- For REX 100 and REX 300

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 the REX 300 Toolbox visualization.

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
- For REX 100 and REX 300

myREX24 — ordering data	Order No.
myREX24.net free Access account for myREX24.net with **one** free active[1] connection and **one** WEB2go connection and 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 One-time fee for each additional REX created after the 10th router.	800-870-REX01
myREX24.net ac1 License for 1 additional active connection[1]; expires 1 year after the invoice date.[2]	800-870-ACT01
myREX24.net ac3 License for 3 additional active connections[1]; expires 1 year after the invoice date.[2]	800-870-ACT03
myREX24.net ac5 License for 5 additional active connections[1]; expires 1 year after the invoice date.[2]	800-870-ACT05
myREX24.net ac10 License for 10 additional active connections[1]; expires 1 year after the invoice date.[2]	800-870-ACT10
myREX24.net WEB5 License for 5 additional WEB2go connections; expires 1 year after the invoice date.[2]	800-870-WEB05
myREX24.net WEB10 License for 10 additional WEB2go connections; expires 1 year after the invoice date.[2]	800-870-WEB10
myREX24.net WEB25 License for 25 additional WEB2go connections; expires 1 year after the invoice date.[2]	800-870-WEB25
myREX24.net WEB50 License for 50 additional WEB2go connections; expires 1 year after the invoice date.[2]	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
myREX24 company edition	**on request**

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

2) Term
This license will be automatically renewed for one year unless renewal is canceled at least four weeks before the license expires.

SSW7-TS, MPI adapter

SSW7-TS, MPI adapter

The SSW7-TS can be used for teleservice of your system over a modem connection. You can do this by connecting the RS232 interface of the SSW7-TS to a standard external modem (analog, ISDN, GSM).
For local use, just connect the RS232 interface of the SSW7-TS to your PC. It automatically recognizes the baud rate used by the PC (9.6 to 115.2 kBaud).
On the system side, you can connect the SSW7-TS to an MPI network with 187.5 or 19.2 kbps.
On the PC, the programming software and teleservice software are required (such as Teleservice for Simatic[1] STEP[1] 7) to parameterize the SSW7-TS when needed or to manage the modem connections. Without modem and teleservice software, the SSW7-TS can be used locally as a SSW7.
It is supplied with voltage by the MPI bus of the CPU, and can be deployed at any location in the system using an optional 24 V connection.
The SSW7-TS can also be provided with new firmware using a modem connection. This means a functional expansion of an adapter already installed in the system is also possible.
Parameterization and diagnostic functions are possible using the SHTools software.
For a firmware update, the latest SHTools version is available for free download on our website www.helmholz.com.

Features

- MPI up to 187.5 kbps
- Teleservice via external modem (analog, ISDN, GSM)
- Can be used with Hayes-compatible modems
- Password protection
- Callback function
- Remote update capability
- Use as a programming adapter on site
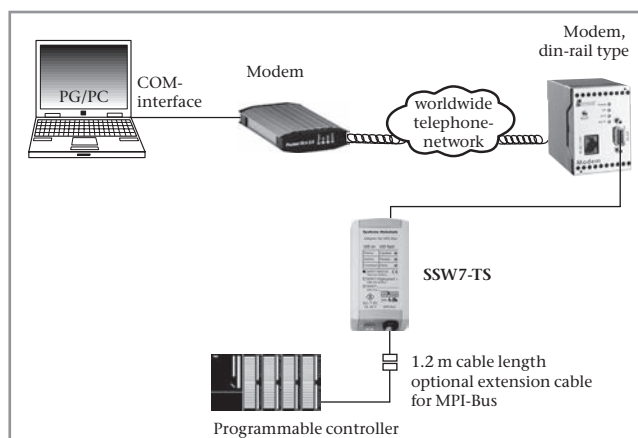
Application example for SSW7-TS

Technical specifications	
Dimensions in mm (D x W x H)	105 x 53 x 29
Weight	Approx. 180 g
Supply voltage	+24 V ±25 % from AD or external
Current draw typ. max.	30 mA 45 mA
MPI interface Type	RS485
Transmission rate	19.2 or 187.5 kbps
Connector	SUB-D, 9-pin; with PG interface and terminating resistor
Communication interface Type	RS232
Transmission type	Asynchronous serial
Transmission rate	9.6 ... 115.2 kbps
Parity	Odd
Data format	8 bits
Protocols	PC <-> S7 via modem or local
Connection	Connector, SUB-D, 9-pin
Protection rating	IP 20

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

Starting with STEP[1] 7 version 5.5 SP2, Siemens no longer supports serial COM ports under Windows 7[2] 64 bit. The TIA Portal[1] also no longer supports any COM ports, regardless of what operating system they are installed on!

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

Integrated modem

MPI up to 187.5 kbps

SSW7-TS, MPI adapter with modem analog/ISDN/GSM

Features
- MPI up to 187.5 kbps
- Teleservice and on-site use
- Password protection and callback function
- RS232 interface
- Remote update capability
- DIN rail adapter for mounting included in the delivery

Application example for SSW7-TS with analog modem

The SSW7-TS with integrated modem is an economical alternative for teleservice of an automation device 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 use worldwide. All connecting cables required for operation are included. For mobile use, or if there is no telephone line, the SSW7-TS with GSM modem (quad band) is the right choice.
Using the serial interface, the SSW7-TS with modem can also be used as a PC adapter for on-site use. The respective modem can also be used for teleservice of a VISU/SCADA application without the TS adapter function.
The SSW7-TS with modem is powered by the CPU via the MPI cable or external voltage connection.
The SSW7-TS with modem can be provided with new firmware over a modem connection using the free software SHTools. This means a functional expansion of an adapter already installed in the system is possible. The latest SHTools version is available for download at no charge at our website www.helmholz.com.

Accessories note
For the SSW7-TS with GSM modem, you need a Mini-SIM card with activated CSD (Circuit Switched Data) service from your mobile provider and a suitable GSM antenna (for antennas, see page 63).

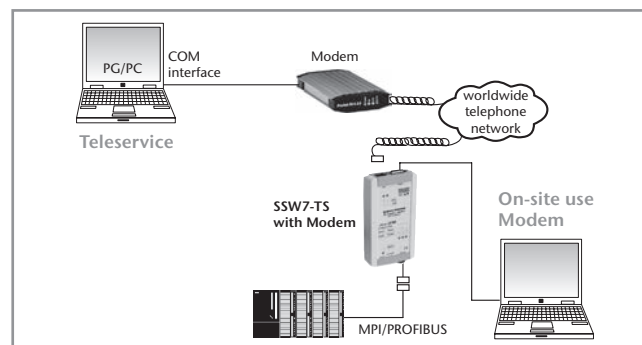| Ordering Data	Order No.
SSW7-TS with analog modem (incl. DIN rail adapter, 2 x telephone cable RJ11 + TAE, 3 m each, 3 m programming cable, manual, CD with software)	700-751-8MD21
SSW7-TS with ISDN modem (incl. DIN rail adapter, 1 x telephone cable RJ11 3 m, 3 m programming cable, manual, CD with software)	700-751-8IS21
SSW7-TS with GSM modem (incl. DIN rail adapter, 3 m programming cable, manual, CD with software)	700-751-8GS21
Power adapter, 24 V, for SSW7, NETLink® and REX 300 devices (optional)	700-751-SNT01

Technical specifications	
Dimensions in mm (D x W x H)	135 x 67 x 30
Weight	Approx. 240 g
Supply voltage	+24 V ±25 % from AD or external
Current draw	Analog/ISDN approx. 100 mA, GSM approx. 150 mA
MPI interface Type	RS485
Transmission rate	19.2 or 187.5 kbps
Connector	SUB-D, 9-pin; with PG interface and terminating resistor
Communication interface Type	RS232; 2-wire dial-up line (analog), ISDN S_0
GSM frequencies	Quad band: GSM850, EGSM900, DCS1800, PCS1900
Transmission type	Asynchronous serial
Transmission rate	9.6 ... 115.2 kbps
Protocols	PC <-> S7 via modem or local
Connection	Connector, SUB-D, 9-pin, RJ11 or SIM card holder
Protection rating	IP 20

Starting with STEP[1] 7 version 5.5 SP2, Siemens no longer supports serial COM ports under Windows 7[2] 64 bit. The TIA Portal[1] also no longer supports any COM ports, regardless of what operating system they are installed on!

1) STEP, Simatic, and TIA Portal are registered trademarks of Siemens AG.
2) Windows 7 is a registered trademark of Microsoft Corporation.
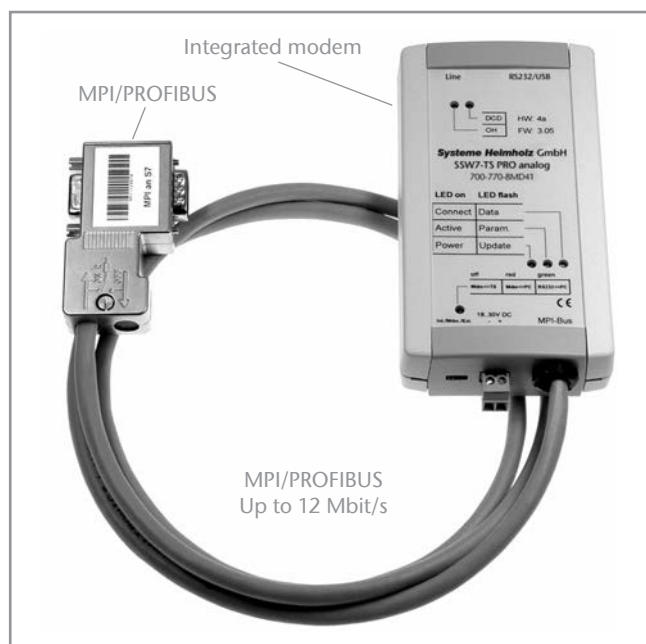
SSW7-TS PRO analog

The SSW7-TS PRO enables teleservice of an S7 system over a modem connection and supports connecting to an MPI or PROFIBUS network with up to 12 Mbps on the system side. 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 use worldwide. For mobile use, or if there is no telephone line, the SSW7-TS PRO GSM is the right choice. In addition to use as a teleservice solution, the SSW7-TS PRO can also be used as a PC adapter on-site with its RS232 or USB interface. Due to the integrated repeater, the MPI/PROFIBUS connecting cable of the SSW7-TS PRO is not a spur line. This means the adapter can be plugged at any point along the bus even at 12 Mbps.
Power is supplied to the SSW7-TS PRO through the MPI/PRO-FIBUS connecting cable or on demand via the external voltage connection.
The SSW7-TS PRO allows any number of SMS text messages to be sent. Sending of the SMS is triggered by calling the function module SMS_SEND from the automation system.
Using the free software SHTools, firmware updates can be transmitted directly and via modem connection;
the latest SHTools version is available for free download from our website www.helmholz.com.

Features

- MPI/PROFIBUS up to 12 Mbps; Autobaud
- Teleservice and on-site use
- Password protection and callback function
- RS232 and USB interface
- Remote update capability
- Any SMS text messages can be sent from the PLC

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

Accessories note

For the SSW7-TS PRO GSM, you need a Mini-SIM card with activated CSD (Circuit Switched Data) service and a suitable GSM antenna (for antennas, see page 63).

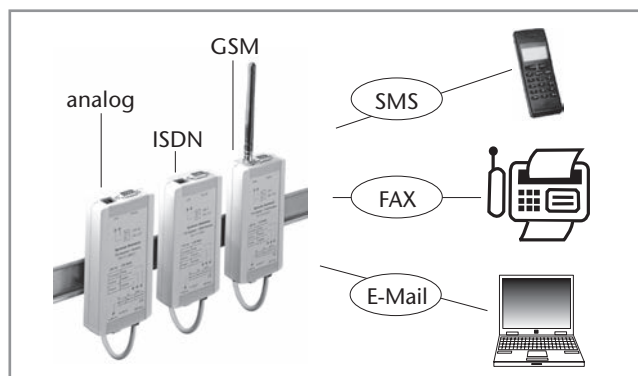| Technical specifications	
Dimensions in mm (D x W x H)	130 x 67 x 30
Weight	Approx. 240 g
Supply voltage	+24 V ±25 % from AD or external
Current draw	Approx. 130 mA
MPI/PROFIBUS interface Type	RS485
Transmission rate	9.6 kbps ... 12 Mbps
Connector	SUB-D, 9-pin; with PG interface and terminating resistor
Communication interfaces Type	RS232; 2-wire dial-up line (analog), ISDN S_0; USB
GSM frequencies	Quad band; GSM850, EGSM900, DCS1800, PCS1900
Transmission type	Asynchronous serial / USB
Transmission rate	9.6 ... 115.2 kbps
Protocols	PC <-> S7 via modem or local
Connection	Connector, SUB-D, 9-pin; RJ11; Mini-USB connector
Protection rating	IP 20

Ordering Data	Order No.
SSW7-TS PRO with analog modem (incl. DIN rail adapter, 2 x telephone cable RJ11 + TAE, 3 m each, 3 m programming cable, USB cable, manual, CD with software)	700-770-8MD41
SSW7-TS PRO with ISDN modem (incl. DIN rail adapter, 1 x telephone cable RJ11 3 m, 3 m programming cable, USB cable, manual, CD with software)	700-770-8IS41
SSW7-TS PRO with GSM modem (incl. DIN rail adapter, 3 m programming cable, USB cable, manual, CD with software)	700-770-8GS41
Power adapter, 24 V, for SSW7, NETLink®, and REX 300 devices (optional)	700-751-SNT01

Starting with STEP[1] 7 version 5.5 SP2, Siemens no longer supports serial COM ports under Windows 7[2] 64 bit.
When using the TIA Portal[1], parameterization of these products can be carried out only using SHTools.
Dialing in and teleservice of the automation device is then also possible with the TIA Portal[1].

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

TS 300, teleservice module 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 on-site use
- Password protection
- Callback function
- Remote update capability
- Alarm functions and switching outputs can be used via the backplane bus
- Operating mode switching via remote connection
- For each module, up to 2 alarm messages are sent by SMS
- Communication via backplane bus possible[3]

The TS 300 enables teleservice of a system via the MPI bus. It is inside a single-width S7 housing for mounting on the mounting rail. An analog modem that can be configured for worldwide use without an update is integrated in the housing of the TS 300. TAE and RJ11 cables are included in the scope of delivery. Alternatively, variants with ISDN or GSM modems are also available.
The TS 300 can establish an MPI connection with the CPU via the backplane bus. Power can also be supplied through the backplane bus. This means the only thing else required for installation of a teleservice solution is the telephone line. The TS 300 does not need to be configured in the hardware configuration of the PLC and can be retrofitted at any time.
Alternatively, it can be supplied externally with 24 V. The MPI connection can also be established through the front-side 9-pin Sub-D socket.
An additional USB port is used to parameterize the TS 300 for on-site use as a PC adapter or for direct use of the internal modem.
The TS 300 can also be provided with new firmware using a remote connection. This means a functional expansion of a TS 300 already installed in the system is also possible.

Parameterization and diagnostic functions are possible using the SHTools software.
For a firmware update, the latest SHTools version is available for free download on our website www.helmholz.com.

Accessories note
For GSM antennas, see page 63.

Ordering Data	Order No.
TS 300, teleservice module for the S7 Rack with analog modem incl. 3 m USB cable, 2 x telephone cable (RJ11+TAE), 3 m each, manual, CD with software	700-753-8MD21
TS 300, teleservice module for the S7 rack with ISDN modem incl. 3 m USB cable, 1 x RJ11 telephone cable 3 m, manual, CD with software	700-753-8IS21
TS 300, teleservice module for the S7 rack with GSM modem incl. 3 m USB cable, manual, CD with software	700-753-8GS21
MPI connection cable, 0.5 m **Mounting rail adapter** for DIN rail **Mounting rail** 40 mm, for module mounting	700-753-6VK11 700-390-6BA01 700-390-1XA04

Starting with STEP[1] 7 version 5.5 SP2, Siemens no longer supports serial COM ports under Windows 7[2] 64 bit. Parameterization and teleservice is no longer possible with the teleservice module integrated in the TIA Portal[1].

1) S7-300, STEP, and TIA Portal are registered trademarks of Siemens AG.
2) Windows is a registered trademark of Microsoft Corporation.
3) When using the following CPUs, the MPI functionality on the backplane bus is not recommended: S7-315 2 DP/PN, S7-317, S7-318, and S7-319 (as of: 11/2011)

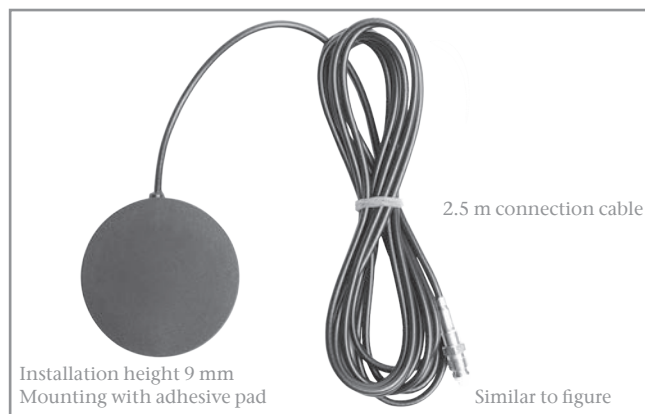| Technical specifications			
	TS 300 analog	**TS 300 ISDN**	**TS 300 GSM**
Protection rating	IP 20	IP 20	IP 20
Dimensions (D x W x H)	116 x 40 x 124 mm	116 x 40 x 124 mm	116 x 40 x 124 mm
Weight	Approx. 280 g	Approx. 280 g	Approx. 280 g
Operating voltage	DC +24 V ± 25 %, external or 5 V via backplane bus	DC +24 V ± 25 %, external or 5 V via backplane bus	DC +24 V ± 25 %, external
Current draw	Approx. 500 mA (backplane bus) Approx. 140 mA (external)	Approx. 500 mA (backplane bus) Approx. 140 mA (external)	Approx. 500 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-pin socket or via backplane bus	SUB-D, 9-pin socket or via backplane bus	SUB-D, 9-pin 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 through virtual COM port	9.6 kbps to 115.2 kbps through virtual COM port	9.6 kbps to 115.2 kbps through virtual COM port
Modem	Analog interface 56 kbps (V.92)	ISDN-S0 interface as per ITU I.430, 64 kbps	Quad band: GSM850, EGSM900, DCS1800, PCS1900
Modem port	RJ-11 socket	RJ-11 socket	3V Mini-SIM card, FME connector for antenna
SMS dispatch	2	2	2
Transmission standards	V.90, V.34+, V.34, V.32 bis, V.32, V.22, V.22 bis, V.21, V.23, BELL standard 103, 212, fax class 1, fax class 2	Transmission in the D-channel at 9600 bps (X.31-D) Transmission in the B-channel at 64,000 bps (X.31-B)	Class 4 (2W) for GSM850/ EGSM900 Class 1 (1W) for DCS1800/PCS1900
Protocols		B-channel: V.110, X75, X25/ X31, HDLC (transparent) D-channel: DSS1, X.31	
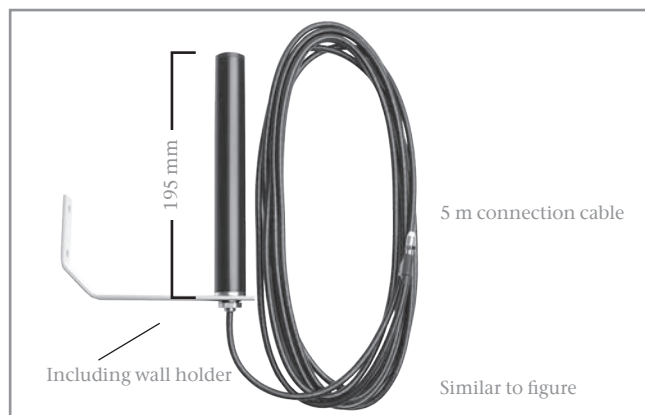
Stationary quad-band antenna for wall mounting (indoor and outdoor)

195 mm · Including wall holder · 5 m connection cable · Similar to figure
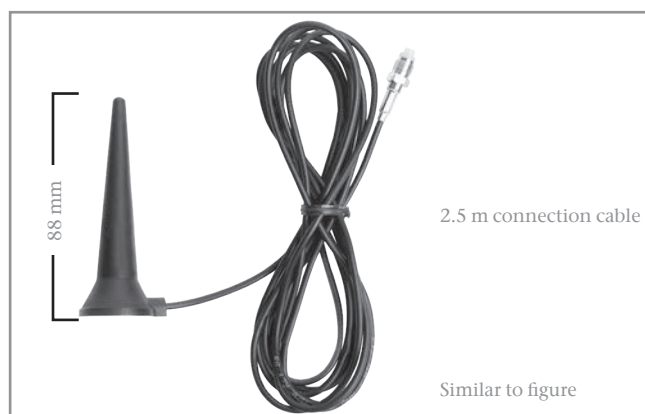
Quad-band antenna with magnetic (indoor)

88 mm · 2.5 m connection cable · Similar to figure

Adhesive triband antenna for wall or glass mounting (inside)

2.5 m connection cable · Installation height 9 mm · Mounting with adhesive pad · Similar to figure

Portable quad-band antenna for mobile use (inside)

84 mm · Similar to figure

Stationary quad band antenna
The stationary quad-band antenna is an omni-directional station antenna with up to 2 dBi gain. It is protected in a sturdy and weatherproof GFRP tube and is supplied with a fixture for wall mounting. This makes it particularly suitable for mounting on vertical surfaces. It can be used both indoors and outdoors. Metallic surfaces in the vicinity of the antenna should be avoided. The 5 m long connection cable is securely connected to the antenna.

Quad-band antenna with magnetic base
The quad-band antenna with magnetic base supports all relevant GSM radio frequencies. Thanks to the strong permanent magnets, it adheres to all level magnetic surfaces. This omni-directional antenna is ideally suited for mounting on the top or side of the control cabinet housing. The 2.5 m long connection cable provides a sufficient radius of action and is securely connected to the antenna.

Adhesive triband antenna
Adhesive triband antenna in a flat, robust design for indoor use. Mounting is with an adhesive pad, preferably on a horizontal surface. It works independently of external ground surfaces and can be mounted onto almost any material. The 2.5 m long connecting cable is securely mounted, and the outlet can be in the horizontal or vertical direction.

Portable quad-band antenna
Small quad-band omni-directional antenna for direct connection to the GSM modem. For this antenna type, an all-round minimum distance of 60 cm from other antennas or upright metal parts should be observed in use.

Note
All antennas shown here are UMTS/HSDPA compatible.

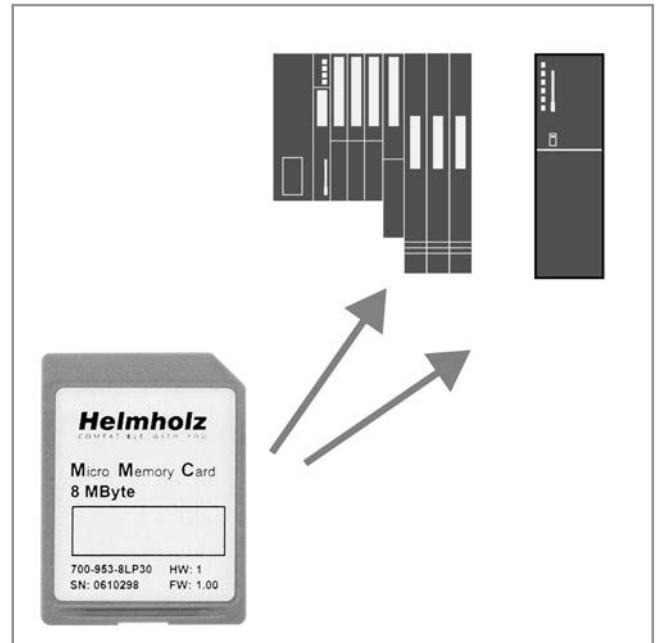| Ordering Data	Order No.
Antennas for REX 100	
Stationary quad-band antenna, GSM/UMTS, 2 dBi, 5 m cable, SMA socket	700-751-ANT21
Quad-band antenna with magnetic base, GSM/UMTS, 2 dBi, 2.5 m cable, SMA socket	700-751-ANT22
Adhesive triband antenna, GSM/UMTS, 3 m cable, SMA socket	700-751-ANT23
Portable quad-band antenna, 90° angled, GSM/UMTS, 2 dBi, SMA socket	700-751-ANT24
Antenna cable for REX 100	
GSM antenna extension cable	
SMA socket/connector, 5 m	700-751-ANK21
SMA socket/connector, 10 m	700-751-ANK22
SMA socket/connector, 15 m	700-751-ANK23
Antennas for REX 300, TS300, SSW7-TS	
Stationary quad-band antenna, GSM/UMTS, 2 dBi, 5 m cable, FME socket	700-751-ANT11
Quad-band antenna with magnetic base, GSM/UMTS, 2 dBi, 2.5 m cable, FME socket	700-751-ANT12
Adhesive triband antenna, GSM/UMTS, 2.5 m cable, FME socket	700-751-ANT13
Portable quad-band antenna, 90° angled, GSM/UMTS, 2 dBi, FME socket	700-751-ANT14
Antenna cable for REX 300, TS300, SSW7-TS	
GSM antenna extension cable,	
FME socket/connector, 5 m	700-751-ANK01
FME socket/connector, 10 m	700-751-ANK02
FME socket/connector, 15 m	700-751-ANK03
FME socket/connector, 20 m	700-751-ANK04

Components for S7

Memory cards
Micro memory cards
Digital modules
Analog modules
Front connector

Memory cards for the 1200/1500 series
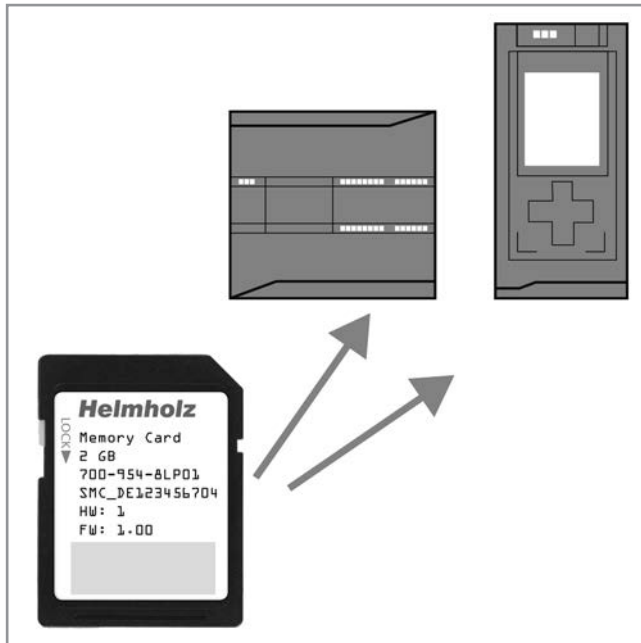
Micro memory card for the 300 series

The memory cards are suitable for use in S7-1200[1]/S7-1500[1] controllers of Siemens AG.
They are available in the following memory sizes:
4 MB, 12 MB, 24 MB, and 2 GB.

The Micro memory cards are suitable for use in the S7-300[1] and ET200S CPU controllers of Siemens AG.
Our product range includes the entire range of the most popular modules plus the special variants 256 kB and 1 MB.
The Micro memory cards are available in the following memory sizes: 64 kB, 128 kB, 256 kB, 512 kB, 1 MB, 2 MB, 4 MB, and 8 MB.

Technical specifications	
1200/1500 series memory cards	
Storage volume	4 MByte 12 MByte 24 MByte 2 GByte
Application options	CPU 1200 CPU 1500

Technical specifications	
300 series micro memory cards	
Storage volume	64 kByte 128 kByte 256 kByte 512 kByte 1 MByte 2 MByte 4 MByte 8 MByte
Application options	CPU 312C CPU 313C CPU 314C CPU 312 ... 317 IM 151, IM 153, IM 154 CPU C7

Ordering Data	Order No.
Memory cards for the 1200/1500 series	
4 MByte	**700-954-8LC01**
12 MByte	**700-954-8LE01**
24 MByte	**700-954-8LF01**
2 GByte	**700-954-8LP01**

Ordering Data	Order No.
Micro memory cards for the 300 series	
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**

1) S7-300, S7-1200, and S7-1500 are registered trademarks of Siemens AG.
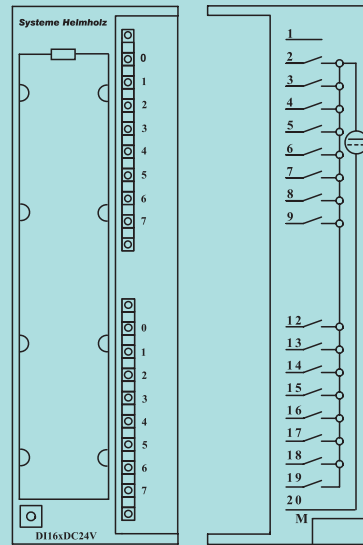
DEA 300, digital input module

Digital input module, 16 and 32 inputs

Accessories note
Front connectors and preassembled cables are available as accessories (see page 88–91).

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
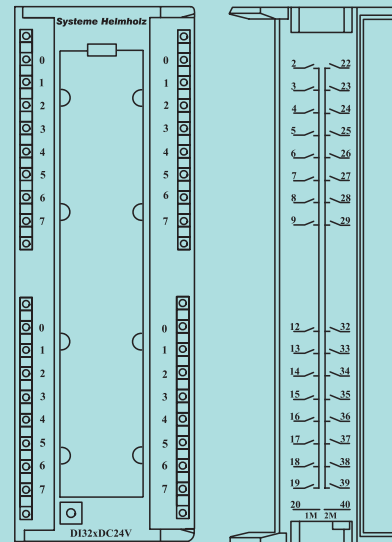
700-321-1BL00

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

Technical specifications		700-321-1BH02	700-321-1BL00
Number of inputs		16	32
Electrically isolated (from backplane bus) in groups to		Yes (optocoupler) 16	Yes (optocoupler) 16
Input voltage • Rated • 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 signal "1"	typ.	7 mA	7 mA
Delay time	typ.	1.2 ... 4.8 ms	1.2 ... 4.8 ms
Can accommodate 2-wire initiator Permitted bias current for signal "0"	max.	Yes 1.5 mA	Yes 1.5 mA
Cable length • Unshielded • Shielded	max. max.	600 m 1000 m	600 m 1000 m
Current draw • Intern (backplane bus) • External (from +24 V)	typ. max.	20 mA 140 mA	30 mA 290 mA
Power dissipation (nominal operation)	typ.	3.5 W	6.8 W
Front connector		20-pin	40-pin
Ambient temperature Transport and storage temperature		0 °C ... 60 °C -25 °C ... 75 °C	0 °C ... 60 °C -25 °C ... 75 °C

DEA 300, digital output module

Digital output modules, 16 and 32 outputs
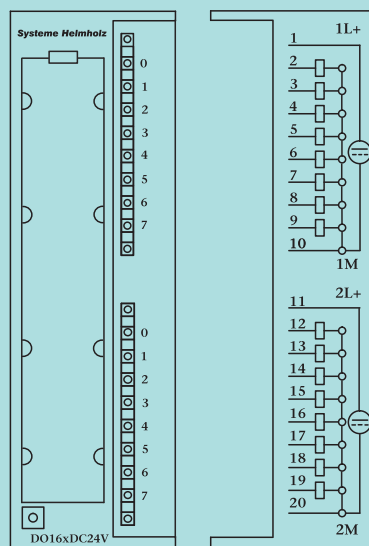
Accessories note
Front connectors and preassembled cables are available as accessories (see page 88–91).

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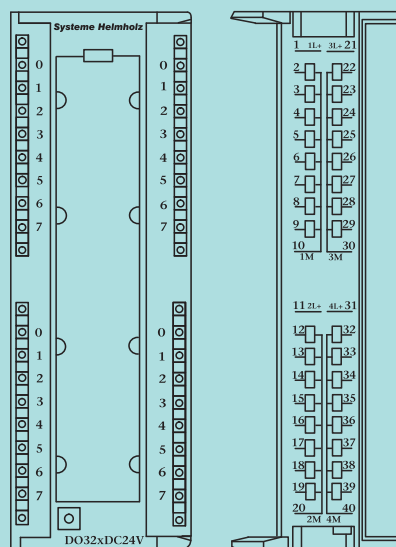
Ordering Data	Order No.
DEA 300, digital output module	
16 outputs (DC 24 V, 0.5 A)	**700-322-1BH01**
32 outputs (DC 24 V, 0.5 A)	**700-322-1BL00**
DEA 300 Manual, German/English	**900-321-1DE11**

Technical specifications		700-322-1BH01	700-322-1BL00
Number of outputs		**16**	**32**
Electrically isolated (from backplane bus) in groups to		Yes (optocoupler) 8	Yes (optocoupler) 8
Supply voltage U$_P$, U$_S$ • Rated • Ripple U$_{ss}$ • Permissible range (with ripple) • Value for 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
Output current • Rated		 0.5 A	 0.5 A
Short-circuit protection		Electronic	Electronic
Inductive cutoff voltage limited to		-48 V	-48 V
Cable length • Unshielded • Shielded	 max. max.	600 m 1000 m	600 m 1000 m
Current draw • Internal (backplane bus) • External without load (from +24 V)	 max. typ.	100 mA 120 mA	125 mA 200 mA
Power dissipation (nominal operation)	typ.	5 W	6.8 W
Front connector		20-pin	40-pin
Ambient temperature Transport and storage temperature		0 °C ... 60 °C -25 °C ... 75 °C	0 °C ... 60 °C -25 °C ... 75 °C

DEA 300, digital input/output module

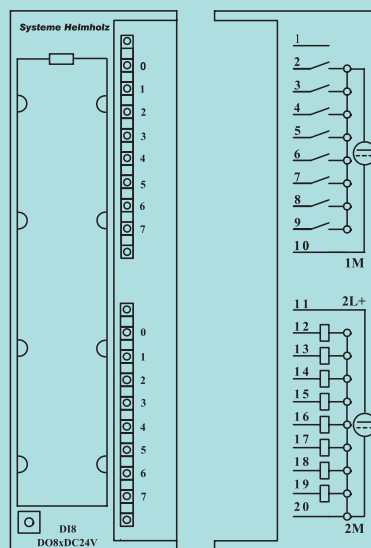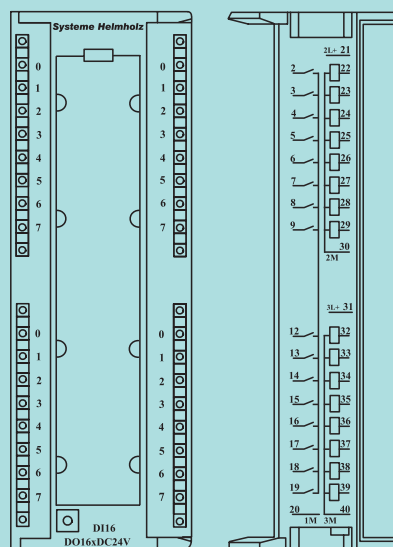Digital input/output modules

Accessories note
Front connectors and preassembled cables are available as accessories (see page 88–91).

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
DEA 300 Manual, German/English	900-321-1DE11

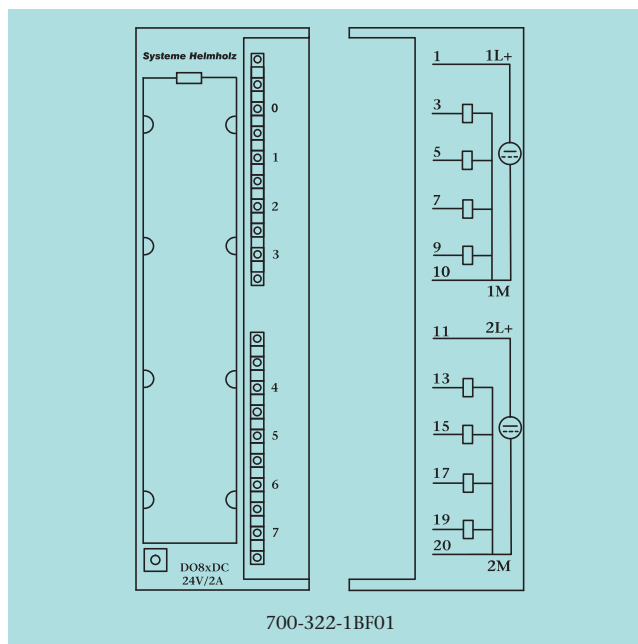| Technical specifications		700-323-1BH01	700-323-1BL00
Number of inputs		**8**	**16**
Electrically isolated (from backplane bus) in groups to		Yes (optocoupler) 8	Yes (optocoupler) 16
Input voltage • Rated • For signal "0" • For signal "1"		DC 24 V -3 ... +5 V +13 ... +30 V	DC 24 V -3 ... +5 V +13 ... +30 V
Input current • For signal "1"	typ.	7 mA	7 mA
Delay time	typ.	1.2 ... 4.8 ms	1.2 ... 4.8 ms
Can accommodate 2-wire initiator Permitted bias current for signal "0"	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**
Electrically isolated (from backplane bus) in groups to		Yes (optocoupler) 8	Yes (optocoupler) 8
Output current • Rated		0.5 A	0.5 A
Short-circuit protection		Electronic	Electronic
Inductive cutoff voltage limited to		-48 V	-48 V
Cable length • Unshielded • Shielded	max. max.	600 m 1000 m	600 m 1000 m
Supply voltage U_P, U_S • Rated • Ripple U_{SS} • Permissible range (with ripple) • Value for 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 draw • Intern (backplane bus) • External without load (from +24 V)	typ. max.	55 mA 60 mA	90 mA 120 mA
Power dissipation (nominal operation)	typ.	3.5 W	6.8 W
Front connector		20-pin	40-pin
Ambient temperature Transport and storage temperature		0 °C ... 60 °C -25 °C ... 75 °C	0 °C ... 60 °C -25 °C ... 75 °C

DEA 300, digital output module, 2 amperes

Digital output module, 8 outputs, 2 amperes

Accessories note
Front connectors and preassembled cables are available as accessories (see page 88–91).

700-322-1BF01

Technical specifications	
Number of outputs	8
Electrically isolated (from backplane bus) in groups to	Yes (optocoupler) 4
Supply voltage L+/L- • Rated value • Ripple U_{ss} max. • Permissible range (with ripple) • Value for t < 10 ms max.	DC 24 V 3.6 V 20 ... 30 V 40 V
Output current • Rated value	2 A
Total current of the outputs (per group, horizontal configuration) • Up to 40 °C • Up to 60 °C	8 A 6 A
Short-circuit protection	Electronic
Short-circuit current typ.	12 A clocked
Limitation of inductive cutoff voltage to	-23 V
Cable length • Unshielded max. • Shielded max.	600 m 1000 m
Current draw • Intern (backplane bus) typ. • External without load (from +24 V) max.	40 mA 60 mA
Power dissipation (nominal operation) typ.	6.8 W
Front connector	20-pin
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 (DC 24 V, 2 A)	700-322-1BF01
DEA 300 Manual, German/English	900-321-1DE11

Digital output module, 16 relays

Accessories note
Front connectors and preassembled cables are available as accessories (see pages 88–91).

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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 specifications		
	700-322-1HH01	**700-322-1HF01**
Number of outputs	**16**	**8**
Load voltage L+/L-	DC 24 V	DC 24 V
Output voltage	AC to 230 V DC to 120 V	AC to 230 V DC to 120 V
Output current Total current of the outputs (per group) max.	8 A	4 A
Electrically isolated (from backplane bus) in groups to	Yes (optocoupler) 8	Yes (optocoupler) 2
Thermal continuous current	2 A	3 A
Switching frequency of the outputs • Under resistive load max. • Under inductive load max. • Under lamp load max. • Mechanical max.	1 Hz 0.5 Hz 1 Hz 10 Hz	2 Hz 0.5 Hz 2 Hz 10 Hz
Switching capacity of the contacts • Under resistive load max. • Under 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)
Operations of the contacts Under mechanical load Under resistive load	10 million 2 A, 1 million	10 million 2 A, 0.7 million
Ambient temperature Transport and storage temperature	0 °C ... 60 °C -25 °C ... 75 °C	0 °C ... 60 °C -25 °C ... 75 °C

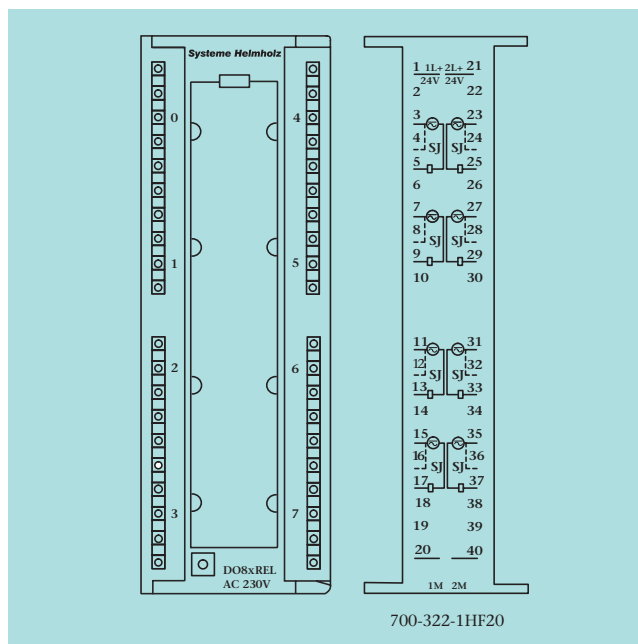| Ordering Data	Order No.
DEA 300, digital output module 16 outputs, relay, 2 A 8 outputs, relay, 2 A	700-322-1HH01 700-322-1HF01
DEA 300 Manual, German/English	900-321-1DE11

700-322-1HH01   700-322-1HF01
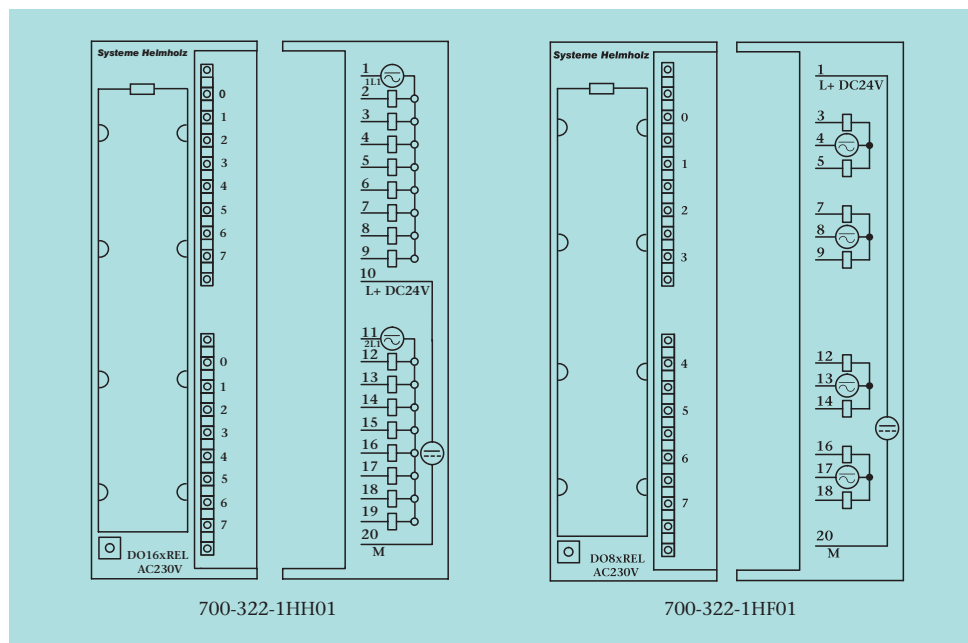
DEA 300, digital output module, relay output, 5 amperes

Digital output module, 8 relays

700-322-1HF20

Accessories note
Front connectors and preassembled cables are available as accessories (see pages 88–91).

Technical specifications	
Number of outputs	8
Load voltage L+/L-	DC 24 V
Output voltage	AC to 230 V DC to 120 V
Output current Total current of the outputs (per group) max.	 5 A
Electrically isolated (from backplane bus)	Yes (optocoupler)
Switching frequency of the outputs • Under resistive load max. • Under inductive load max. • Under lamp load max. • Mechanical max.	 2 Hz 0.5 Hz 2 Hz 10 Hz
Switching capacity of the contacts • Under resistive load max. • Under inductive load max.	 8 A (AC 230 V) 8 A (DC 24 V) 3 A (AC 230 V) 2 A (DC 24 V)
Switching cycles of the contacts • Under mechanical load • Under resistive load	 10 million 5 A, 0.2 million
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, relay, 5 A, quenching circuit	 700-322-1HF20
DEA 300 Manual, German/English	900-321-1DE11

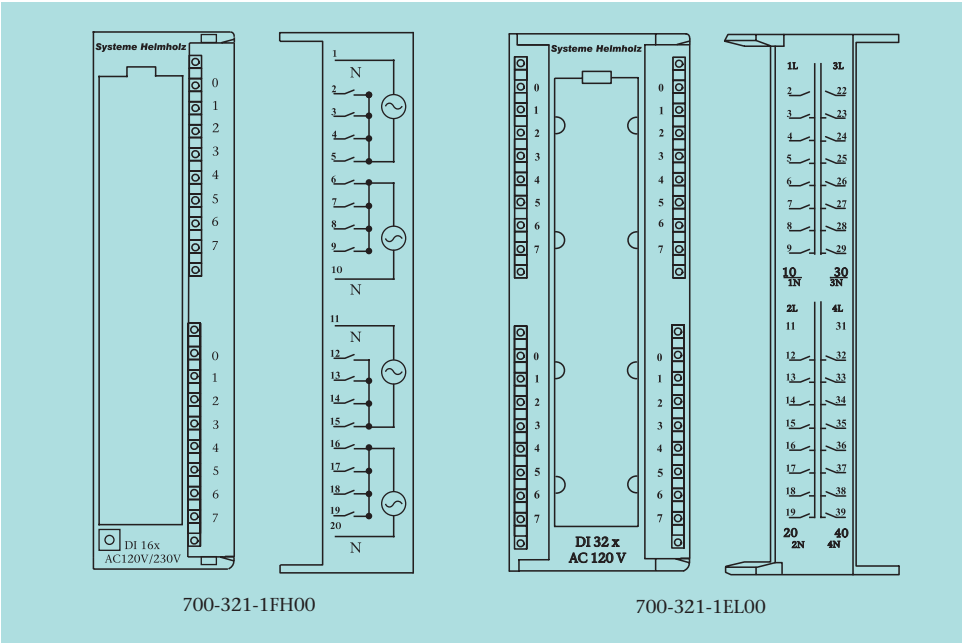Digital input module, 120/230 V

Accessories note
Front connectors and preassembled cables are available as accessories (see pages 88–91).
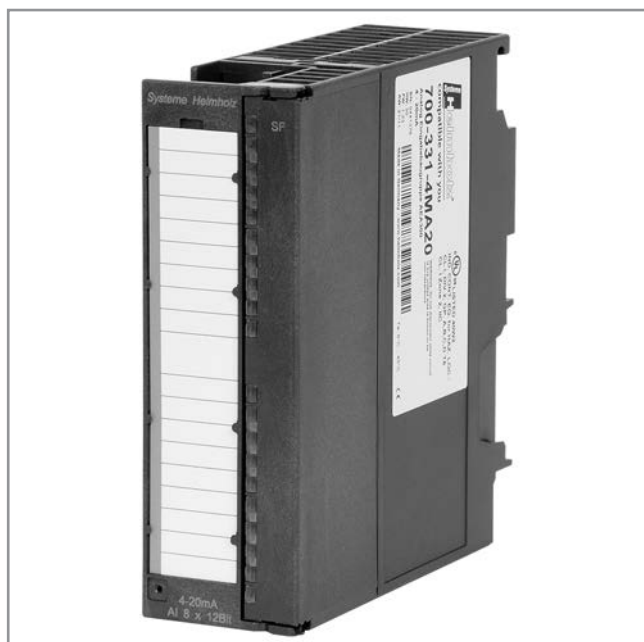

Open-type programmable controllers for use in hazardous locations, Class I, Div. 2 Groups A, B, C, D T4 including Class I Zone 2 IIC.

Technical specifications	700-321-1FH00	700-321-1EL00
Number of inputs	16	32
Electrically isolated (from backplane bus) in groups to	Yes (optocoupler) 4	Yes (optocoupler) 8
Input voltage • Rated value (all input voltages must have the same phase) • 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
Internal current draw typ. Power dissipation of the module typ.	30 mA 4.5 W	16 mA 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
DEA 300 Manual, German/English	900-321-1DE11

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

AEA 300, analog input module for connecting current transmitters

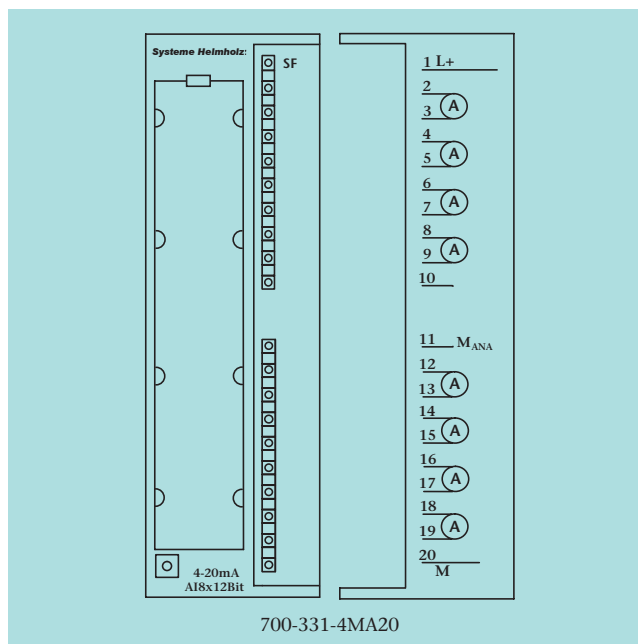
Analog input module, current transmitter

700-331-4MA20

The analog input module is suitable for connection of current transmitters in the range up to ±20 mA.
The signal lines are connected to the corresponding front connectors and can be marked in the label field.
The modules can be fully parameterized with the hardware configurator of the programming software. A hardware configuration is not necessary (**no** measuring range module).

Accessories note
Front connectors and preassembled cables are available as accessories (see pages 88–91).

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 specifications	
Number of inputs	8
Alarms • Limit alarm • Diagnostic alarm	Parameterizable Parameterizable for channels 0 and 2
Diagnosis	Red LED for group error indicator
Load voltage L+/L-	DC 24 V
Reverse polarity 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
Electrically isolated from backplane bus	Yes
Conversion time/resolution (per channel) • Integration time • Noise suppression for interference frequency • Resolution (VZ = sign) (depending on the 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 draw • Internal (from backplane bus) typ. • External (L+) max.	120 mA 200 mA
Power dissipation typ.	1.8 W
Front connector	20-pin
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 connection of current transmitters, 4–20 mA	700-331-4MA20
AEA 300 Manual, German/English	900-331-0AA01

Analog input module, voltage transmitter

The analog input module is suitable for connection of voltage transmitters in the range up to ±10 V.
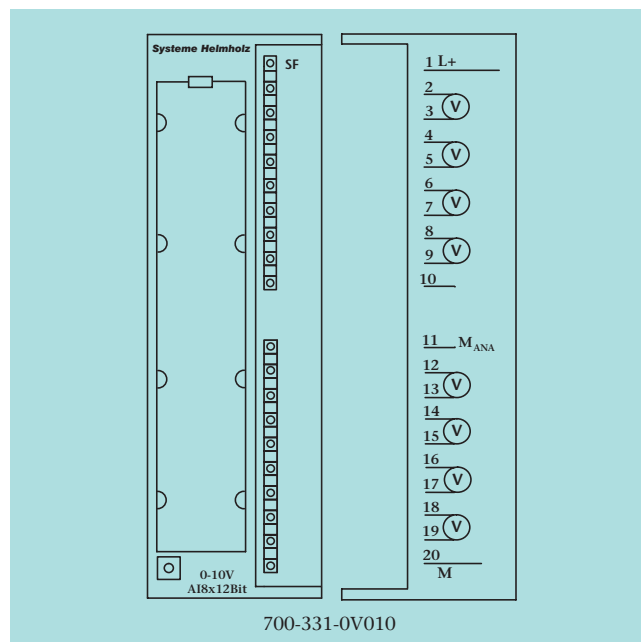The signal lines are connected to the corresponding front connectors and can be marked in the label field.
The modules can be fully parameterized with the hardware configurator of the programming software. A hardware configuration is not necessary (**no** measuring range module).

Accessories note
Front connectors and preassembled cables are available as accessories (see pages 88–91).

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.


700-331-0V010

Technical specifications	
Number of inputs	**8**
Alarms • Diagnostic alarm • Limit alarm	Parameterizable Parameterizable for channels 0 and 2
Diagnosis	Red LED for group error indicator
Load voltage L+/L-	DC 24 V
Reverse polarity protection	Yes
Input ranges Voltage/input resistance	±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
Permissible input voltage for voltage input max.	20 V
Electrically isolated from backplane bus	Yes
Conversion time/resolution (per channel) • Integration time • Noise suppression for interference frequency • Resolution (VZ = sign) (depending on the 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 draw • Internal (from backplane bus) typ. • External (L+) max.	120 mA 200 mA
Power dissipation typ.	1.8 W
Front connector	20-pin
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 voltage transmitters, 0–10 V	700-331-0V010
AEA 300 Manual, German/English	900-331-0AA01
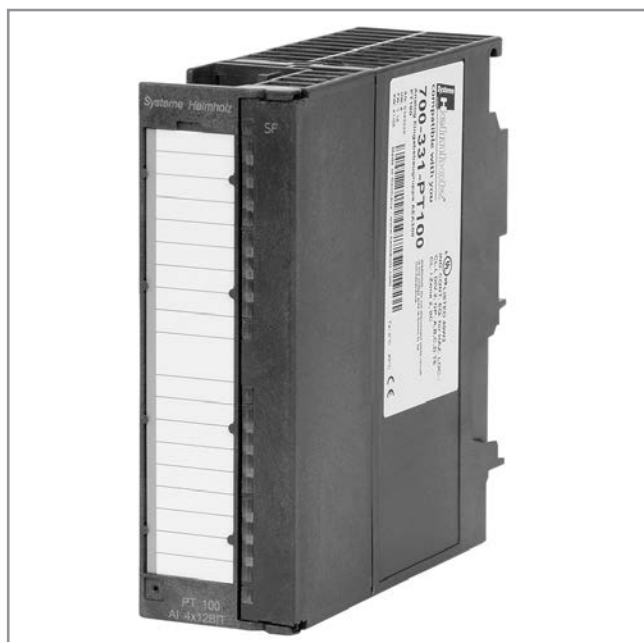
Analog input module, resistance thermometer

700-331-PT100

The analog input module is suitable for connection of Pt100/ Ni100 sensors and resistors.
The signal lines are connected to the corresponding front connectors and can be marked in the label field.
The modules can be fully parameterized with the hardware configurator of the programming software. A hardware configuration is not necessary (**no** measuring range module).
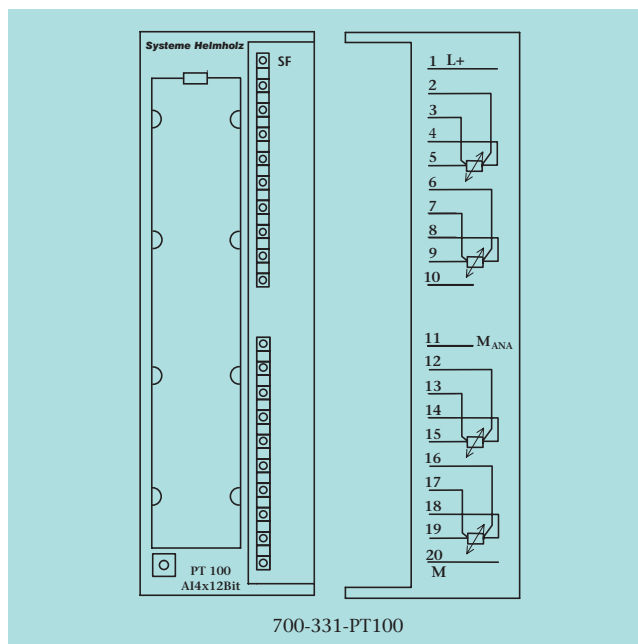
Accessories note
Front connectors and preassembled cables are available as accessories (see pages 88–91).

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 specifications	
Number of inputs	4
Alarms • Limit alarm • Diagnostic alarm	Parameterizable Parameterizable for channels 0 and 2
Diagnosis	Red LED for group error indicator
Load voltage L+/L-	DC 24 V
Reverse polarity protection	Yes
Input resistance	10 MΩ
Resistance thermometer	Pt100, Ni100 (Standard and climate range)
Resistance measuring range	150, 300, 600 Ω
Connection of signal sensors	2-, 3-, or 4-wire connection
Electrically isolated from backplane bus	Yes
Conversion time/resolution (per channel) • Integration time • Noise suppression for interference frequency • Resolution (VZ = sign) (depending on the 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 draw • Internal (from backplane bus) typ. • External (L+) max.	120 mA 200 mA
Power dissipation typ.	1.8 W
Front connector	20-pin
Ambient temperature Transport and storage temperature	0 °C ... +60 °C -25 °C ... +75 °C

Ordering Data	Order No.
AEA 300, analog input module 4 inputs, Pt100/Ni100 for connection of resistance thermometers	700-331-PT100
AEA 300 Manual, German/English	900-331-0AA01

Analog input module, 8-channel, current transmitter, voltage transmitter, resistors, and resistance thermometers


700-331-1KF01

Example assignment

The analog input module is suitable for connection of current transmitters in the range up to ± 20 mA, voltage transmitters in the range up to ±10 V, Pt100/Ni100 sensors, and resistors.

All inputs can be programmed either as voltage or current inputs for Pt100/Ni100 sensors and resistors, freely selectable in their combination.

The signal lines are connected to the corresponding front connectors and can be marked in the label field.

The modules can be fully parameterized with the hardware configurator of the programming software. A hardware configuration is not necessary (**no** measuring range module).

Accessories note
Front connectors and preassembled cables are available as accessories (see pages 88–91).
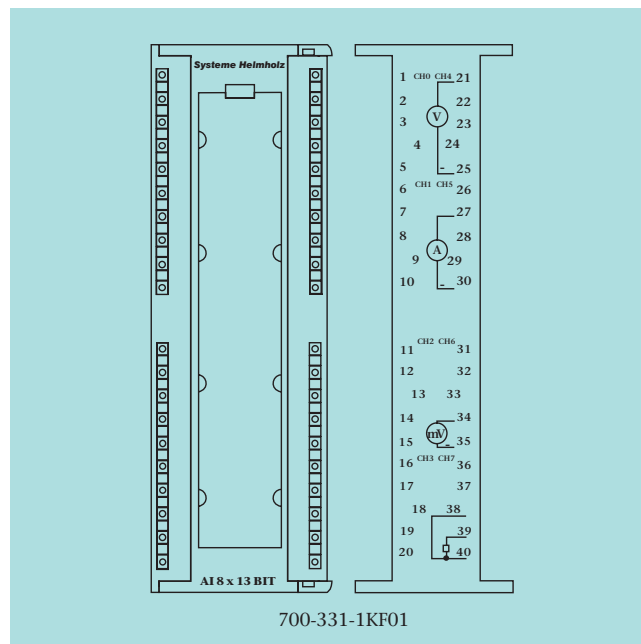
Technical specifications	
Number of inputs	**8**
Measuring ranges	
• Voltage	±50 mV, ±500 mV, ±1 V, ±5 V, ±10V, 1 ... 5V, 0 ... 10 V
• Current	±20 mA, 0 ... 20 mA, 4 ... 20 mA
• Resistance	0 ... 6 kΩ, 0 ... 600 Ω
• Resistance thermometer (standard and climate)	Pt100, Ni100, Ni1000, LG-Ni1000
Resolution incl. override range	13 bits
Error limits Basic error limit	at 25 °C
• Voltage input	±0.4 %
• Current input	±0.4 %
• Resistance	±0.4 %
• Resistance thermometer	±0.8 K Pt100 standard, ±1 K
Operational error limit	In the entire temperature range
• Current input	±0.6 %
• Resistance	±0.6 %
• Resistance thermometer	±1 K; Pt100, Ni100 standard ±1.2 K
• Voltage input	±0.6 %
Voltage supply Rated voltage	DC 5 V via backplane bus
Current draw	Typ. 160 mA at 5 V (from backplane bus)
Power dissipation	Approx. 0.8 W
Front connector	32-bit DEA300 front connector (40-pin)
Ambient temperature Transport and storage temperature	0 °C ... +60 °C -25 °C ... +75 °C

Ordering Data	Order No.
AEA 300, analog input module 8 inputs, for connection of current, voltage transmitters, resistors	700-331-1KF01
AEA 300 Manual, German/English	900-331-0AA01

AEA 300, analog output module, 4-channel

Analog output module, 4-channel

The analog output module is suitable for connection of analog actuators for voltage and current outputs in the range up to ±10 V or ±20 mA.
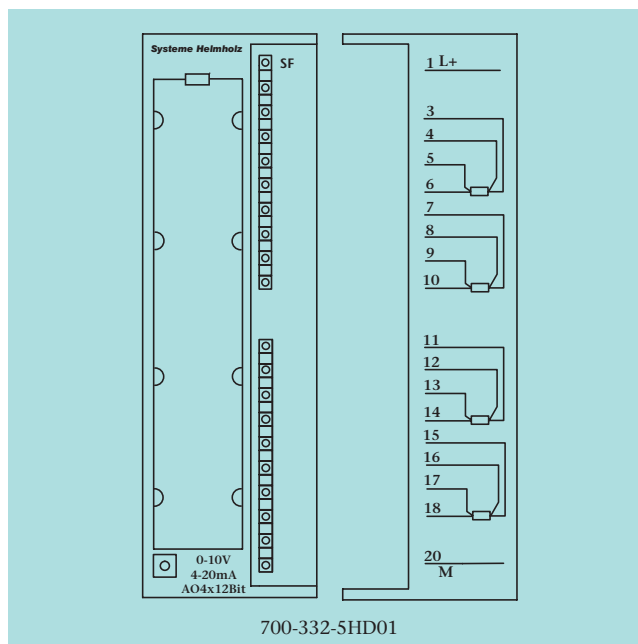The signal lines are connected to the corresponding front connectors and can be marked in the label field.
The modules are fully configured with the programming software.

Accessories note
Front connectors and preassembled cables are available as accessories (see pages 88–91).

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.

700-332-5HD01

Technical specifications		
Number of outputs		4
Diagnostic alarm		Yes, parameterizable
Diagnosis		Red LED for group error indicator
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 resistance		
• With voltage outputs	min.	1 kΩ
• With current outputs	max.	500 Ω
• Under capacitive load	max.	1 µF
• Under inductive load	max.	10 mH
Voltage output		
• Short-circuit protection		Yes
• Short-circuit current	max.	25 mA
Current output		
• No-load voltage	max.	18 V
Electrically isolated from backplane bus		Yes
Operational error limit (0...60°C, relative to output range)		
• Voltage		±0.5 %
• Current		±0.6 %
Basic error limit (Operational limit at 25 °C, relative to output range)		
• Voltage		±0.4 %
• Current		±0.5 %
Cable length (shielded)	max.	200 m
Current draw		
• Internal (from backplane bus)	typ.	100 mA
• Externally, without load	max.	240 mA
Power dissipation	typ.	3 W
Front connector		20-pin
Ambient temperature Transport and storage temperature		0 °C ... +60 °C -25 °C ... +75 °C

Ordering Data	Order No.
AEA 300, analog output module 4-channel, 4 outputs for connection of analog actuators, 0–10 V/4–20 mA	700-332-5HD01
AEA 300 Manual, German/English	900-331-0AA01

Analog output module, 2-channel

The analog output module is 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 and can be marked in the label field.
The modules are fully configured with the programming software.

Accessories note
Front connectors and preassembled cables are available as accessories (see pages 88–91).

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.

700-332-5HB01
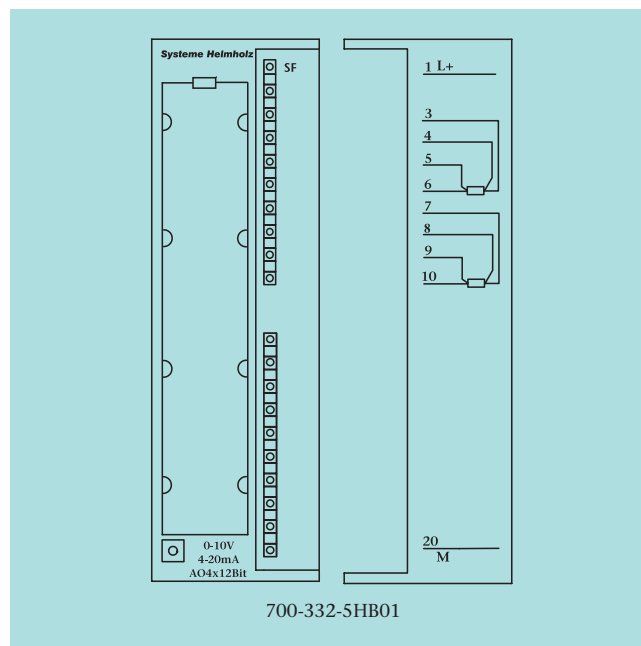
Technical specifications	
Number of outputs	**2**
Diagnostic alarm	Yes, parameterizable
Diagnosis	Red LED for group error indicator
Load voltage	DC 24 V
Output ranges	
• Voltage outputs	0 ... 10 V; ±10 V; 1 ... 5 V
• Current outputs	4 ... 20 mA; ±20 mA; 0 ... 20 mA
Load resistance	
• With voltage outputs min.	1 kΩ
• With current outputs max.	500 Ω
• Under capacitive load max.	1 µF
• Under inductive load max.	10 mH
Voltage output	
• Short-circuit protection	Yes
• Short-circuit current max.	25 mA
Current output	
• No-load voltage max.	18 V
Electrically isolated from backplane bus	Yes
Operational error limit (0 ... 60 °C, relative to output range)	
• Voltage	±0.5 %
• Current	±0.6 %
Basic error limit (Operational limit at 25 °C, relative to output range)	
• Voltage	±0.4 %
• Current	±0.5 %
Cable length (shielded) max.	200 m
Current draw	
• Internal (from backplane bus) typ.	100 mA
• Externally, without load max.	240 mA
Power dissipation typ.	3 W
Front connector	20-pin
Ambient temperature Transport and storage temperature	0 °C ... +60 °C -25 °C ... +75 °C

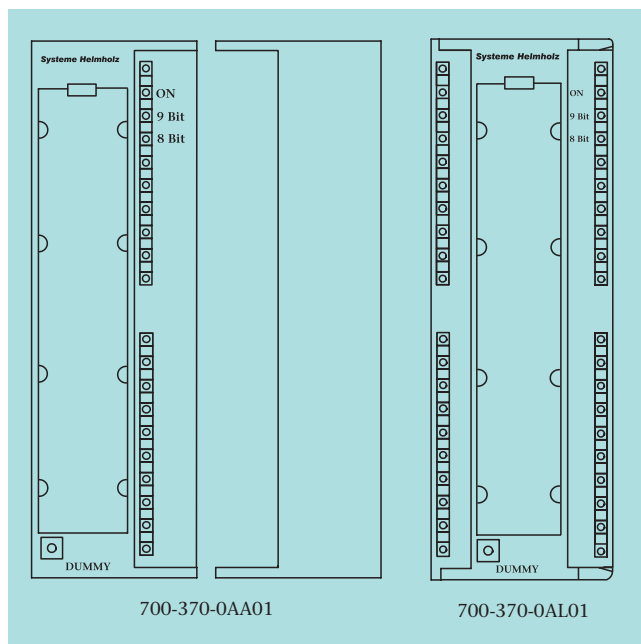| Ordering Data	Order No.
AEA 300, analog output module 2-channel, 2 outputs for connection of analog actuators, 0–10 V/4–20 mA	700-332-5HB01
AEA 300 Manual, German/English	900-331-0AA01

Dummy module

Dummy module

The dummy module is suitable for reserving slots for non-parameterized signal modules.
It maintains structure and address assignments for when signal modules are changed out.
The dummy module is available for 20-pin or 40-pin front connectors.

700-370-0AA01

700-370-0AL01

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

Technical specifications	
Current draw Internal	5 mA
Power dissipation (nominal operation) typ.	0.03 W
Front connector	–
Ambient temperature Transport and storage temperature	0 °C ... 60 °C -25 °C ... 75 °C

SAS 340, communication module

Application example for SAS 340

The SAS 340 is a serial communication module for use in S7-300[1] systems. It allows the connection to the PLC of serial devices such as barcode scanners, operator terminals, serial printers, PCs, PLCs of other manufacturers and supports the protocols ASCII and 3964R.

Serial devices can be connected with RS232 or RS422/RS485. The 9-pin Sub-D socket (15-pin with RS422/485) with standard pin assignment is provided for connecting the partner devices.

The additional USB device interface enables the connection of the PLC to PC systems, many of which have no conventional physical port. A virtual COM port driver enables the use of software that expects a COM interface.
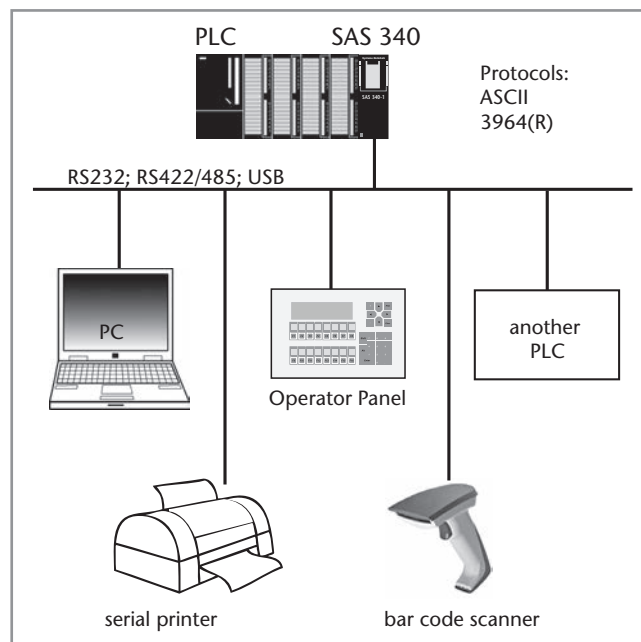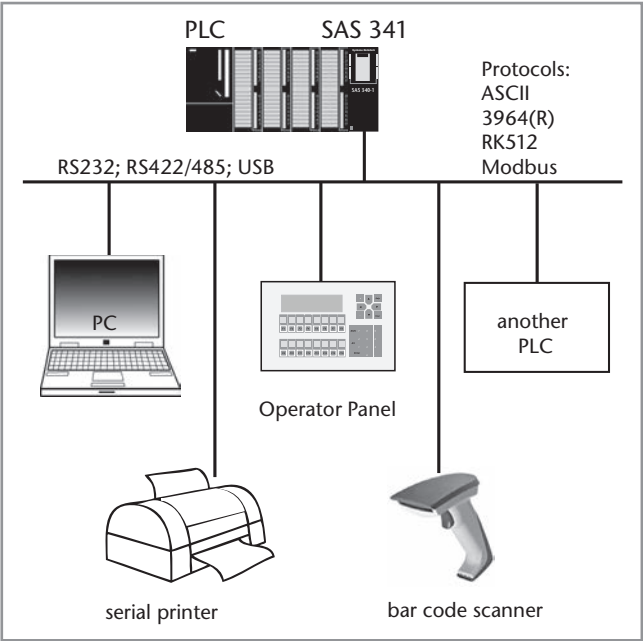
The SAS 340 features advanced functions such as support for higher baud rates up to 115 kBaud, making it flexible without any loss of compatibility.

The handling blocks supplied enable simple and flexible integration into the PLC. The module is parameterized in the hardware configurator of the PLC. Advanced functionalities (such as higher baud rates) can be activated easily with the handling blocks.

Note
To enable high integration density in the control cabinet, the SAS 340 is also available with 2 serial interfaces. Both interfaces can be configured independently and used in the PLC.

Ordering Data	Order No.
SAS 340-1, 1 x RS232, 1 x USB incl. CD with handling blocks and manual; protocols: ASCII, 3964R	700-340-1AH02
SAS 340-1, 1 x RS422/RS485 incl. CD with handling blocks and manual; protocols: ASCII, 3964R	700-340-1CH02
SAS 340-2, 2 x RS232, 2 x USB incl. CD with handling blocks and manual; protocols: ASCII, 3964R	700-340-2AH02
SAS 340-2, 2 x RS422/RS485 incl. CD with handling blocks and manual; protocols: ASCII, 3964R	700-340-2CH02
SAS 340 Manual, German/English	900-340-1XH02

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

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

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. It allows the connection to the PLC of serial devices such as barcode scanners, operator terminals, serial printers, PCs, PLCs of other manufacturers and supports the protocols ASCII, 3964R, and RK512.

Serial devices can be connected with RS232 or RS422/RS485. The 9-pin Sub-D socket (15-pin with RS422/485) with standard pin assignment is provided for connecting the partner devices.

The additional USB device interface enables the connection of the PLC to PC systems, many of which have no conventional physical port. A virtual COM port driver enables the use of software that expects a COM interface.

The SAS 341 features advanced functions such as support for higher baud rates up to 115 kBaud, making it flexible without any loss of compatibility.

The linking of different PLC types of the S7-300[1] is flexibly implemented using the standardized RK512 computer link protocol. The handling blocks supplied enable simple and flexible integration into the PLC. The module is parameterized in the hardware configurator of the PLC.

Note
To enable high integration density in the control cabinet, the SAS 341 is also available with 2 serial interfaces.
Both interfaces can be configured independently and used in the PLC.

Do you need a specific protocol for your device? Ask us!

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

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

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

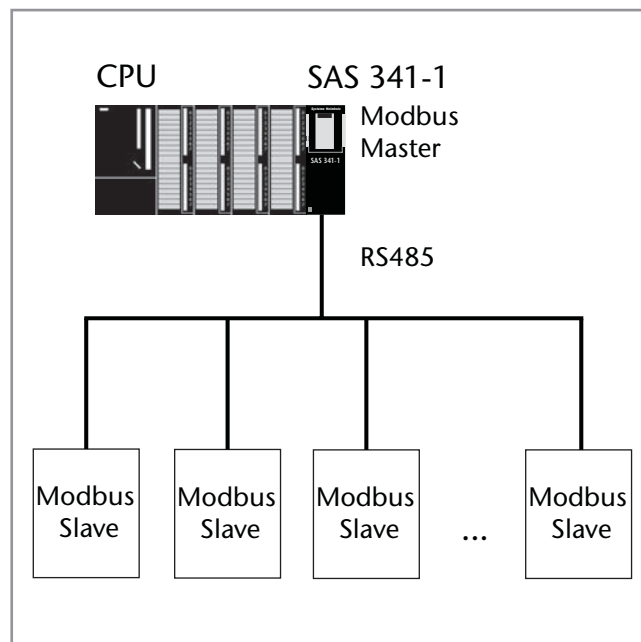SAS 341-1 with Modbus RTU driver

SAS 341-1 as Modbus master

The driver addon "Modbus Master/Slave" enables communication with Modbus RTU-compatible devices. With this driver, the SAS 341 can operate either as a Modbus RTU master or Modbus RTU slave.
The driver is used for the SAS 341-1 with RS232 interface (700-341-1AH02) or for the SAS 341-1 with RS485 interface (700-341-1CH02).
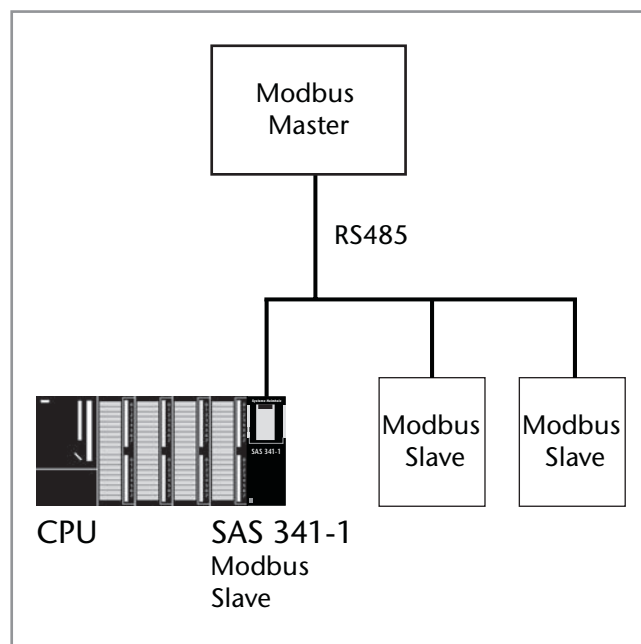With the RS232 interface, a point-to-point operation is possible, and with the RS485 interface, up to 32 participants can be addressed using the 2-wire half-duplex method.
In the communication with other systems, the Modbus RTU function codes 01, 02, 03, 04, 05, 06, 07, 08, 11, 12, 15, and 16 are supported.
The data exchange with the S7-CPU is in blocks in the supplied function blocks.

SAS 341-1 as Modbus slave

Ordering Data	Order No.
Modbus master/slave driver for SAS 341-1 (on Micro memory card; can only be used in SAS 341-1 modules)	800-341-MOD01
SAS 341 Manual, Modbus driver German/English	900-341-MOD01

EIB 300, communication module for twisted-pair EIB/KNX

Features

- Access to the EIB/KNX bus directly from the PLC
- Implementation of complex control and monitoring functions through PLC programming
- Configurable object operation with up to 240 objects
- Easy integration and handling
- ETS[2]3 and ETS[2]4 are supported

The EIB 300 is a serial communication module for use in S7-300[1] systems. It enables the connection of an EIB/KNX bus to the PLC, with the bus being placed directly on the module.

Through the possibilities of PLC programming, complex control and monitoring functions can be easily implemented on the EIB/KNX bus.

In "object mode," the EIB 300 is an active participant on the EIB/KNX bus with up to 240 objects, with all object types from 1 bit to 4-byte data size being supported.

The current object values in the PLC are mapped in a data block and exchanged with each PLC cycle. In this way the changes on the EIB side are transferred to the PLC, and values changed in the PLC are transferred to the EIB/KNX bus. In addition, "event" and "control flags" allow influence to be taken on the communication behavior in a targeted manner.

The configuration of the EIB 300 is in the PLC as a CP module. The handling blocks included in the scope of delivery enable easy integration of the EIB 300 into the PLC program. The EIB 300 is integrated as a new device in the ETS software with a supplied sample project. In object mode, objects organized in various profiles can be configured and adapted to the respective application. Six colored LEDs indicate the current operating status of the EIB 300 and the EIB/KNX bus. The built-in USB interface is provided for firmware updates and more in-depth diagnosis.
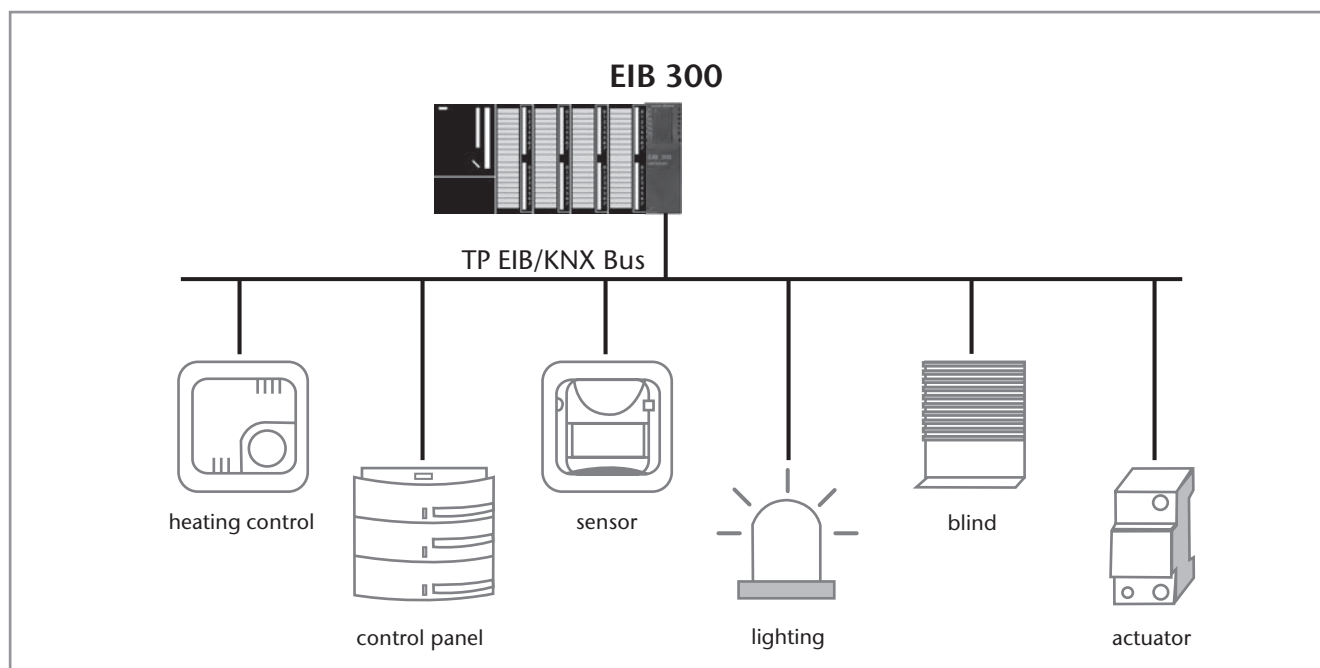
Technical specifications

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

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

Ordering Data	Order No.
EIB 300, communication module for twisted-pair EIB/KNX	700-820-EIB01
EIB 300 Manual, German/English	900-820-EIB01

EIB 300

TP EIB/KNX Bus

heating control

control panel

sensor

lighting

blind

actuator

Application example EIB 300

Configuration of the EIB 300 in the ETS3

FastPlug, front adapter for S7 modules

FastPlug, front adapter

Features

- Front adapter for flat ribbon connector (IDC)
- 20-pin and 40-pin
- Fast, safe, and cost-effective wiring
- Connection errors excluded

The new professional **FastPlug** front adapters are used for screwing and snapping onto 16- or 32-bit S7 input/output modules. The effort required for wiring is very low. Through the use of pre-assembled system cables, connection errors are excluded.
In this way interface modules / transfer modules can be quickly and safely connected to the S7 controller.
The new **FastPlug** front adapters are available in a version for connection to a 16-bit input/output module with a 20-pin ribbon connector as well as in the version for connection to 32-bit input/output modules with 2 x 20-pin ribbon connectors.

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

Technical specifications	
Connection type 700-921-1AJ01 700-921-1AM01	**FastPlug** 1 x 20-pin ribbon connector 2 x 20-pin ribbon connector
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	Max. 600 mA per connection
Ambient temperature Transport and storage tempera- ture Relative humidity max.	0 °C ... +60 °C -25 °C ... +80 °C 75% at +25 °C

Front connector with screw contacts; Front connector with EasyConnect® technology

Front connector, 20-pin and 40-pin with screw contacts

Front connector, 40-pin with EasyConnect® technology

Front connector with screw contacts
The 20-pin and 40-pin front connector is designed with proven screw contacts.
They enable simple connection of sensors and actuators to input/output modules. In this way the wiring can be kept when replacing modules.

Front connector with EasyConnect® technology
The 40-pin front connector is manufactured with the patented EasyConnect® technology.
Fast wiring of the plug is ensured through opening and closing of the spring-loaded terminal by turning the screw (180° counterclockwise to open, clockwise to close), saving the user both money and installation time. Ferrules are not necessary.
Due to the lower design, the front cover of the module can be optimally closed even in the fully wired state.

Technical specifications	
20-pin front connector Connector type	Screw contacts
Connectable cables **With/without ferrules**	Flexible, solid 0.25 – 1.5 mm²
Stripping 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
40-pin front connector Connector type	Screw contacts
Connectable cables **With/without ferrules**	Flexible, solid 0.125 – 1.5 mm²
Stripping 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 specifications	
40-pin front connector Connector type	**EasyConnect®**
Connectable cables	Flexible cables 0.34 – 1 mm²
Stripping 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-pin with screw contacts 40-pin with screw contacts	 700-392-1AJ10 700-392-1AM01

Ordering Data	Order No.
Front connector for DEA/AEA 300 40-pin with **EasyConnect®** technology	 700-392-1AM10

Front connector, 20-pin and 40-pin with spring-type terminal

Front connector with cables

Front connector with spring-type terminal
The 20-pin and 40-pin front connector is an installation-friendly spring-type terminal.
The front connectors enable simple connection of sensors and actuators to input/output modules.
In this way the wiring can be kept when replacing modules.

Front connector with cables
The front connectors with cables enable simple connection of sensors and actuators to input/output modules.
In this way the wiring can be kept when replacing modules.

Technical specifications	
20-pin front connector Connector type	Spring-type terminal
Connectable cables	Flexible, solid 0.34 – 1.5 mm²
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
40-pin front connector Connector type	Spring-type terminal
Connectable cables	Flexible, solid 0.34 – 1.5 mm²
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-pin with spring-type terminal 40-pin with spring-type terminal	700-392-1BJ01 700-392-1BM01

Ordering Data	Order No.
Front connector with cables[1] **DEA/AEA 300** with screw contacts, 20-pin, 2 m with screw contacts, 20-pin, 3 m with screw contacts, 20-pin, 5 m	700-392-1AJ10A 700-392-1AJ10B 700-392-1AJ10C
for **EasyConnect**® connection, 40-pin, 2 m for **EasyConnect**® connection, 40-pin, 3 m for **EasyConnect**® connection, 40-pin, 5 m	700-392-1AM10A 700-392-1AM10B 700-392-1AM10C
for spring-type terminal, 20-pin, 2 m for spring-type terminal, 20-pin, 3 m for spring-type terminal, 20-pin, 5 m	700-392-1BJ01A 700-392-1BJ01B 700-392-1BJ01C
for spring-type terminal, 40-pin, 2 m for spring-type terminal, 40-pin, 3 m for spring-type terminal, 40-pin, 5 m	700-392-1BM01A 700-392-1BM01B 700-392-1BM01C

1) Wires 0.5 mm², blue (RAL 5010); numbers printed as on connector

Mounting rails

Mounting rail adapter for DIN rail

For all modules in the 300 and 1500 series, we offer the mechanical module rack in various prefabricated lengths.

For all communication modules (such as REX 300, DP/DP coupler, TS 300) which were designed for mounting on the mounting rail, we offer the mounting rail adapter for DIN rail.

Ordering Data	Order No.
Mounting rail 300 series	
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
Mounting rail 1500 series	
Length 160 mm	700-590-1AB60
Length 482 mm	700-590-1AE80
Length 530 mm	700-590-1AF30
Length 830 mm	700-590-1AJ30
Length 2000 mm	700-590-1BC00

Ordering Data	Order No.
Mounting rail adapter for DIN rail	700-390-6BA01

CAN Bus

Modules for the 300/400 series
Bus connectors
DP/CAN coupler
PN/CAN Gateway
CAN Bridge

CAN 300 PRO, communication module

The CAN 300 PRO module, for use in an S7-300[1] from Siemens, enables connection of CAN participants with the automation device.

The module can be plugged into either the central frame or the expansion frame. It supports CAN 2.0A (11 bit) and CAN 2.0B (29 bit) telegrams with a freely selectable baud rate from 10 kbps to 1 Mbps.

The CAN 300 PRO can send and receive CAN telegrams in Layer 2 mode. In the CANopen® master mode, the data of the CANopen® slaves can be processed as a process map in the PLC.

Use as a CANopen® slave is also possible. For standard applications, such as motor control with CANopen®, application examples are available. In addition, handling blocks for the SAE J1939 protocol are available.

There are 16 freely settable timers available in the CAN 300 PRO. Each timer can trigger a freely programmable CAN telegram. This means the synchronous protocols widely available in drive and servo control are easy to implement using the CAN 300 PRO.

A DIP switch for setting the baud rate and station address facilitates commissioning. An optional Micro memory card stores the project. In this way, replacement of the parameterization or the module during servicing can be carried out quickly.

6 LEDs indicate the operating status of the module. There is a USB interface for diagnostics and parameterization.

The CAN 300 PRO also works in the extended ambient temperatures of -25 °C to +60 °C.

A USB programming cable is included in the delivery.

Features

- Layer 2, 11 bit and 29 bit (CAN 2.0 A/B)
- CANopen® master on the module
- DIP switches for address + baud rate
- Memory card for project backup (optional)
- USB interface for parameterization and diagnostics
- Extensive CAN Bus diagnostic possibilities
- Can also be used as CANopen® slave
- Extended ambient temperature

Member of:

Note
On page 96 you will find information on the parameterization software CANParam and the handling blocks for the PLC. In the first use, handling blocks for the PLC are needed.

Technical specifications	
Dimensions in mm (D x W x H)	116 x 40 x 125
Weight	Approx. 280 g
Power supply Voltage	DC +5 V via backplane bus
Current draw typ. max.	160 mA 190 mA
CAN interface 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-pin
Status indicator	6 LEDs
Configuration interface Type	USB 1.1
Connection	USB-B socket
Ambient temperature Transport and storage temperature	-25 °C ... 60 °C -25 °C ... 75 °C

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

Ordering Data	Order No.
CAN 300 PRO, communication module (incl. USB programming cable)	700-600-CAN12
Micro memory card, 256 kByte	700-953-8LH30
CAN 300 PRO Manual, German/English CAN training (see also page 112)	900-600-CAN12 400-600-CAN01

CAN 300 PRO, communication module

Application example of CAN 300 PRO as CANopen® master/slave

Application example CAN 300 PRO SAE J1939 protocol

Application example CAN 300 PRO as DeviceNet slave

CAN 400, communication module

Features

- Layer 2, 11 bit and 29 bit (CAN 2.0 A/B)
- DIP switches for address + baud rate
- USB interface for parameterization and diagnostics
- Extensive CAN Bus diagnostic possibilities
- Can also be used as CANopen® master or CANopen® slave

Member of:

The CAN 400 PRO module, for use in an S7-400[1] from Siemens, enables connection of CAN participants with the automation device.
The module can be plugged into either the central frame or the expansion frame.
It supports CAN 2.0A (11 bit) and CAN 2.0B (29 bit) telegrams with a freely selectable baud rate from 10 kbps to 1 Mbps. The CAN 400 can be operated as Layer 2, CANopen® master or CANopen® slave.
The module contains the scripts for "Power On", "Stop -> Run", "Run -> Stop", "Power Off". Using a multi-stage acceptance mask, relevant IDs can be pre-filtered for the automation device.
In the CAN 400, there are 16 freely settable timers up to a resolution of 1 ms. Each timer can trigger a freely programmable CAN telegram. This means the synchronous protocols widely available in drive and servo control are easy to implement using the CAN 400.
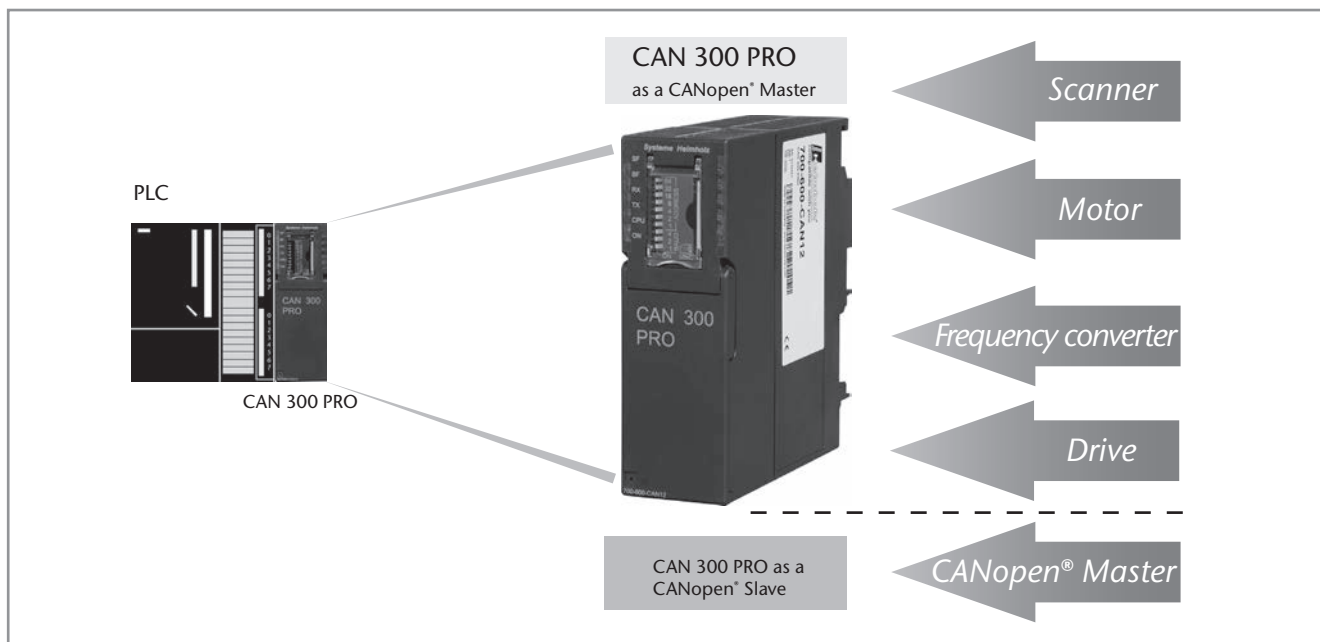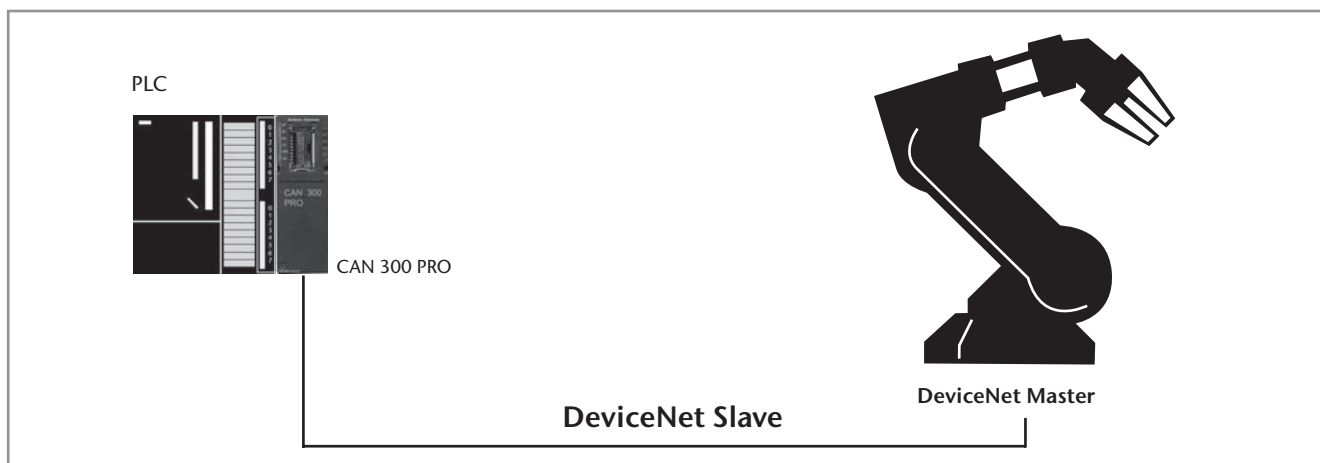
Note
On page 96 you will find information on the parameterization software CANParam and the handling blocks for the PLC.
In the first use, handling blocks for the PLC are needed.

Technical specifications		
	CAN 400-1	CAN 400-2
Dimensions in mm (D x W x H)	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 draw	560 mA	600 mA
CAN interface		
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	Connector, SUB-D, 9-pin	Connector, SUB-D, 9-pin
Status indicators	6 LEDs	10 LEDs
Configuration interface Type	USB 1.1	USB 1.1
Connection	USB-B socket	USB-B socket
Ambient temperature Transport and storage temperature	0 °C ... 60 °C -25 °C ... 75 °C	0 °C ... 60 °C -25 °C ... 75 °C

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

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
CAN 400 Manual, German/English	900-640-CAN21
CAN training (see also page 112)	400-600-CAN01

Parameterization tool CANParam

The CAN modules are configured on the PC with the parameterization tool CANParam (included in the software package 800-600-1AA11). This means the communication parameters can be easily set. The parameters for 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).
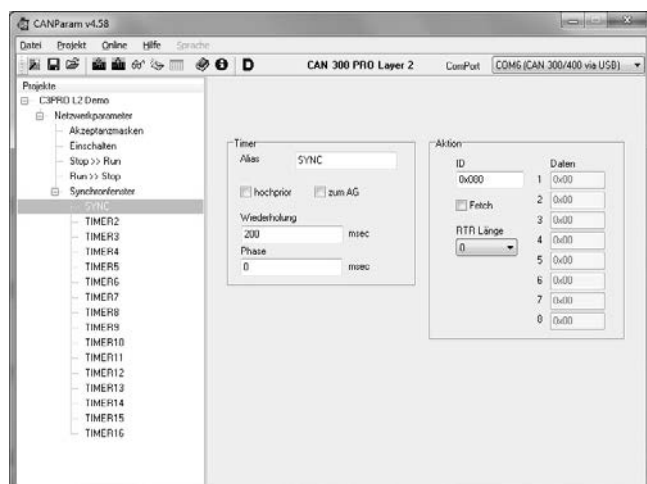
Acceptance masks are available in the CAN modules. Using these masks, it is possible to activate or block various telegram IDs for reception. Express masks filter high-priority CAN telegrams to pass them directly to the PLC.

For time-dependent events, such as the SYNC telegram in CANopen®, up to 16 timers with a resolution of up to 1 ms are available in the CAN modules. Each timer can transmit any CAN telegram. The timers can be started, stopped, and changed from the PLC.

In addition, synchronized transmission of CAN messages can be enabled. With this, a time window in which all data will be transmitted synchronously is specified.

Using freely programmable scripts, upon certain events, such as "Power ON" or "PLC Stop -> Run", CAN messages can be sent or timers started.

An integrated diagnostic function facilitates troubleshooting during commissioning of the module.

For the CANopen® master function of the CAN 300 PRO, the behavior of the master can be defined and the slaves that exist in the CAN Bus can be parameterized.

To simplify configuration, the CANParam software can read in the EDS files from CANopen® slaves.
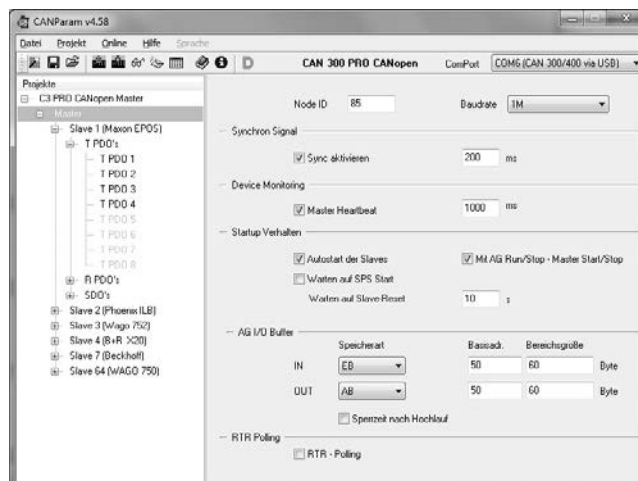
Handling blocks

The CAN modules are entered in the hardware configurator of the programming software as CP module (CAN 300, CAN 300 PRO) or as FM module (CAN 400) and addressed in the STEP[1] 7 program / TIA Portal[1] using handling blocks.

For the CAN modules, handling blocks are available for Layer 2 communication and for the CANopen® master (DS301 V4). For use of the CAN modules as CANopen® slaves, handling for the profiles DS401 (IO modules) and DS420 (Corrugator) is available. Additional profiles can be prepared on request.

Functionality of the Layer 2 handling:
- Send CAN telegram
- Receive CAN telegram
- Start/stop timer
- Module reset
- CAN controller reset

With the handling blocks for Layer 2, any number of CAN protocols can be implemented in 11-bit and 29-bit mode.

Functionality of the CANopen® master handling:
- Read/send SDO
- SDO segmented download/upload
- Receive emergency
- Send/request PDO
- Node guarding / heartbeat monitoring
- Network management functions
- Error control

Application examples for control of drives according to profile DS402 are also available.

Furthermore, handling blocks for the application of the CAN 300 PRO as a DeviceNet slave are available.

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	on request
Devicenet slave handling	on request
CAN training (see also page 112)	400-600-CAN01

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

DP/CAN coupler CANopen® Layer 2

The DP/CAN coupler integrates CANopen® devices into a PRO-FIBUS DP network. It is a full-fledged CANopen® master and supports network management, SYNC telegrams, and node guarding to monitor the participants.

On the PROFIBUS-DP, the DP/CAN coupler is a normal participant. The IO data of the CANopen® participants is shown in the PROFIBUS in a transparent and freely configurable manner.

The DP/CAN coupler is integrated in the hardware configurator with a GSD file and can be completely configured there. Additional tools are not necessary.

On PROFIBUS all standard transfer rates up to 12 Mbps are supported, on the CAN Bus up to 1 Mbps.

The PROFIBUS address is set using a DIP switch.

Parameterization of the CANopen® participants using 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 makes it possible to also integrate customer-specific CAN protocols via PROFIBUS.

Features

- Up to 15 CANopen® participants
- Up to 1 Mbps CAN baud rate
- Up to 12 Mbps PROFIBUS-DP
- Address setting using DIP switches
- Easy configuration via GSD file
- No handling blocks or parameterization software necessary
- CANopen® master and CAN Layer 2 possible
- Address and operating mode can be set via DIP switch
- 3 status LEDs
- Extended ambient temperature
- USB interface for firmware updates
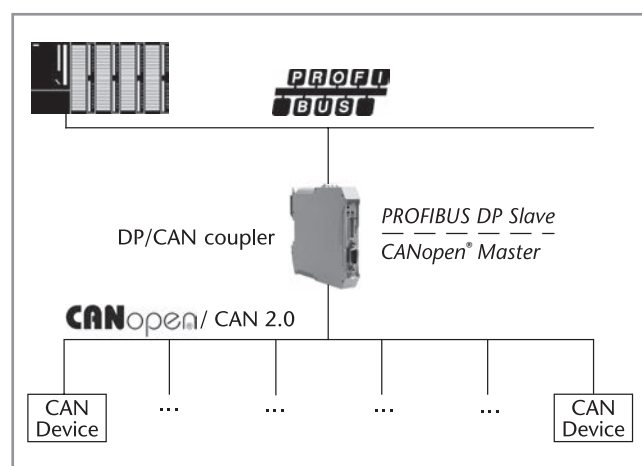
Application example DP/CAN coupler CANopen®

Technical specifications	
Dimensions in mm (D x W x H)	114 x 18 x 108
Weight	Approx. 110 g
Power supply Voltage	24 V
Current draw	Approx. 180 mA
CAN interface 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	Terminal, 3-pin
Status indicator	3 LEDs
PROFIBUS-DP interface Transfer rate max.	12 Mbps, autom. detection
Protocol	PROFIBUS-DP as per EN 50 170
Connection	SUB-D socket, 9-pin
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... 70 °C -40 °C ... 75 °C 80 % at +20 °C, non-condensing
Protection rating	IP 20

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

DP/CAN coupler Layer 2

DP/CAN coupler Layer 2

The DP/CAN coupler Layer 2 allows you to connect any number of CAN participants to the PROFIBUS-DP.

The DP/CAN coupler Layer 2 must be parameterized in the hardware configurator as a PROFIBUS participant. Corresponding GSD files are included with the device.

The PROFIBUS side is configured as a DP slave; the interfaces correspond to EN 50170 and are electrically isolated.

The baud rate from 9.6 kbps to 12 Mbps is automatically detected, and the size of the input and output information is up to 312 bytes.

The CAN Bus interface complies with ISO/DIN 11898-2 and is electrically isolated.

The DP/CAN coupler can send and receive any CAN messages. Messages can be defined with a fixed identifier, whose data is always visible as a peripheral image in PROFIBUS. Alternatively, the DP/CAN coupler Layer 2 has a transmit and receive buffer for any CAN messages.

Features

- Up to 1 Mbps CAN baud rate
- Up to 12 Mbps PROFIBUS-DP
- Address setting using DIP switches
- Easy configuration via GSD file
- No handling blocks or parameterization software necessary
- Any protocols via Layer 2 possible
- CAN 2.0 A (11 bit)
- CAN 2.0 B (29 bit)
- Timer for cyclical telegrams
- 3 status LEDs
- Extended ambient temperature
- USB interface for firmware updates
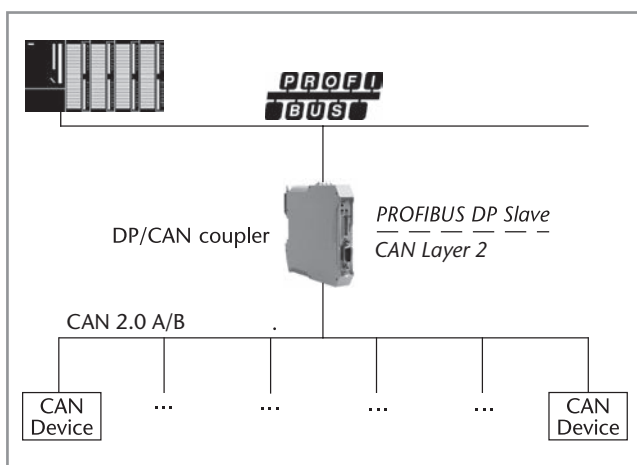
Application example DP/CAN coupler Layer 2

Technical specifications	
Dimensions in mm (D x W x H)	114 x 18 x 108
Weight	Approx. 110 g
Power supply Voltage	24 V
Current draw	Approx. 180 mA
CAN interface 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	Terminal, 3-pin
Status indicator	3 LEDs
PROFIBUS-DP interface Transfer rate max.	12 Mbps, autom. detection
Protocol	PROFIBUS-DP as per EN 50 170
Connection	SUB-D socket, 9-pin
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... 70 °C -40 °C ... 75 °C 80 % at +20 °C, non-condensing
Protection rating	IP 20

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

CAN Bus connector, 90° cable outlet

The bus connectors for the CAN Bus are used to connect a CAN Bus participant to the CAN Bus line. The connector is quickly mounted and has an integrated, connectable terminating resistor. Helmholz offers you the bus connector with vertical cable outlet and for transmission rates up to 1 Mbps.

The bus connector is plugged directly onto the CAN Bus interface (SUB-D socket, 9-pin) of the CAN Bus participants. The CAN Bus cables are connected using 6-pin screw terminals.

A slide switch is used to set whether the connector is to be used as a node or at the segment end. The switch can also be operated in the installed condition. The setting is clearly visible.

In node setting ("OFF"), the connector must be operated when the incoming and outgoing bus are connected to each other. The terminating resistor is then ineffective.

As segment end ("ON"), the connector must be set on the first and last (outermost) participants of the segment. In this case the terminating resistor is connected on the incoming bus, and the outgoing bus is disconnected.

The bus connectors for CAN Bus are also available in axial design and with 24 V supply for participant supply.

The CAN connectors also work in the extended ambient temperature range of -25 °C to +85 °C[1].

CAN Bus connector, axial

Features

- 24 V supply for participant supply (only at 90°)
- Metalized housing
- No parts that can be lost
- 90° and axial cable outlet available
- Small size

Member of:

Technical specifications	
Socket	
Order No. 700-690-1BB12	Yes
Order No. 700-690-1BA12	No
Order No. 700-690-0CA12	No
Dimensions in mm (D x W x H) 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 switchable using slide switch.
Transfer rate max.	1 Mbps
Interfaces CAN Bus participants	SUB-D socket, 9-pin
CAN Bus cable	6 serial terminals for wires up to 0.5 mm²
Maximum outside diameter	8.0 mm
Ambient temperature Transport and storage temperature Relative humidity max.	-25 °C ... +85 °C[1] -25 °C ... +85 °C 75% at +25 °C
Protection rating	IP 20

1) The maximum ambient temperature for UL is 60 °C.

Ordering Data	Order No.
CAN Bus connector 90°, without additional device connection	700-690-1BA12
CAN Bus connector 90°, with additional device connection	700-690-1BB12
CAN Bus connector, axial	700-690-0CA12

PN/CAN Gateway, PROFINET/CANopen®
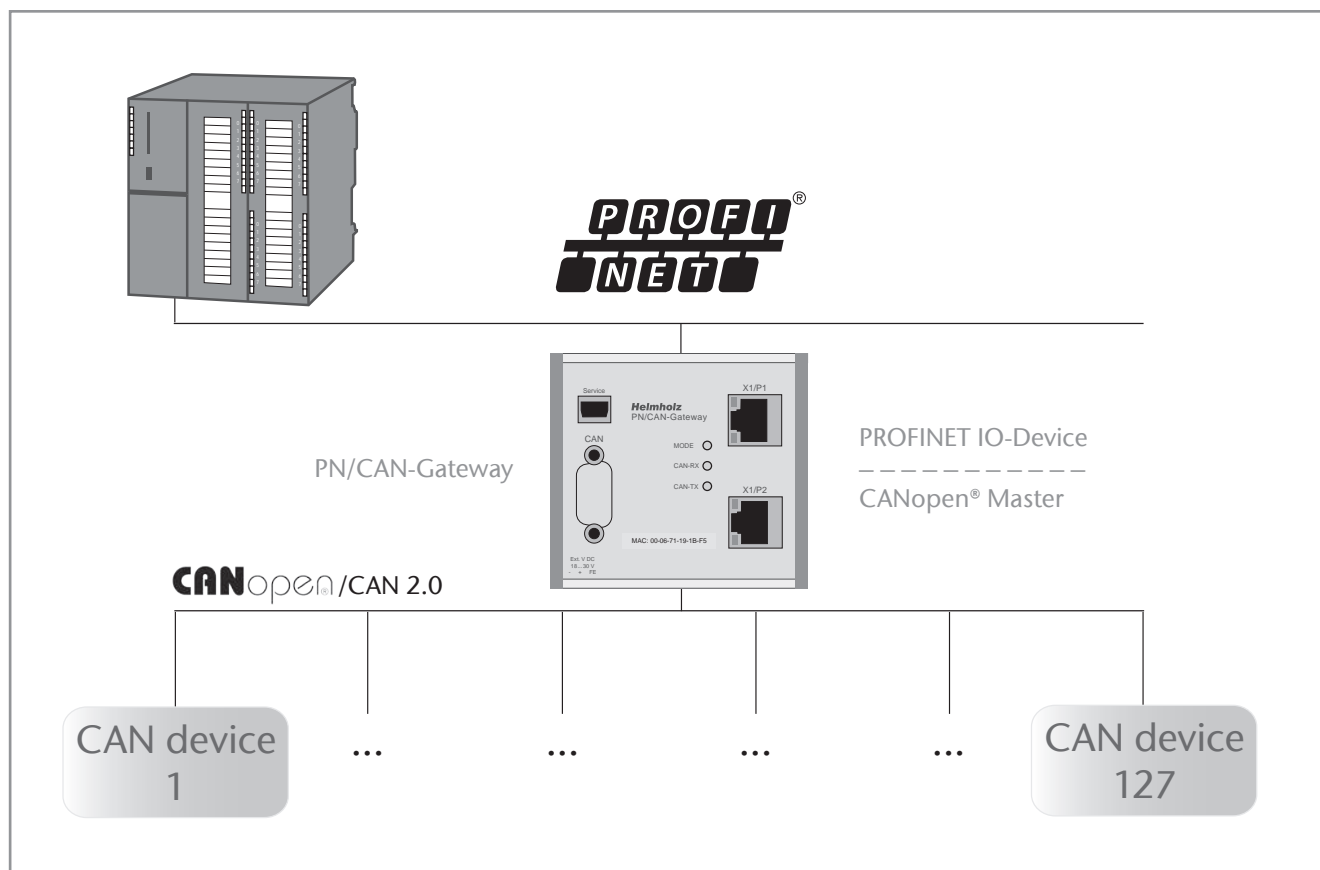
PN/CAN Gateway

Features

- PROFINET IO device as per IEC 61158-6-10
- Integrated 2-port switch
- Full duplex 100 Mbps transmission rate
- Conformance class B
- Media Redundancy Protocol (MRP)
- Up to 127 CANopen® participants
- Up to 1 Mbps CAN baud rate
- Easy configuration via GSDML file, no handling blocks or parameterization software necessary
- CANopen® master and CAN layer 2 possible
- Up to 16 PDOs per CANopen® slave
- SDO communication, emergency messages, participant monitoring with heartbeat and node guarding
- Extensive diagnostic functions
- 3 two-color status LEDs
- USB interface for online diagnostics and firmware update
- DIN rail mounting

The PN/CAN Gateway connects CANopen® devices in a PROFINET network. At the same time, it is a full-fledged CANopen® master.

As the master, it supports gateway network management, SYNC telegrams, and node guarding / heartbeat for monitoring the participants.

On the PROFINET network, the PN/CAN Gateway is a PROFINET IO device that supports transfer rates up to 100 Mbps full duplex, and on the CAN Bus up to 1 Mbps is supported.

The IO data (PDOs) of the CANopen® participants is transparently displayed in a freely configurable manner in the PROFINET network and can be processed directly in the PLC.

The PN/CAN Gateway is integrated with a GSDML file in the hardware configurator and can be completely configured there. Other software tools for parameterization or handling blocks for programming are not required.

Parameterization of the CANopen® participants using SDO telegrams and management of emergency messages is also possible.

Technical specifications	
Dimensions in mm (D x W x H)	35 x 83 x 72
Weight	Approx. 160 g
Power supply Voltage	24 V
Current draw max.	250 mA
CAN interface Type	ISO/DIN 11898-2 CAN high-speed physical layer
Transmission rate	10 kbps to 1 Mbps
Protocol	CANopen® master
Connection	Connector, SUB-D, 9-pin
PROFINET interfaces	
Protocol	PROFINET IO as per IEC 61158-6-10
Equipment	Ethernet
Transmission rate	100 Mbps full duplex
I/O image size	Up to 1440 bytes
Connection	2 x RJ45, integrated switch
Features	Conformance class B, Media Redundancy Protocol (MRP), automatic addressing / topology detection (LLDP, DCP)
Status indicator	3 two-color LEDs
Ambient temperature Transport and storage temperature	0 °C ... 60 °C -25 °C ... 75 °C
Protection rating	IP 20

Ordering Data	Order No.
PN/CAN Gateway, PROFINET/CANopen® (incl. CD with software and manual)	700-670-PNC01

Application example PN/CAN Gateway

CAN Bridge, connecting CAN networks

Features

- Enlargement of the network scope
- Connect different CAN networks
  (different baud rates / different protocols)
- Physical disconnection (electrical isolation)
- Reduced bus load on both CAN networks
- Autobaud detection
- Easy configuration mode
- For use with CAN 2.0A & 2.0B, CANopen®, DeviceNet, SAE J1939
- DIN rail mounting

The CAN Bridge makes it possible to connect two CAN networks of the same type or of different types.

It can be used as a message repeater to expand network distances as well as to connect different CAN networks together. It is immaterial whether the CAN networks have different baud rates or work with different protocols, such as CANopen® and a proprietary protocol.

A flexibly adjustable filtering logic can accept freely selectable identifiers and transfer them to the other network. The CAN messages are forwarded to the respective other CAN network according to the store-forward principle and sent out again. With the CAN Bridge, the CAN networks are physically decoupled (electrical isolation) and the bus load is reduced on both CAN networks. The CAN Bridge allows a flexible design of the network topology; star and tree structures as well as extensive line structures can be implemented.

The CAN Bridge can be configured for simple applications using the two rotary coding switches. For more complex applications, the supplied CAN Bridge parameterization software can be used to flexibly adjust the filtering and forwarding of CAN telegrams. Up to 256 range filters are available, along with up to 4 bit filters for address filtering. The configuration is imported through a USB interface and can also be read out again.

The CAN Bridge works both in 11-bit and 29-bit mode, and can communicate with baud rates from 10 Kbps to 1 Mbps. It has a powerful microcontroller that can operate even with extremely high data rates and bus loads without loss of messages. 5 LEDs indicate the status of the device and the connected CAN networks.
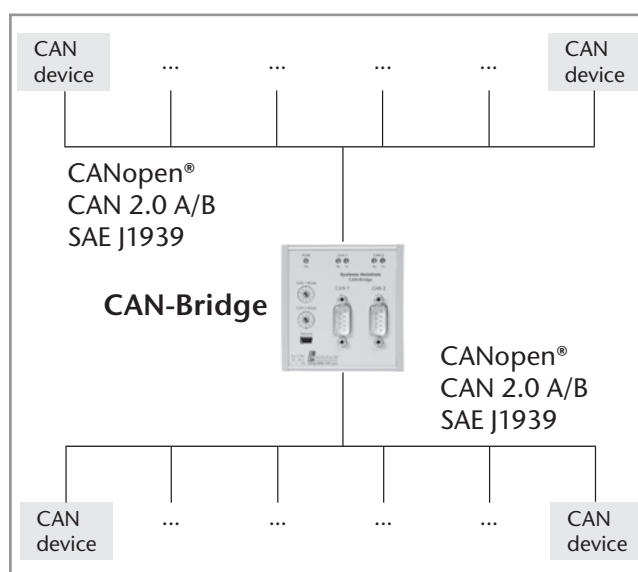
Technical specifications	
Dimensions in mm (D x W x H)	31 x 74 x 75
Weight	Approx. 130 g
Power supply Voltage	18 - 30 V DC
Current draw typ. max.	35 mA 60 mA
CAN interfaces Type	2 x ISO/DIN 11898-2 CAN high-speed physical layer
Transmission rate	10 kbps to 1 Mbps
Protocol	CAN 2.0A (11 bit) CAN 2.0B (29 bit) CANopen® SAE J1939 DeviceNet
Connection	2 x connector, SUB-D, 9-pin
Status indicator	5 LEDs
Configuration interface 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, connecting CAN networks 2 x CAN Bus connections (incl. software manual and USB programming cable)	700-660-2AA01

Interface converters

Programming adapter
RK512 and HMI adapter
S5 interface converters

SSW7, MPI programming adapter

SSW7, MPI programming adapter

Features

- Programming & visualizing
- Transfer rate up to 115 kbps
- MPI up to 187.5 kbps
- Power supply from the AD or external 24 V

Application example for SSW7

The SSW7 allows you to connect a PC or laptop with programming software to automation devices via every standard COM interface.

The SSW7 has automatic baud rate detection on the RS232 interface, which makes it possible for it to adapt to the set bit rate (9.6 to 115 kbps).

The MPI interface operates at 187.5 kbps or 19.2 kbps.

The SSW7 is supplied with voltage via the MPI bus from the CPU. With an optional 24 V connection, it can be used anywhere else on the bus line.
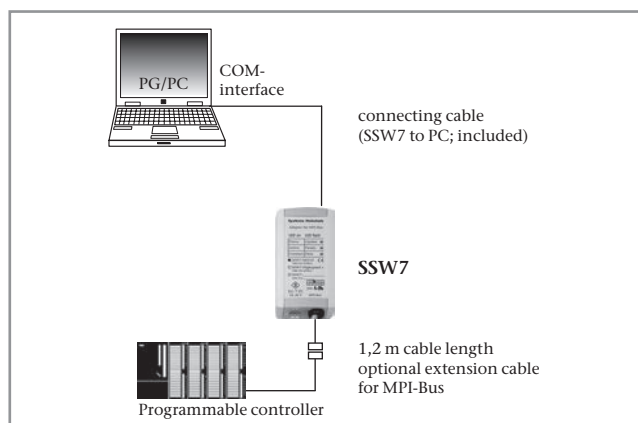
With the Speedup tool included in the scope of delivery, the maximum transmission rate of SSW7 can be achieved with any programming software.

Parameterization and diagnostic functions are possible using the SHTools software.

For a firmware update, the latest SHTools version is available for free download on our website www.helmholz.com.

Technical specifications

Technical specifications	
Dimensions in mm (D x W x H)	105 x 53 x 29
Weight	Approx. 180 g
Supply voltage	+24 V ±25 % from AD or external
Current draw typ. max.	30 mA 45 mA
MPI interface Type	RS485
Transmission rate	19.2 or 187.5 kbps
Connector	SUB-D, 9-pin
Communication interface Type	RS232/RS422
Transmission type	Asynchronous serial
Transmission rate	19.2 kbps ... 115.2 kbps
Parity	Odd
Data format	8 bits
Protocols	PC <-> S7
Connection	Connector, SUB-D, 9-pin
Protection rating	IP 20

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

Starting with STEP[1] 7 version 5.5 SP2, Siemens no longer supports serial COM ports under Windows 7[2] 64 bit. The TIA Portal[1] also no longer supports any COM ports – regardless of what operating system it is installed on!

Our technical sales representatives can provide you with advice on alternatives.

1) STEP and SIMATIC are registered trademarks of SIEMENS AG.
2) Windows is a registered trademark of Microsoft Corporation.

SSW7-USB, MPI programming adapter USB

Features

- Programming & visualization via USB
- MPI up to 187.5 kbps
- Power supply via USB
- Virtual COM port for flexible applications

Application example for SSW7-USB

The SSW7-USB enables 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 plugged directly into the CPU socket of the automation device and into any other point in an MPI network.

In the housing of the SSW7-USB, there is a USB socket of type "B". The SSW7-USB can be connected to the PC with the USB cable included in the scope of delivery. The SSW7-USB receives its voltage supply from the PC. It can therefore be used at any point on the MPI bus.
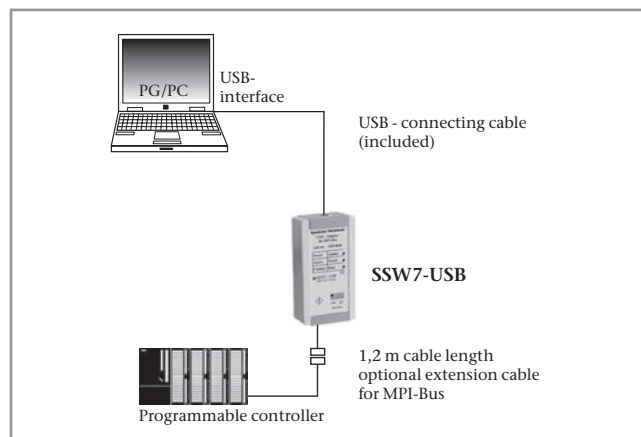
A driver for creating a virtual COM port is included.

Parameterization and diagnostic functions are possible using the SHTools software.

For a firmware update, the latest SHTools version is available for free download on our website www.helmholz.com.

Technical specifications	
Dimensions in mm (D x W x H)	105 x 53 x 29
Weight	Approx. 180 g
Supply voltage	5 V via USB
Current draw	Approx. 150 mA
MPI interface Type	RS485
Transmission rate	19.2 or 187.5 kbps
Connector	SUB-D, 9-pin
Communication interface Type	USB 1.1
Protocols	PC <-> S7
Connection	USB-B socket
Protection rating	IP 20

Starting with STEP[1] 7 version 5.5 SP2, Siemens no longer supports serial COM ports under Windows 7[2] 64 bit. The TIA Portal[1] also no longer supports any COM ports – regardless of what operating system it is installed on!

Our technical sales representatives can provide you with advice on alternatives.

1) STEP and SIMATIC are registered trademarks of SIEMENS AG.
2) Windows 7 is a registered trademark of Microsoft Corporation.

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

SSW7-RK512

SSW7-HMI
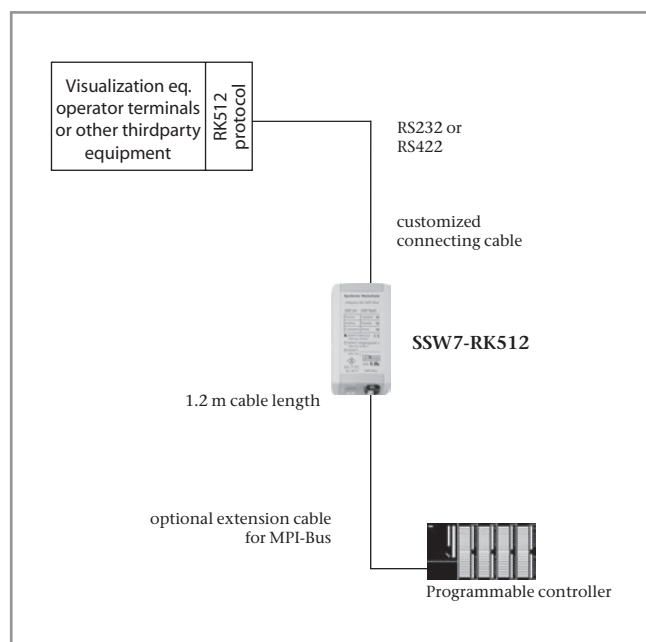
SSW7-RK512

With the SSW7-RK512 it is possible to bring operator terminals, visualization, or other external devices 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 by a parameterization program or with special RK512 telegrams to connect several SSW7-RK512 units or several ADs to an MPI bus.

The SSW7-RK512 has automatic baud rate detection on the RS232 interface, which makes it possible to adapt to the connected device (from 9.6 to 115 kbps). The MPI interface operates at 187.5 kbps.
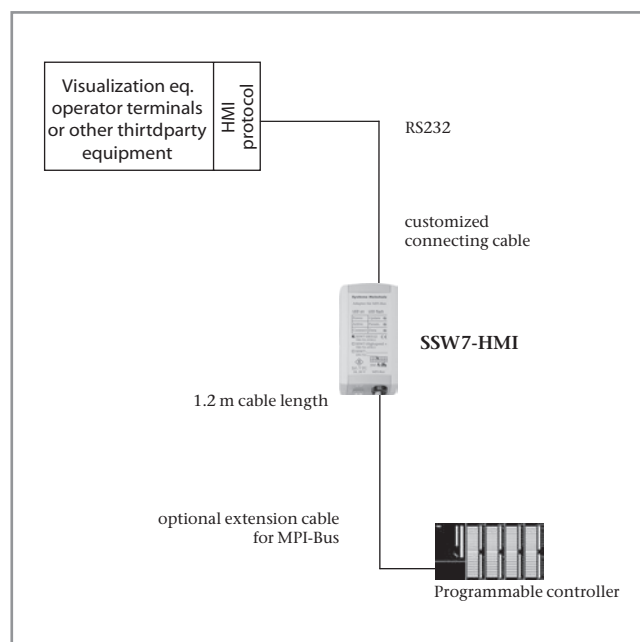
The SSW7-RK512 is supplied with voltage via the MPI bus of the CPU. With an optional 24 V connection, it can be used anywhere else in the system.

We provide the SSW7-RK512 with an additional programming interface on the connector, including a switchable terminating resistor.

The SSW7-RK512 is also available with RS422 interface.

Parameterization and diagnostic functions are possible using the SHTools software.

For a firmware update, the latest SHTools version is available for free download on our website www.helmholz.com.

SSW7-HMI

The SSW7-HMI is designed for use with operator terminals, visualizations or other third-party devices that support the HMI protocol from Siemens.

The baud rate of the adapter is set by the protocol (from 4.8 to 115 kbps).

The SSW7-HMI is supplied with voltage via the MPI bus of the CPU. With an optional 24 V connection, it can be used anywhere else in the system.

We provide the SSW7-HMI with an additional programming interface on the connector, including a switchable terminating resistor.

Parameterization and diagnostic functions are possible using the SHTools software.

For a firmware update, the latest SHTools version is available for free download on our website www.helmholz.com.

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

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

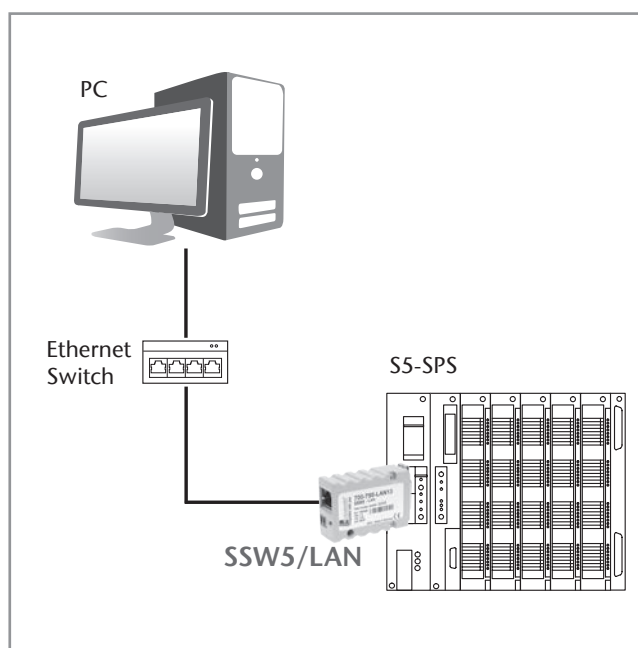| Technical specifications			
	SSW7-RK512	**SSW7-RK512 with RS422**	**SSW7-HMI**
	700-751-5VK21	**700-752-5VK21**	**700-751-9VK21**
Dimensions (D x W x H mm)	105 x 53 x 29	105 x 53 x 29	105 x 53 x 29
Weight	Approx. 180 g	Approx. 180 g	Approx. 180 g
Supply voltage (from the AD or power supply)	+24 V ±25 %	+24 V ±25 %	+24 V ±25 %
Current draw	Approx. 70 mA	Approx. 70 mA	Approx. 70 mA
MPI interface Type	RS485	RS485	RS485
Transmission rate	19.2 or 187.5 kbps	187.5 kbps	187.5 kbps
Connector	SUB-D, 9-pin with PG interface and terminating resistor	SUB-D, 9-pin with PG interface and terminating resistor	SUB-D, 9-pin with PG interface and terminating resistor
Communication interface Type	RS232	RS422	RS232
Transmission type	Asynchronous serial	Asynchronous serial	Asynchronous serial
Transmission rate	19.2 ... 115.2 kbps	19.2 ... 115.2 kbps	4.8 ... 115.2 kbps
Parity	Even	Even	Odd
Data format	8 bits	8 bits	8 bits
Protocols	RK512 with 3964/R	RK512 with 3964/R	HMI
Connection	Connector, SUB-D, 9-pin	Connector, SUB-D, 9-pin	Connector, SUB-D, 9-pin
Protection rating	IP 20	IP 20	IP 20

SSW5/LAN, S5 Ethernet converter

SSW5/LAN, S5 Ethernet converter

The SSW5/LAN is an S5 Ethernet converter which is suitable for programming S5 controllers via Ethernet.
A special virtual COM driver enables the use of common programming tools such as STEP[1] 5 V7.2 from Siemens.
The power is supplied via the CPU or externally (24 V). A virtual COM port is available for all current commissioning tools.

Features

- Program S5 via TCP/IP
- Virtual COM port for all common commissioning tools
- Power supply from the CPU or external 24 V
- Fits onto any standard S5-CPU
- Unique detection on the network through device names

Application example SSW5/LAN

Technical specifications	
Dimensions in mm (D x W x H)	65 x 21 x 42
Weight	Approx. 50 g
Power supply Voltage	Via AD interface or external
Current draw typ.	Approx. 55 mA
S5-AD interface Type	TTY, 20 mA
Transmission rate	9.6 kBaud
Protocol	AS 511
Connection	Sub-D connector, 15-pin
Ethernet interface Type	10 Base-T/100 Base-T; RJ45 socket
Transmission rate	10/100 Mbps
Port for device discovery	2362 (UDP)
Port for transmission	2001 (TCP/IP)
Ambient temperature Transport and storage temperature	0 °C ... 60 °C -25 °C ... 75 °C
Protection rating	IP 20

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.

SSW5/USB programming cable

Application example SSW5/USB programming cable

The SSW5/USB programming cable enables a connection between a PC or laptop via USB to an S5 PLC.
A special virtual COM driver enables the use of common programming tools such as STEP[1] 5 V7.2 from Siemens.
The SSW5/USB is equipped with a 15-pin Sub-D connector.

Technical specifications	
Conversion Interface	USB to TTY USB
Transmission	USB
TTY interface	SUB-D plug, 15-pin
Max. transfer rate	38400 bps
Max. cable length	5 m
Tapping of the supply voltage	On the USB side

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

1) STEP is a registered trademark of Siemens AG.

SSW3, interface converter cable
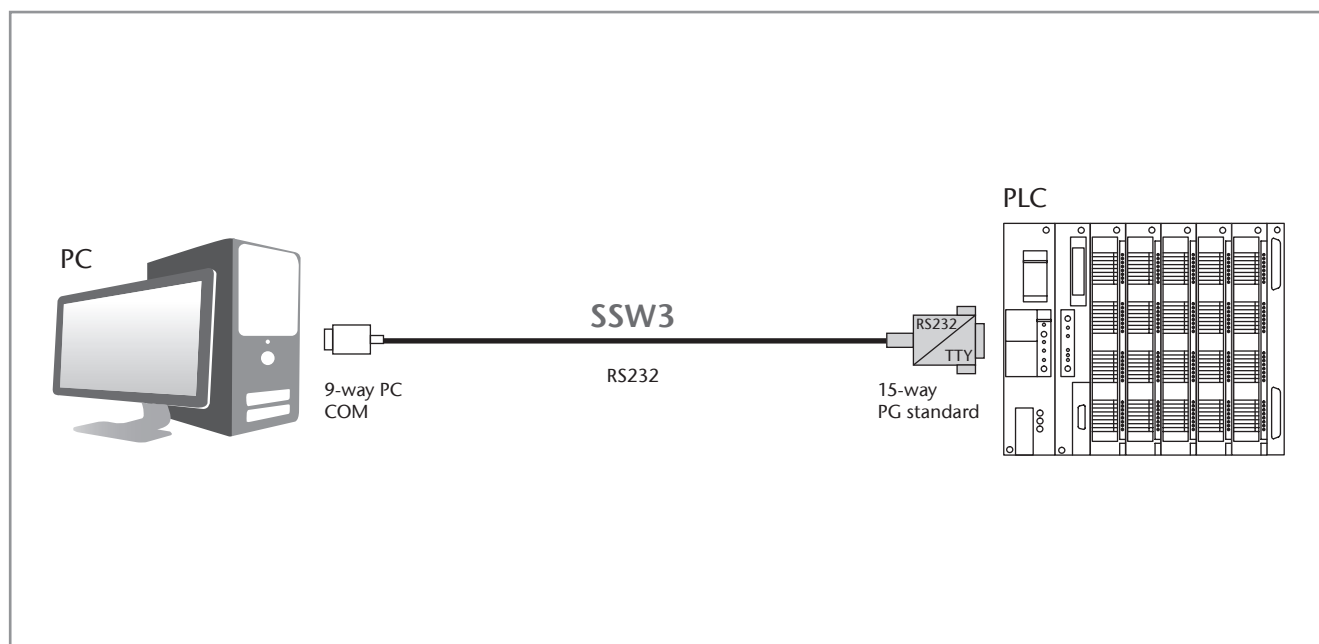
SSW3, interface converter cable

The SSW3 interface converter cable enables a connection between a PC and a PLC.

The RS232/TTY converter is completely integrated into the 15-pin connector housing; an external power supply is therefore not required.

The transmission of data signals is over an RS232 connection.

Use in conjunction with:
• Every programming software on a PC
• Online linking to the AD with data exchange
• Visualization and linking software

Ordering Data	Order No.
SSW3, 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**

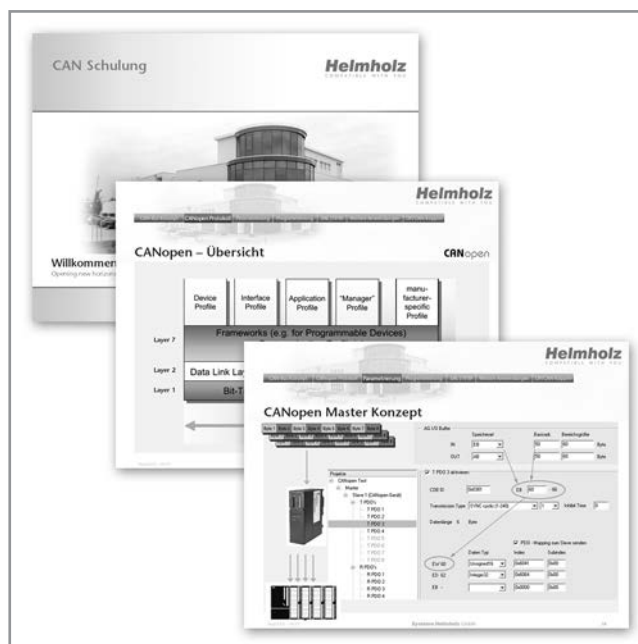| Technical specifications	
Conversion	RS232 to TTY
Transmission	RS232
RS232 interface	SUB-D socket, 9-pin
TTY interface	SUB-D connector, 15-pin
Max. transmission rate	38400 bps
Max. cable length	15 m
Tapping of the supply voltage	On the AD side

Service

Product training

User workshops

National and international contacts

Helmholz also offers product training courses if required:
In our product training, we teach you all you need to know about correct handling of products using practical examples.
Our consultants are available by appointment to advise you in detail.
The training takes place in Großenseebach in the main building. On-site training is also possible.

Please request an individual quote for this.

Contents of a CAN training course:
- CAN concept
- CAN Layer 2 protocol
- CANopen® protocol
- SAE J1939 protocol
- CAN 300/CAN 400 parameterization & commissioning
- CAN 300/CAN 400 programming in STEP[1] 7
- DP/CAN coupler

Ordering Data	Order No.
CAN training course CAN/CANopen®/CAN products, 1 day, per participant	400-600-CAN01

1) STEP is a registered trademark of Siemens AG.

REX user workshop
You want ...
... to carry out teleservice independently of the modem?
... fast teleservice?
... to remotely maintain Ethernet devices?
... high availability?

Then take part in one of our user workshops!

In our user workshops on the topic of Ethernet routers, find out which requirements are necessary for Internet teleservice, what problems must be considered, and how to deal with them.
For optimal learning of the course content, you will configure a teleservice connection yourself on a test setup.

Objective
As a participant, you will be trained on the following topics in a practical manner:
• REX industrial router family
  • Applications
  • Commissioning

• VPN portal myREX24
  • Opportunities / benefits
  • Performing teleservice

• REX 300 Toolbox
  • Capturing/analyzing S7 data
  • Alarms by SMS and e-mail
  • Parameterizing visualization
  • EIB/KNX and M-BUS connection

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