Catalog 11 English

Systeme Helmholz®
compatible with you

System Components for Automation

Catalog 11





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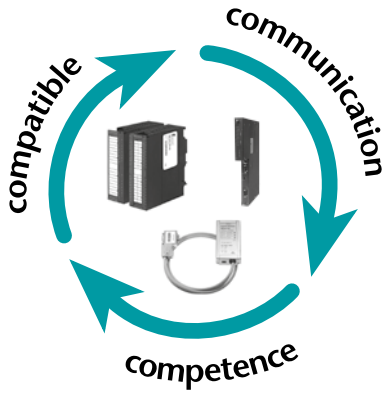
Abstract



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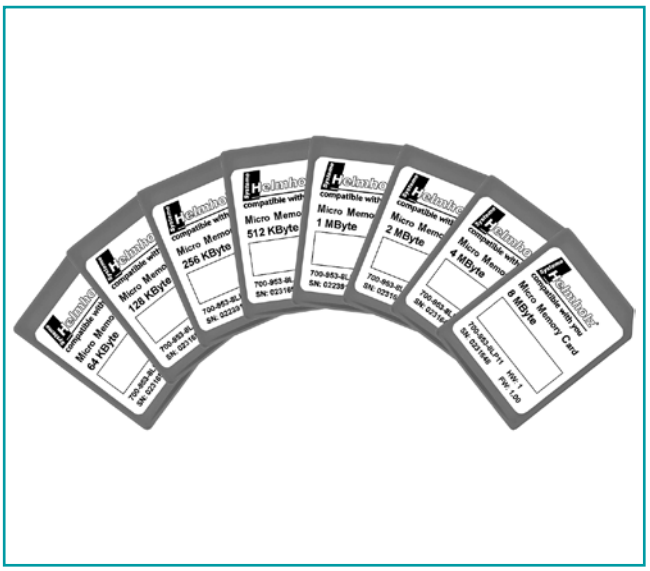


Micro Memory Cards

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

We are able to offer you a very advantageous price-performance ratio due to our modern production methods.

Ordering Data

	Order-No.
Micro Memory Cards	
64 kByte	**700-953-8LF11**
128 kByte	**700-953-8LG11**
256 kByte	**700-953-8LH11**
512 kByte	**700-953-8LJ11**
1 MByte	**700-953-8LK11**
2 MByte	**700-953-8LL11**
4 MByte	**700-953-8LM11**
8 MByte	**700-953-8LP11**

Technical Data

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

Memory Cards

Memory Card short type, long type

Memory Cards from the Systeme Helmholz GmbH are designed for use in CPU modules CPU 313 to CPU 318-2 (Memory Cards short type) and CPU modules CPU 412 to CPU 417(long type). We have been able to achieve top quality standards and a very advantageous price-performance ratio with the use of modern manufacturing methods.

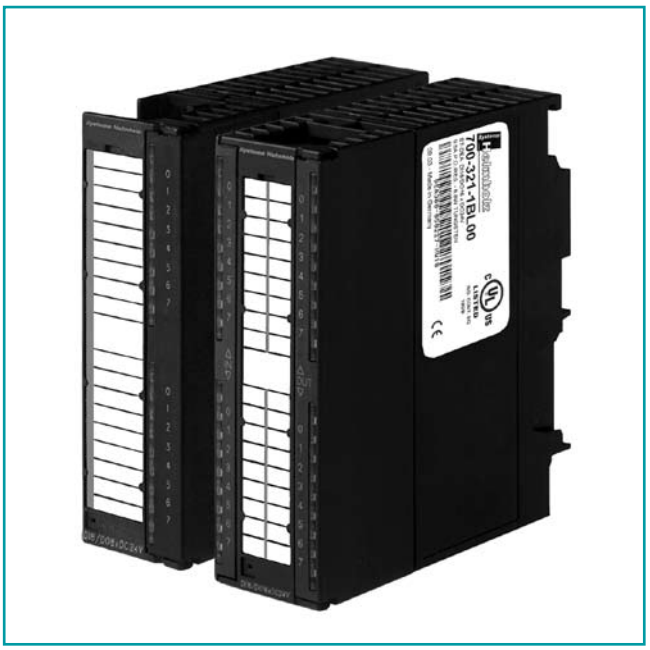
Our product program covers the range of the most common submodules.

Ordering Data	Order-No.
Flash EPROM Cards, short	
16 kByte	700-951-0KD00
32 kByte	700-951-0KE00
64 kByte	700-951-0KF00
128 kByte	700-951-0KG00
256 kByte	700-951-1KH00
512 kByte	700-951-0KJ00
1 MByte	700-951-1KK00
2 MByte	700-951-1KL00
4 MByte	700-951-1KM00
RAM Cards, short	
128 kByte	700-951-0AG00
256 kByte	700-951-1AH00
512 kByte	700-951-1AJ00
1 MByte	700-951-1AK00
2 MByte	700-951-1AL00
Flash EPROM Cards, long	
64 kByte	700-952-0KF00
256 kByte	700-952-0KH00
1 MByte	700-952-1KK00
2 MByte	700-952-1KL00
4 MByte	700-952-1KM00
8 MByte	700-952-1KP00
16 MByte	700-952-1KS00
RAM Cards, long	
64 kByte	700-952-0AF00
256 kByte	700-952-1AH00
1 MByte	700-952-1AK00
2 MByte	700-952-1AL00
4 MByte	700-952-1AM00
8 MByte	700-952-1AP00

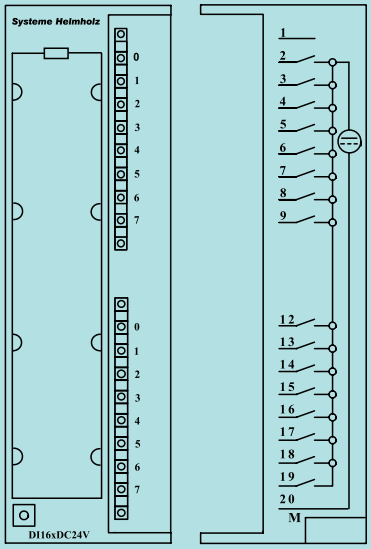
Technical Data	
Flash EPROM Cards, short Memory capacity	16 kByte, 32 kByte, 64 kByte, 128 kByte, 256 kByte, 512 kByte, 1 MByte, 2 MByte, 4 MByte
Applications	CPU 313 to 318-2
RAM Cards, short Memory capacity	128 kByte, 256 kByte, 512 kByte, 1 MByte, 2 MByte
Applications	CPU 318-2 only

Technical Data	
Flash EPROM Cards, long Memory capacity	64 kByte, 256 kByte, 1 MByte, 2 MByte, 4 MByte, 8 MByte, 16 MByte
Applications	CPU 412 to 417
RAM Cards, long Memory capacity	64 kByte, 256 kByte, 1 MByte, 2 MByte, 4 MByte, 8 MByte
Applications	CPU 412 to 417

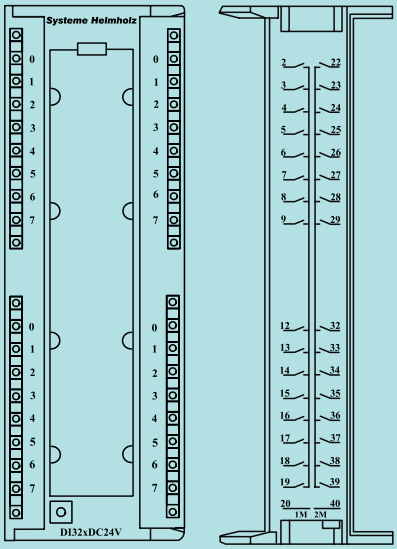
DEA 300, Digital Input Modules



Digital input modules with 16 and 32 inputs



700-321-1BH02



700-321-1BL00

The digital inputs convert the external binary signals from the process into the internal signal level of the programmable controller.
Green LEDs indicate the signal state of the inputs and outputs.
The inputs of the modules from the Systeme Helmholz GmbH are also suitable for connection of 2-wire proximity switches.
Modules with modified specifications or special modules can be supplied on request.

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 32 - 34).

c UL us LISTED

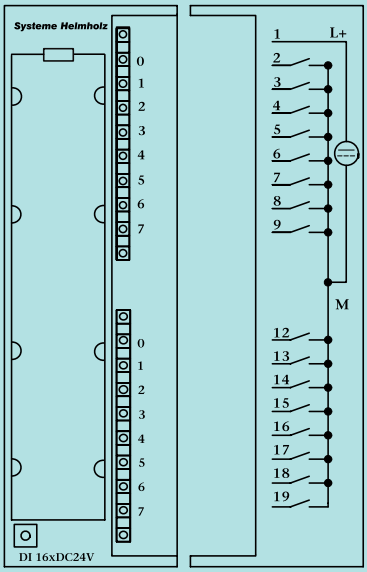
Open type Programmable Controllers, for use in Hazardous Locations, Class I, Div. 2 Groups A, B, C, D T4 including Class I Zone 2 IIC.

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

Technical Data			
		700-321-1BH02	**700-321-1BL00**
Number of inputs		**16**	**32**
Isolation (from backplane bus) in groups of		yes (optocoupler) 16	yes (optocoupler) 16
Input voltage • nom. value • for „0“ signal • for „1“ signal		 DC 24 V -3 ... +5 V +13 ... +30 V	 DC 24 V -3 ... +5 V +13 ... +30 V
Input current • for „1“ signal	typ.	 7 mA	 7 mA
Delay time	typ.	1.2 ... 4.8 ms	1.2 ... 4.8 ms
Connection of 2-wire initiator perm. quiescent current for „0“ signal	 max.	yes 1.5 mA	yes 1.5 mA
Cable length • unshielded • shielded	 max. max.	 600 m 1000 m	 600 m 1000 m
Current consumption • internal (backplane bus) • external (from +24 V)	 typ. max.	 20 mA 140 mA	 30 mA 290 mA
Power loss (rated operation)	typ.	3.5 W	6.8 W
Front connector		20-way	40-way
Surrounding air 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 Module, m-reading

DEA 300, m-reading



700-321-1BH50

The digital inputs convert the external binary signals from the process into the internal signal level of the programmable controller.
Green LEDs indicate the signal state of the inputs and outputs.
The inputs of the modules from the Systeme Helmholz GmbH are also suitable for connection of 2-wire proximity switches.
Modules with modified specifications or special modules can be supplied on request.

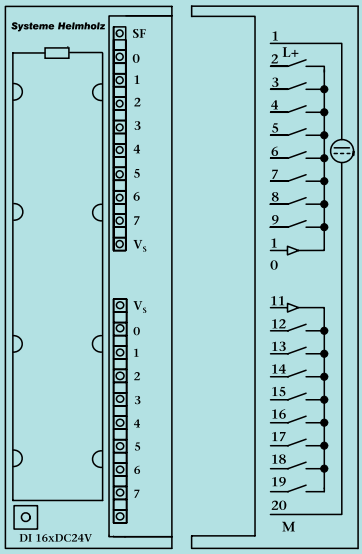
Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 32 - 34).

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

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

DEA 300, Digital Input Module with Alerts

DEA 300, with Alerts



700-321-7BH01

The digital inputs convert the external binary signals from the process into the internal signal level of the programmable controller.
Green LEDs indicate the signal state of the inputs and outputs.
The inputs of the modules from the Systeme Helmholz GmbH are also suitable for connection of 2-wire proximity switches.
This module offers as additional features parameterizable diagnostics, diagnostic- and processalerts, as well as a parameterizable input delay.
Modules with modified specifications or special modules can be supplied on request.

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 32 - 34).

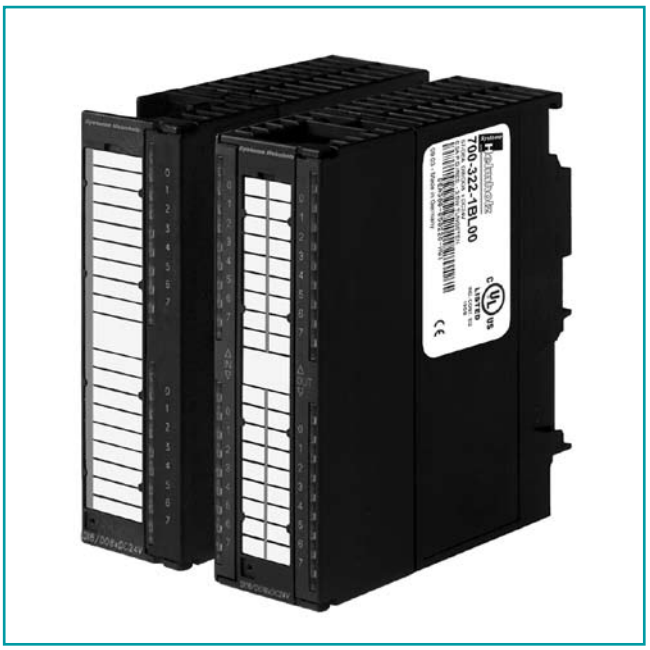
Features

- Parameterizable diagnostics
- Diagnostic- and processalerts
- Parameterizable input delay

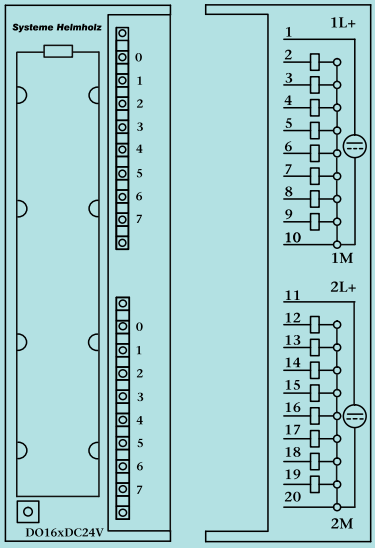
Technical Data	
Number of inputs	**16**
Isolation against backplane bus in groups of	yes (optocoupler) 16
Input voltage, **reference potential is L+** • nom. value • for Signal „0“ • for Signal „1“	 DC 24 V -30 ... +5 V +13 ... +30 V
Input current • for Signal „1“	 7 mA
Delay time parameterizable	yes (0,1; 0,5; 3; 15; 20 ms)
Diagnostics	parameterizable
Process alerts	parameterizable
Diagnostic alerts	parameterizable
Conduction length • unshielded • shielded	 600 m 1000 m
Current consumption • internal (backplane bus) typ. • extern L+, DC 24 V	 130 mA 90 mA
Encoder power supply outputs Output voltage	 min L+ DC -2.5 V
Output current	0 ... 150 mA
Short-circuit protection	electrical
Power loss (nominal operation)	4 W
Front connector	20-way
Surrounding air temperature Transport and storage temperature	0°C ... 60°C -25°C ... 75°C

Ordering Data	
	Order-No.
DEA 300 16 inputs, with Alerts	**700-321-7BH01**
Manual DEA 300, German/English	**900-321-1DE11**

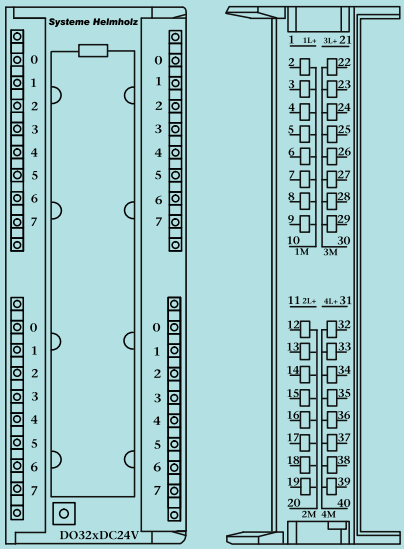
DEA 300, Digital Output Modules



Digital output modules with 16 and 32 outputs



700-322-1BH01



700-322-1BL00

The digital outputs convert the internal signal level to the external signal level required for the process. Green LEDs indicate the signal state of the outputs.
The outputs of the modules from the Systeme Helmholz GmbH are also suitable for connection of, for example, solenoid valves, contactors, and small-power motors within the permissible data. Modules with modified specifications or special modules can be supplied on request.

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 32 - 34).

c UL us LISTED

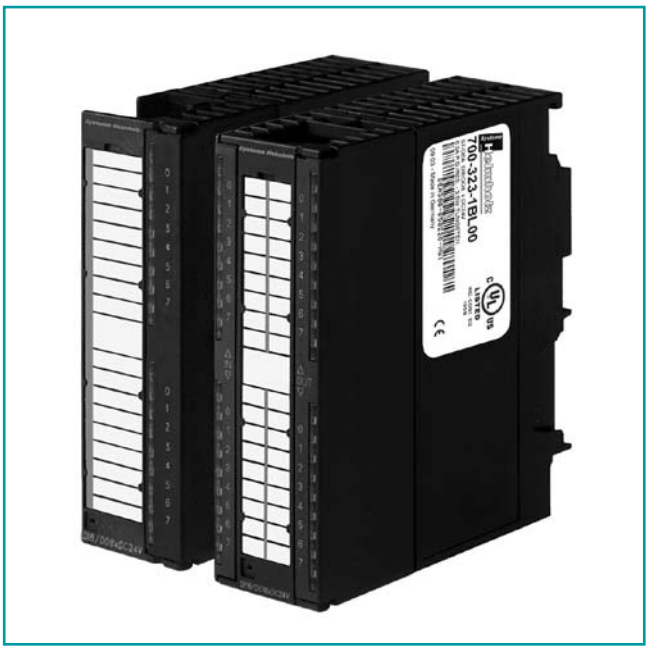
Open type Programmable Controllers, for use in Hazardous Locations, Class I, Div. 2 Groups A, B, C, D T4 including Class I Zone 2 IIC.

Ordering Data	
	Order-No.
DEA 300 16 outputs (DC 24 V; 0,5 A) 32 outputs (DC 24 V; 0,5 A)	 **700-322-1BH01** **700-322-1BL00**
Manual DEA 300, German/English	**900-321-1DE11**

DEA 300, Digital Output Modules

Technical Data			
		700-322-1BH01	**700-322-1BL00**
Number of outputs		**16**	**32**
Isolation against backplane bus in groups of		yes (optocoupler) 8	yes (optocoupler) 8
Supply voltage V_P, V_S • nom. value • ripple V_{PP} • permissible range (with ripple) • value at t < 10 ms	 max.	 DC 24 V 3.6 V 20 ... 30 V 50 V	 DC 24 V 3.6 V 20 ... 30 V 50 V
Output current • nom. value		 0.5 A	 0.5 A
Short-circuit protection		electrical	electrical
Voltage induced on circuit interruption limited to		-48 V	-48 V
Cable length • unshielded • shielded	 max. max.	 600 m 1000 m	 600 m 1000 m
Current consumption • internal (backplane bus) • ext. w/o load (from +24 V)	 max. typ.	 100 mA 120 mA	 125 mA 200 mA
Power loss (nominal operation)	typ.	5 W	6,8 W
Front connector		20-way	40-way
Surrounding air 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 Modules

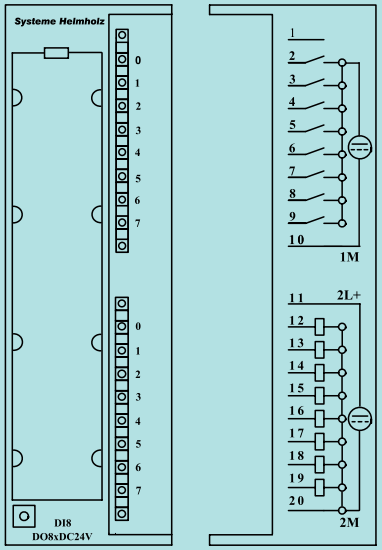


Digital input/output modules

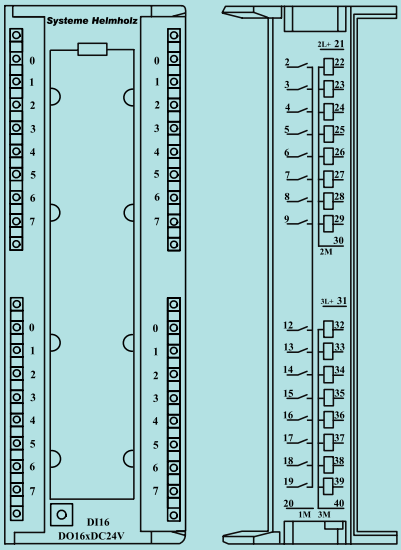
The digital inputs convert the external binary signals from the process into the internal signal level of the programmable controller.
The digital outputs convert the internal signal level of the programmable controllers into the external binary signal level required for the process. Green LEDs indicate the signal state of the inputs and outputs.
The inputs of the modules from the Systeme Helmholz GmbH are also suitable for connection of 2-wire proximity switches, the outputs for connection of, for example, solenoid valves, contactors, and small motors within the permissible data.
Modules with modified specifications or special modules can be supplied on request.

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 32 - 34).

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

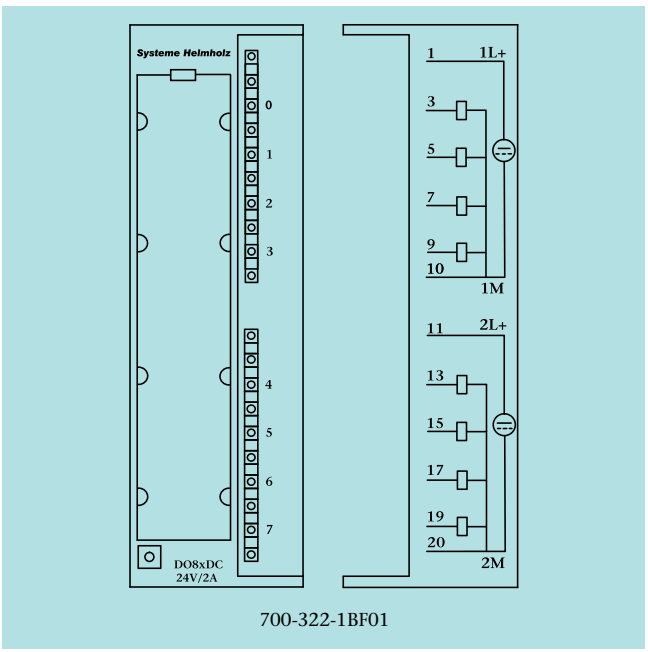
Ordering Data	
	Order-No.
DEA 300 8 inputs (DC 24 V)/ 8 outputs (DC 24 V; 0,5 A)	**700-323-1BH01**
16 inputs (DC 24 V)/ 16 outputs (DC 24 V; 0,5 A)	**700-323-1BL00**
Manual DEA 300, German/English	**900-321-1DE11**

DEA 300, Digital Input/Output Modules

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

Digital output module; 8 outputs, 2 amps



700-322-1BF01

The digital outputs convert the internal signal level to the external signal level required for the process. Green LEDs indicate the signal state of the outputs.
The outputs of the modules from the Systeme Helmholz GmbH are also suitable for connection of, for example, solenoid valves, contactors, and small-power motors within the permissible data. The output power of 2 amps per channel is also suitable for larger loads.

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 32 - 34).

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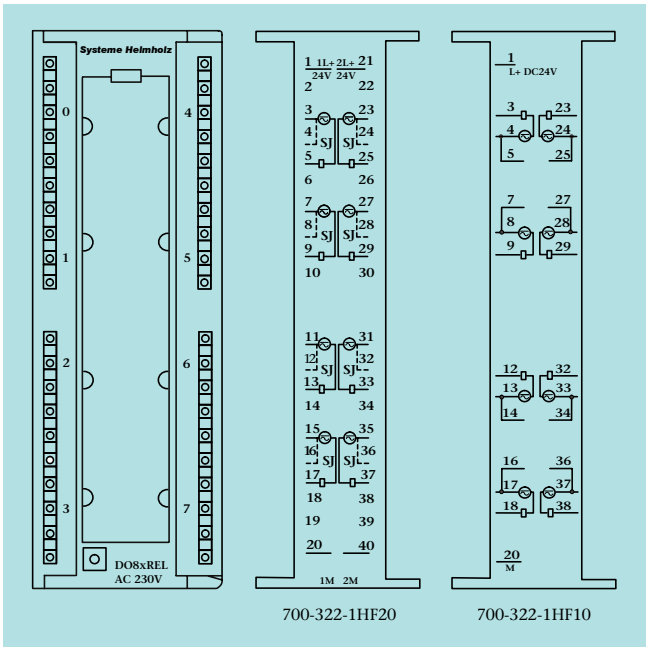
Technical Data	
Number of outputs	**8**
Isolation (from backplane bus) in groups of	yes (optocoupler) 4
Supply voltage V_P, V_S • nom. value • ripple V_{PP} max. • permissible range (with ripple) • value at t < 10 ms max.	 DC 24 V 3.6 V 20 ... 30 V 40 V
Output current • nom. value	 2 A
Aggregate current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

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

DEA 300, Digital Output Convert; Relays

Digital output convert; 8 relays



The digital outputs convert the internal signal level into the external signal levels required for the process.
Green LEDs indicate the signal state of the outputs.
The outputs of the modules from the Systeme Helmholz GmbH are suitable for connection of solenoid valves, contactors, and small-power motors within the permissible range, etc. The output power of up to 5 amps per group is also suitable for larger loads.

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 32 - 34).

c UL us LISTED

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

Technical Data		
		700-322-1HF10/20
Number of outputs		**8**
Nom. load voltage L+/L-		DC 24 V
Switching voltage		AC to 230 V DC to 120 V
Output current Aggregate current of the output (per group)	max.	 5 A
Isolation to • backplane bus • in groups		 optocoupler 1
Switching frequency • resistive load • inductive load • lamp load • mechanical	max. max. max. max.	 2 Hz 0.5 Hz 2 Hz 10 Hz
Rated load • resistive load • inductive load	max. max.	 8 A (AC 230 V) 8 A (DC 24 V) 3 A (AC 230 V) 2 A (DC 24 V)
Expected life • mechanical • resistive load		 10 Mio. 5 A, 0.2 Mio.
Surrounding air temperature Transport and storage temperature		0°C ... 60°C -25°C ... 75°C

DEA 300, Digital Output Convert; Relays

Digital output convert, 16 relays

The digital outputs convert the internal signal level into the external signal levels required for the process.
Green LEDs indicate the signal state of the outputs.
The outputs of the modules from the Systeme Helmholz GmbH are suitable for connection of solenoid valves, contactors, and small-power motors within the permissible range, etc. The output power of up to 8 amps per group is also suitable for larger loads.

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 32 - 34).

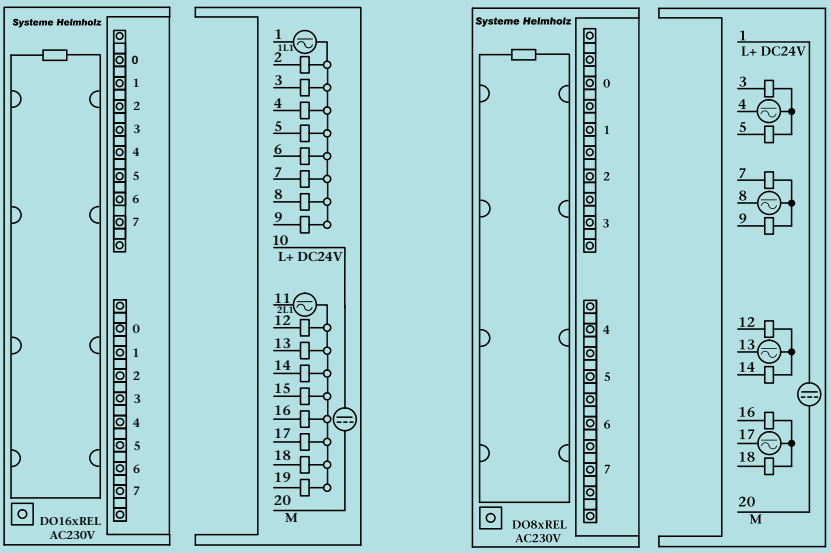
Order-No. 700-322-1HH01:
Open type Programmable Controllers, for use in Hazardous Locations, Class I, Div. 2 Groups A, B, C, D T6 including Class I Zone 2, IIC.

Technical Data

	700-322-1HH01	700-322-1HF01
Number of outputs	**16**	**8**
Nom. load voltage L+/L-	DC 24 V	DC 24 V
Switching voltage	AC to 230 V DC to 120 V	AC to 230 V DC to 120 V
Output current Aggregate current of the output (per group) max.	8 A	4 A
Isolation to backplane bus • in groups	optocoupler 8	optocoupler 2
Continuos thermal current	2 A	3 A
Switching frequency • resistive load max. • inductive load max. • lamp load max. • mechanical max.	 1 Hz 0,5 Hz 1 Hz 10 Hz	 2 Hz 0,5 Hz 2 Hz 10 Hz
Rated load • resistive load max. • inductive load max.	 2 A (AC 230 V) 2 A (DC 24 V) 2 A (AC 120 V) 2 A (DC 24 V)	 2 A (AC 230 V) 2 A (DC 24 V) 2 A (AC 120 V) 2 A (DC 24 V)
Expected life • mechanical • resistive load	 10 Mio. 2 A, 1 Mio.	 10 Mio. 2 A, 0,7 Mio.
Surrounding air 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 16 outputs, relays, 2 A 8 outputs, relays, 2 A	 **700-322-1HH01** **700-322-1HF01**
Manual DEA 300, German/English	**900-321-1DE11**



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

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DEA 300, Digital Input Modules; 120/230 V

Digital input convert, 120/230 V

The digital inputs convert the external binary signals from the process into the internal signal level of the programmable controller.
Green LEDs indicate the signal state of the inputs and outputs.
The inputs of the modules from the Systeme Helmholz GmbH are also suitable for connection of 2-wire proximity switches.
This module offers as additional features parameterizable diagnostic- and processalerts, as well as a parameterizable input delay.
Modules with modified specifications or special modules can be supplied on request.

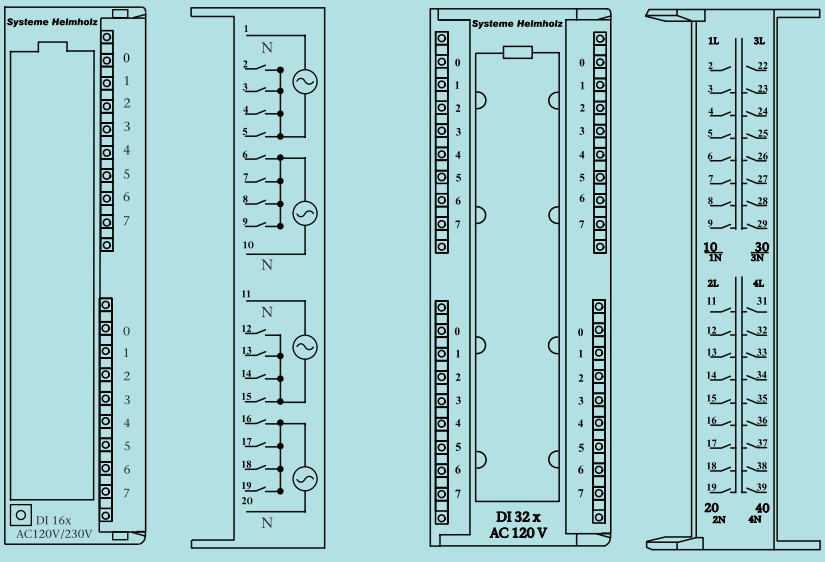
Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 32 - 34).

Technical Data

	700-321-1FH00	700-321-1EL00
Number of inputs	**16**	**32**
Isolation to backplane bus • in groups	yes (optocoupler) 4	yes (optocoupler) 8
Input voltage, • nom. value (input voltage must be equal on all phases) • for Signal „0“ • for Signal „1“ • frequency range	120/230 V AC 0 ... 40 V 79 ... 264 V 47 ... 63 Hz	120 V AC 0 ... 20 V 74 ... 132 V 47 ... 63 Hz
Input current for signal „1“ • 120 V, 60 Hz typ. • 230 V, 50 Hz typ.	 8 mA 13 mA	 22 mA -
Delay time • from “0“ to “1“ typ. • from “1“ to “0“ typ.	 25 ms 25 ms	 15 ms 25 ms
Cable length • unshielded max. • shielded max.	 600 m 1000 m	 600 m 1000 m
Current consumption • internal max	30 mA	16 mA
Power loss typ.	4,5 W	5,8 W
Surrounding air 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 16 inputs, AC 120 V/230 V 32 inputs, AC 120 V	 **700-321-1FH00** **700-321-1EL00**
Manual DEA 300, German/English	**900-321-1DE11**



700-321-1FH00

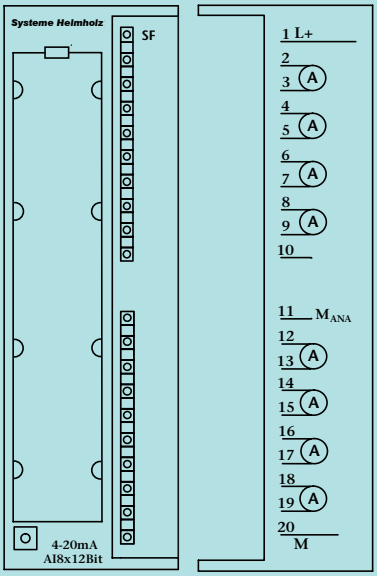
700-321-1EL00

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.

c UL us LISTED

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

Analog input module



700-331-4MA20

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

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 32 - 34).

c UL us LISTED

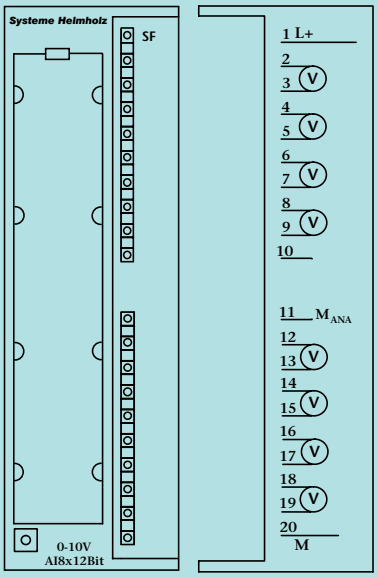
Open type Programmable Controllers, for use in Hazardous Locations, Class I, Div. 2 Groups A, B, C, D T6 including Class I Zone 2, IIC.

Technical Data	
Number of inputs	**8**
Alarms • Limit value alarm • Diagnostic alarm	 parameterizable parameterizable for channels 0 and 2
Diagnostics	red LED for group error display
Nom. load voltage L+/L-	DC 24 V
Polarity reversal protection	yes
Input ranges • Current, 4 DMU • Current, 2 DMU	 ±3,2 mA/25 Ω ±10 mA/25 Ω 0 ... 20 mA/25 Ω 4 ... 20 mA/25 Ω ±20 mA/25 Ω 4 ... 20 mA/25 Ω
Permissible input current for current input max.	40 mA
Isolation against backplane bus	yes
Conversion time/resolution (per chann.) • integration time • noise suppression for interference frequency • resolution (SG = sign) (depends on integration time)	 2,5/16,6/20/100 ms 400/60/50/10 Hz 9 + VZ / 12 + VZ / 12 + VZ / 14 + VZ Bit
Operational limit max.	±0,6%
Basic error limit at 25 °C max.	±0,5%
Cable length (shielded)	200 m
Current consumption • internal (backplane bus) typ. • external (L+) max.	 120 mA 200 mA
Power loss typ.	1,8 W
Front connector	20-way
Surrounding air temperature Transport and storage temperature	0°C ... +60°C -25°C ... +75°C

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

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

Analog input module



700-331-0V010

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

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 32 - 34).

c UL us LISTED

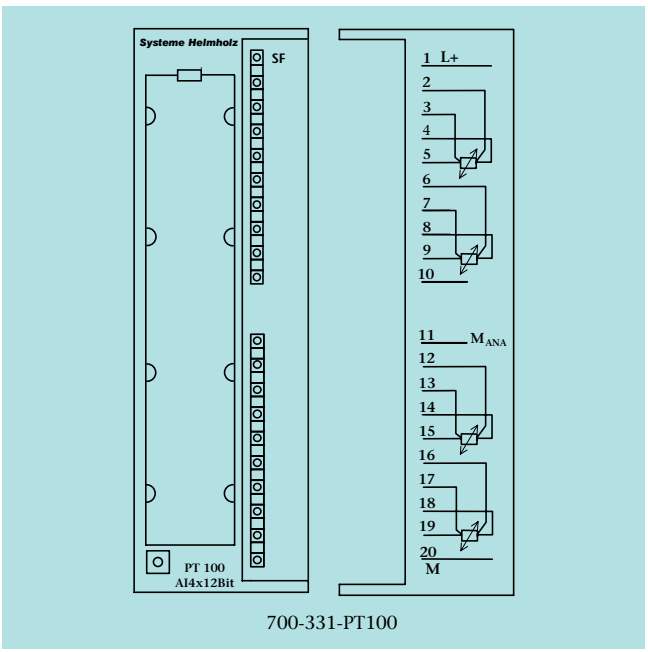
Open type Programmable Controllers, for use in Hazardous Locations, Class I, Div. 2 Groups A, B, C, D T6 including Class I Zone 2, IIC.

Technical Data		
Number of inputs		**8**
Alarms • Diagnostic alarm • Limit value alarm		parameterizable parameterizable for channels 0 and 2
Diagnostics		red LED for group error display
Nom. load voltage L+/L-		DC 24 V
Polarity reversal protection		yes
Input ranges Voltage/ input impedance		±80 mV/10 M Ω ±250 mV/10 M Ω ±500 mV/10 M Ω ±1 V/10 M Ω ±2,5 V/100 k Ω ±5 V/100 k Ω 1 ... 5 V/100 k Ω ±10 V/100 k Ω
Permiss. input voltage for voltage input	max.	20 V
Isolation against backplane bus		yes
Conversion time/resolution (per channel) • integration time • noise suppression for interference frequency • resolution (SG = sign) (depends on integration time)		2,5/16,6/20/100 ms 400/60/50/10 Hz 9 + VZ / 12 + VZ / 12 + VZ / 14 + VZ Bit
Operational limit	max.	±0,6%
Basic error limit at 25 °C	max.	±0,5%
Cable length (shielded)	max.	200 m (50 m bei ±80 mV)
Current consumption • internal (backplane bus) • external (L+)	typ. max.	120 mA 200 mA
Power loss	typ.	1,8 W
Front connector		20-way
Surrounding air temperature Transport and storage temperature		0°C ... +60°C -25°C ... +75°C

Ordering Data	
	Orderl-No.
AEA 300 8 voltage inputs, for connection of voltage sensors	**700-331-0V010**
Manual AEA 300, German/English	**900-331-0AA01**

AEA 300, Analog Input Module for Connecting Resistance Thermometers

Analog input module



700-331-PT100

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

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 32 - 34).

c UL us LISTED

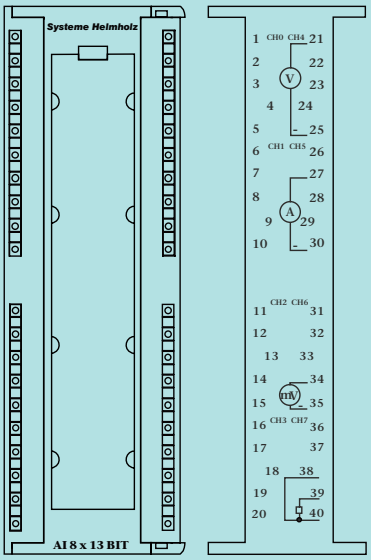
Open type Programmable Controllers, for use in Hazardous Locations, Class I, Div. 2 Groups A, B, C, D T6 including Class I Zone 2, IIC.

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

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

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

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



700-331-1KF01

The analog input modules from the Systeme Helmholz GmbH convert the analog signals from the process to the internal signal level of the programmable controllers.
This module is suitable for connection of sensors with current signals in the range up to ±20 mA, of sensors with voltage signals in the range up to ±10 V, of Pt100/Ni100 sensors and resistors.
The signal lines are connected to the corresponding front connectors. You can identify them on the labeling strip.
The modules can be fully parameterized with the hardware configurator of the programming software. Hardware configuration is not necessary (**no** range card).

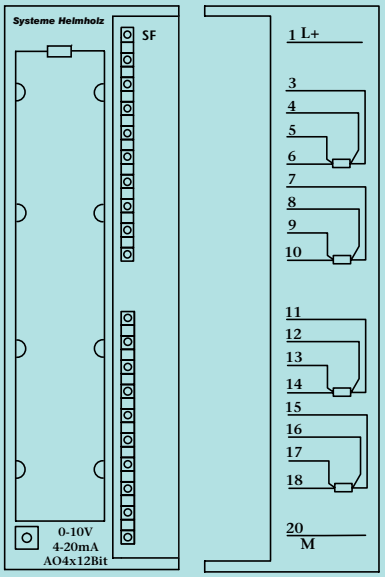
Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 32 - 34).

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

Ordering Data	
	Order-No.
AEA 300 8 inputs, for connection of current signals, voltage signals, resistance	 **700-331-1KF01**
Manual AEA 300, German/English	**900-331-0AA01**

AEA 300, Analog Output Module; 4-Channel

4-channel analog output module



700-332-5HD01

The analog output modules from the Systeme Helmholz GmbH convert the internal signal level of the programmable controllers to the analog signal level required for the process.
This 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. You can identify them on the labeling strip.
The modules can be fully configured with the programming software. Hardware switchover is not necessary.

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 32 - 34).

c UL us LISTED

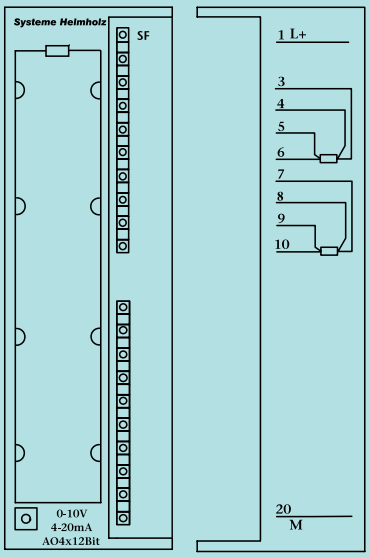
Open type Programmable Controllers, for use in Hazardous Locations, Class I, Div. 2 Groups A, B, C, D T6 including Class I

Technical Data		
Number of outputs		**4**
Diagnostics alarm		yes, parameterizable
Diagnostics		red LED for group error display
Nom. load voltage		DC 24 V
Output ranges		
• voltage outputs		0 ... 10 V; ±10 V; 1 ... 5 V
• current outputs		4 ... 20 mA; ±20 mA; 0 ... 20 mA
Load impedance		
• for voltage outputs	min.	1 kΩ
• for current outputs	max.	500 Ω
• at capacitive load	max.	1 µF
• at inductive load	max.	10 mH
Voltage output		
• short-circuit protection		yes
• short-circuit current	max.	25 mA
Current output		
• open-circuit voltage	max.	18 V
Isolation against backplane bus		yes
Operational limit (0 to 60 °C, with reference to output range)		
• voltage		±0,5 %
• current		±0,6 %
Basic error limit (operational limit at 25 °C, with reference to output range)		
• voltage		±0,4%
• current		±0,5 %
Cable length (shielded)	max.	200 m
Current consumption		
• internal (from backplane bus)	typ.	100 mA
• external, without load	max.	240 mA
Power loss	typ.	3 W
Front connector		20-way
Surrounding air temperature Transport and storage temperature		0°C ... +60°C -25°C ... +75°C

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

AEA 300, Analog Output Modules; 2-Channel

2-channel analog output module



700-332-5HB01

The analog output modules from the Systeme Helmholz GmbH convert the internal signal level of the programmable controllers to the analog signal level required for the process.
This 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. You can identify them on the labeling strip.
The modules can be fully configured with the programming software. Hardware switchover is not necessary.

Accessory-Note
The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 32 - 34).

c UL us LISTED

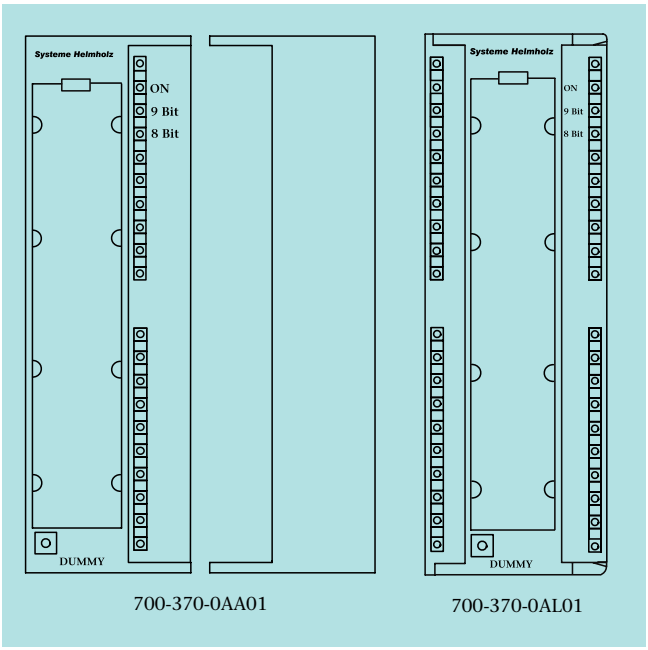
Open type Programmable Controllers, for use in Hazardous Locations, Class I, Div. 2 Groups A, B, C, D T6 including Class I Zone 2, IIC.

Technical Data		
Number of outputs		**2**
Diagnostics alarm		yes, parameterizable
Diagnostics		red LED for group error display
Nom. load voltage		DC 24 V
Output ranges		
• voltage outputs		0 ... 10 V; ±10 V; 1 ... 5 V
• current outputs		4 ... 20 mA; ±20 mA; 0 ... 20 mA
Load impedance		
• for voltage outputs	min.	1 kΩ
• for current outputs	max.	500 Ω
• at capacitive load	max.	1 µF
• at inductive load	max.	10 mH
Voltage output		
• short-circuit protection		yes
• short-circuit current	max.	25 mA
Current output		
• open-circuit voltage	max.	18 V
Isolation against backplane bus		yes
Operational limit (0 to 60 °C, with reference to output range)		
• voltage		±0,5 %
• current		±0,6 %
Basic error limit (operational limit at 25 °C, with reference to output range)		
• voltage		±0,4%
• current		±0,5 %
Cable length (shielded)	max.	200 m
Current consumption		
• internal (from backplane bus)	typ.	100 mA
• external, without load	max.	240 mA
Power loss	typ.	3 W
Front connector		20-way
Surrounding air temperature Transport and storage temperature		0°C ... +60°C -25°C ... +75°C

Ordering Data	
	Order-No.
AEA 300, 2-channel 2 outputs for connecting analog actuators	**700-332-5HB01**
Manual AEA 300, German/English	**900-331-0AA01**

Dummymodule

Dummymodule



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

Meaning of the 8/9-Bit display of the placeholder module
There are two different methods of transmitting data on the backplane bus of the S7-300[1]:

- **without parity Bit**
  Only the data bytes (8 Bits) are transmitted.
  This method is obsolete because errors during transmission cannot be detected and the I/Os may be incorrectly switched.
- **with parity Bit**
  The new safe method transmits a parity bit in addition to the useful data (9 Bits per byte). That way transmission errors can be detected and incorrect connections avoided.

The CPUs known to us are capable of both transmission methods. Due to reasons of downward compatibility all I/O modules that are capable of the 9-Bit method can also be switched back to the 8-Bit method. This occurs when at least one module is plugged into the system that is only capable of the 9-Bit method.

The 8/9-Bit LEDs indicate which method the complete system is using.
If an 8-Bit module is used, all 9-Bit modules on the backplane will only use 8-Bit transmission.
The 9-bit method was introduced shortly after the market launch of the S7-300[1].
However, to ensure downward compatibility, new CPUs are still capable of the 8-Bit method.

Systeme Helmholz modules all use the reliable 9-Bit method when possible.
However, there are modules possessing just the 8-Bit method on the market. To ensure reliable data transmission on the backplane bus and avoid incorrect switching, we advise against using such modules. The presence of 8-Bit modules can be seen by the shining of the red 8-Bit LED of the placeholder module.

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

Technical Data	
Current consumption internal	5 mA
Power loss (nominal operation)	0,03 W
Front connector	-
Surrounding air temperature Transport and storage temperature	0°C ... 60°C -25°C ... 75°C

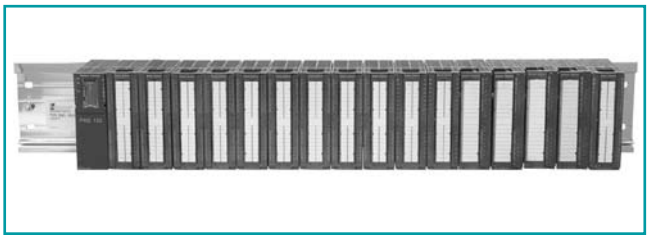
1) S7-300 is a registered trademark of Siemens AG

PAS 153, distributed PROFIBUS Interface

PAS 153

Features

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



Up to 16 modules can be plugged in

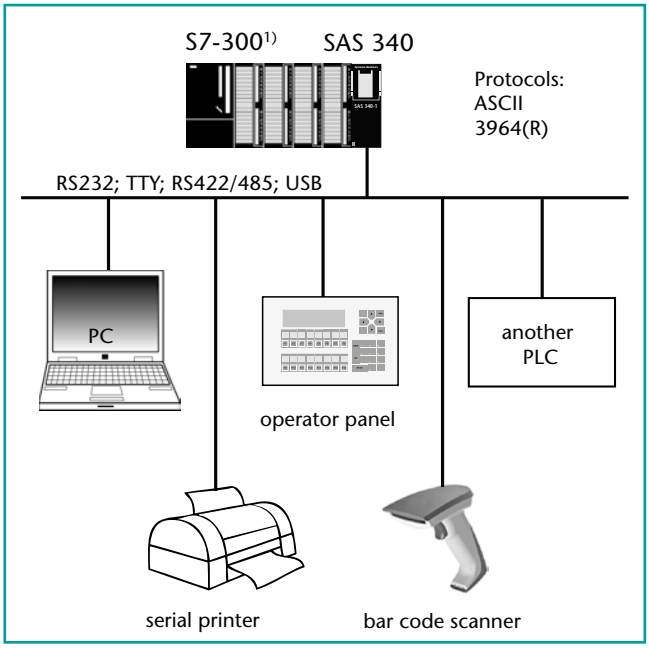
The PAS 153 distributed PROFIBUS Interface from Systeme Helmholz GmbH is for linking digital and analog input and output modules to the PROFIBUS DP. The module can be mounted on a sectional rail.
Up to 16 modules can be connected to the PAS 153. The PAS 153 is integrated into the hardware configurer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

Ordering Data	
	Order-No.
PAS 153, distributed PROFIBUS Interface	**700-153-1AA03**
Manual PAS 153, German/English	**900-153-1AA03**

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

SAS 340

SAS 340



Application example for SAS 340

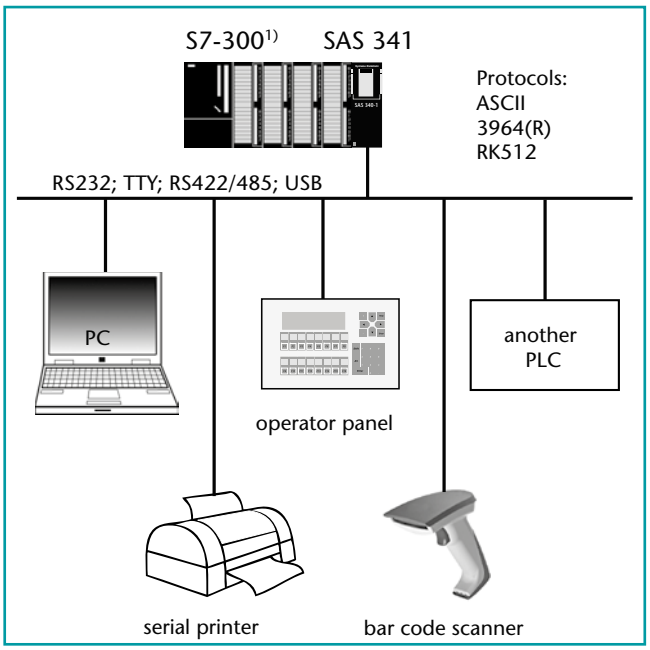
The SAS 340 is a serial communication module for use in Simatic S7-300[1)] systems. The SAS 340 permits the linking to the PLC of serial devices, such as barcode scanners, operator terminals, serial printers, PCs, PLCs of other manufacturers, and supports the ASCII and 3964R protocols.
The serial devices can be connected via RS232, TTY (20 mA), or RS422/RS485. The 9-way Sub-D socket (15-way in the case of RS422/485) with standard pin assignment is provided for connecting communicating devices.
The additional USB interface permits the connection of the PLC to PC systems, many of which no longer have a conventional physical port. A virtual COM port driver enables the use of software that still expects a COM port.
Extended functions, such as support for higher baud rates up to 115 kBaud make the SAS 340 all the more versatile without any loss of compatibility.
The data handling blocks supplied enable simple and flexible integration into the PLC. The module is parameterized in the Hardware Configurator of the PLC. Extended functions (e.g. higher baud rates) can be activated with the data handling blocks without any problem.
To permit a higher integration density in the cabinet, the SAS 340 is also available with 2 serial interfaces. Both interfaces can be parameterized independently and are used in the PLC.

Ordering Data	Order-No.
SAS 340-1, 1 x RS232, 1 x USB	**700-340-1AH02**
SAS 340-1, 1 x TTY	**700-340-1BH02**
SAS 340-1, 1 x RS422/RS485	**700-340-1CH02**
SAS 340-2, 2 x RS232, 2 x USB	**700-340-2AH02**
SAS 340-2, 2 x TTY	**700-340-2BH02**
SAS 340-2, 2 x RS422/RS485	**700-340-2CH02**
Manual SAS 340, German/English	**900-340-1XH02**

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

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

SAS 341



Application example for SAS 341

The SAS 341 is a serial communication module for use in Simatic S7-300[1)] systems. The SAS 341 permits the linking to the PLC of serial devices, such as barcode scanners, operator terminals, serial printers, PCs, PLCs of other manufacturers, and supports the ASCII, 3964R, and RK512 protocols.
The serial devices can be connected via RS232, TTY (20 mA), or RS422/RS485. The 9-way Sub-D socket (15-way in the case of RS422/485) with standard pin assignment is provided for connecting communicating devices.
The additional USB interface permits the connection of the PLC to PC systems, many of which no longer have a conventional physical port. A virtual COM port driver enables the use of software that still expects a COM port.
Extended functions, such as support for higher baud rates up to 115 kBaud make the SAS 341 all the more versatile without any loss of compatibility.
Using the standardized RK512 computer link protocol, the linking of different types of PLC to the S7-300[1)] can be flexibly implemented.
The data handling blocks supplied enable simple and flexible integration into the PLC. The module is parameterized in the Hardware Configurator of the PLC. To permit a higher integration density in the cabinet, the SAS 341 is also available with 2 serial interfaces. Both interfaces can be parameterized independently and are used in the PLC.

Via an optionally obtainable MMC card, customer-specific protocol drivers can be loaded into the SAS 341. Special drivers, such as Modbus can be implemented in this way.

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

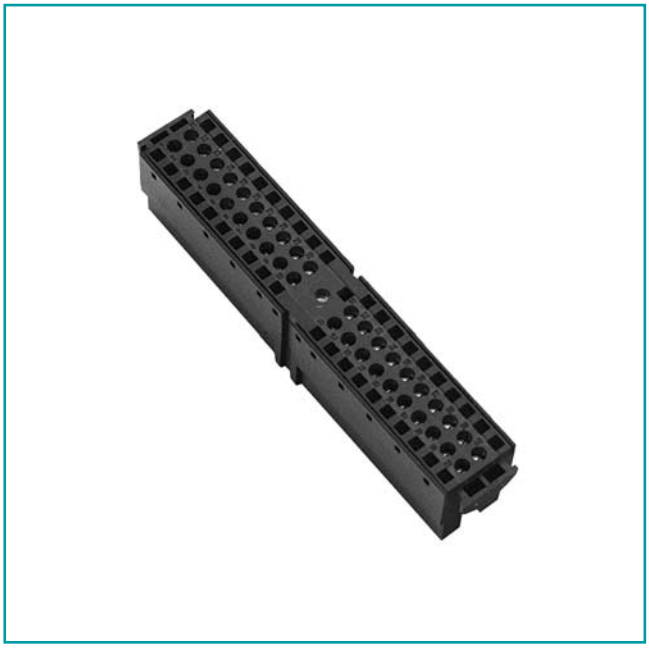
Ordering Data	Order-No.
SAS 341-1, 1 x RS232, 1 x USB	**700-341-1AH02**
SAS 341-1, 1 x TTY	**700-341-1BH02**
SAS 341-1, 1 x RS422/RS485	**700-341-1CH02**
SAS 341-2, 2 x RS232, 2 x USB	**700-341-2AH02**
SAS 341-2, 2 x TTY	**700-341-2BH02**
SAS 341-2, 2 x RS422/RS485	**700-341-2CH02**
Manual SAS 341, German/English	**900-341-1XH02**

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

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

Front Connectors

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



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

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

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

Technical Data	
Front Connector 20-way connection	 screw-type terminals
Cable w/o wire end ferrule	flexible conductor 0.25 - 1.5 mm²
Strip length	6 mm
Max. tightening torque	0.5 Nm
Weight	approx. 60 g
Current at 60°C	3 A
Voltage	230 V AC
Surrounding air temperature Transport and storage temperature Relative humidity max.	0°C ... +60°C -25°C ... +80°C 75 % at +25°C
Front Connector 40-way connection	 screw-type terminals
Cable w/o wire end ferrule	flexible conductor 0.125 - 1.5 mm²
Strip length	6 - 8 mm
Max. tightening torque	0.5 Nm
Weight	approx. 120 g
Current at 60°C	3 A
Voltage	230 V AC
Surrounding air temperature Transport and storage temperature Relative humidity max	0°C ... +60°C -25°C ... +80°C 75 % at +25°C
Front Connector 40-way connection	 **EasyConnect**®
Cable w/o wire end ferrule	flexible conductor 0.34 - 1 mm²
Strip length	8 - 10 mm
Weight	ca. 70 g
Current at 60°C	3 A
Voltage	230 V AC
Surrounding air 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 300	
20-way with screw contacts	**700-392-1AJ10**
40-way with screw contacts	**700-392-1AM01**
40-way with **EasyConnect**® technology	**700-392-1AM10**

EasyConnect® is a registered trademark of Systeme Helmholz GmbH.

Front Connectors with spring contacts, Ready-wired Front Connectors

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

Ready-wired Front Connectors

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

Technical Data	
Front Connector 20-way Connection type	 spring contacts
Connectable cables **with/without wire end ferrules**	flexible, fixed 0.34 - 1.5 mm²
Insulation stripping length	8 mm
Weight	Approx. 50 g
Current at 60°C	3 A
Voltage	230 V AC
Ambient temperature Temperature during transportation and storage Relative humidity max.	0°C ... +60°C -25°C ... +80°C 75 % at +25°C
Front Connector 40-way Connection type	 spring contacts
Connectable cables **with/without wire end ferrules**	flexible, fixed 0.34 - 1.5 mm²
Insulation stripping length	8 mm
Weight	Approx. 70 g
Current at 60°C	3 A
Voltage	230 V AC
Ambient temperature Temperature during transportation and storage Relative humidity max.	0°C ... +60°C -25°C ... +80°C 75 % at +25°C

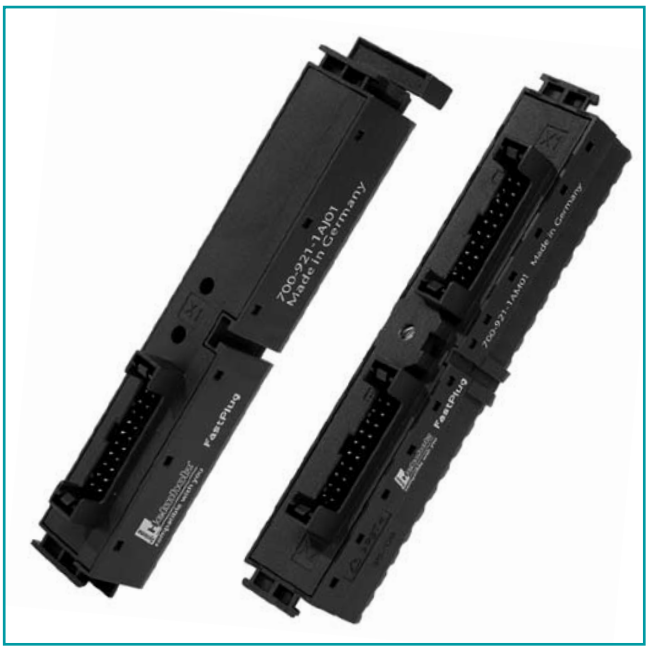
Ordering Data	Order-No.
Front Connector for DEA 300	
20-way with spring contacts	**700-392-1BJ01**
40-way with spring contacts	**700-392-1BM01**

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

Ordering Data	Order-No.
Ready-wired Front Connectors[1)] **DEA 300**	
for screw connection, 20-way, 2 m	**700-392-1AJ10A**
for screw connection, 20-way, 3 m	**700-392-1AJ10B**
for screw connection, 20-way, 5 m	**700-392-1AJ10C**
for **EasyConnect**® connection, 40-way, 2 m	**700-392-1AM10A**
for **EasyConnect**® connection, 40-way, 3 m	**700-392-1AM10B**
for **EasyConnect**® connection, 40-way, 5 m	**700-392-1AM10C**
for spring contacts, 20-way, 2 m	**700-392-1BJ01A**
for spring contacts, 20-way, 3 m	**700-392-1BJ01B**
for spring contacts, 20-way, 5 m	**700-392-1BJ01C**
for spring contacts, 40-way, 2 m	**700-392-1BM01A**
for spring contacts, 40-way, 3 m	**700-392-1BM01B**
for spring contacts, 40-way, 5 m	**700-392-1BM01C**

EasyConnect® is a registered trademark of Systeme Helmholz GmbH.
1) strands 0.5 mm2 blue (RAL 5010); Labeling as on connector

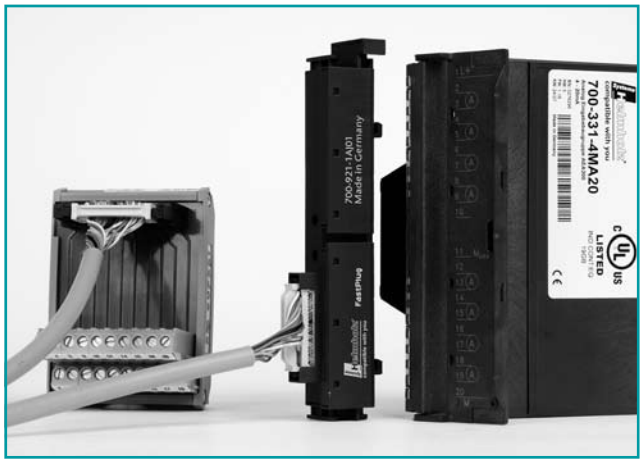
FastPlug

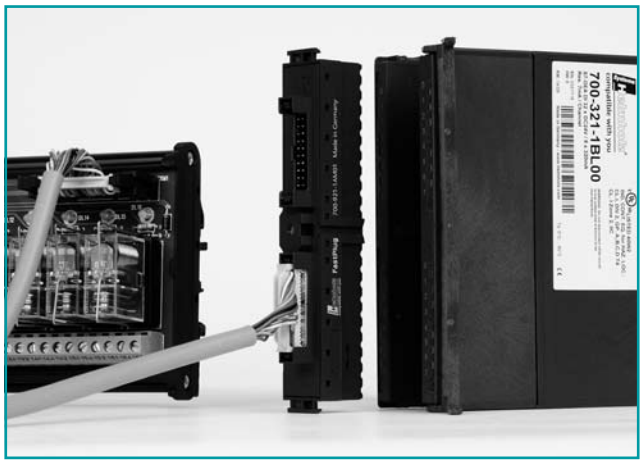


FastPlug - Frontadapter

Features

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



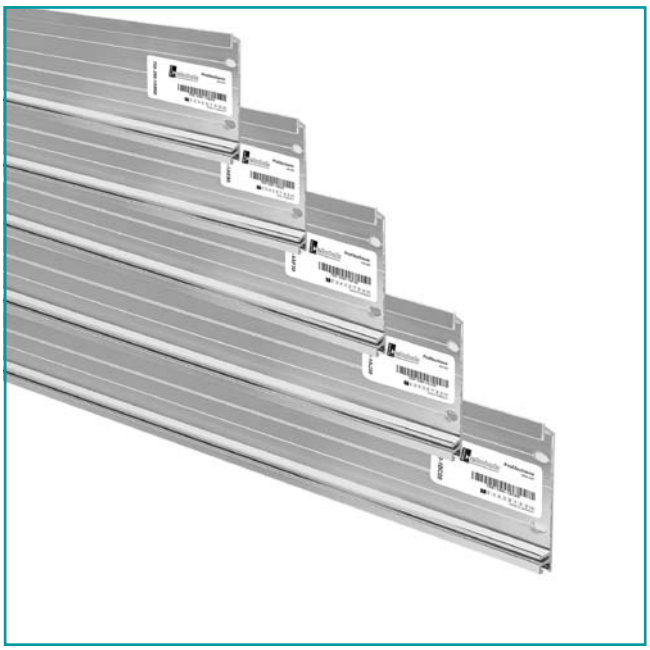


FastPlug - Frontadapter for S7 modules
The new professional **FastPlug** Frontadapter from the Systeme Helmholz GmbH are intended for insertion or clipping on a 16 or 32 Bit S7 Input/Output module. The wiring is very low. Through the use of prefabricated system cables, connection errors are excluded.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

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

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

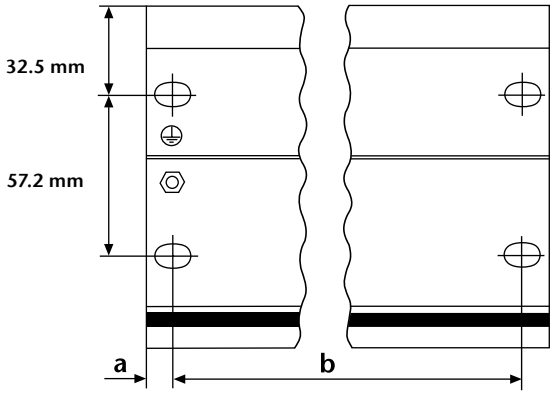
Technical Data	
Front Connector Connection 700-921-1AJ01 700-921-1AM01	 **FastPlug** 1 x 20-way IDC 2 x 20-way IDC
Weight	approx. 50 g
Dimensions (DxWxH mm) 700-921-1AJ01 700-921-1AM01	 131 x 23 x 31 116 x 22 x 30
Voltage	max. 48 V AC/DC between any terminals
Current consumption	max. 600 mA per terminal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



Mounting rack

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

Standard - Mounting rack



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

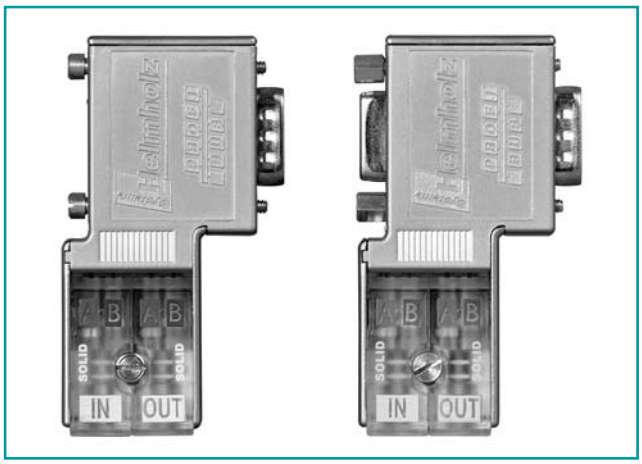
Ordering Data	Order-No.
Mounting rack	
length 160 mm	**700-390-1AB60**
length 320 mm	**700-390-1SO01**
length 482 mm	**700-390-1AE80**
length 530 mm	**700-390-1AF30**
length 830 mm	**700-390-1AJ30**
length 2000 mm	**700-390-1BC00**

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

PROFIBUS

Bus Connectors
Repeater
Active Dropcable
Terminal Block
DP/DP Coupler
Ethernet Gateways
OPC Server

PROFIBUS Connector, 90° EasyConnect®



EasyConnect® PROFIBUS connector

The **EasyConnect®** connectors feature quick-connect technology, making the stripping of bus conductors superfluous. The bus connectors are used to connect a PROFIBUS node to the PROFIBUS line.
The connector is quick to install and has a metalized housing and integrated terminating resistors. The Systeme Helmholz GmbH offers the **EasyConnect®** connector with a perpendicular cable outlet. Correct connection of the PROFIBUS cable can quickly be checked visually even after installation.
Find a list of released cables on our website www.helmholz.com.

Features

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

Ordering Data

	Order-No.
PROFIBUS connector EasyConnect® for solid cables 90° cable outlet without prog. device connector	**700-972-0BA50**
90° cable outlet with prog. device connector	**700-972-0BB50**
PROFIBUS connector EasyConnect® for flexible cables 90° cable outlet without progr. device connector 90°	**700-972-0FA50**
90° cable outlet with progr. device connector 90°	**700-972-0FB50**
Stripping tool for PROFIBUS	**700-972-6AA00**

EasyConnect® is a registered trademark of Systeme Helmholz GmbH.
1) FastConnect is a registered trademark of Siemens AG.

Technical Data

Programming device connector Order No. 700-972-0BB50/-0FB50 Order No. 700-972-0BA50/-0FA50	 **yes** **no**
Dimensions (DxWxH mm)	72 x 40 x 17
Weight	approx. 40 g
Outgoing cable	vertical outgoing cable suitable for FastConnect[1] stripping tool
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D connector, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	FC standard cable solid or flexible; 0.64 mm² 60/70°C copper wire
Connection type	**EasyConnect®**
Voltage consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	12.5 mA
Environmental pollution degree	2
Surrounding air temperature Transport and storage temperature Relative humidity max.	0° C ... +60° C -25° C ... +80° C 75 % at +25° C
Degree of protection	IP 20

PROFIBUS Connector, axial EasyConnect®

EasyConnect® PROFIBUS connector axial

Features

- Integrated terminating-resistor
- Visual connection control
- **EasyConnect®** technology

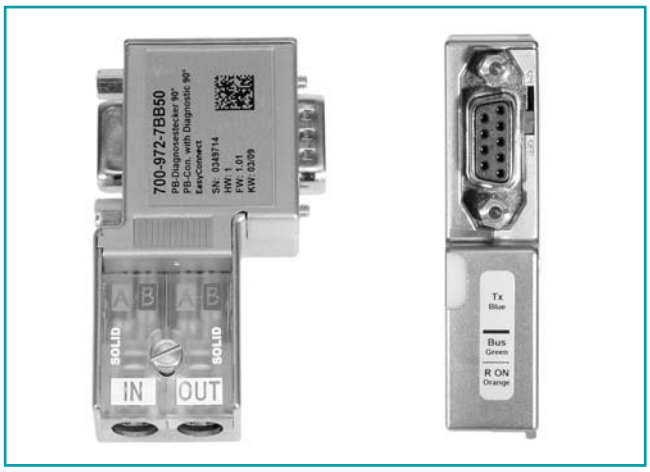
The new **EasyConnect®** connector axial features quick-connect technology, making the stripping of bus conductors superfluous. The bus connectors are used to connect a PROFIBUS node to the PROFIBUS line.
The connector is quick to install, and has a metallized housing and integrated terminating resistors.
Correct connection of the PROFIBUS cable can quickly be checked visually even after installation.

Technical Data	
Dimensions (DxWxH mm)	70 x 35 x 17
Weight	approx. 50 g
Outgoing cable	vertical outgoing cable suitable for FastConnect[1] stripping tool
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D connector, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	FC standard cable solid or flexible; 0.64 mm² 60/70°C copper wire
Connection type	**EasyConnect®**
Voltage consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	12.5 mA
Environmental pollution degree	2
Surrounding air temperature Transport and storage temperature Relative humidity max.	0° C ... +60° C -25° C ... +80° C 75 % at +25° C
Degree of protection	IP 20

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

1) FastConnect is a registered trademark of Siemens AG.

PROFIBUS Connector, 90° with diagnostic LEDs, EasyConnect®



EasyConnect® PROFIBUS connector axial

Features

- 3 LEDs status displays
- Integrated terminating resistors
- No loosable parts
- Small housing
- Visual connection control
- **EasyConnect®** technology

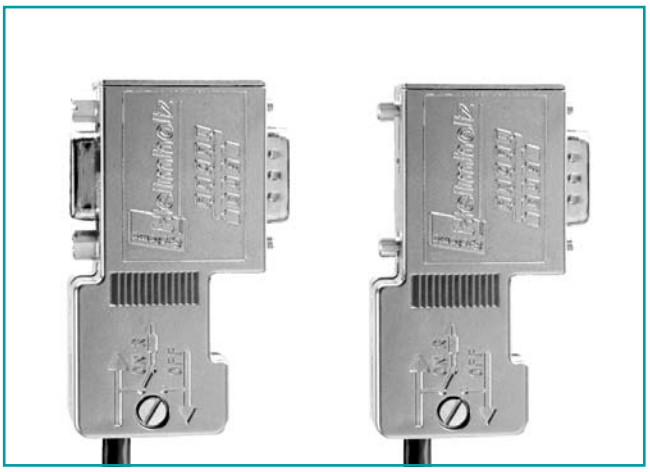
The new **EasyConnect®** diagnostic PROFIBUS connector allows you to build a PROFIBUS network in which the user can always check the state of the bus system at a glance.
The three built-in LEDs in the easily distinguishable colors blue, green, and orange indicate the most important states of the PROFIBUS network at each station.
The state of the terminating resistor (orange), whether bus activity is in progress (green), and whether the station addressed is participating in bus traffic (blue) are all indicated.
This means errors, such as bus interruptions, missing or incorrectly connected terminating resistors, and malfunctioning or failed bus stations can be detected immediately.
The PROFIBUS diagnostic connector with tried-and-tested and reliable screw terminals can be supplied with or without a programmer (PG) jack.
The new **EasyConnect®** connectors feature quick-connect technology, which makes stripping the bus wires superfluous. The bus connector is used to connect a PROFIBUS station to the PROFIBUS cable.

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

1) FastConnect is a registered trademark of Siemens AG.

Technical Data	
Programming device connector Order No. 700-972-7BB12 Order No. 700-972-7BA12	 **yes** **no**
Dimensions (DxWxH mm)	64 x 40 x 17
Weight	approx. 40 g
Outgoing cable	vertical outgoing cable suitable for FastConnect[1] stripping tool
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D connector, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	FC standard cabel solid, 0.64 mm² 60/70°C copper wire
Connection type	**EasyConnect®**
Voltage consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	35 mA
Environmental pollution degree	2
Surrounding air temperature Transport and storage temperature Relative humidity max.	0° C ... +60° C -25° C ... +80° C 75 % at +25° C
Degree of protection	IP 20

PROFIBUS Connector, 90°



Bus connector for PROFIBUS with (l.) and without (r.) prog. device connector

Features

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

The compact design of the bus connectors from the Systeme Helmholz GmbH makes them suitable for use in all Siemens CPU types.
A slide switch sets whether the connector will be used as a node or end of segment. The switch can also be operated when the connector is plugged. The switch setting is clearly visible.
The connector must be used as a node („OFF“) when the incoming bus and the outgoing bus are to be interconnected. This deactivates the terminating resistors.
The connector must be set as a segment end (“ON”) on the first and last (extreme) stations of the segment. In that case the terminating resistors are connected on the incoming bus, the outgoing bus is disconnected.

Ordering Data	
	Order-No.
Bus connector for PROFIBUS 90° cable outlet without prog. device connector 90° cable outlet with prog. device connector 90°	 **700-972-0BA12** **700-972-0BB12**
Stripping tool for PROFIBUS	**700-972-6AA00**

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

Technical Data	
Programming device connector Order No. 700-972-0BB12 Order No. 700-972-0BA12	 **yes** **no**
Dimensions (DxWxH mm)	64 x 40 x 17
Weight	approx. 40 g
Outgoing cable	vertical outgoing cable suitable for FastConnect[1] stripping tool
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D connector, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	60/70°C copper wire up to 1.0 mm²
Connection type	4 terminals
Voltage consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	12.5 mA
Environmental pollution degree	2
Surrounding air temperature Transport and storage temperature Relative humidity max.	0° C ... +60° C -25° C ... +80° C 75 % bei +25° C
Degree of protection	IP 20

PROFIBUS Connector 90° with diagnostic LEDs

Bus connectors for PROFIBUS 90° with diagnostic LEDs

Features

- 3 status LEDs indicate „bus operation“, „station transmitting“, „terminating resistor inserted“
- Screw terminals
- Integrated switchable terminating resistors
- No loosable parts
- Small housing

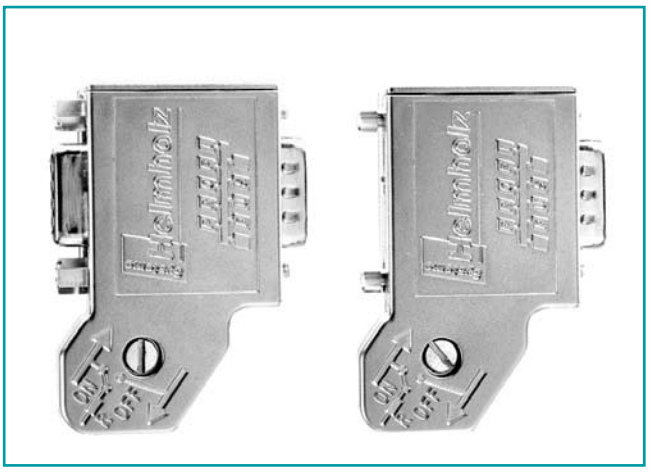
The PROFIBUS diagnostic connector can be used to connect a PROFIBUS network in which the user can check the status of the bus system at any time at a glance.
The three built-in LEDs with the easily distinguished colors blue, green and orange indicate the most important states of the PROFIBUS network at each station. The state of the terminating resistor (**orange**), whether bus activity is in progress (**green**) and whether the station addressed is participating in bus traffic (**blue**) are all indicated.
This means errors, such as bus interruptions, missing or incorrectly connected terminating resistors and malfunctioning or failed bus stations can be detected immediately.
The PROFIBUS diagnostic connector with screw terminals can be supplied with or without a programming (PG) device connector.

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

1) FastConnect is a registered trademark of Siemens AG.

Technical Data	
Programming device connector Order No. 700-972-7BB12 Order No. 700-972-7BA12	 **yes** **no**
Dimensions (DxWxH mm)	64 x 40 x 17
Weight	approx. 40 g
Outgoing cable	vertical outgoing cable suitable for Fast-Connect[1] stripping tool
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D connector, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	60/70°C copper wire up to 1.0 mm²
Connection type	4 terminals
Voltage consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	35 mA
Environmental pollution degree	2
Surrounding air temperature Transport and storage temperature Relative humidity max.	0° C ... +60° C -25° C ... +80° C 75 % at +25° C
Degree of protection	IP 20

PROFIBUS Connector, 35°



Bus connector 35° for PROFIBUS

Features

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

The 35° bus connector for PROFIBUS is a further component in our range of connectors providing you with low-cost, compatible alternatives for your automation.
The bus connectors are used to connect a PROFIBUS node to the PROFIBUS cable. The connector is quickly mounted and features integrated terminating resistors.
The Systeme Helmholz GmbH offers the bus connector with an 35° cable outlet and for transmission rates up to 12 Mbps.

Technical Data	
Programming device connector Order No. 700-972-0BB41 Order No. 700-972-0BA41	 **yes** **no**
Dimensions (DxWxH mm)	54 x 40 x 17
Weight	approx. 40 g
Outgoing cable	35° outgoing cable
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D connector, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	60/70°C copper wire up to 1.0 mm²
Connection type	4 terminals
Voltage consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	12.5 mA
Environmental pollution degree	2
Surrounding air temperature Transport and storage temperature Relative humidity max.	0° C ... +60° C -25° C ... +80° C 75 % bei +25° C
Degree of protection	IP 20

Ordering Data	
	Order-No.
Bus connector for PROFIBUS 35° cable outlet, without prog. device connector 35° cable outlet, with prog. device connector	 **700-972-0BA41** **700-972-0BB41**

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

PROFIBUS Connector, axial

Bus connector axial for PROFIBUS

The axial bus connector for PROFIBUS is a further component in our range of connectors providing you with low-cost, compatible alternatives for your automation.
The bus connectors are used to connect a PROFIBUS node to the PROFIBUS cable. The connector is quickly mounted and features integrated terminating resistors.
The Systeme Helmholz GmbH offers the bus connector with an axial cable outlet and for transmission rates up to 12 Mbps.

Features

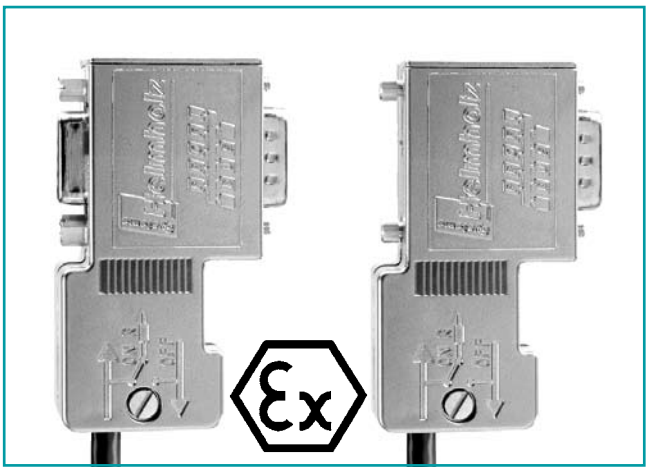
- Metalized housing
- Integrated switchable terminating resistor
- No loosable parts
- axial cable outlet
- Screw terminals

Ordering Data	
	Order-No.
Bus connector for PROFIBUS axial cable outlet	**700-972-0CA12**

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

Technical Data	
Dimensions (DxWxH mm)	68 x 39.5 x 17
Weight	approx. 40 g
Outgoing cable, axial	axial outgoing cable, suitable for FastConnect[1)] stripping tool
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D connector, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	60/70°C copper wire up to 1.0 mm²
Connection type	4 terminals
Voltage consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	12.5 mA
Environmental pollution degree	2
Surrounding air temperature Transport and storage temperature Relative humidity max.	0° C ... +60° C -25° C ... +80° C 75 % at +25° C
Degree of protection	IP 20

PROFIBUS Connector with „ATEX“ accreditation



Bus connector for PROFIBUS with (l.) and without (r.) prog. device connector

Features

- Metalized housing
- No loosable parts
- Integrated switchable terminating resistor
- 90° cable outlet
- ATEX-accreditation (EN 50021 : 1999)
- Screw terminals

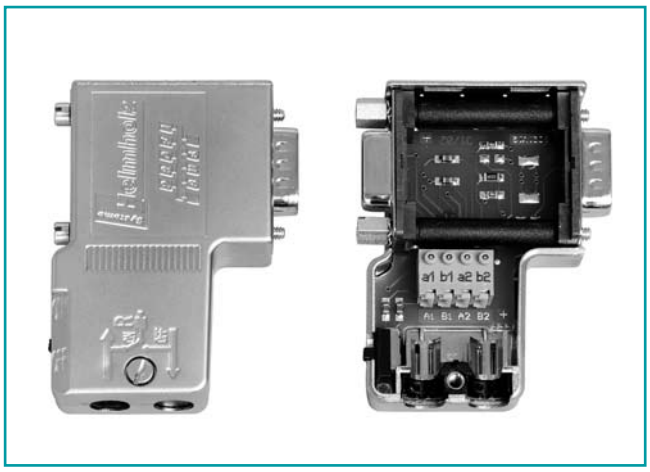
The bus connectors are used to connect a PROFIBUS station to the PROFIBUS cable. The connector is quickly mounted and has integrated, connectable terminating resistors.
The Systeme Helmholz GmbH offers the busconnector for usage in explosion hazardous areas of zone 2 (explosive gasatmosphere appears seldom and for very short time).
The bus connector is plugged directly onto the PROFIBUS interface (SUB-D connector, 9-way) of the PROFIBUS stations.
The PROFIBUS cables are connected using 4-way screw terminals.
The cable can be prepared for connection using the fast-connect stripping tool from Siemens.
Using a slide switch you can set whether the connector is to be used as a node or segment end. The switch can also be operated when the connector is installed. The setting can be clearly seen.

Technical Data	
Programming device connector Order No. 700-973-0BB12 Order No. 700-973-0BA12	 **yes** **no**
Dimensions (DxWxH mm)	64 x 40 x 17
Weight	approx. 40 g
Outgoing cable	vertical outgoing cable suitable for FastConnect[1)] stripping tool
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D connector, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	60/70°C copper wire up to 1.0 mm²
Connection type	4 terminals
Voltage consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	12.5 mA
Environmental pollution degree	2
Surrounding air temperature Transport and storage temperature Relative humidity max.	0° C ... +60° C -25° C ... +80° C 75 % bei +25° C
Degree of protection	IP 20

Ordering Data	
	Order-No.
Bus connector for PROFIBUS without prog. device connector, Ex-Zone 2 with prog. device connector, Ex-Zone 2	 **700-973-0BA12** **700-973-0BB12**
Stripping tool for PROFIBUS	**700-972-6AA00**

1) FastConnect is a registered trademark of Siemens AG.

PROFIBUS Connector with spring type terminals



Bus connector for PROFIBUS with spring type terminals

Features

- Metalized housing
- No loosable parts
- Integrated switchable terminating resistor
- 90° cable outlet
- Spring type terminal

The bus connectors are used to connect a PROFIBUS station to the PROFIBUS cable. The connector is quickly mounted and has integrated, connectable terminating resistors.
The spring type terminal is suiteable for solid conductors up to a cross section of 0.5 mm². The stripped conductors contacts automatically when inserted, for breaking the connection the orange lever must be pressed.
The bus connector is plugged directly onto the PROFIBUS interface (SUB-D connector, 9-way) of the PROFIBUS stations.
The PROFIBUS cables are connected using 4-way spring type terminals. The cable can be prepared for connection using the fast-connect stripping tool from Siemens.
Using a slide switch, you can set whether the connector is to be used as a node or segment end. The switch can also be operated when the connector is installed. The setting can be clearly seen.

Ordering Data	
	Order-No.
Bus connector for PROFIBUS without prog. device connector, with spring connection technique with prog. device connector, with spring connection technique	 **700-982-0BA22** **700-982-0BB22**
Stripping tool for PROFIBUS	**700-972-6AA00**

1) FastConnect is a registered trademark of Siemens AG.

Technical Data	
Programming device connector Order No. 700-982-0BB22 Order No. 700-982-0BA22	 **yes** **no**
Dimensions (DxWxH mm)	65 x 48 x 16
Weight	approx. 40 g
Outgoing cable	vertical outgoing cable suitable for FastConnect[1)] stripping tool
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbps
Interfaces PROFIBUS station	 SUB-D connector, 9-way
Max. outside diameter	8.0 mm
PROFIBUS cable	60/70°C copper wire up to 0.5 mm²
Connection type	4 spring type terminals
Voltage supply	DC 4.75 ... 5.25 V (must come from connected equip.)
Current consumption max.	12.5 mA
Environmental pollution degree	2
Surrounding air temperature Transport and storage temperature Relative humidity max.	0° C ... +60° C -25° C ... +80° C 75 % at +25° C
Degree of protection	IP 20

PROFIBUS Compact Repeater

PROFIBUS Compact Repeater

Features

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

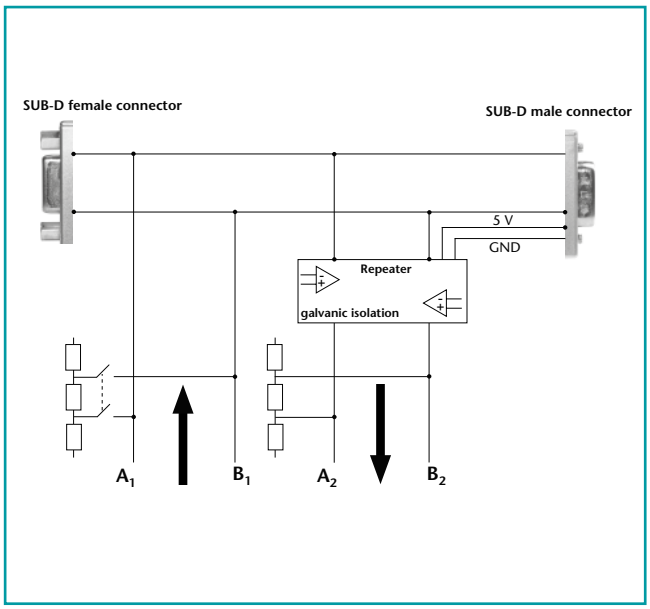
The new PROFIBUS Compact Repeater from Systeme Helmholz GmbH is a fully functional PROFIBUS repeater. It is applicable very flexible thanks to it's very small style.
The repeater covers transmission rates from 9.6 Kbps to 12 Mbps. The transmitted signals are regenerated by the repeater and resent (Bit-Reshaping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

Transmission Rate	max. segment length
9,6 kbps	**1000 m**
19,2 kbps	**1000 m**
45,45 kbps	**1000 m**
93,75 kbps	**1000 m**
187,5 kbps	**1000 m**
500 kbps	**400 m**
1,5 Mbps	**200 m**
3 Mbps	**100 m**
6 Mbps	**100 m**
12 Mbps	**100 m**

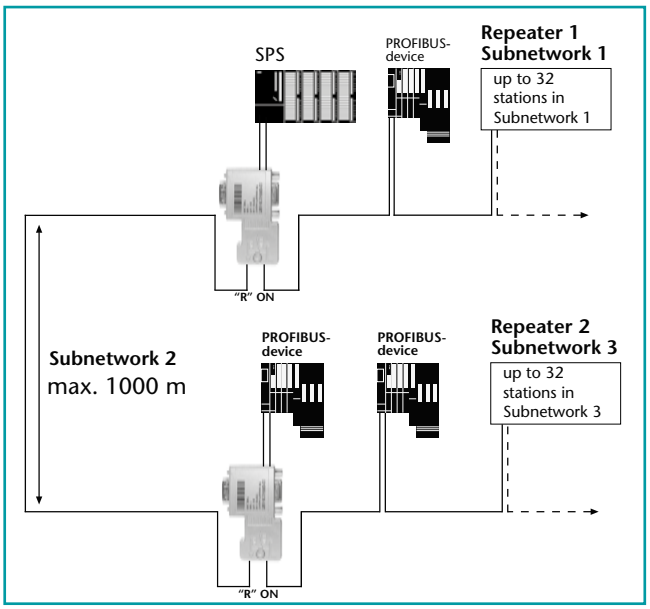
Technical Data		
Dimensions (DxWxH mm)		64 x 40 x 17
Weight		approx. 40 g
Power supply Voltage		+ 5 V DC
Current consumption	typ.	100 mA
Connection		SUB-D, 9-way
PROFIBUS interface transmission rate	max.	9.6 kbps to 12 Mbps autodetection
Protocol		PROFIBUS DP per EN 50 170
Connection		SUB-D, 9-way
Max. outside diameter		8.0 mm
PROFIBUS cable		60/70°C copper wire up to 1.0 mm²
Connection type		4 terminals
Environmental pollution degree		2
Surrounding air temperature Transport and storage temperature		0°C ... +60°C -25°C ... +75°C
Degree of protection		IP 20

Ordering Data	
	Order-No.
PROFIBUS Compact Repeater	**700-972-0RB12**
Stripping tool for PROFIBUS	**700-972-6AA00**
Manual PROFIBUS Compact Repeater, German/English	**900-972-0RB12**

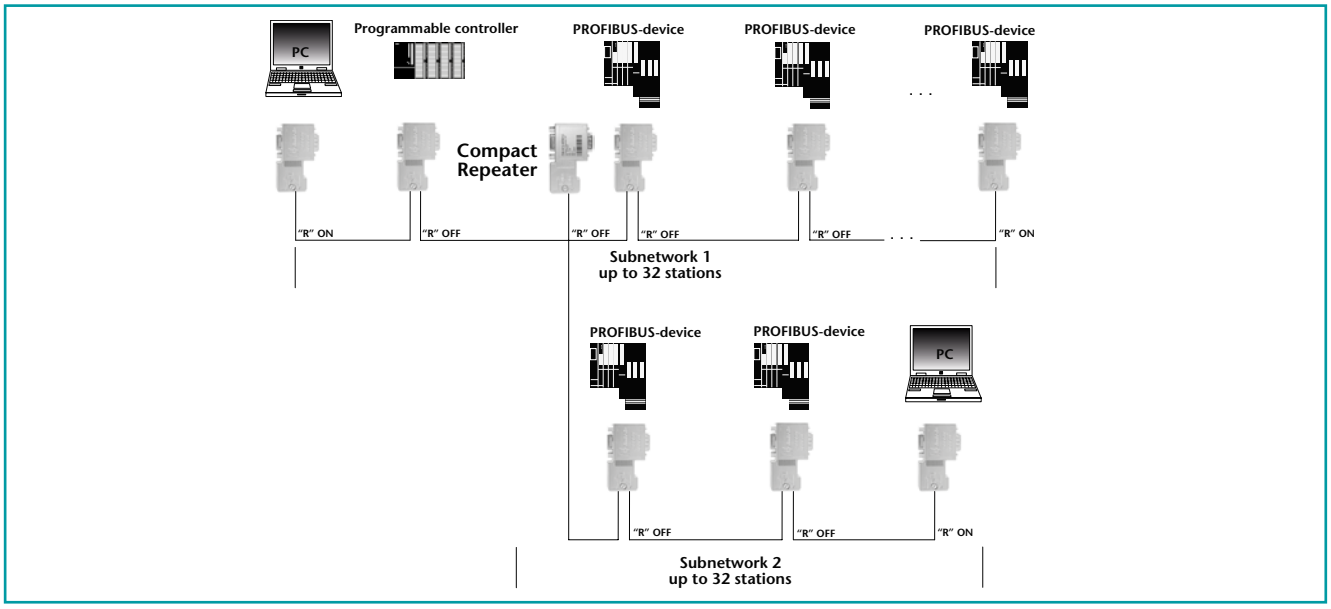
PROFIBUS Compact Repeater



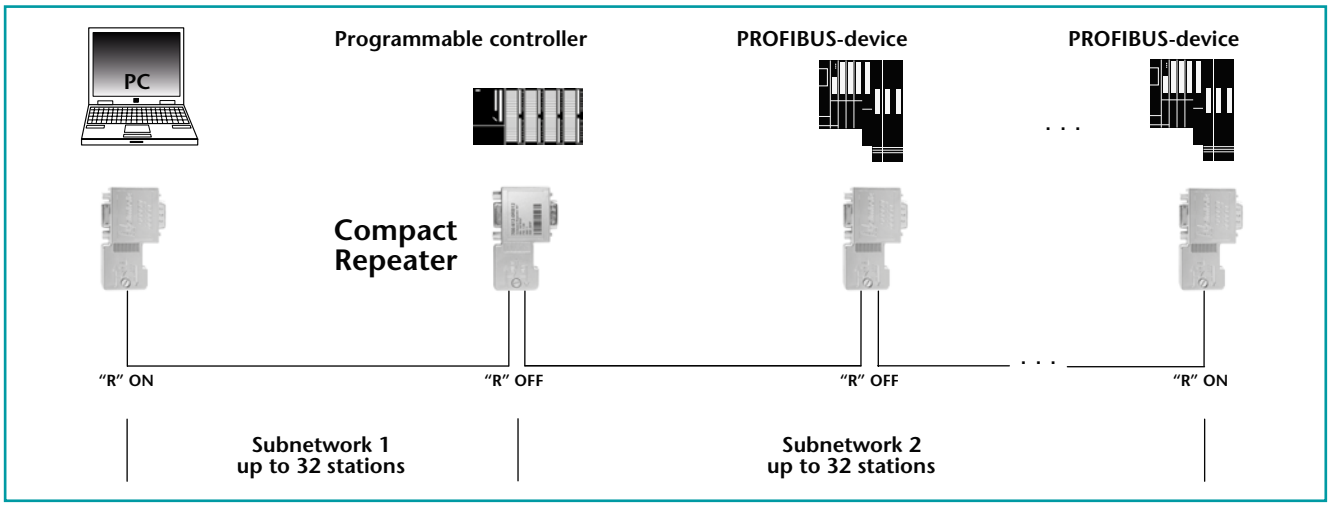
Internal Design



Application example with long distances



Application example with spur lines



Application example with more than 32 stations

FLEXtra twinRepeater

FLEXtra twinRepeater

Features

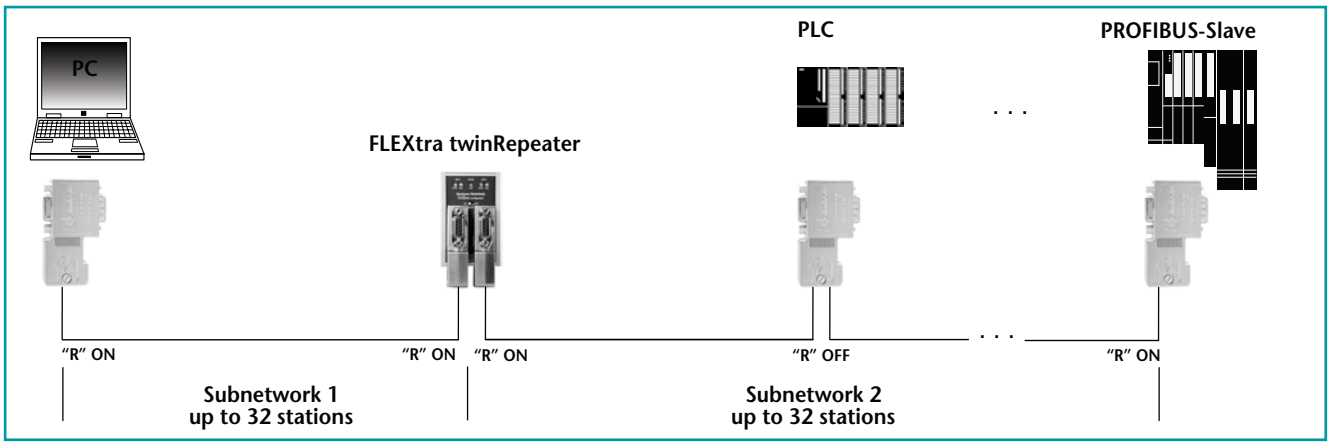
- Can be used as bus extension or as a spur line
- Increases the number of nodes
- System expansion
- Can also be used in MPI networks
- Status LEDs per segment
- Repeater function can be deactivated
- Electrical isolation

FLEXtra *twinRepeater*

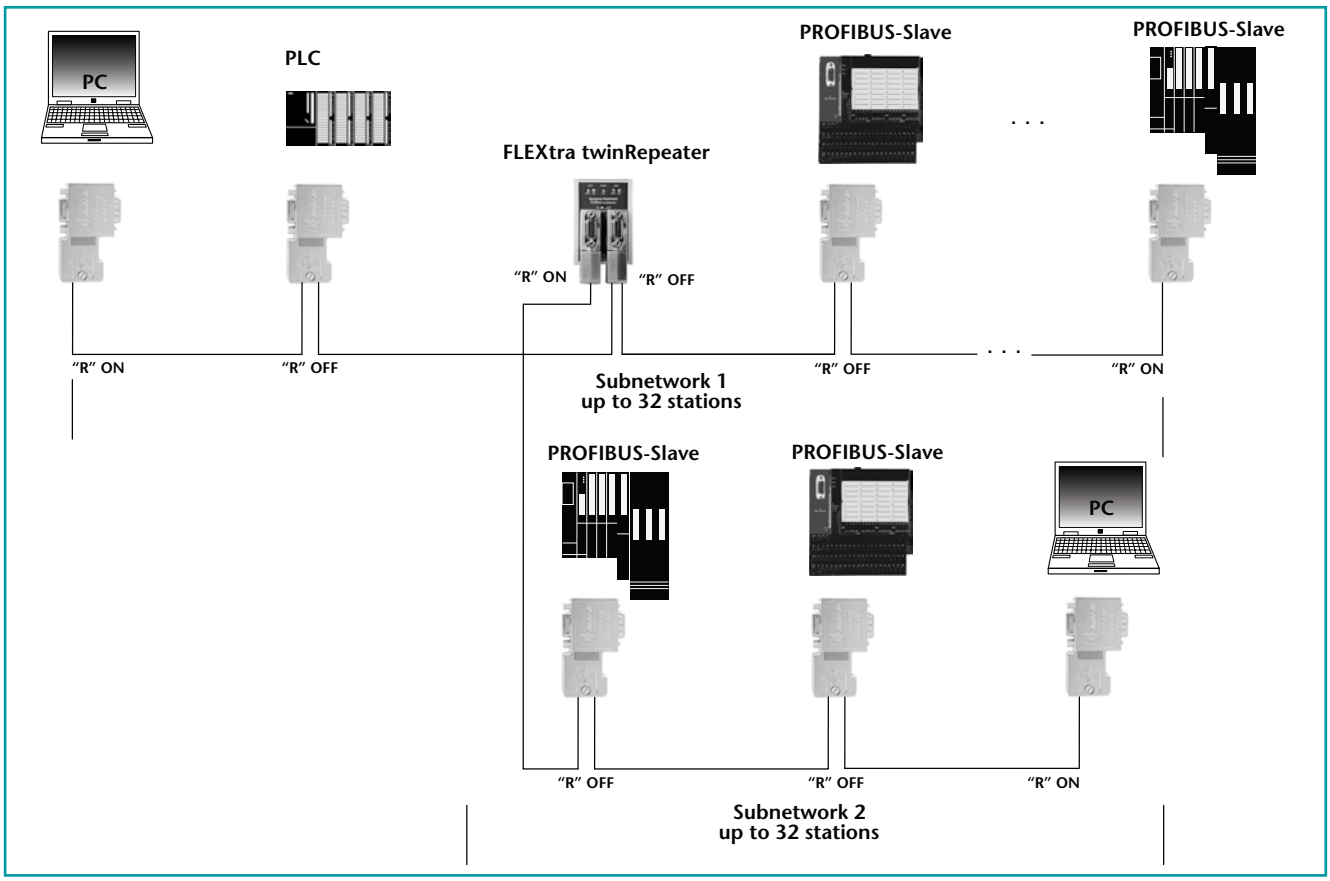
Despite its compact size, the new FLEXtra twinRepeater from Systeme Helmholz GmbH is a fully functioning PROFIBUS repeater. It is designed for mounting on a DIN rail.
The FLEXtra twinRepeater regenerates the electrical signal arriving on the bus line and retransmits it (bit reshaping and retransmission).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

Ordering Data	
	Order-No.
FLEXtra twinRepeater	**700-972-2AA02**
FLEXtra twinRepeater Set incl. 2 PROFIBUS Connectors 90° with PG (screw)	**700-972-2XA02**
Manual FLEXtra twinRepeater German/English	**900-972-2AA02**

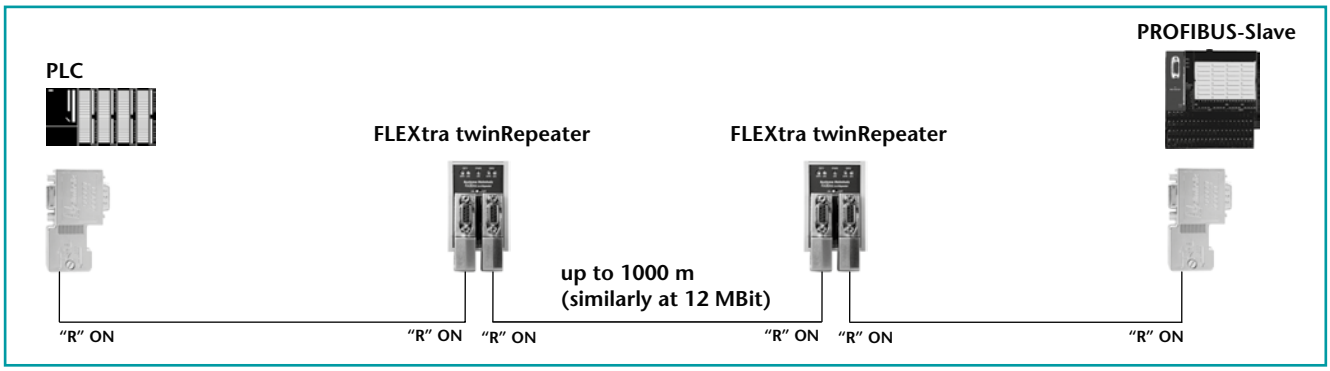
Technical Data		
Dimensions (DxWxH mm)		35 x 44 x 72
Weight		approx. 110 g
Power supply		18 - 30 VDC
Output voltage		5 V
Potential separation		500 V
Current consumption	max.	60 mA
Segment connection		via PROFIBUS Connector
PROFIBUS interface Transmission rate	max.	12 Mbps autodetection
Protocol		PROFIBUS DP to EN 61 158-2
Surrounding air temperature Transport and storage temperature		0°C ... +60°C -25°C ... +75°C
Degree of protection		IP 20



Application example FLEXtra twinRepeater with more than 32 stations



Application example FLEXtra twinRepeater with spur lines



Application example FLEXtra twinRepeater with long distances

FLEXtra multiRepeater 4-way, 6-way

FLEXtra multiRepeater 4-way, 6-way

Features

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

FLEXtra *multiRepeater*

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

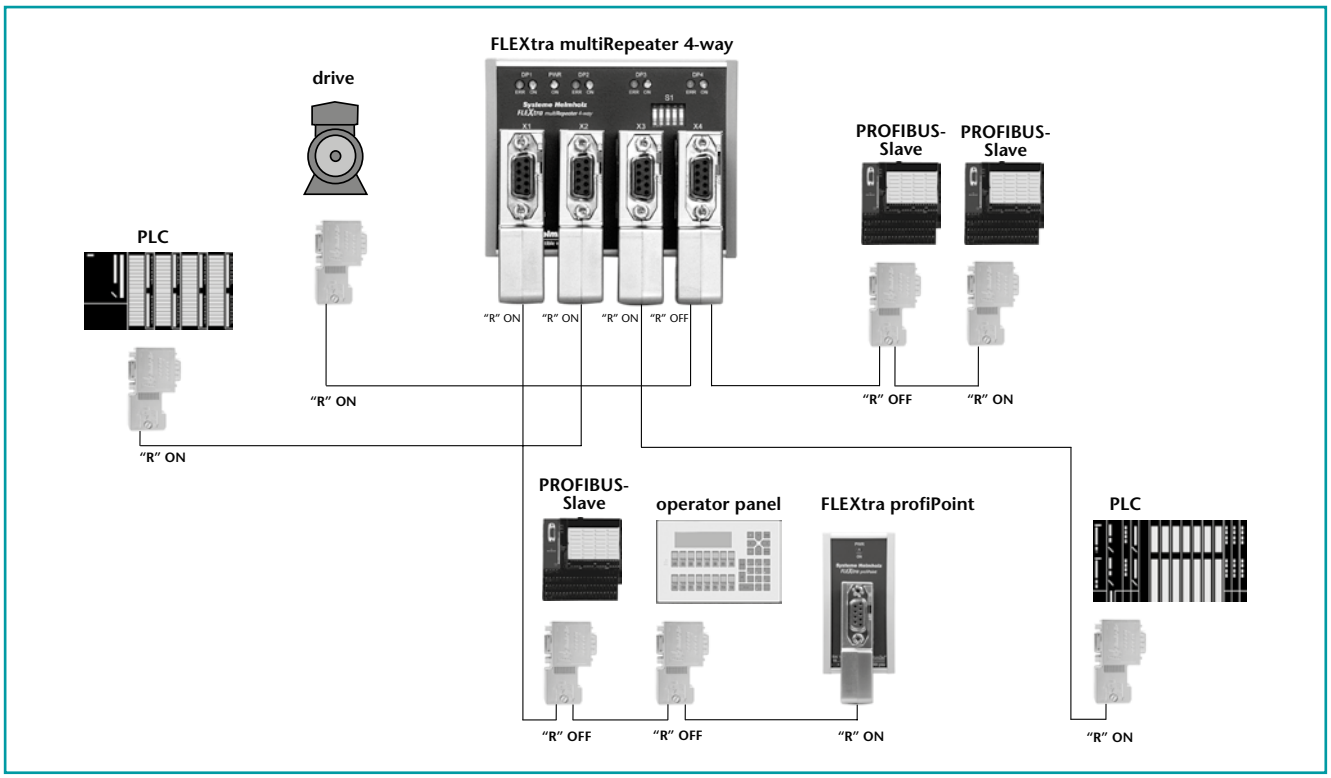
Technical Data

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

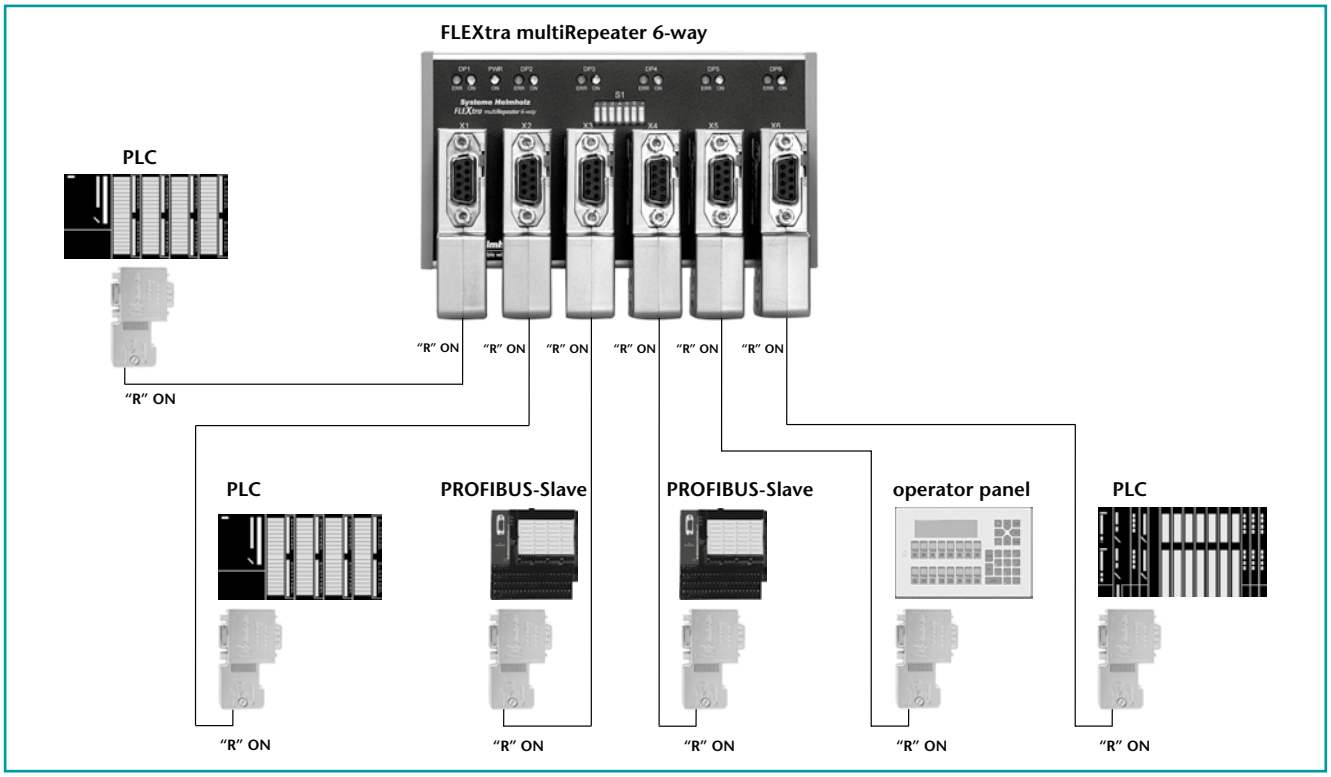
Ordering Data

	Order-No.
FLEXtra multiRepeater 4-way **FLEXtra multiRepeater 6-way**	700-972-4AA02 700-972-6AA02
Manual FLEXtra multiRepeater 4-way/ 6-way, German/English	900-972-4AA02

FLEXtra multiRepeater 4-way, 6-way



Application example FLEXtra multiRepeater 4-way



Application example FLEXtra multiRepeater 6-way

FLEXtra profiPoint

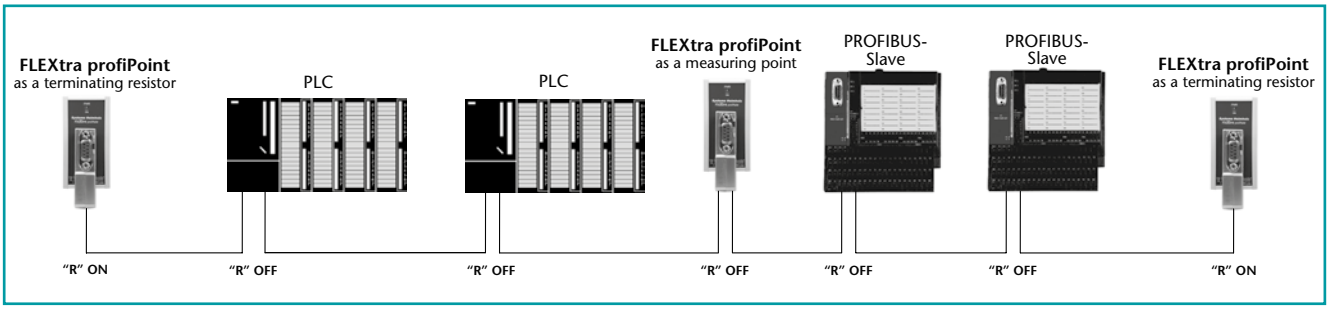
FLEXtra profiPoint

Features

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

FLEXtra profiPoint

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

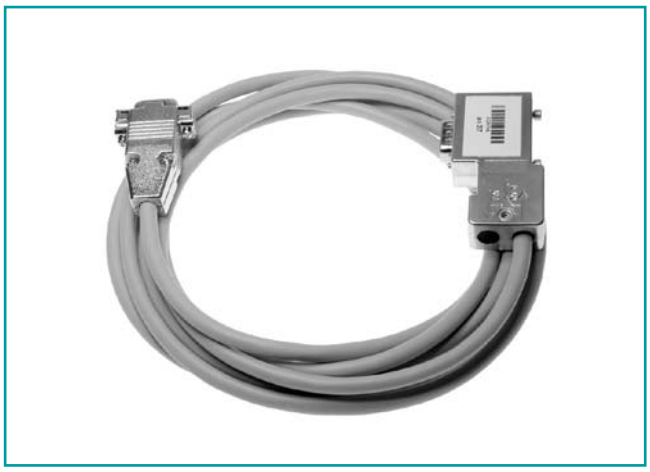


Application example FLEXtra profiPoint

Ordering Data	
	Order-No.
FLEXtra profiPoint	700-972-1AA02
FLEXtra profiPoint Set incl. PROFIBUS Connector 90° with Diagnostic LEDs (screw)	700-972-1XA02
Manual FLEXtra profiPoint German/English	900-972-1AA02

Technical Data	
Dimensions (DxWxH mm)	35 x 32 x 72
Weight	approx. 85 g
Power supply	18 - 30 VDC
Output voltage	24 VDC/5 VDC
Potential separation	500 V
Current consumption max.	400 mA
Segment connection	via PROFIBUS Connector
Surrounding air temperature Transport and storage temperature	0°C ... +60°C -25°C ... +75°C
Degree of protection	IP 20

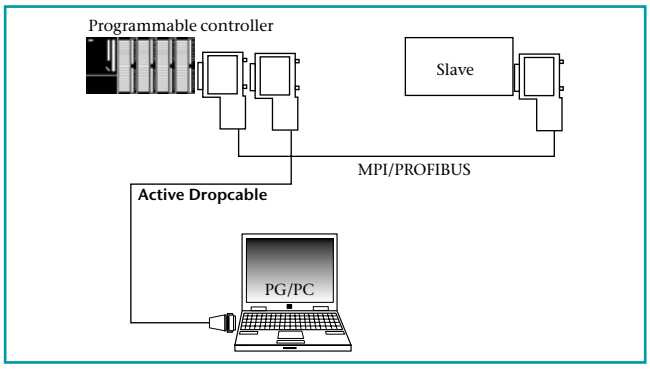
Active PROFIBUS Dropcable, Multiplexer for MPI and PROFIBUS



Dropcable PROFIBUS for PG

Multiplexer for MPI-/PROFIBUS

The active PROFIBUS dropcable from the Systeme Helmholz GmbH is used for a failure-free connection of a programming device to an existing PROFIBUS net.
The active line is not a radial line because of it`s integrated electronic.

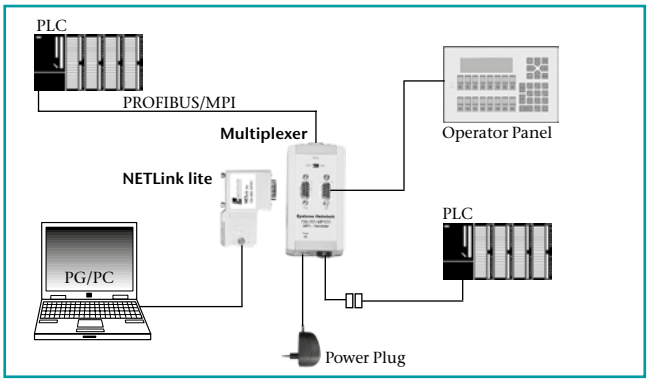


Application example Active Dropcable

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

Ordering Data	Order-No.
Dropcable PROFIBUS for PG, 3 m	**700-901-4BD00**
Multiplexer for MPI/PROFIBUS in a plastic housing **Manual,** German/English	 **700-751-MPV01** **900-751-MPV01**
Power Plug (optional)	**700-751-SNT01**

The MPI/PROFIBUS multiplexer permits connection of up to 3 devices to one MPI or PROFIBUS network.
The MPI/PROFIBUS multiplexer has a 1.2 m long connecting cable that can be plugged directly into the MPI/PROFIBUS socket of the PLC but also at any position in an MPI or PROFIBUS network. The “PG” socket is the only socket that has the full MPI pin assignment. That makes it possible to use “direct operation” on this socket via an MPI adapter (“SSW 7” or “PC adapter”) with programming software. This pin assignment is not relevant for operation of PROFIBUS devices.The MPI/PROFIBUS multiplexer is powered via the connection line to the CPU. If the terminal does not provide 24 V, it is possible to draw the 24 V from an external source. The 24 V connector for this purpose (green connector) is polarized.



Application example for MPI Multiplexer

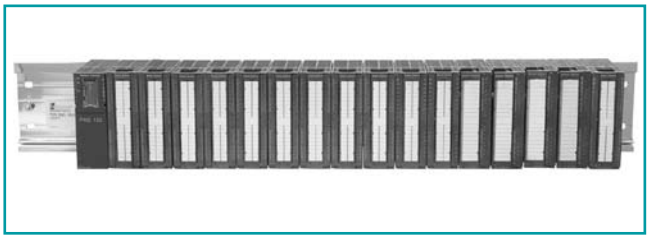
Technical Data	
Dimensions (DxWxH mm)	125 x 67 x 30
Weight	approx. 135 g
Power supply Voltage	 DC 24 V
Current consumption max.	200 mA at 24 V
PROFIBUS interface Transmission max.	 12 Mbps
Connection	3x female, SUB-D, 9-way
Surrounding air temperature Transport and storage temperature	0°C ... +60°C -25°C ... +75°C
Degree of protection	IP 20

PAS 153, distributed PROFIBUS Interface

PAS 153

Features

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



Up to 16 modules can be plugged in

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

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

Ordering Data	
	Order-No.
PAS 153, distributed PROFIBUS Interface	**700-153-1AA03**
Manual PAS 153, German/English	**900-153-1AA03**

DP/DP Coupler

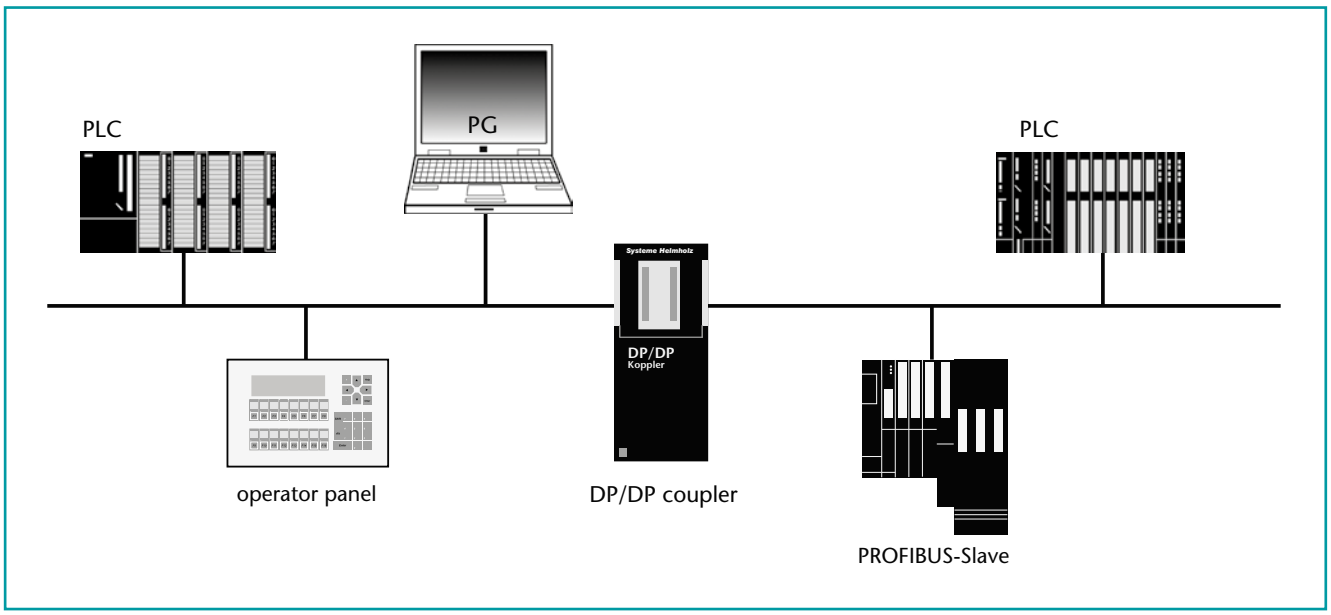
DP/DP Coupler

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

Features

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

Technical Data	
Dimensions (DxWxH mm)	116 x 40 x 125
Weight	Approx. 250 g
Power Supply Nominal power supply Current consumption	 24 V DC (20.4 V... 28.8 V) approx. 150 mA at DC 24 V
Electric isolation of the 24 V power supply to PROFIBUS DP	 yes
Mutually	yes
PROFIBUS interface Transmission rate	 9.6 ... 12 Mbps
Protocol	PROFIBUS DP
Telegram length I/O data	max. 244 Bytes inputs/ 244 Bytes outputs
Surrounding air temperature	0°C ... 60°C
Degree of protection	IP 20



Ordering Data	
	Order-No.
DP/DP Coupler	**700-158-0AD01**
Mountingrack adapter for DIN-Rail (optional) **Mountingrack** 40 mm	 **700-390-6BA00** **700-390-1XA04**
Manual DP/DP Coupler, German/English	**900-158-0AD01**

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

PROFIBUS Radiosystem viBlu

viBlu

Features viBlu 200

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

Features viBlu 100

As for viBlu 200 but with following reservations:

- Only 1 DP-slave
- Only up to 187.5 kbps PROFIBUS-DP

viBlu

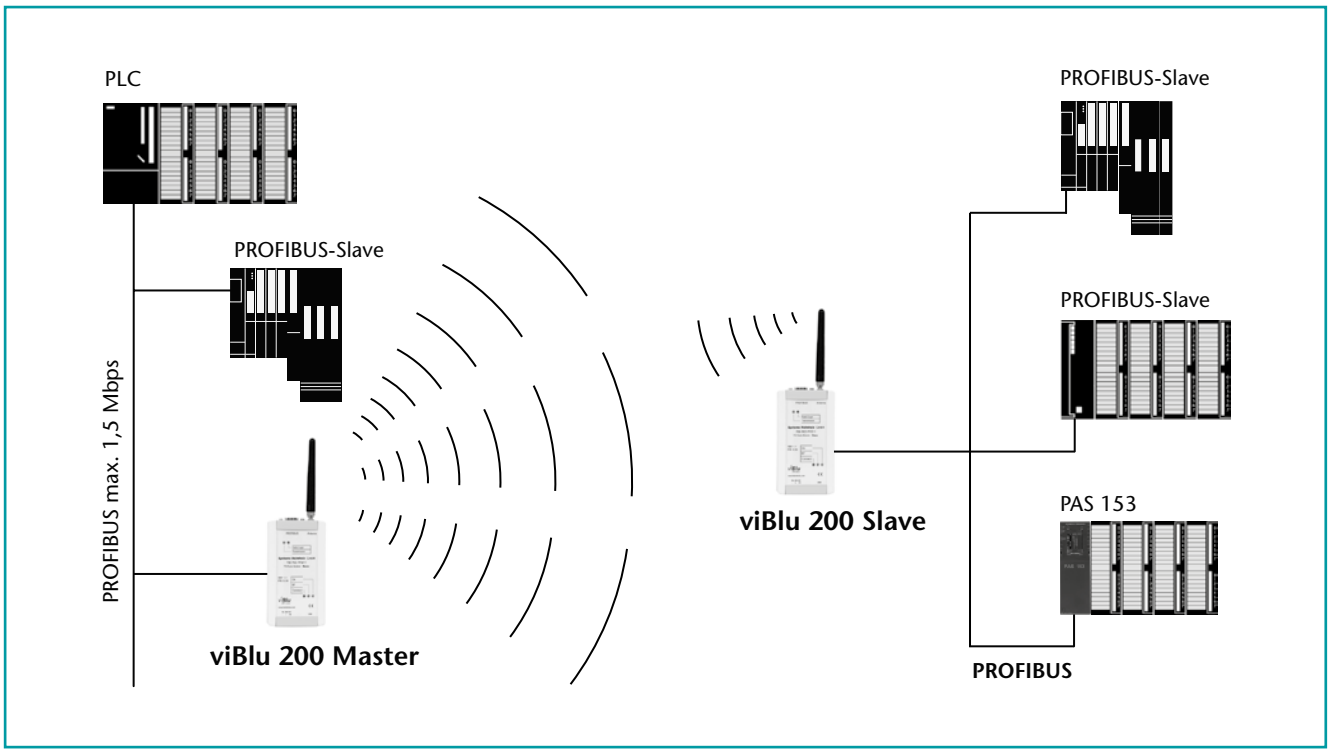
The PROFIBUS radio system viBlu is a virtual cable that permits the linking of distributed I/Os or intelligent devices (e.g. rotating tables, conveyor systems, etc.) by means of radio.
Data transmission is performed via Bluetooth in the license-exempt 2.4 GHz band and supports the PROFIBUS baud rates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

Accessory-Note
Antennas see page 65.

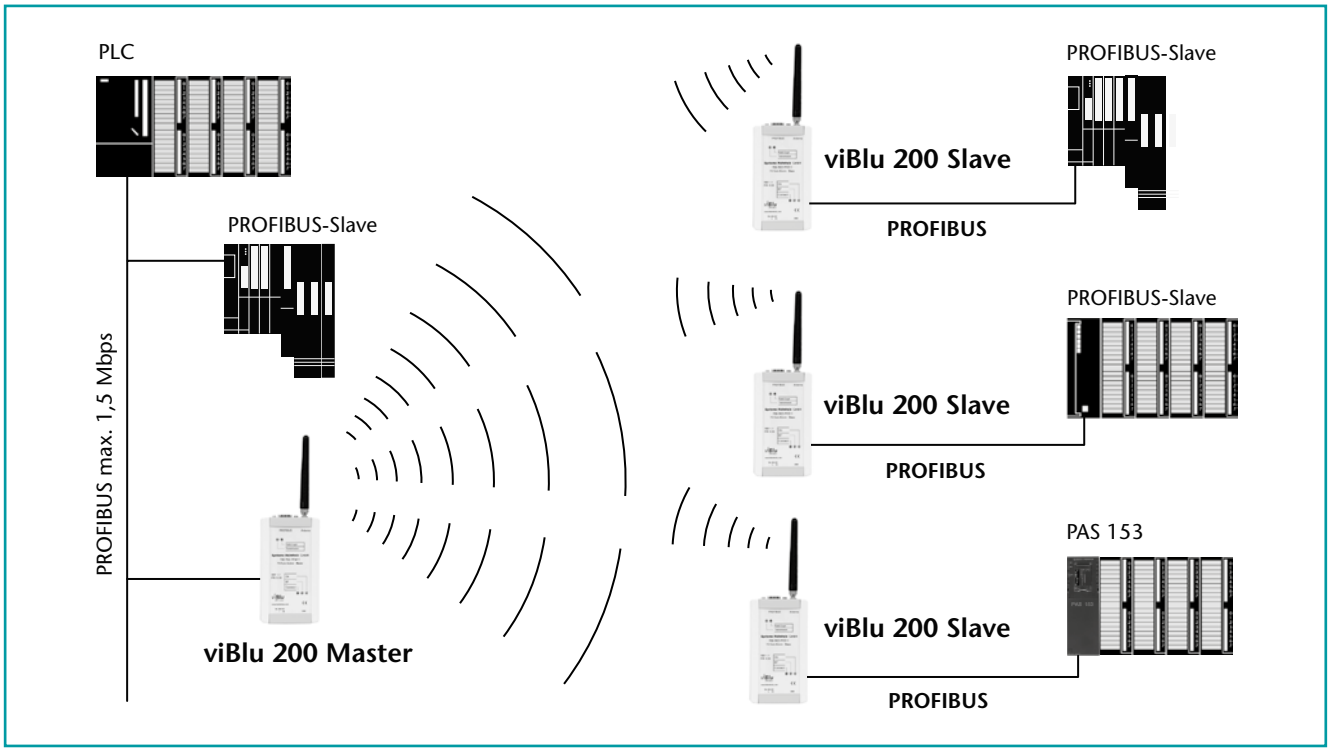
Ordering Data	
	Order-No.
viBlu 100 Master (1 Slave; 187.5 kbps)	**700-761-PFM11**
viBlu 100 Slave (1 Slave; 187.5 kbps)	**700-761-PFS11**
viBlu 200 Master (3 Slaves; 1.5 Mbps)	**700-762-PFM11**
viBlu 200 Slave (3 Slaves; 1.5 Mbps)	**700-762-PFS11**
Manual viBlu 100, German/English	**900-761-PFX11**
Manual viBlu 200, German/English	**900-762-PFX11**

1) STEP is a registered trademark of Siemens AG.

Technical Data		
	viBlu 100	**viBlu 200**
Dimensions (DxWxH mm)	130 x 68 x 30	130 x 68 x 30
Weight	approx. 170 g	approx. 170 g
Power supply Voltage	DC 24 V (18 ... 30 V)	DC 24 V (18 ... 30 V)
Current consumption	typ. 100 mA	typ. 100 mA
PROFIBUS Type	RS485, isolated	RS485, isolated
Number of DP/ slaves	1 slave	3 slaves
Transmission rate	9.6 kbps ... 187.5 kbps, autodetection	9.6 kbps ... 1.5 Mbps, autodetection
Connection	SUB-D, 9-way	SUB-D, 9-way
Radio interface Protocol	Bluetooth	Bluetooth
Range	up to more than 100 m	up to more than 100 m
Baudrate	up to 700 kbps	up to 700 kbps
Antenna connection	RP-SMA socket	RP-SMA socket
Surrounding air temperature	0°C ... 60°C	0°C ... 60°C
Indicators	5 LEDs	5 LEDs
Degree of protection	IP 20	IP 20



viBlu 200 with a radio slave and up to 3 PROFIBUS-DP nodes



viBlu 200 with 3 radio slaves

NETLink® Gateways

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

NETLink® USB, Highspeed USB Gateway for MPI/PROFIBUS

NETLink® USB, Highspeed USB Gateway

Features

- MPI/PPI/PROFIBUS from 9.6 kbps up to 12 Mbps, autobaud
- USB 2.0 up to 480 Mbps
- For S7-200[1)], S7-300[1)], S7-400[1)]
- 12 links on MPI/PROFIBUS
- Power supply via USB
- External 24 V power source possible
- With programming device connector (PG) as standard
- Support for all common Simatic[1)] Engineering Tools
- Galvanic isolation

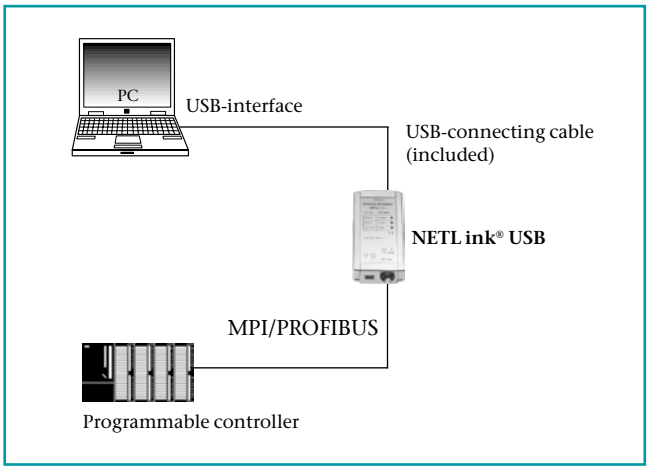
NETLink USB

PROFI BUS

• Programming and configuration via USB

• Visualization via USB

The NETLink® USB is an alternative to a PROFIBUS-PCMCIA plug-in card.
Its 1.2 m connecting cable is plugged directly into the CPU of the programmable controller. The connecting cable is an active cable and therefore does not influence the MPI/PROFIBUS. The second programmer (PG) jack enables connection of further devices.
The NETLink® USB permits conversion of a USB interface to MPI/PROFIBUS for programming or visualization with the full transmission rate of up to 12 Mbps. Furthermore 12 simultaneous links can be established.
The NETLink® USB is powered from the USB bus, but also features an optional 24 V DC power supply and automatic baudrate detection. At the USB end the protocols Fullspeed (12 Mbps) and Highspeed (480 Mbps) are supported.
The MPI/PROFIBUS is electrically isolated from the external 24 V DC power source and from the USB interface (functional separation).
A 3-m high-speed USB cable is included with the NETLink® USB. By using the enclosed SHTools software are parameterization and diagnostic functions possible. For a firmware update is a free download of the latest SHTools version on our website www.helmholz.com available.



Application for NETLink® USB

Ordering Data	
	Order-No .
NETLink® USB (incl. 3m USB cable)	**700-890-MPI11**
DIN rail adapter short **Power Plug** (optional)	**700-751-HSH01** **700-751-SNT01**
Manual NETLink® USB, German/English	**900-890-MPI11**

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

Technical Data		
Dimensions (DxWxH mm)		102 x 54 x 30
Weight		approx. 180 g
Power Supply Voltage		DC 24 V ±25 % DC 5 V USB automatically selected
Current consumption	max. max.	150 mA at DC 24 V/ 500 mA at DC 5 V USB
Communication interface Type		USB 2.0
Connector		USB-B female connector
Transmission rate		12 MBit (Fullspeed)/ 480 MBit (Highspeed)
MPI/PPI/PROFIBUS Type		RS485, isolated
Transmission rate	max.	12 Mbps, autodetection
Connector		SUB-D, 9-way with PG interface and terminating resistor
Protocols		FDL frames
Surrounding air temperature		0°C ... 60°C
Indicators		3 LEDs, therefrom 2 two coloured
Degree of protection		IP 20

NETLink® USB Compact

NETLink® USB Compact

Features

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

• Programming and configuration via USB

• Visualization via USB

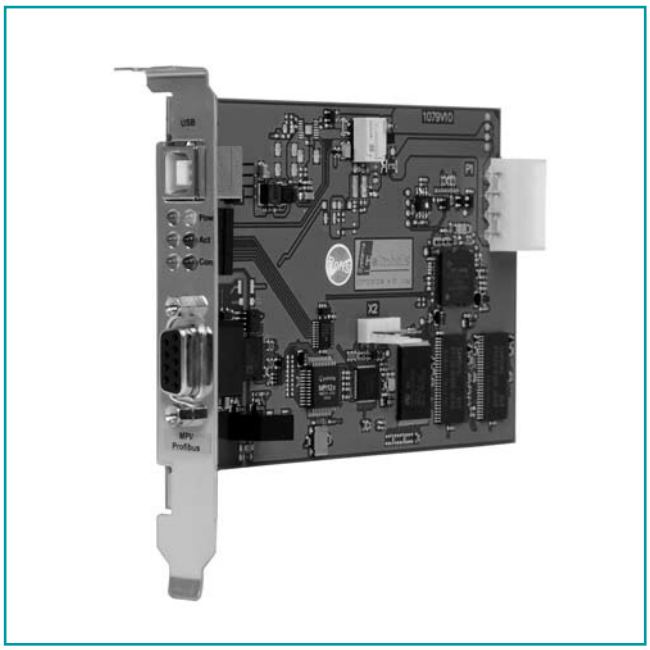
The NETLink® USB Compact is an alternative to a PROFIBUS-PCMCIA plug-in card.
It is plugged directly into the CPU of the programmable controller. The connection with the PC is established using the approx. 3 m high-speed USB cable. The NETLink® USB Compact is supplied with power from the USB bus. At the USB end, the protocols Fullspeed (12 Mbps) and Highspeed (480 Mbps) are supported.
The second PG socket permits connection of further devices.
The NETLink® USB Compact permits conversion of a USB interface to MPI/PROFIBUS for programming or visualization with the full transmission rate of up to 12 Mbps with automatic baudrate detection. Furthermore, 32 simultaneous links can be established.
The MPI/PROFIBUS is electrically isolated from the USB interface (functional isolation).
By using the enclosed SHTools software are parameterization and diagnostic functions possible. For a firmware update is a free download of the latest SHTools version on our website www.helmholz.com available.

Ordering Data	
	Order-No.
NETLink® USB Compact	**700-892-MPI21**
Manual NETLink® USB Compact, German/English	**900-892-MPI21**

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

Technical Data		
Dimensions (DxWxH mm)		102 x 54 x 30
Weight		approx. 180 g
Power Supply Voltage		DC 5 V USB
Current consumption	typ.	200 mA at DC 5 V USB
Communication interface Type		USB 2.0
Connector		USB-A-female connector
Transmission rate		12 MBit Fullspeed/ 480 MBit Highspeed
MPI/PPI/PROFIBUS Type		RS485, isolated
Transmission rate	max.	12 Mbps, autodetection
Connector		SUB-D, 9-way with PG interface
Protocols		FDL frames
Surrounding air temperature		0°C ... 60°C
Indicators		3 LEDs, therefrom 2 two coloured
Degree of protection		IP 20

NETLink® SLOT USB, Highspeed USB Gateway as a plug-in board



NETLink® SLOT USB

- **Programming and configuration via USB**
- **Visualization via USB**
- **PC plug-in board**

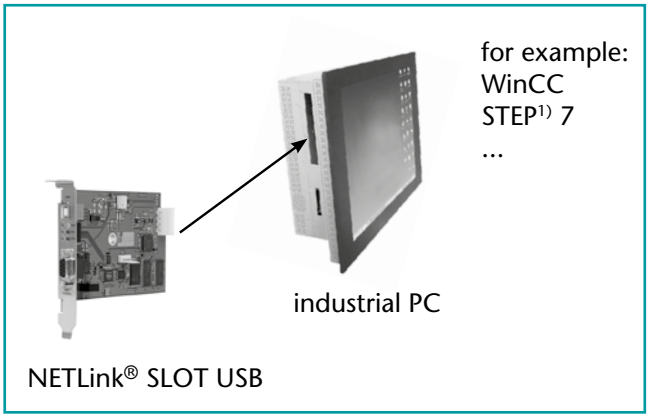
The NETLink® SLOT USB is an alternative to a PROFIBUS-CP plug-in board and is directly installed in the computer (industrial PC, panel PC, etc.). It is connected to the programmable controller by means of a standard Profibus connection. Connection to the USB bus is possible directly from the mother board using the cable supplied. The necessary 5 volts are also provided through this connection. Moreover, a direct connection from the computer power supply unit can be used for the power supply. As an alternative, complete connection of the NETLink® SLOT USB is also possible through an external USB cable.
The NETLink® SLOT USB permits programming or visualization from a USB interface on up to 32 simultaneous MPI/PPI/PROFIBUS connections with the full transmission rate of 12 Mbps. The NETLink® SLOT USB features automatic baudrate detection and supports the USB protocols Fullspeed (12 Mbps) and Highspeed (480 Mbps). The MPI/PPI/PROFIBUS is electrically isolated from the PC power supply and from the USB interface (functional isolation).
By using the enclosed SHTools software are parameterization and diagnostic functions possible. For a firmware update is a free download of the latest SHTools version on our website www.helmholz.com available.

Ordering Data	
	Order-No.
NETLink® SLOT USB	**700-891-MPI21**
Manual NETLink® SLOT USB, German/English	**900-891-MPI21**

1) Simatic, WinCC and STEP are registered trademarks of Siemens AG.

Features

- Plug-in card for standard programming PCs, industrial PCs, operator panel PCs, etc.
- MPI/PPI/PROFIBUS with 9.6 kbps to 12 Mbps, autobaud
- USB 1.1 and 2.0
- For S7-200[1)], S7-300[1)], S7-400[1)]
- Galvanic isolation to the MPI/PPI/PROFIBUS
- 12 Mbps (Fullspeed) or 480 Mbps (Highspeed)
- 32 simultaneous links on MPI/PROFIBUS
- 5 V power supply via USB
- Power supply by the PC-power supply
- Support for all common Simatic[1)] Engineering Tools



NETLink® SLOT USB for industrial PCs

NETLink SLOT USB

Technical Data		
Dimensions (DxWxH mm)		140 x 120 x 16
Weight		approx. 180 g
Power Supply Voltage		DC 5 V USB, PC-power supply automatically selected
Current consumption	typ.	350 mA at DC 5 V
Communication interface Type		USB 2.0
Connector		USB-B-female (extern) 4-way post plug connector for motherboard (intern)
Transmission rate		12 MBit (Fullspeed)/ 480 MBit (Highspeed)
MPI/PPI/PROFIBUS Type		RS485, isolated
Transmission rate	max.	12 Mbps, autodetection
Connector		SUB-D, 9-way
Protocols		FDL frames
Surrounding air temperature		0°C ... 60°C
Indicators		6 status LEDs
Degree of protection		without degree of protection

NETLink® PRO, Ethernet Gateway for MPI/PROFIBUS

NETLink® PRO, Ethernet Gateway

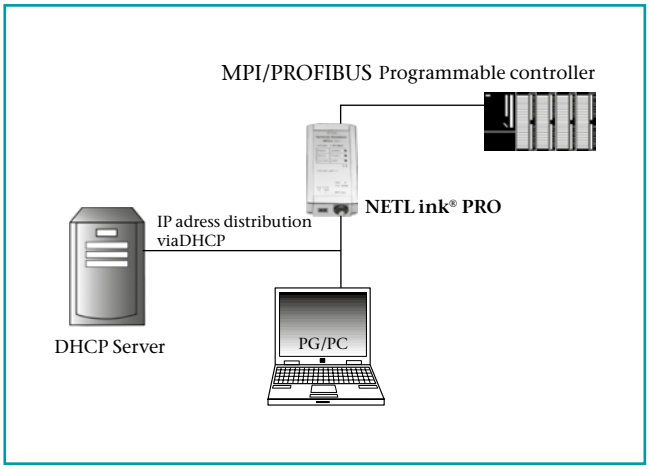
- **Visualization via Ethernet**
- **Teleservice via Internet**
- **Visualization via dial-up router**
- **Protocol via Ethernet/PDA data acquisition**
- **Programming & configuring via Ethernet**

NETLink PRO

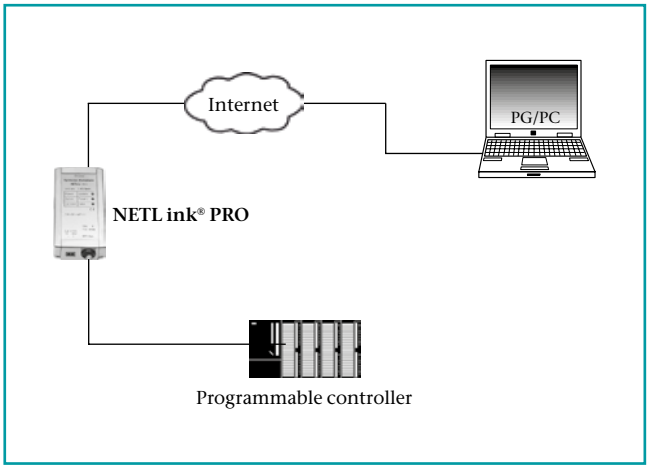
The NETLink® PRO for programming, configuring and visualization of S7 PLCs from Siemens is plugged into the CPU of the programmable controller. The connecting cable is an active cable and therefore does not influence the MPI/PROFIBUS. The bus connector is equipped with a programming unit socket to which additional devices can be connected.
The NETLink® PRO can optionally be powered from an external 24 V DC power source.
At the controller end, the NETLink® PRO via MPI and PROFIBUS allows the full transmission speed of 12 Mbps and 12 simultaneous connections.
Moreover, the new NETLink® PRO features automatic baudrate detection and flexible configuration, such as DHCP and a Web interface.
The 3 m Ethernet connecting cable (straight) is provided with the NETLink® PRO.
At the TCP/IP-end, the NETLink® PRO can be used both in the LAN and in the WAN (for example, via VPN).
The MPI/PPI/PROFIBUS is electrically isolated from the external 24 V DC power source and from the Ethernet interface (functional separation).
By using the enclosed SHTools software are parameterization and diagnostic functions possible. For a firmware update is a free download of the latest SHTools version on our website www.helmholz.com available.

Features

- MPI/PPI/PROFIBUS from 9.6 kbps up to 12 Mbps, autobaud
- Support for all common Simatic[1)] Engineering Tools
- For S7-200[1)], S7-300[1)], S7-400[1)]
- TCP/IP 10/100 Mbps
- ISO on TCP (RFC 1006)
- Support of the PPI protocol for S7-200[1)] applications
- Security functions for protecting TCP/IP access
- Monitoring variables in the Browser window
- Visualize web-services via HTML
- DHCP, Web configuration
- 12 links on MPI/PROFIBUS
- 6 links on TCP
- Power supply from the CPU or alternative external 24 V power source possible
- With programmer (PG) jack as standard
- RJ45 jack for connecting the TCP cable
- Support of Slave Parametrization
- Galvanic isolation to the MPI/PPI/PROFIBUS



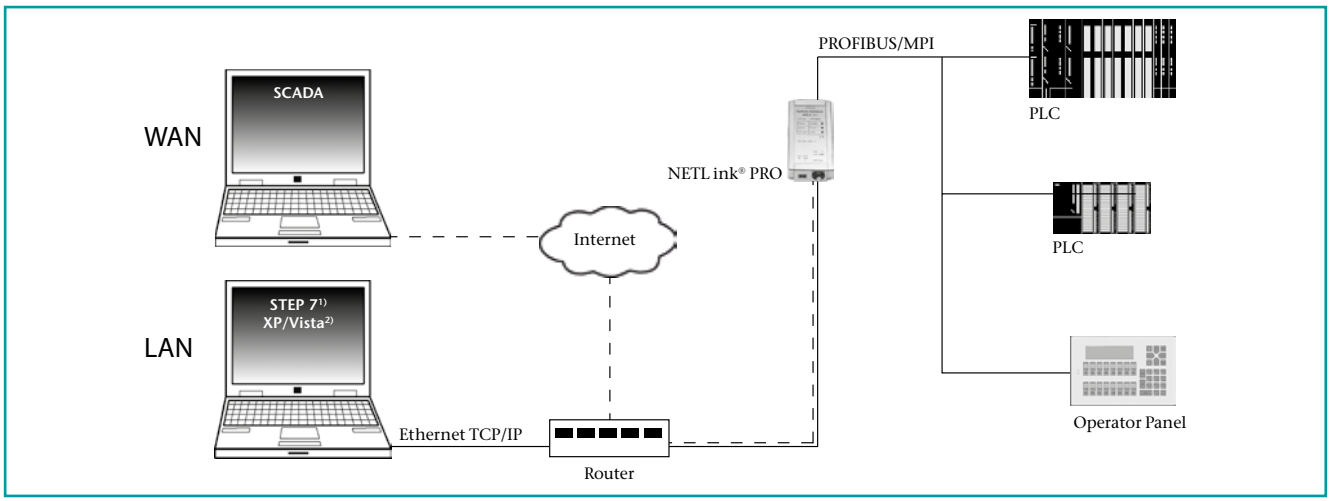
Application for NETLink® PRO in a LAN for example address distribution via DHCP



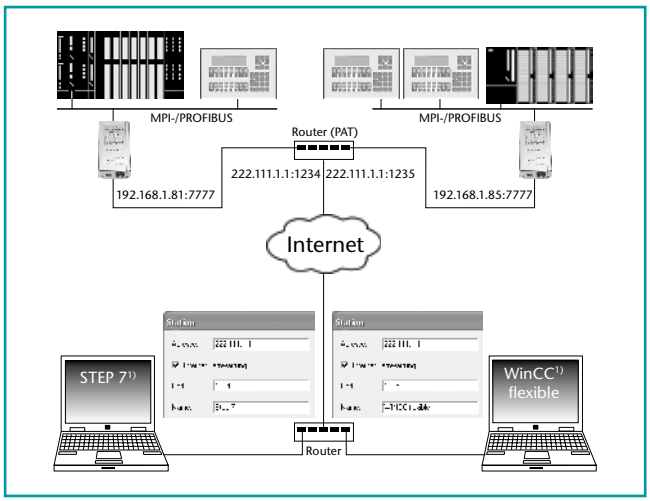
Application for NETLink® PRO in a WAN for example via dial in router

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

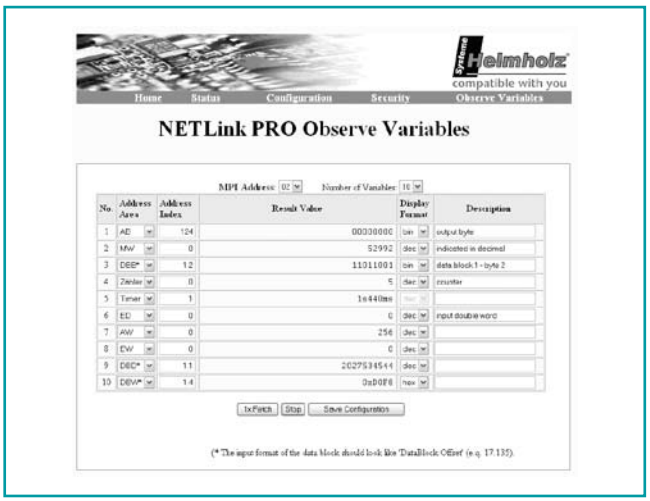
NETLink® PRO, Ethernet Gateway for MPI/PROFIBUS



Application example for programming and projecting with different software tools in LAN and simultaneously connection with RFC 1006 via WAN



Application example for the access to several NETLink® PRO via a public IP Address and by using Port and Address Translation



Observe variables in the NETLink® PRO webserver.

Technical Data	
Dimensions (DxWxH mm)	102 x 54 x 30
Weight	approx. 180 g
Power Supply Voltage	 DC 24 V ±25 %
Current consumption max.	150 mA
Communication interface Type	 10 Base-T 100 Base-TX
Connector	RJ45
Transmission rate	10/100 Mbps autodetection
MPI/PPI/PROFIBUS Type	 RS485, isolated
Transmission rate max.	12 Mbps, autodetection
Connector	SUB-D, 9-way with PG interface and repeater
Protocols	FDL frames, RFC 1006
Surrounding air temperature	0°C ... 60°C
Indicators	3 LEDs, therefrom 2 two coloured
Degree of protection	IP 20

Ordering Data	
	Order-No.
NETLink® PRO (incl. 3 m Ethernet cable) **NETLink® PRO**, 35° cable outlet for S7-400 (incl. 3 m Ethernet cable)	**700-881-MPI11** **700-881-MPI12**
Crossover-adapter **DIN rail adapter** short **Power Plug** (optional)	**700-880-CROSS** **700-751-HSH01** **700-751-SNT01**
Manual NETLink® PRO, German/English	**900-881-MPI11**

1) S7-200, S7-300, S7-400, STEP and WinCC are registered trademarks of Siemens AG.
2) Windows XP, Windows 2000 and Windows Vista are registered trademarks of Microsoft Corporation.

NETLink® WLAN, PROFIBUS Ethernet WLAN Gateway

NETLink® WLAN

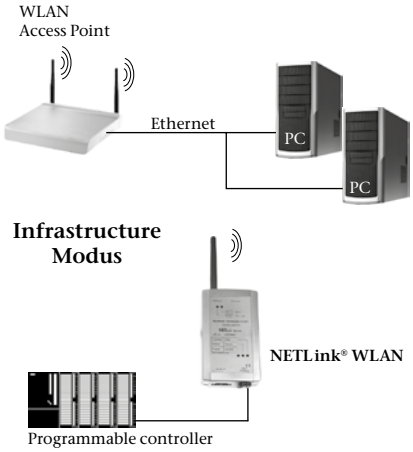
Features

- MPI/PPI/PROFIBUS from 9.6 kbps up to 12 Mbps, autobaud
- Support of all common Simatic[1)] Engineering Tools
- For S7-200[1)] , S7-300[1)], S7-400[1)]
- ISO on TCP (RFC 1006)
- WLAN interface (802.11 b/g) with up to 54 Mbps
- Can be operated in “ad hoc” and in “infrastructure” mode
- Supports the following wireless security methods: WEP, WPA, and WPA2
- 16 TCP connections, 32 MPI connections
- Simple configuration via the webinterface
- Clear diagnostics page in the webinterface
- Security functions for securing TCP/IP access
- Variable monitoring in the Browser window
- Visualization with NETLink® WebService using HTML
- RJ45 socket for connecting the TCP cable
- Support of slave parameterization
- Galvanic isolation from MPI/PROFIBUS
- CPU-to-CPU communication

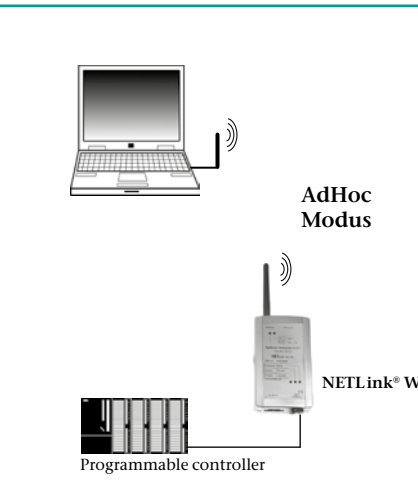
- **Visualizing via WLAN or Ethernet**
- **Logging and production data acquisition via WLAN or Ethernet**
- **Programming & configuring via WLAN or Ethernet**

NETLink WLAN

The NETLink® WLAN is an Ethernet/WLAN Gateway for programming, configuring, and visualizing S7-200[1)], S7-300[1)], and S7-400[1)] PLCs. The bus connector (with PG socket) is plugged directly onto the MPI or PROFIBUS interface of the CPU. The supplied driver automatically embeds itself in the Simatic Engineering Tools. Furthermore, with a simple configuration via the Web interface, the widely used ISO on TCP (RFC 1006) protocol can be activated in the NETLink® WLAN. At the controller end, the NETLink® WLAN permits the full transmission speed of 12 Mbps with maximum 32 simultaneous connections via MPI or PROFIBUS. Besides the RJ45 socket, the WLAN interface (802.11 b/g) can be connected with up to 54 Mbps.
This can be parameterized via the Web interface for “Ad Hoc” or “Infrastructure” mode. All standard Wireless Security methods such as: WEP, WPA, and WPA2 are supported.
Additional features include: DHCP, TCP/IP access to Security functions and the new configuration tool “NETLink® WebService” for creating customized visualizations with HTML. This permits the visualization of plant states in any Browser. The 3 m Ethernet connecting cable (straight) is provided with the NETLink® WLAN.
By using the enclosed SHTools software are parameterization and diagnostic functions possible. For a firmware update is a free download of the latest SHTools version on our website www.helmholz.com available.

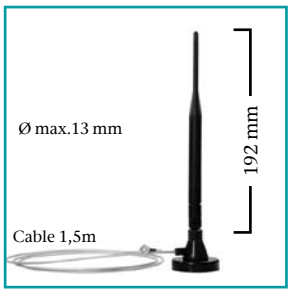


Application for WLAN Infrastructure-Modus

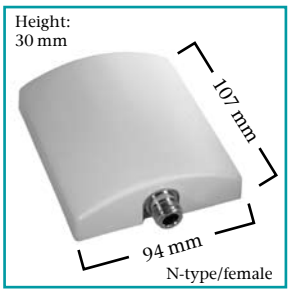


Application for WLAN AdHoc-Modus

NETLink® WLAN, Antennas for WLAN and Bluetooth

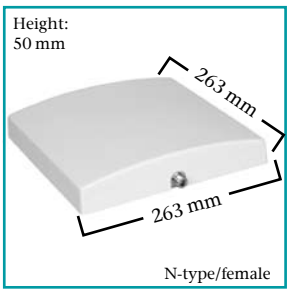


5 dBi magnetic base antenna



Panel 8 dBi antenna

Omni 8 dBi antenna, including wallclamp



Panel 18 dBi antenna

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

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

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

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

Ordering Data	Order-No.
NETLink® WLAN (incl. 3m Ethernet cable)	**700-882-MPI21**
2.4 GHz 5 dBi magnetic base antenna, with 1,5 m antenna 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**
2.4 GHz antenna cable, 3m; 1,7 dB; Ø 5 mm	**700-889-ANK01**
2.4 GHz antenna cable, 5m; 2,8 dB; Ø 5 mm	**700-889-ANK02**
2.4 GHz antenna cable, 6m; 1,4 dB; Ø 10,3 mm	**700-889-ANK03**
2.4 GHz antenna cable, 10m; 2,3 dB; Ø 10,3 mm	**700-889-ANK04**
DIN rail adapter long	**700-751-HSH10**
Power Plug (optional)	**700-751-SNT01**
Manual NETLink® WLAN, German/English	**900-882-MPI21**

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

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

NETLink® Switch

NETLink® Switch

- **Programming and configuration over Ethernet**
- **Visualization over Ethernet**
- **Logging and production data acquisition over Ethernet**

The NETLink® Switch is an Ethernet Gateway with an integrated 4-port switch for programming, configuring, visualizing, and remote servicing of S7-200[1)], S7-300[1)], and S7-400[1)] PLCs and is mounted on a DIN rail. It is either included in the bus with a PROFIBUS connector or plugged directly into the MPI/PPI or PROFIBUS interface of a bus station using an active plug-in cable. The NETLink® Switch is powered with an external 24 V DC. The supplied driver automatically embeds itself in the Simatic[1)] Engineering Tools. Furthermore, with a simple configuration through the Web interface, the widely used ISO on TCP (RFC 1006) protocol can be activated in the NETLink® Switch. At the controller end, the NETLink® Switch permits the full transmission speed of 12 Mbps with maximum 32 simultaneous connections via MPI/PPI or PROFIBUS. In addition to the function as NETLink®, the 4-fold 10Base-T/100Base-TX Switch can be used to include further Ethernet stations.
One new feature is the free configuration tool "NETLink® Web-Service," which is used to produce your own visualizations by means of HTML. In that way, plant statuses can be visualized in any browser. This enables the visualization of plant states in any Browser.
TCP/IP access can also be restricted by means of security functions.
By using the enclosed SHTools software are parameterization and diagnostic functions possible. For a firmware update is a free download of the latest SHTools version on our website www.helmholz.com available.

Ordering Data	
	Order-No.
NETLink® Switch (incl. 3 m Ethernet cable)	**700-883-PRO42**
Power Plug (optional)	**700-751-SNT01**
Manual NETLink® Switch, German/English	**900-883-PRO42**

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

Features

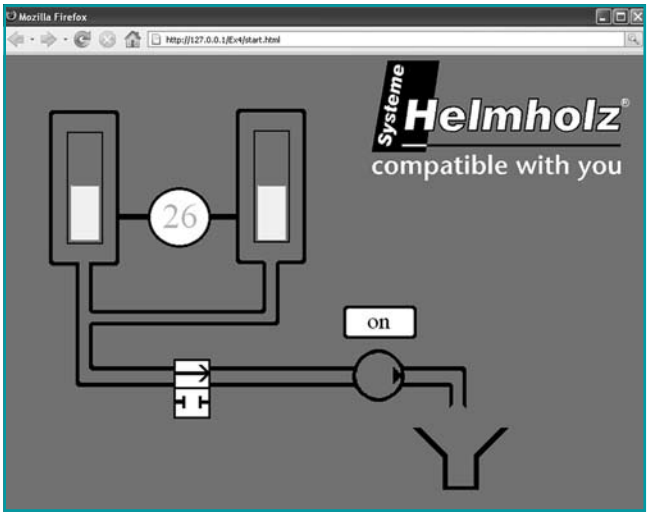
- MPI/PPI/PROFIBUS from 9.6 kbps up to 12 Mbps, autobaud
- Support for all common Simatic[1)] Engineering Tools
- For S7-200[1)], S7-300[1)], S7-400[1)]
- ISO on TCP (RFC 1006)
- 3 m Ethernet connection cable (straight) is included
- Dynamic address assignment by means of DHCP
- Integrated 4-fold 10Base-T/100Base-TX store-and-forward switch
- 16 TCP connections, 32 MPI connections
- Simple configuration through the webinterface
- Clear diagnostics page in the webinterface
- Security functions for protecting TCP/IP access
- Monitoring variables in the Browser window
- Visualization with NETLink® WebService using HTML
- Support for slave parameterization
- Electrical isolation from the MPI/PPI/PROFIBUS
- CPU-to-CPU communication

NETLink Switch

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

What is NETLink® WebService?

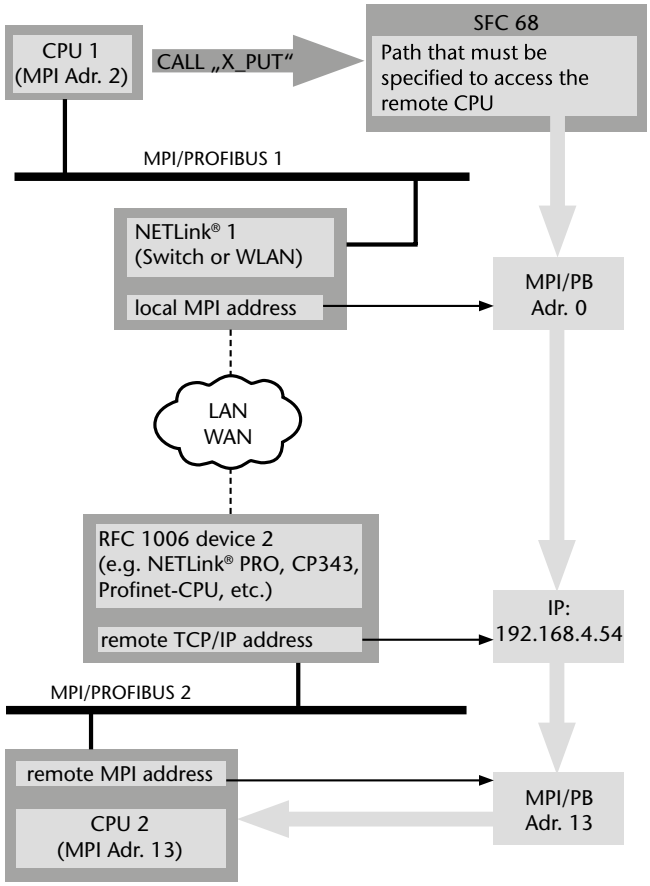
NETLink WebService



Example of NETLink® WebService visualization

NETLink® WebService is a service to help you create your own Browser interface for simple visualization tasks. Operand values from your PLC can be visualized for monitoring services via a NETLink® PRO, NETLink® WLAN and NETLink® Switch.
The program modules required for this are available free of charge. Using application examples and the configuration tool, changes in value can be visualized in a few steps.
Using Java-Script functions status images can be integrated, which, for example, indicate fill levels of tanks or valve positions in the visualization.
Furthermore, the values from NETLink® PRO/WLAN/Switch can be adapted for display by means of stored arithmetic operations.
If you release your scripts to a Web host, they can be accessed from any Internet computer. This means that machine states can be called up from any location.
The examples supplied by Systeme Helmholz GmbH can be freely edited. However, HTML and Java Script programming knowledge is required to expand your own user interfaces.

What is CPU-to-CPU communication?



Implement a CPU-to-CPU link using the S7 basic communication. The connection types MPI and PROFIBUS are supports on all S7-300[1)] and S7-400[1)] PLCs. The STEP[1)] 7 software from Siemens features simple functions (SFCs) for the transmission of data between two stations. The Systeme Helmholz products NETLink® Switch and NETLink® WLAN support the Simatic[1)] mechanisms X_PUT and X_GET (read and write data from/to a communicating partner outside the local S7 station).
For this type of client-server communication, the familiar RFC1006 transport protocol (ISO on top of TCP) is used. In this way, on the receiving side (client), for example, CPs or Profinet CPUs are used that also support this protocol.
The connections are not configured but are explicitly established during the SFC call. For that reason, a connection resource is only permanently assigned for the communication at the “active” end. The “passive” end responds to the queries of the active partner and therefore only requires a resource if it establishes a connection.
This has the advantage that function calls only need to be stored at the active end (server).
If the intention is to expand an already configured X_PUT/X_GET process via TCP/IP, it is only necessary to include an additional X_PUT (with the parameters for the remote station – see illustration) in the program execution to open the communication channel via the NETLink® Switch or NETLink® WLAN.
The number of useful data items that can be transmitted per communication request is up to 76 bytes for the entire system.
For support with configuration (including for newcomers), Systeme Helmholz GmbH provides simple example projects for the STEP[1)] 7 programming software free of charge. Using the associated application description, the CPU-to-CPU communication can be implemented in just a few steps.

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

OPC-Server

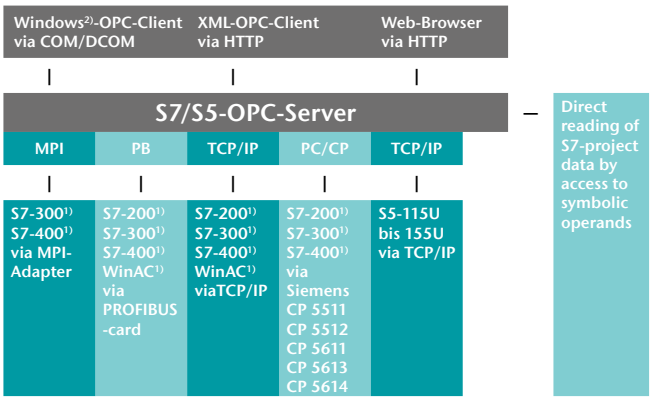
Fast access to S7- and S5 data
The S7/S5 OPC server allows you fast and easy access to process data in WinAC[1)], S7-200[1)], S7-300[1)], S7-400[1)], C7- and S5 controllers. Addressing of the variables can be performed completely in STEP[1)]7 semantics and can be imported directly from an Excel file or a STEP[1)]7 project if required.
With each OPC-compliant client application, you can read or write all input/output data, data blocks, flags, timers and counters in the S7-/S5 controllers. You can also access up to 256 controllers at one time.
The control program does not have to be adapted for communication with the S7/S5 OPC server. No detailed knowledge of the PLC program that is running is necessary.

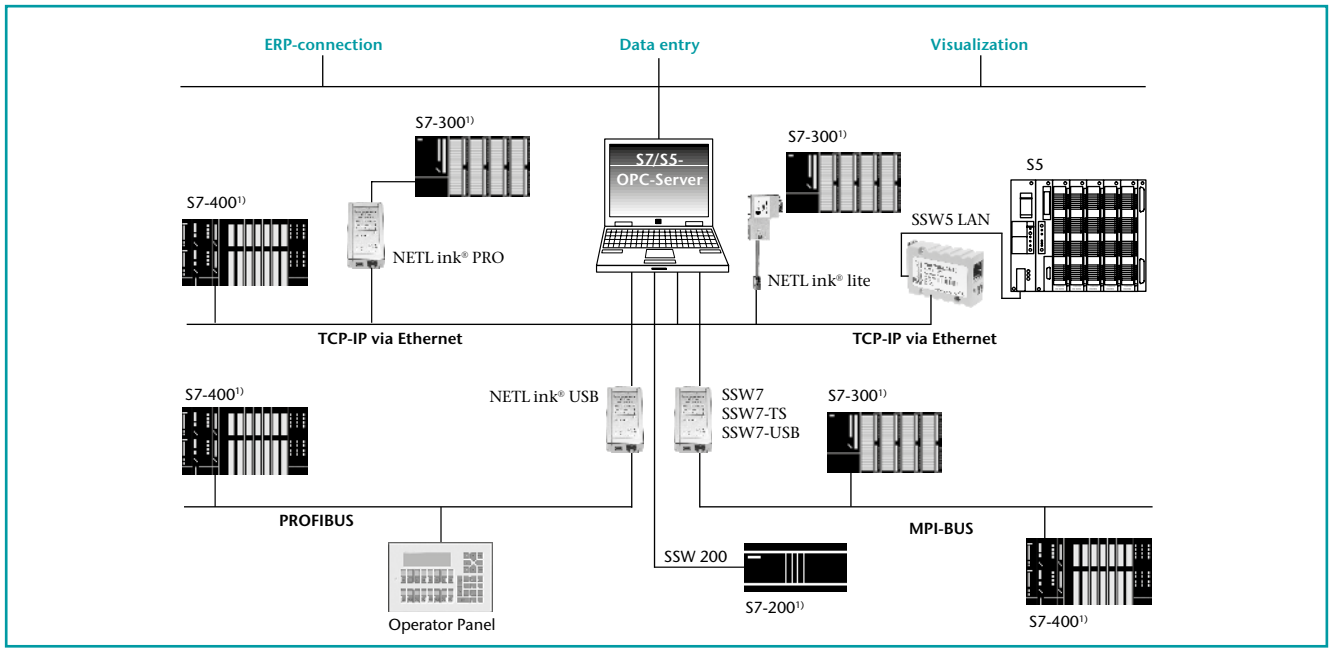
New functions and expansions
On the S7-300[1)] and S7-400[1)] the DATE_AND_TIME and ASCII strings are supported as additional data formats.
OPC Client Controls are now contained in the scope of supply of the S7/S5 OPC server as ActiveX components.
The S5 syntax for creating items can now be used. Access to array elements has been improved.

Integrated Web server
The S7/S5 OPC server features an integrated Web server. This is used for diagnosing the OPC server and for providing its own Web pages for operating and monitoring using any standard browser.
The architecture and performance of the Web server is designed for small visualization systems.

Flexible connection
There are many ways of connecting the controllers to the S7/S5 OPC server such as TCP/IP, PROFIBUS, MPI, PPI or AS511.
For communication, Systeme Helmholz GmbH provides the following devices:
- SSW7, SSW7-TS, SSW7-USB for MPI
- NETLink® PRO, NETLink® USB, NETLink® lite, NETLink® WLAN for MPI and PROFIBUS
- SSW3, SSW4 and SSW5 for AS511

Also a selection of communication modules of other manufacturers, such as CP243, CP343, and CP443 from Siemens are supported.
The current OPC server version and further technical information are available for download at www.helmholz.de.





Application for OPC-Server

Ordering Data	
	Order-No.
S7-OPC-Server with USB-Dongle	**800-880-OPC20**

1) WinAC, S7-200, S7-300, S7-400, STEP and WinCC are registered trademarks of Siemens AG.
2) Windows is a registered trademark of Microsoft Corporation.

MPI-BUS

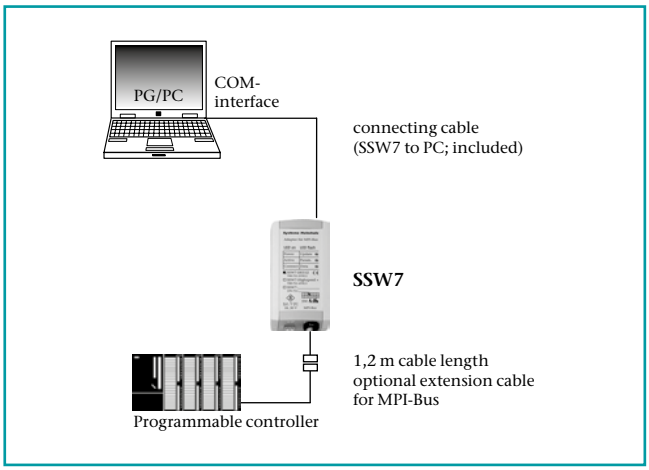
Programming Adapter
PPI-Cable
Accessory
RK512- and HMI-Adapter

SSW7, MPI-Programming Adapter

SSW7

Features

- Programming and visualization
- Transmission rate up to 115 kBaud
- MPI up to 187,5 kbps
- Power supply via programming device or via external 24 V supply



Application for SSW7

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

Accessory-Note
DIN rail clips, extension cables (see page 74) as well as multiplexers (see page 53) are available for the SSW7.

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

Ordering Data	Order-No.
MPI-Adapter **SSW7, RS232** (incl. 3 m programming cable) **SSW7, RS422**	 **700-751-1VK21** **700-752-1VK21**
DIN rail adapter short **Power Plug** (optional)	**700-751-HSH01** **700-751-SNT01**
Manual SSW7, MPI adapter German/English	 **900-751-1VK21**

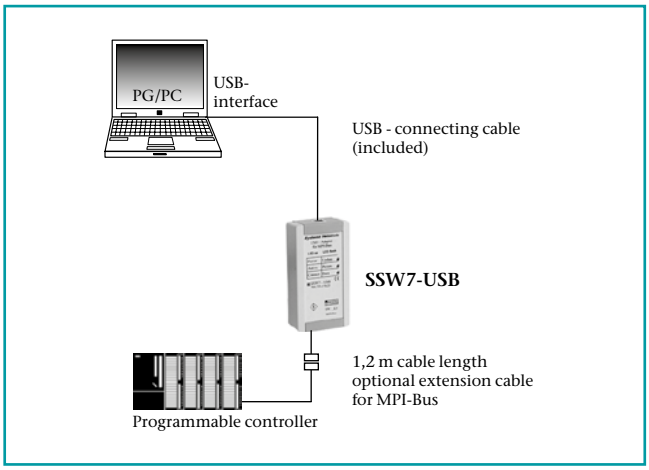
Technical Data	
SSW7	
Dimensions (DxWxH mm)	105 x 53 x 29
Weight	approx. 180 g
Supply voltage	+24 V ±25 % from PLC or extern
Current consumption typ. max.	30 mA 45 mA
MPI-Interface Type	 RS485
Transmission rate	19.2 or 187.5 kbps
Cable connector	SUB-D, 9-way
Communication interface Type	 RS232/RS422
Transmission type	serial asynchronous
Transmission rate	19.2 kbps to 115.2 kbps
Parity	odd
Data format	8 Bit
Protocols	PC <-> S7
Connection	connector, SUB-D, 9-way
Degree of protection	IP 20

SSW7-USB, MPI-Programming Adapter USB

SSW7-USB

Features

- Programming and visualization via USB
- Supply Voltage via USB
- Virtual COM-port for flexible applications
- MPI up to 187,5 kbps



Application for SSW7-USB

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

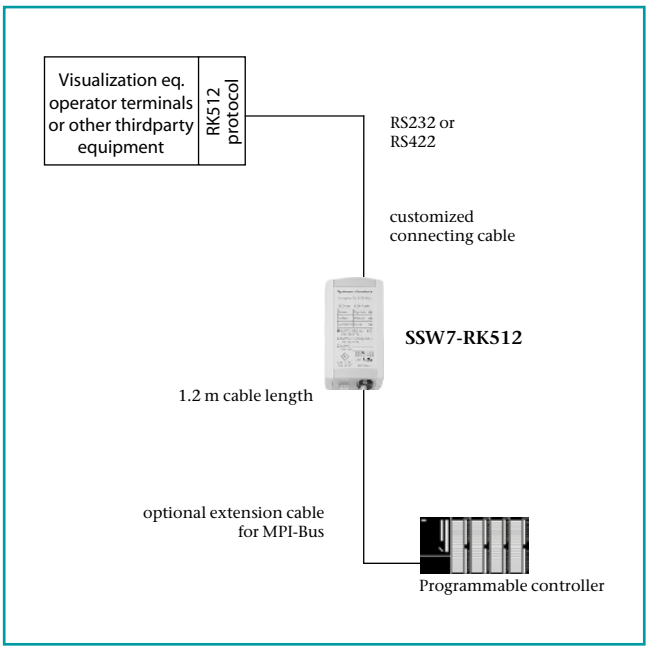
Accessory-Note
DIN rail clips, extension cables (see page 74) as well as multiplexers (see page 53) are available for the SSW7-USB.

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

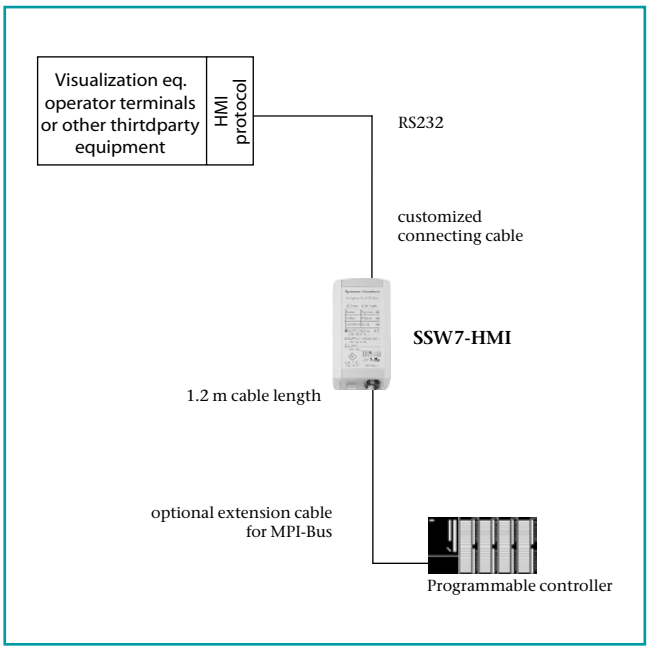
Ordering Data	
	Order-No.
MPI-Adapter **SSW7-USB** (incl. 3 m USB cable)	**700-755-1VK21**
DIN rail adapter short	**700-751-HSH01**
Manual SSW7-USB, German/English	**900-755-1VK21**

Technical Data	
SSW7-USB	
Dimensions (DxWxH mm)	105 x 53 x 29
Weight	approx. 180 g
Supply voltage	5 V via USB
Current consumption	approx. 150 mA
MPI interface Type	 RS485
Transmission rate	19.2 or 187.5 kbps
Cable connector	SUB-D, 9-way
Communication interface Type	 USB 1.1
Protocols	PC <-> S7
Connection	USB-B female
Degree of protection	IP 20

SSW7-RK512, SSW7-HMI, MPI-Adapter with RK512/HMI Protocol



SSW7-RK512



SSW7-HMI

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

Accessory-Note
DIN rail clips, extension cables (see page 74) as well as multiplexers (see page 53) are available for the SSW7-RK512 and the SSW7-HMI.

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

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

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

Ordering Data	
	Order-No.
MPI-Adapter **SSW7-RK512** **SSW7-RK512** with RS422 interface	 700-751-5VK21 700-752-5VK21
DIN rail adapter short **Power Plug** (optional)	700-751-HSH01 700-751-SNT01
Manual SSW7-RK512, german/english **Manual SSW7-RK512/RS422,** German/English	900-751-5VK21 900-752-5VK21

Ordering Data	
	Order-No.
MPI-Adapter **SSW7-HMI**	 700-751-9VK21
DIN rail adapter short **Power Plug** (optional)	700-751-HSH01 700-751-SNT01
Manual SSW7-HMI, German/English	900-751-9VK21

SSW7-RK512, SSW7-HMI, MPI-Adapter with RK512/HMI Protocol

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

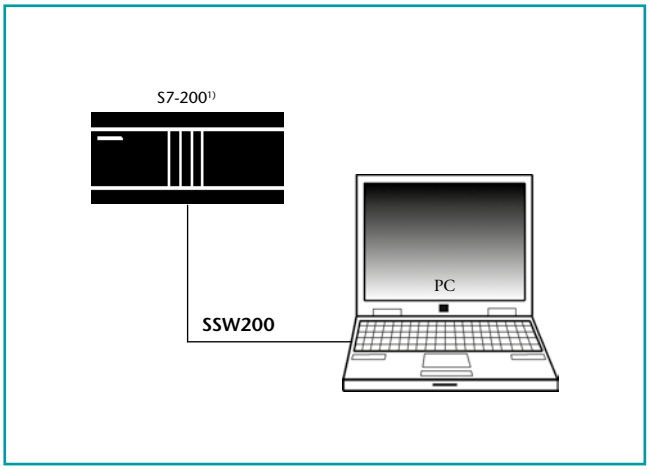
MPI-Accessory, SSW200

DIN rail adapter

For all SSW7- and NETLink® PRO/USB adapter, we provide DIN rail adapters as an accessory.
The MPI adapters can be installed in a bigger distance with the MPI extension cable.
The cable also carries the power supply for the MPI adapter.

Ordering Data	Order-No.
MPI-Accessory	
DIN rail adapter, short (for SSW7, SSW7-TS, SSW7-USB, NETLink® PRO, NETLink® USB)	**700-751-HSH01**
DIN rail adapter, long (only for SSW7-TS with Modem + ISDN + GSM + NETLink® WLAN)	**700-751-HSH10**
Extension cable	
Extension cable MPI bus, 5 m	**700-751-6VK11**
Extension cable MPI bus, 10 m	**700-751-6VK21**
Extension cable MPI bus, special lengths	**700-751-6SO11**

SSW200, PPI-cable



With the SSW200 it is possible to connect a PC with suitable programming software to a S7-200[1)] via any standard COM port. You can set the transmission rate to match your PC with a selector switch.

Technical Data	
PPI interface **Type**	**RS485**
Transmission rate (depending on switch position)	1200, 2400, 9600, 19200, 38400 kbps
Connectors	SUB-D, 9-way
Communication interface Type	RS232
Transmission mode	serial asynchron
Transmission rate (depending on switch position)	1200, 2400, 9600, 19200, 38400 kbps
Female connector	SUB-D, 9-way

Ordering Data	Order-No.
SSW200, PPI-cable for connecting PC to S7-200[1)], 3 m	**700-751-2VK11**

1) S7-200 is a registered trademark of Siemens AG

Teleservice

Adapter for Teleservice
Teleservicemodule
Modems
Router

REX 300

REX 300

Features

- MPI/PROFIBUS up to 12 Mbps
- Support for all common Simatic[1)] Engineering Tools
- S7-300[1)], S7-400[1)] via MPI/PROFIBUS
- Complete configuration of the REX 300 on the web user interface through the locally connected PC or by remote control.
- Deployable worldwide due to its range of different modem connections, such as analog, ISDN, GPRS/EDGE and access via LAN and Internet (DSL, etc.)
- Establishment of secure connections through the integrated firewall with IP filter, NAT/PAT, VPN/OpenVPN with encryption method AES; DES/3DES and authentication by means of pre-shared key or X.509 certificates
- Configuration wizard for simple set-up
- DNS via www.my-REX.net

REX300

The REX 300 industrial router provides you with the greatest flexibility with the greatest possible security. With the router, you can remotely establish simple and secure communication with your plants. Due to its S7-300[1)] design, the REX 300 can easily be integrated into an S7-300[1)] system and, with the included PG/PC interface driver, enables you to use all common Simatic[1)] Engineering Tools. The REX 300 is easy to configure via its web user interface. Irrespective of the way the connection with the Internet is established (analog, ISDN, EDGE/GPRS/GSM or DSL), the integrated, application-oriented configuration wizard makes configuration of the VPN, Internet, and network connection easier.

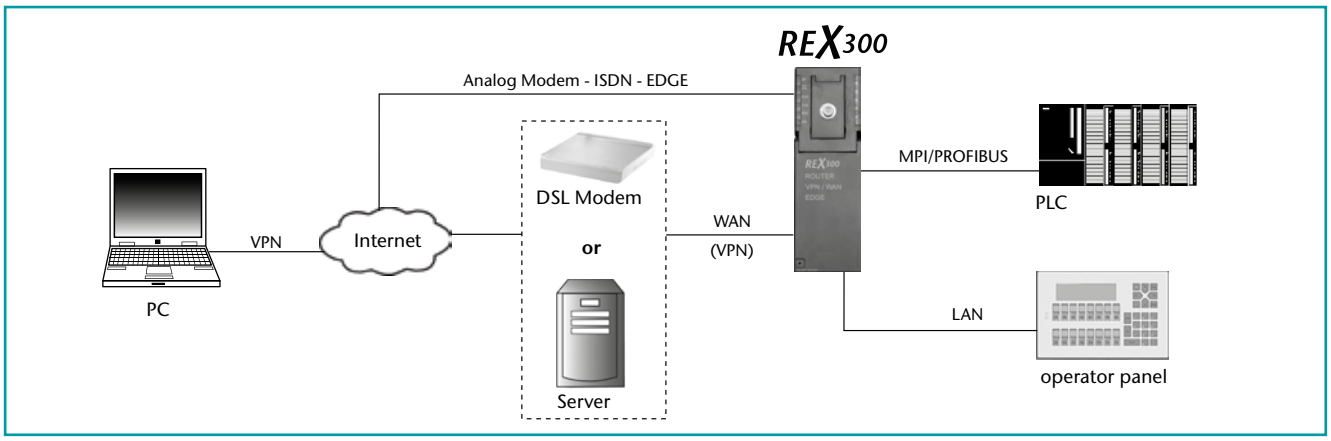
It permits ready-to-use configuration within a matter of minutes. The free my-REX services of Systeme Helmholz GmbH make it easier to access the router via the Internet with dynamic name resolution or by sending e-mails from the assigned IP adress of the internet provider.

Accessory-Note
For GSM antennas, see page 88.

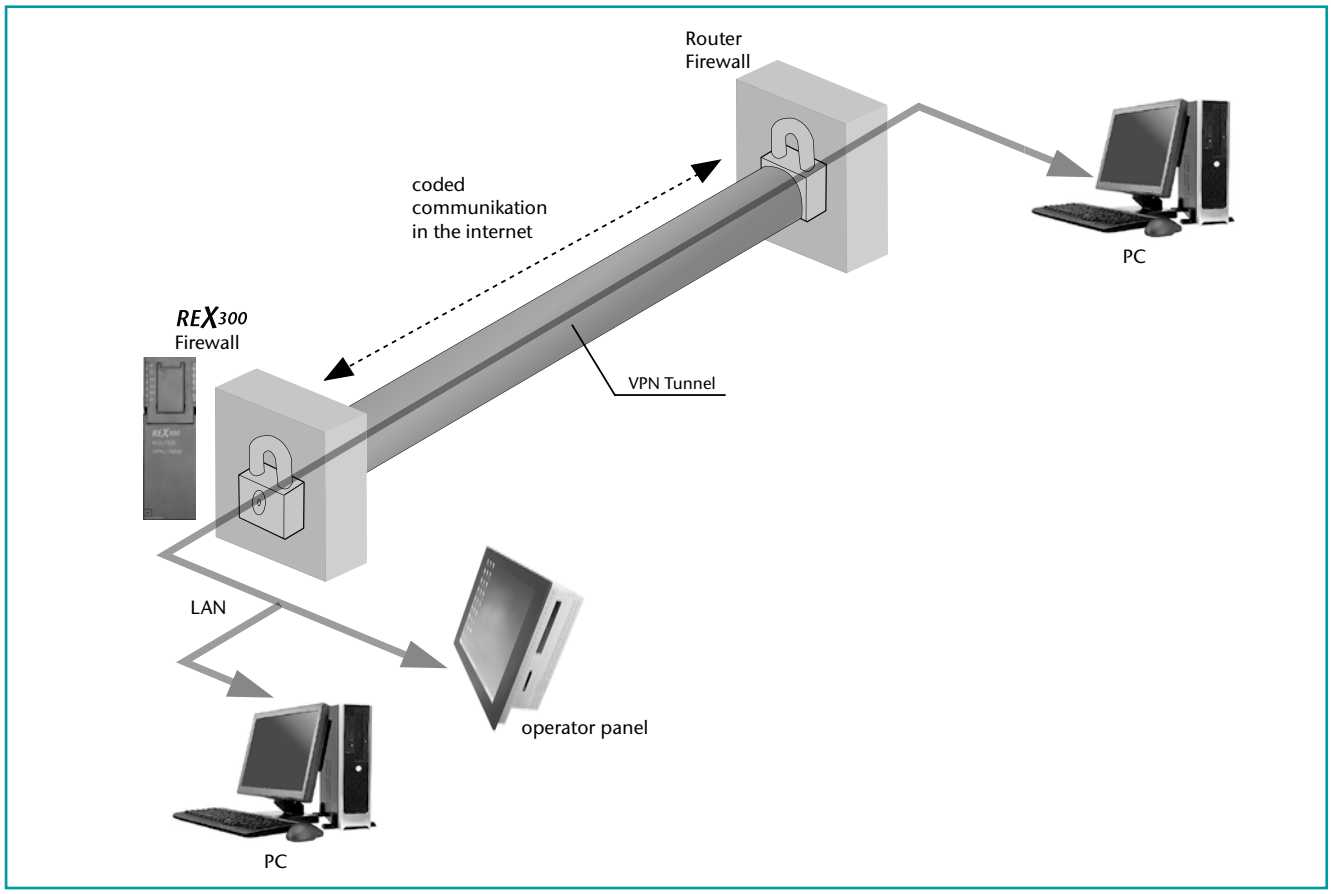
Ordering Data	Order-No.
REX 300	
without VPN, analog (incl. telephone cable, Ethernet cable)	700-870-MDM01
without VPN, ISDN (incl. telephone cable, Ethernet cable)	700-870-ISD01
without VPN, EDGE (incl. Ethernet cable)	700-870-EDG01
with VPN, analog (incl. telephone cable, Ethernet cable)	700-871-MDM01
with VPN, ISDN (incl. telephone cable, Ethernet cable)	700-871-ISD01
with VPN, EDGE (incl. Ethernet cable)	700-871-EDG01
VPN+WAN, analog (incl. telephone cable, Ethernet cable)	700-872-MDM01
VPN+WAN, ISDN (incl. telephone cable, Ethernet cable)	700-872-ISD01
VPN+WAN, EDGE (incl. Ethernet cable)	700-872-EDG01
VPN+WAN, without Modem (incl. Ethernet cable)	700-873-WAN01
Mountingrack adapter for DIN-Rail (optional)	700-390-6BA00
Mountingrack 40 mm	700-390-1XA04

Technical Data	
Dimensions (DxWxH mm)	116 x 40 x 124 mm
Weight	approx. 300 g
Modem	Analog/ISDN/ GSM (GPRS/EDGE)
Router Functions VPN	 Dial In, Dial Out, call-back function, DHCP server and client, firewall, DynDNS, NAT/PAT IPSec, PPTP, openVPN
Authentication PPP VPN	 PAP, CHAP PSK, X.509 certificates
Encryption (VPN)	AES, DES/3DES
Ports LAN/WAN MPI/PROFIBUS	 100/100 Mbps for full and half-duplex operation, automatic detection, autosensing RS485 - 9,6 kbps to 12 Mbps
Configuration Web interface	 local/remote
Power supply Voltage Current consuption	 10 VDC ... 30 VDC max. 250 mA
Surrounding air temperature	0°C ... +60°C
Degree of protection	IP 20

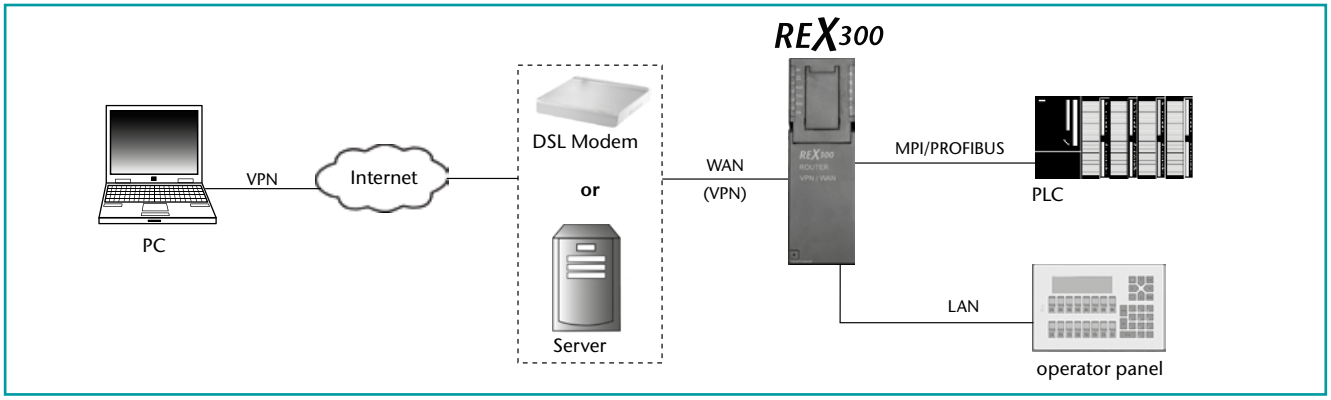
1) S7-300, S7-400 and Simatic are registered trademarks of Siemens AG.



Application example REX 300 VPN + Modem + WAN

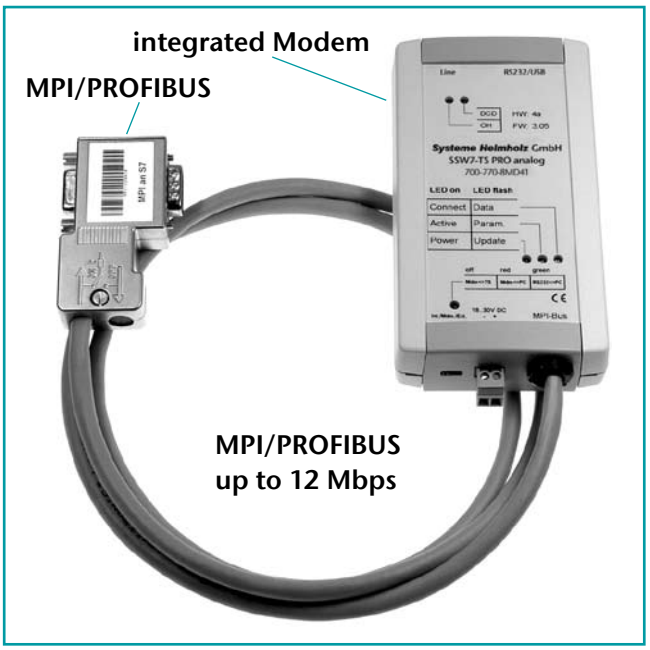


Application example REX 300 with VPN



Application example REX 300 VPN + WAN

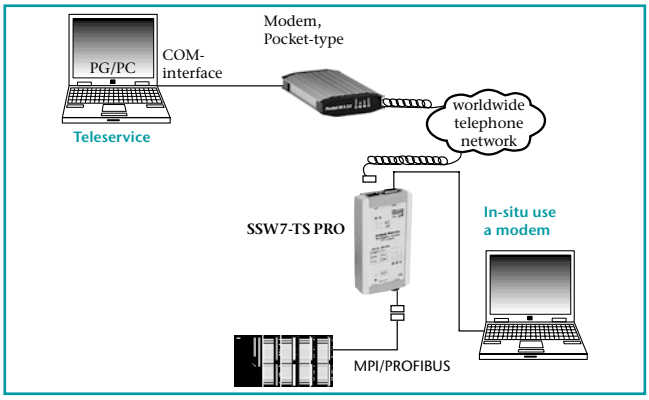
SSW7-TS PRO analog/ISDN/GSM



SSW7-TS PRO; analog

Features

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



Applications for SSW7-TS PRO analog

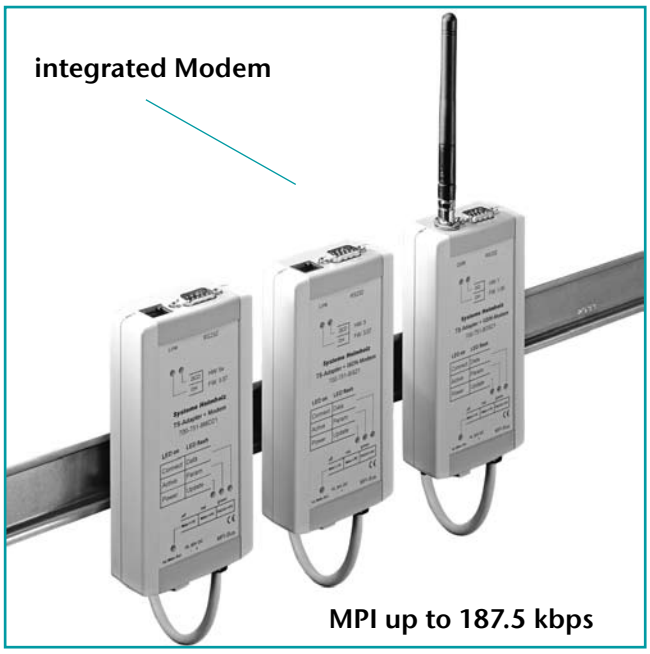
The SSW7-TS PRO can be used for teleservicing a S7 system via a modem connection and supports to the connection of the system to an MPI or PROFIBUS network with up to 12 Mbps.
Depending on the version, an analog, ISDN, or GSM modem is integrated in the housing of the SSW7-TS PRO. The analog modem can be configured for worldwide use. The ISDN variant supports the DSS1 protocol that is used in many countries. The SSW7-TS PRO GSM is the right choice for mobile use or if a telephone connection is not available.
In addition to use as a remote service solution, the SSW7-TS PRO can also be used locally as a PC adapter via its RS232 or USB interface.
The MPI/PROFIBUS connecting cable of the SSW7-TS PRO is not a spur line because of the repeater integrated into the connector. It allows the adapter to be connected at any point along the bus even at 12 Mbps.
The SSW7-TS PRO usually draws its power supply via the MPI/PROFIBUS connecting cable or, if necessary, via the external power source. Using the free software SHTools, firmware updates can be transmitted directly via the RS232/USB and via the modem connection on the SSW7-TS PRO.
For the SSW7-TS PRO GSM you additionally require a SIM card with the CSD service (Circuit Switched Data) activated and a suitable GSM antenna. (For GSM antennas, see page 88)
New:
As a new feature, the SSW7-TS PRO now also supports transmission of any SMS messages. SMS transmission is triggered by calling the SMS_SEND function block from the programmable controller. Depending on the SMS service provider used, it is also possible to send messages to an e-mail address or fax machine.

Ordering Data	Order-No.
MPI-Adapter **SSW7-TS PRO analog**[1)] (incl. DIN rail adapter; 2x telephone cable RJ11 + TAE, each 3 m; 3 m programming cable, USB cable)	700-770-8MD41
Manual German/English	900-770-8MD41
SSW7-TS PRO ISDN[1)] (incl. DIN rail adapter; RJ11 telephone cable, 3 m; 3 m programming cable, USB cable)	700-770-8IS41
Manual German/English	900-770-8IS41
SSW7-TS PRO GSM[1)] (incl. DIN rail adapter; 3 m programming cable, USB cable)	700-770-8GS41
Manual German/English (**GSM antennas** see page 88)	900-770-8GS41
Power Plug (optional)	700-751-SNT01

1) Export restriction for:
AF, AO, CU, IQ, IR, KP, LB, LY, MZ, RW, SD, SY, YU State: 07-2008

Technical Data	
SSW7-TS PRO	
Dimensions (DxWxH mm)	130 x 67 x 30
Weight	approx. 240 g
Supply voltage	+24 V ±25 % from PLC or extern
Current consumption	approx. 130 mA
MPI interface Type	 RS485
Transmission rate	9.6 kbps - 12 Mbps
Cable connector	SUB-D, 9-way with PG interface and terminating resistor
Communication interfaces Type	 RS232; 2-wire dial-up (analog), ISDN S_0; USB
GSM-Frequency	Quadband: GSM850, EGSM900, DCS1800, PCS1900
Transmission type	serial asynchronous/USB
Transmission rate	9.6 ... 115 kbps
Data format	8 Bit
Protocols	PC <-> S7 via modem or local
Connection	connector, SUB-D, 9-way RJ11; Mini-USB female connector
Degree of protection	IP 20

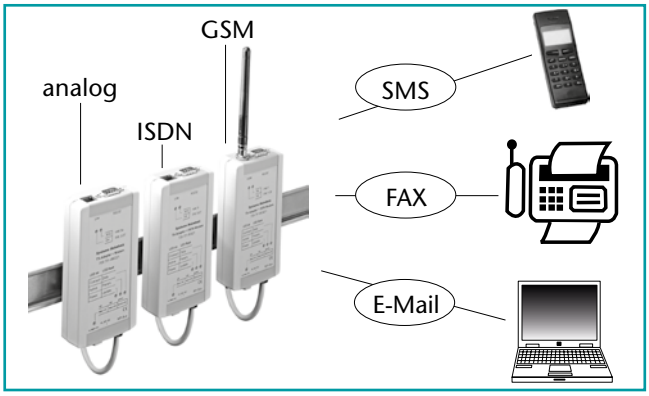
SSW7-TS with Modem; analog/ISDN/GSM



SSW7-TS with Modem

Features

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



Einsatzfall for SSW7-TS with Modem; analog/ISDN/GSM

The SSW7-TS with an integrated modem is a low-cost alternative to teleservicing a programmable controller via the MPI bus. Depending on the version, an analog, ISDN, or GSM modem is integrated in the housing of the SSW7-TS. The analog modem can be configured for worldwide use. The ISDN variant supports the DSS1 protocol that is used in many countries. All connecting cables required for operation are included. The SSW7-TS with a GSM modem (quadband) is the right choice for mobile use or if a telephone connection is not available.
Via the serial interface, the SSW7-TS with modem can also be used as a PC adapter for local use. The modem can be used for teleservicing a VISU/SCADA application even without a TS adapter function. Settings are made using microswitches on the adapter housing.
The SSW7-TS with modem receives its power supply from the CPU via the MPI cable. If no 24V supply is available at the connection point, it is possible to feed in an external 24 V power supply.

The SSW7-TS with modem can also be provided with new firmware via a modem link. That enables functional expansion of an adapter already installed in the system.
Systeme Helmholz GmbH always provides the latest version of the required SHTools software on its website for downloading.
For the SSW7-TS with GSM modem, you require a SIM card with the CSD service (Circuit Switched Data) activated and a suitable GSM antenna (see page 88).

Ordering Data	Order-No.
MPI-Adapter **SSW7-TS with modem analog**[1)] (incl. DIN rail adapter; 2x telephone cable RJ11 + TAE, each 3 m; 3 m programming cable)	700-751-8MD21
Manual, German/English	900-751-8MD21
SSW7-TS with modem ISDN[1)] (incl. DIN rail adapter; RJ11 telephone cable, 3 m; 3 m programming cable)	700-751-8IS21
Manual, German/English	900-751-8IS21
SSW7-TS with modem GSM[1)] (incl. DIN rail adapter; 3 m programming cable)	700-751-8GS21
Manual, German/English	900-751-8GS21
Power Plug (optional)	700-751-SNT01

1) Export restriction for:
AF, AO, CU, IQ, IR, KP, LB, LY, MZ, RW, SD, SY, YU State: 07-2008

Technical Data	
SSW7-TS with Modem	
Dimensions (DxWxH mm)	135 x 67 x 30
Weight	approx. 240 g
Supply voltage	+24 V ±25 % from PLC or extern
Current consumption	analog/ISDN approx. 100 mA, GSM approx. 150 mA
MPI interface Type	RS485
Transmission rate	19.2 or 187.5 kbps
Cable connector	SUB-D, 9-way with PG interface and terminating resistor
Communication interface Type	RS232; 2-wire dial-up (analog); ISDN S_0
GSM-Frequency	Quadband: GSM850, EGSM900, DCS1800, PCS1900
Transmission type	serial asynchronous
Transmission rate	9.6 ... 115.2 kbps
Protocols	PC <-> S7 via modem or local
Connection	connector, SUB-D, 9-way RJ11 or SIM card slot
Degree of protection	IP 20

TS 300, Teleservicemodule for the PLC Rack

TS 300, Teleservicemodule for the PLC-Rack

Features

- MPI up to 187.5 kbps
- TS adapter in the S7 rack for Teleservice
- Analog, ISDN, GSM
- USB interface for parameterization or in-situ use
- Password protection
- Re-Call function
- Online update function
- Alert functions and switch outputs usable via back plane bus
- Mode change via Teleservice
- Up to two alarm messages can be transmitted by SMS per module
- Communication via the backplane bus possible[2)]

With the TS 300, teleservice of a system can be performed via the MPI bus.
The TS 300 has a single-width S7-300[3)] housing for mounting on the sectional rail. A 56k modem is integrated into the housing of the TS 300 that is prepared for use worldwide. A flash update is no longer necessary. TAE and RJ11 cables are included in the scope of supply. As alternatives, versions with ISDN or GSM modem are also available.
The TS 300 can establish an MPI link with the CPU via the back-plane bus. The power supply is also drawn from the backplane bus. Therefore, for installation of a teleservice solution, only the phone line is required.
The TS 300 does not need to be configured in the hardware configuration of the PLC and can therefore be retrofitted at any time. Alternately, the TS 300 can be powered from an external 24 V source. The MPI connection can also be established via the 9-way sub D jack on the front.

An additional USB connection is used to parameterize the TS 300, for in-situ use as a PC adapter, or for direct use of the internal modem.
The TS 300 can also be provided with a new operating system via a remote link. That enables functional expansion of a TS 300 already installed in the system.
By using the enclosed SHTools software are parameterization and diagnostic functions possible. For a firmware update is a free download of the latest SHTools version on our website www.helmholz.com available.

Accessory-Note
For GSM antennas, see page 88.

Ordering Data	
	Order-No.
TS 300 with modem analog[1)] (incl. 3 m USB cable; 2x telephone cable, RJ11+TAE, each 3m)	700-753-8MD21
Manual German/English	900-753-8MD21
TS 300 with modem ISDN[1)] (incl. 3 m USB cable; 1x RJ11 telephone cable, 3m)	700-753-8IS21
Manual German/English	900-753-8IS21
TS 300 with modem GSM[1)] (incl. 3 m USB cable)	700-753-8GS21
Manual German/English	900-753-8GS21
(**GSM antennas** see page 88)	
MPI-connecting cable, 0.5 m	700-753-6VK11
Mountingrack Adapter for DIN-Rail (optional)	700-390-6BA00
Mountingrack 40 mm	700-390-1XA04

1) Export restriction for:
AF, AO, CU, IQ, IR, KP, LB, LY, MZ, RW, SD, SY, YU State: 07-2008

2) It is advised against a MPI functionality at the back plane bus when using the following CPUs: S7-315 2 DP/PN, S7-317, S7-318 and S7-319 State: 06-2007

3) S7-300 is a registered trademerk of Siemens AG

TS 300, Teleservicemodule for the PLC Rack

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

MDM 300, Modem for the S7 Rack

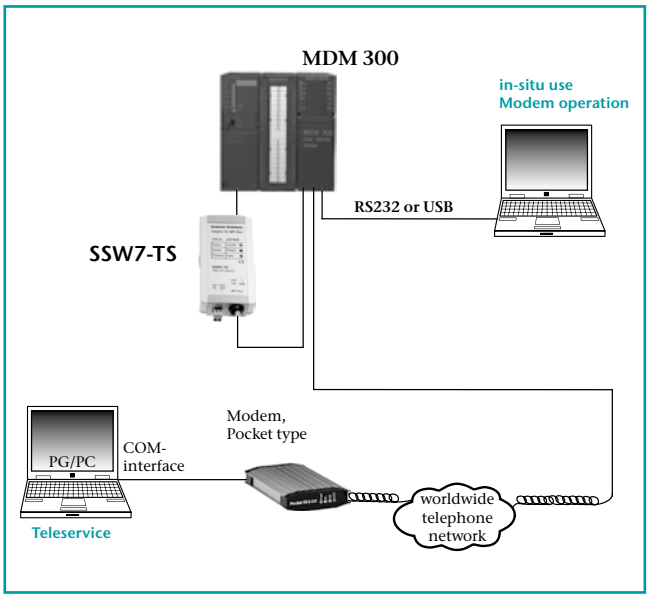
MDM 300 modem for the S7 Rack

Features

- RS232 9-way and USB with virtual COM port
- Destination countries worldwide (analog)
- Power supply via backplane bus or external 24 V
- SMS transmission (analog, ISDN)
- 2 digital inputs for transmitting SMS
- 2 outputs can be switched via telephone call

The MDM 300 of Systeme Helmholz GmbH is a universal modem that can be installed in a single-wide S7-300[2)] housing for the sectional rail. A 56k modem is integrated into the housing of the MDM 300 that is prepared for use worldwide. Alternatively versions with ISDN or GSM functionality are also available.
Besides teleservice of a VISU/SCADA system, the main application is global data exchange.
By using the enclosed SHTools software are parameterization and diagnostic functions possible. For a firmware update is a free download of the latest SHTools version on our website www.helmholz.com available.

Accessory-Note
For GSM antennas, see page 88.



Application MDM 300

Ordering Data	
	Order-No.
MDM 300 analog[1)] (incl. RJ11 + TAE cable, each 3m RS232 connecting cable, USB cable)	700-754-1MD11
Manual, German/English	900-754-1MD11
MDM 300 ISDN[1)] (incl. RJ11 cable, 3m + RS232 connecting cable, USB cable)	700-754-1IS11
Manual, German/English	900-754-1IS11
MDM 300 GSM[1)] (incl. RS232 connecting cable, USB cable)	700-754-1GS11
Manual, German/English (**GSM antennas** see page 88)	900-754-1GS11
Modem cable, 2 m	700-754-7VK11
Mountingrack Adapter for DIN-Rail (optional)	700-390-6BA00
Mountingrack 40 mm	700-390-1XA04

1) Export restriction for:
AF, AO, CU, IQ, IR, KP, LB, LY, MZ, RW, SD, SY, YU State: 07-2008

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

MDM 300, Modem for the S7 Rack

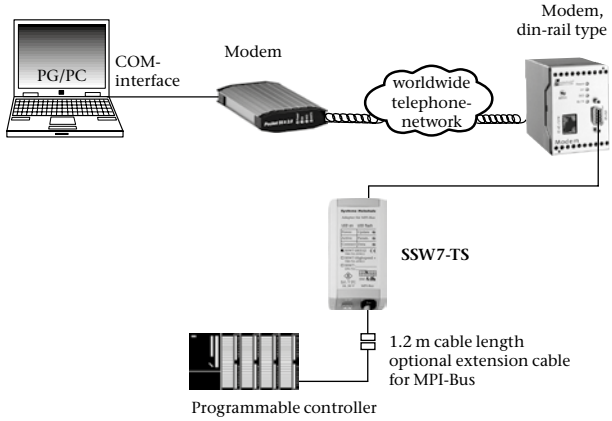
Technical Data			
	MDM 300 analog	**MDM 300 ISDN**	**MDM 300 GSM**
Degree of protection	IP 20	IP 20	IP 20
Dimensions (DxWxH)	116 x 40 x 124 mm	116 x 40 x 124 mm	116 x 40 x 124 mm
Weight	approx. 280 g	approx. 280 g	approx. 280 g
Operating voltage	DC +24 V ± 25%, external or 5 V via backplane bus	DC +24 V ± 25%, external or 5 V via backplane bus	DC +24 V ± 25%, external
Current consumption	approx. 350 mA (backplane bus) approx. 120 mA (external	approx. 350 mA (backplane bus) approx. 120 mA (external)	approx. 50 mA (backplane bus) approx. 200 mA (external)
Ambient temperature	0 °C to + 60 °C	0 °C to + 60 °C	0 °C to + 60 °C
Number of inputs (in groups of)	2/2	2/2	2/2
Number of outputs (in groups of	2/2	2/2	2/2
Communication interface	USB and RS232	USB and RS232	USB and RS232
USB interfacee Type Transmission rate	USB-B socket USB 2.0, USB 1.1 compliant 9.6 kbps to 115.2 kbps via virtual COM port	USB-B socket USB 2.0, USB 1.1 compliant 9.6 kbps to 115.2 kbps via virtual COM port	USB-B socket USB 2.0, USB 1.1 compliant 9.6 kbps to 115.2 kbps via virtual COM port
RS232 interface Transmission rate	RS232, Sub-D 9-way socket 9.6 kbps to 115.2 kbps	RS232, Sub-D 9-way socket 9.6 kbps to 115.2 kbps	RS232, Sub-D 9-way socket 9.6 kbps to 115.2 kbps
Modem Modem connection SMS transmission Transmission standards Protocols	Analog interface 56 kbps (V.92) RJ-11 socket 2 V.90, V.34+, V.34, V.32bis, V.32, V.22, V.22bis, V.21, V.23, BELL standard 103, 212 Fax Class 1, Fax Class 2	ISDN-S0 interface acc. to ITU I.430, 64 kbps RJ-11 socket 2 Transmission in D channel at 9.600 bps (X.31-D) Transmission in B channel at 64.000 bps (X.31-B) B channel: V.110, X75, X25/ X31, HDLC (transparent) D channel: DSS1, X.31	Quadband: GSM850, EGSM900, DCS1800, PCS1900 3V SIM card, FME connector for antenna 2 Class 4 (2W) for GSM850/ EGSM900 Class 1 (1W) for DCS1800/PCS1900

SSW7-TS

SSW7-TS

Features

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



Application for SSW7-TS

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

Accessory-Note
DIN rail clips, extension cables (see page 74) as well as multiplexers (see page 53) are available for the SSW7-TS.

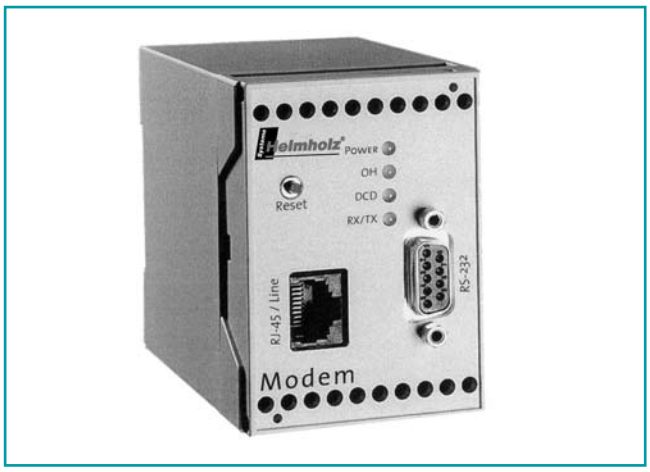
By using the enclosed SHTools software are parameterization and diagnostic functions possible. For a firmware update is a free download of the latest SHTools version on our website www.helmholz.com available.

Ordering Data	
	Order-No.
MPI-Adapter SSW7-TS	**700-751-8VK21**
DIN rail adapter short **Power Plug** (optional)	**700-751-HSH01** **700-751-SNT01**
Manual SSW7-TS, German/English	**900-751-8VK21**

1) Simatic and STEP are registered trademarks of Siemens AG.

Technical Data		
SSW7-TS		
Dimensions (DxWxH mm)		105 x 53 x 29
Weight		approx. 180 g
Supply voltage		+24 V ±25 % from PLC or extern
Current consumption	typ. max.	30 mA 45 mA
MPI interface Type		RS485
Transmission rate		19.2 or 187.5 kbps
Cable connector		SUB-D, 9-way with PG interface and terminating resistor
Communication interface Type		RS232
Transmission type		serial asynchronous
Transmission rate		9.6 ... 115.2 kbps
Parity		odd
Data format		8 Bit
Protocols		PC <-> S7 via modem or local
Connection		connector, SUB-D, 9-way
Degree of protection		IP 20

DIN rail Modems for Teleservice



DIN rail type modem

GSM modem

With the SSW7-TS it is possible to service a plant remotely via the phone line. The Systeme Helmholz GmbH offers for that purpose modems in DIN rail version.
The modems are available both for analog and for ISDN phone connections. Suitable phone cables are included.
The modem can be operated at a voltage of 10 to 24 V.
The analog DIN rail modem is prepared for worldwide use. It contains two alarm inputs and two switching outputs. With the alarm inputs, the modem can send a message via data link, by fax, or by SMS.
The dedicated parameterizing software is included.

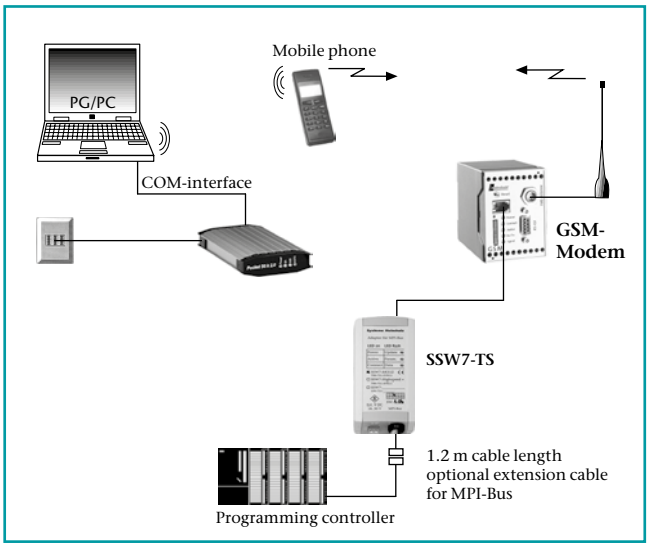
Features

- Destination countries worldwide (analog)
- Alarm inputs (DIN rail type)
- Switching outputs (DIN rail type)
- Industrial design

The Systeme Helmholz GSM Modem 4.2 transmits data in the cellphone network (900 MHz and 1800 MHz). It is parameterized through the RS232 interface.
The modem can be powered with a voltage of 10 to 60 V DC. Two digital alarm inputs permit the transmission of alarm messages by SMS, fax, e-mail, and data link. The up to 20 freely selectable alarm messages can be transmitted to up to 40 different recipients via pulse repetitions at the alert inputs. The modem also features two switch outputs. These can be switched through alarm inputs, by an AT command, SMS command, and by DTMF tone remote switching.
GSM antenna extension cable see page 88.

Note
The SIM-card needed for the modem is available at every mobile service provider. The card must be capable for incoming data transfer.

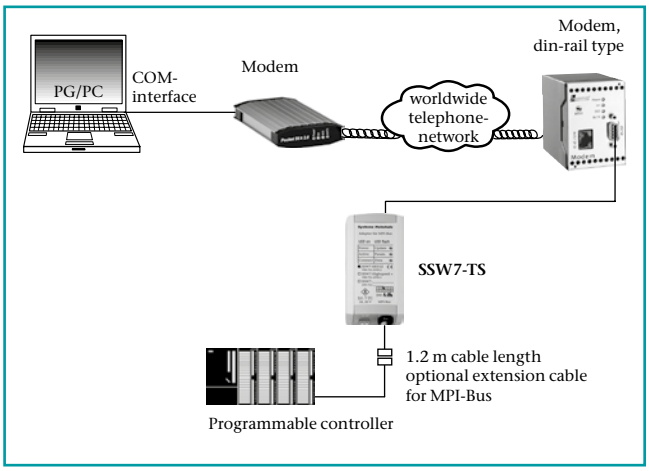
Ordering Data	
	Order-No.
Modem, DIN rail type, analog[1)] (incl. 2 m RS232 cable; 2x telephone cable, RJ11+TAE, each 3 m)	**700-751-HSM11**
Manual, German/English	**900-751-HSM11**
Modem, DIN rail type, ISDN[1)] (incl. 2 m RS232 cable; telephone cable RJ11, 3 m)	**700-751-HSM02**
Manual, German/English	**900-751-HSM02**
Modem, DIN rail type, GSM[1)] (incl. 2 m RS232 cable)	**700-751-GSM02**
Manual, German/English (**GSM antennas** see page 88)	**900-751-GSM02**
SSW7-TS	**700-751-8VK21**
Manual German/English	**900-751-8VK21**
Power Plug (optional)	**700-751-SNT01**



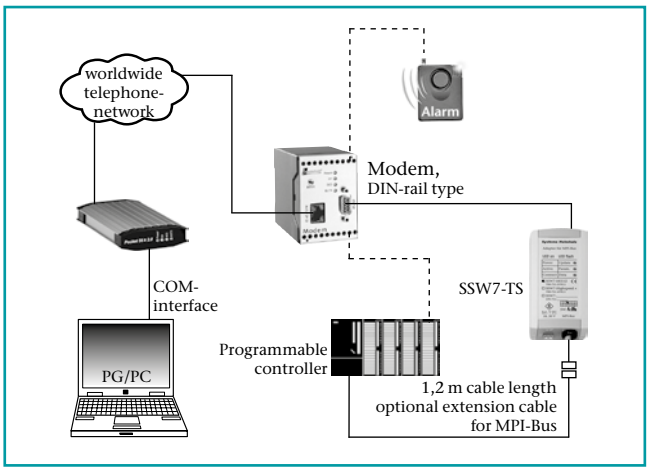
Application for GSM modem
A connection to the GSM modem can be established by an analog, ISDN or GSM remote station.

1) Export restriction for:
AF, AO, CU, IQ, IR, KP, LB, LY, MZ, RW, SD, SY, YU State: 07-2008

DIN rail Modems for Teleservice



Application for modems

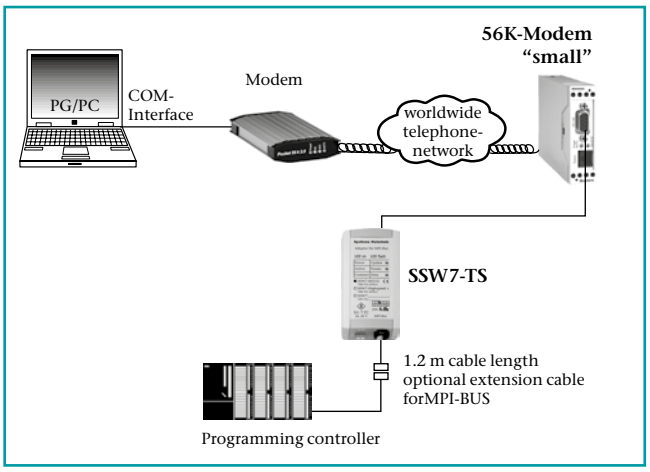


Application example for alert notifications or teleservice to the programming device via SMS.

Connection possibilities:			
	analog	**ISDN**	**GSM**
analog	yes	no	yes
ISDN	no	yes	yes
GSM	yes	yes	yes

Technical Data			
	DIN rail, analog	**DIN rail, ISDN**	**DIN rail GSM**
Degree of protection for housing	housing IP 40/ clamps IP 20	housing IP 40/ clamps IP 20	housing IP 40/ clamps IP 20
Dimension (DxWxH mm)	55 x 110 x 75	55 x 110 x 75	55 x 110 x 75
surrounding air temperature	0 ... +55°C	0 ... +55°C	0 ... +55°C
Air humidity	0 - 95% non condensing	0 - 95% non condensing	0 - 95% non condensin
Supply voltage	DC 10 - 60 V	DC 10 - 60 V	DC 10 - 60 V
Power consumption	approx. 2.5 W	approx. 0.5 W	max. 2.1 W
Interface	RS232 Sub-D 9-way	RS232 Sub-D 9-way	RS232 Sub-D 9-way
Interface speed	0.3 - 115.2 kbps	0.3 - 115.2 kbps	0.3 - 115.2 kbps
Network interface	analog phone network via screw terminals or RJ45 female	ISDN network via screw terminals or RJ45	FME-antenna connector
Line requirements	2-wire dial-up	ISDN S_O	Dualband GSM-Networks: Class 4 (2W@900MHz) Class 1 (1W@1.800MHz)
Watchdog	yes	yes	yes
Reset key	yes	yes	yes
Status display	4 LEDs (Power, OH, DCD, RX/TX)	4 LEDs (Power, OH, DCD, RX/TX)	5 LEDs (Power, Connect, Status, Signal, Rx/Tx)
Electrical isolation	to telephone	to telephone	-
Alertinput	2	2	2
Switching output	2 relays	2 relays	2 relays

56k-modem „small“



Application for 56k-modem „small“

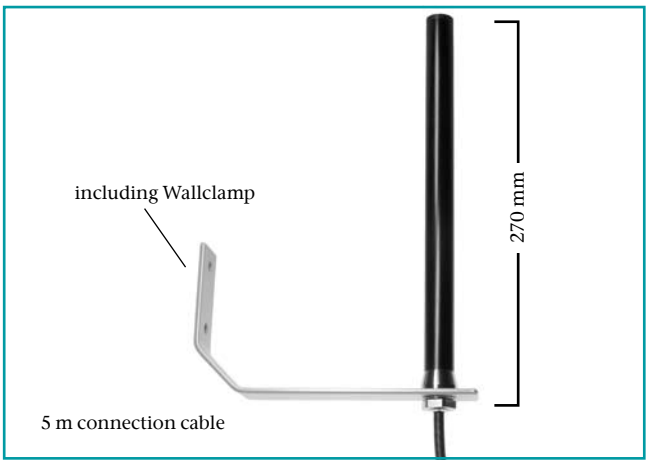
The slimline DIN rail modem 56k „small“ provides a low-cost alternative for data transmission. Its slim design qualifys it as the „space saving“ communication solution for your cabinet, also prepared for worldwide use.
The DIN rail modem 56k „small“ does not contain any alarm inputs and switching outputs like the DIN rail modem 56k.
24 V DC power supply.

Ordering Data	
	Order-No.
56k-Modem „small“[1)] (incl. 2 m RS232 cable; 2x telephone cable, RJ11+TAE, each 3 m)	**700-751-HSM21**
Manual 56k-Modem „small“ German/English	**900-751-HSM21**

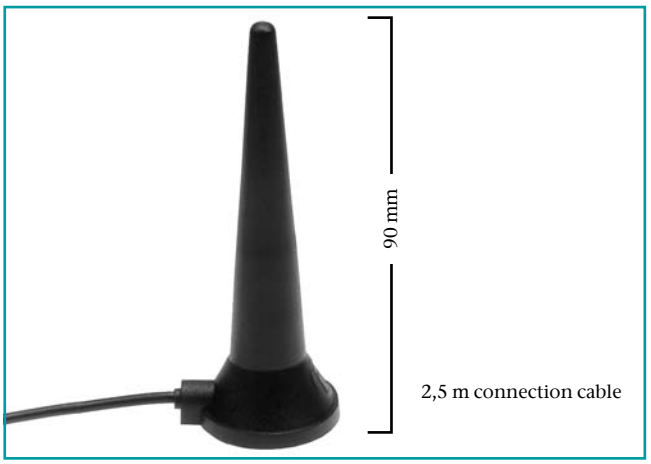
1) Export restriction for:
AF, AO, CU, IQ, IR, KP, LB, LY, MZ, RW, SD, SY, YU State: 07-2008

Technical Data	
56k-Modem „small“	
Dimension (DxWxH mm)	110 x 23 x 75
Degree of protection for housing	housing IP 40/clamps IP 20
Surrounding air temperature	0 ... +55°C
Air humidity	0 - 95% non condensing
Supply voltage	DC 10-32 V
Power consumption	approx. 2.5 W
Interface	RS232 9-way
Interfacespeed	0.3 - 115.2 kbps
Network interface	analog phone network RJ12 female
Line requirements	2-wire dial-up
Software update	yes
Watchdog	no
Reset-key	no
Status display	2 LEDs (Power, Rx/Tx & OH/OCD)
Alarm input	-
Switching output	-

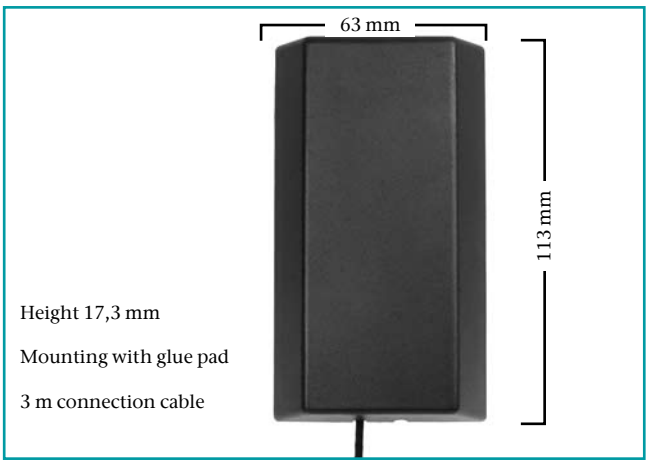
Antennas for GSM Modems



Static triband antenna for wall mounting (in- and outside)



Quadband magnetic base antenna



Patch triband antenna for wall mounting (inside)

Portable quadband antenna with integrated knee-joint for mobile use

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

Outdoor antenna
The stationary triband antenna is a non-directional station antenna with a gain of up to 2 dBi. It is protected in a robust and weatherproof GFK conduit, is supplied with a wall mount, and is therefore especially suitable for mounting on vertical surfaces, such as building walls etc. It can be used equally well both outdoors and indoors. Metal surfaces should not be located in proximity to the emitting antenna. The 5 m long connecting able is permanently connected to the antenna.

Ordering Data	
	Order-No.
Local triband antenna	**700-751-ANT01**
Quadband magnetic base antenna	**700-751-ANT02**
Patch triband antenna	**700-751-ANT03**
Portable quadband antenna	**700-751-ANT04**
GSM antenna extension cable, 5 m	**700-751-ANTK01**
GSM antenna extension cable, 10 m	**700-751-ANTK02**
GSM antenna extension cable, 15 m	**700-751-ANTK03**

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

Top-mounting antenna
Patch antenna with a flat, robust design for indoor use. It is fixed by means of an adhesive pad on preferably horizontal surfaces. It functions independently of external grounding surfaces and can be mounted on nearly any material. The 2.5 m long connecting cable is permanently attached and can exit in the horizontal or vertical direction.

Portable antenna
Small omnidirectional antenna for direction connection to the GSM modem. Implemented as a dipole antenna, it ensures mobile use in the 900/1800 MHz band. For this type of antenna, a minimum clearance of 60 cm from other antennas and standing metal parts must be ensured on all sides in the application. The direction of emission can be optimized with the integrated knee-joint.

CAN-Bus

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

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

CAN 300 PRO, Communication Module

CAN 300 PRO, communication module

Features

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

CAN connected

CANopen®

Member of: CiA®

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

Note
On page 93 you will find information about the parameterization software CANParam and about the data handling blocks for the PLC.

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

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

Ordering Data	
	Order-No.
CAN 300 PRO, communication module (incl. USB programming cable)	**700-600-CAN12**
Micro Memory Card, 256 kByte **USB cable** Highspeed 2.0, 3m	**700-953-8LH11** **700-755-7VK11**
Manual CAN 300 PRO, German/English **CAN Training Course** (see page 97)	**900-600-CAN12** **400-600-CAN01**

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

CAN 300, Communication Module with DNV certificate

CAN 300, communication module (DNV)

The CAN 300 module from the Systeme Helmholz GmbH for use in a S7-300[1)] from Siemens permits connection of CAN stations with the programmable controller. The module can be slotted either into the central controller or into the expansion unit.
The CAN 300 modules support both CAN 2.0A (11 Bit) and CAN 2.0B (29 Bit) frames with a free selectable baudrate of 10 kbps to 1 Mbps.
The CAN 300 module can also be run as Layer 2, CANopen® Master, and CANopen® Slave.
The CAN 300 module contains the power managment functions „Power On“, „Stop -> Run“ and „Run-> Stop“. IDs relevant to the programmable controller can be prefiltered using a 5-level acceptance mask.
In CAN 300 modules 11 free settable timers are available. Each timer can trigger a free programmable CAN frame. In that way, it is simple to implement synchronous protocols commonly used in drive and servo control using the CAN 300 module.

Note
Informations about software and handling blocks are available on page 93.

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

The CAN 300 module is DNV (Det Norske Veritas) „peripherial equipment“ approved for increased application conditions.

Technical Data		
Dimensions (DxWxH mm)		116 x 40 x 125
Weight		approx. 280 g
Power supply Voltage		+5 V DC via backplane bus
Current consumption	typ. max.	160 mA 190 mA
CAN interfaces Type		ISO/DIN 11898 -2 CAN High Speed physical Layer
Transmission rate		10 kbps to 1 Mbps
Protocol		CAN 2.0A (11 Bit) CAN 2.0B (29 Bit) CANopen® Master CANopen® Slave SAE J1939
Connection		connector, SUB-D, 9-way
Configuration interfaces Type		RS232, serial asynchronous
Transmission rate		9.6 kbps
Format		8/N/1
Connection		connector, SUB-D, 9-way
Surrounding air temperature Transport and storage temperature		-25°C ... 60°C -25°C ... 75°C

Ordering Data	
	Order-No.
CAN 300, communication module (DNV)	**700-600-CAN81**
RS232 Parameterization cable, serial PC to CAN 300 communication module	**700-610-0VK11**
Manual CAN 300, German/English **CAN Training Course** (see page 97)	**900-600-CAN01** **400-600-CAN01**

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

CAN 400, Communication Module

CAN 400, communication module

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

Note
Informations about software and handling blocks are available on page 93.

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

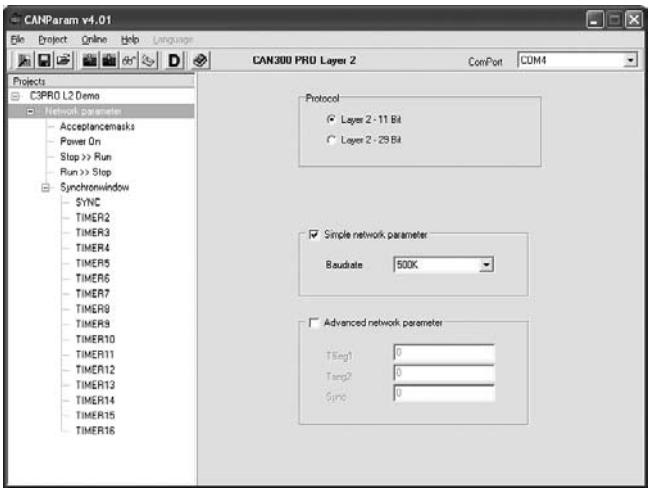
Ordering Data	
	Order-No.
CAN 400-1, Communication module with 1 CAN interface	**700-640-CAN11**
CAN 400-2, Communication module with 2 CAN interfaces	**700-640-CAN21**
Manual CAN 400, German/English	**900-640-CAN21**
CAN Training Course (see page 97)	**400-600-CAN01**

Member of:

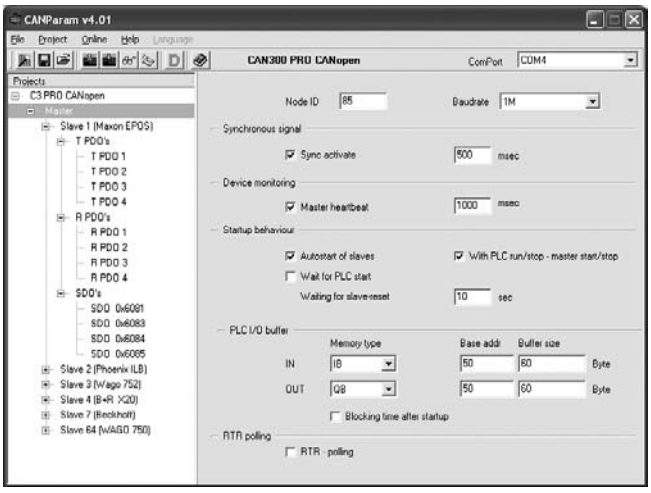
Technical Data		
	CAN 400-1	CAN 400-2
Dimensions (DxWxH mm)	290 x 210 x 25	290 x 210 x 25
Weight	approx. 900 g	approx. 900 g
Power supply Voltage	DC +5 V via backplane bus	DC +5 V via backplane bus
Current consumption	560mA	600mA
CAN interfaces		
Number	1	2
Type	ISO/DIN 11898-2 CAN High Speed physical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

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

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



The CAN modules contain acceptance masks. These masks can be used to enable or disable various telegram IDs for reception. Express masks filter high-priority CAN telegrams so that they can be forwarded directly to the PLC.
For time-dependent events, such as the SYNC telegram in the case of CANopen®, up to 11 timers (CAN 300) or 16 timers (CAN 400) are available in the CAN modules up to a resolution of 1ms. Each timer can transmit any CAN telegram. The timers can be started, stopped, and changed from the PLC.
The timer 0 can also be used for synchronized transmission of CAN telegrams. It defines the time window in which all data will be transmitted synchronously.
CAN telegrams can be transmitted or timers started via freely programmable scripts on certain events such as „Power ON“ or „PLC Stop -> Run“.
An integrated diagnostic function facilitates troubleshooting on commissioning of the module.



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

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

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

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

Application examples for controlling drives according to the DS402 profile are also supplied.

Ordering Data	
CAN handling blocks	**Order-No.**
Handling blocks for CAN CD with parameterization software „CANParam“, handling blocks „Layer 2“ and „CANopen®“	**800-600-1AA11**
CANopen® Slave handling blocks	**on request**
Devicenet Slave handling blocks	**on request**
CAN Trainig Course (see page 97)	**400-600-CAN01**

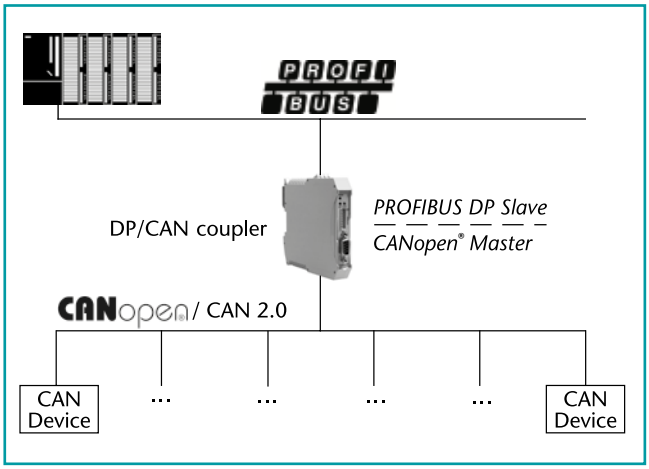
1) STEP is a registered trademark of Siemens AG

DP/CAN Coupler CANopen®

DP/CAN Coupler

Features

- Up to 15 CANopen® participants
- Up to 1 MBit CAN-baudrate
- Simple configuration via GSD file
- CANopen® Master and CAN Layer 2 possible
- Address and function settable via dip switches
- 3 status LEDs



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

Technical Data	
Dimensions (DxWxH mm)	114 x 18 x 108
Weight	approx. 110 g
Power supply Voltage	 24 V
Current consumption	approx. 180 mA
CAN interfaces Type	 ISO/DIN 11898 -2 CAN High Speed physical Layer
Transmission rate	10 kbps to 1 Mbps
Protocol	CANopen® Master CAN 2.0A (11 Bit)
Connection	clamp, 3-way
Status display	3 LEDs
Configuration interfaces Transmission rate max.	 12 Mbps, autodetection
Protocol	PROFIBUS DP to EN 50 170
Connection	SUB-D female, 9-way
Surrounding air temperature Transport and storage temperature	0°C ... 60°C -25°C ... 75°C
Degree of protection	IP 20

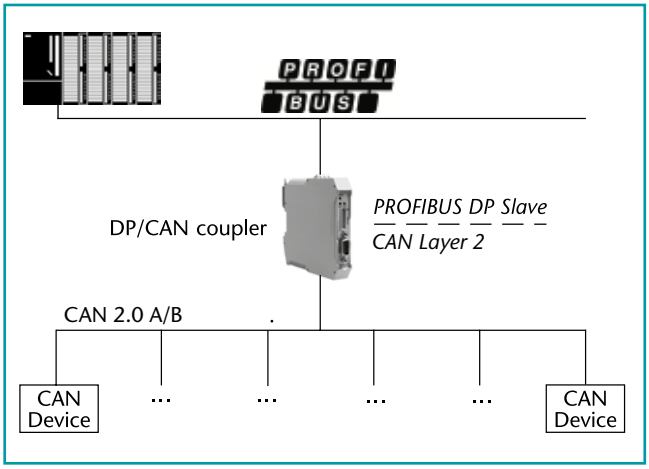
Ordering Data	
	Order-No.
DP/CAN coupler CANopen®	**700-650-CAN01**
Manual, German/English	**900-650-CAN01**

DP/CAN Coupler Layer 2

DP/CAN Coupler Layer 2

Features

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

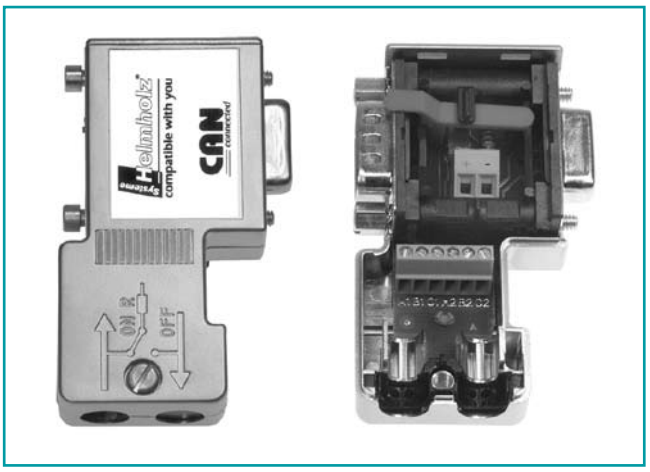


The DP/CAN coupler layer 2 of Systeme Helmholz GmbH allows you to connect any number of CAN nodes to the PROFIBUS DP. The DP/CAN coupler layer 2 must be parameterized in the hardware configurator as a PROFIBUS node. The GSD files required for this purpose are supplied with the device.
The PROFIBUS side is configured as a DP slave. The interfaces meets EN 50170 and are electrically isolated. Baudrates of 9.6 kbps to 12 Mbps are automatically detected. The size of the input and output information is up to 320 Bytes.
The CAN bus interface meets ISO/DIN 11898-2 and is electrically isolated.
The DP/CAN coupler can send and receive any number of CAN messages. Messages can be defined with a fixed identifier, whose data are always visible in the PROFIBUS as an I/O image. Alternatively the DP/CAN coupler layer 2 can be equipped with a receive buffer for any number of CAN messages.

Technical Data	
Dimensions (DxWxH mm)	114 x 18 x 108
Weight	approx. 110 g
Power supply Voltage	 24 V
Current consumption	approx. 180 mA
CAN interfaces Type	 ISO/DIN 11898 -2 CAN High Speed physical Layer
Transmission rate	10 kbps to 1 Mbps
Protocol	CAN 2.0A (11 Bit) / CAN 2.0B (29 Bit)
Connection	clamp, 3-way
Status display	3 LEDs
Configuration interfaces Transmission rate max.	 12 Mbps, autodetection
Protocol	PROFIBUS DP to EN 50 170
Connection	SUB-D female, 9-way
Surrounding air temperature Transport and storage temperature	0°C ... 60°C -25°C ... 75°C
Degree of protection	IP 20

Ordering Data	
	Order-No.
DP/CAN Coupler Layer 2	**700-651-CAN01**
Manual, German/English	**900-651-CAN01**

Bus Connector for CAN Bus



CAN Bus connector „Smaller dimension“, 90° cable outlet

CAN Bus connector, axial

The bus connectors for CAN bus are used to connect a CAN bus station to the CAN bus cable. The connector is quickly mounted and has integrated, connectable terminating resistors.
The Systeme Helmholz GmbH offers the bus connector with a vertical outgoing cable and for transmission rates up to 1 Mbits/s. The bus connector is plugged directly onto the CAN bus interface (SUB-D-connector, 9-way) of the CAN bus stations. The CAN bus cables are connected using 6-way screw terminals.
Using a slide switch, you can set whether the connector is to be used as a node or segment end. The switch can also be operated when the connector is installed. The setting can be clearly seen.
The connector must be operated in node setting (“OFF“) when the incoming bus and the outgoing bus are to be interconnected. The terminating resistors are then bypassed.
The connector must be set as a segment end (“ON“), on the first and last (extreme) stations of the segement. In that case the terminating resistors are connected on the incoming bus, the outgoing bus is disconnected.
The bus connectors for CAN are also available with 180° cable outlet.

New
24 V for user supply.

Features

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

Member of:

Ordering Data	Order-No.
CAN Bus Connector 90° „smaller dimension“ without additional connection jack	700-690-1BA12
CAN Bus Connector 90° „smaller dimension“ with additional connection jack	700-690-1BB12
CAN Bus Connector Axial	700-690-0CA12

Technical Data	
Order-No. 700-690-1BB12 Order-No. 700-690-1BA12	**Connection jack** **yes** **no**
Order-No. 700-690-0CA12	**no**
Dimensions (DxWxH mm) 700-690-1BB12, 700-690-1BA12	65 x 48 x 16
Dimensions (DxWxH mm) 700-690-0CA12	67.5 x 35 x 17
Weight	approx. 40 g
Terminating resistor	Resistance 120 Ω; integrated and connectable with slide switch
Transmission rate max.	1 Mbps
Interfaces CAN bus station	 SUB-D connector, 9-way
CAN bus cable	6 terminals for wires up to 0.5 mm²
Max. outside diameter	8.0 mm
Surrounding air temperature Transport and storage temperature Relative humidity max.	0°C ... +60°C -25°C ... +75°C 75% at +25°C
Degree of protection	IP 20

CAN Training Course

CAN Training Course
The trainers will teach you all you need to know about correct handling of products by way of practical examples.

Contents:
- CAN concept
- CAN Layer 2 protocol
- CANopen® protocol
- CAN 300/CAN 400 parameterization & start-up
- CAN 300/CAN 400 Programming in STEP[1)] 7
- DP/CAN Coupler

The trainings take place in our head quarter in Großenseebach. But it is also possible to have on-site trainings. Please ask for your individual offer.
You can find the actual dates for our trainings and registration form on our website www.helmholz.com.
Make an appointment with one of our specialists for your own in-depth consultation.

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

1) STEP is a registered trademark of Siemens AG

Components for *S5*

Converter Cables
Memory Cards
RAM Submodule
EPROM, EEPROM
Digital Input/Output Modules
Analog Input/Output Modules
Serial Interface Modules

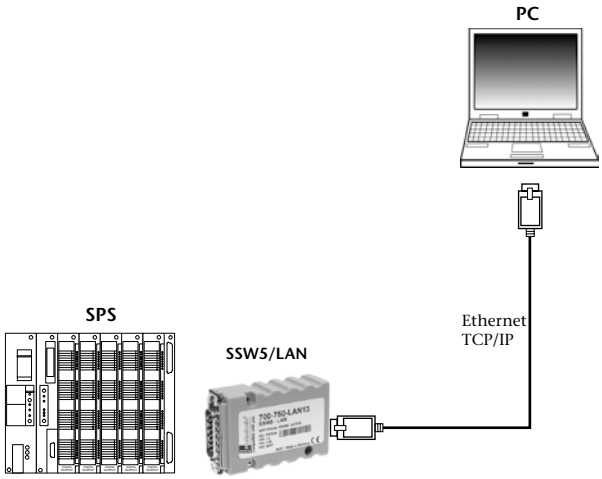
SSW5/LAN, S5 Ethernet Converter

SSW5/LAN, S5 Ethernet Converter

The SSW5/LAN is an S5 Ethernet converter suitable for programming S5 controllers via the Ethernet.
A special virtual COM-port driver enables the usage of common programming tools, e.g. Step5 V7.2 from Siemens
The power is drawn from the CPU or from an external source (24 V). A virtual COM port is available for all common installation tools.

Features

- S5 programming via TCP/IP
- virtual COM port for all common installation tools
- power supply from the CPU or external 24 V
- compatible with every common S5 CPU
- clearly recognition in the network by device name

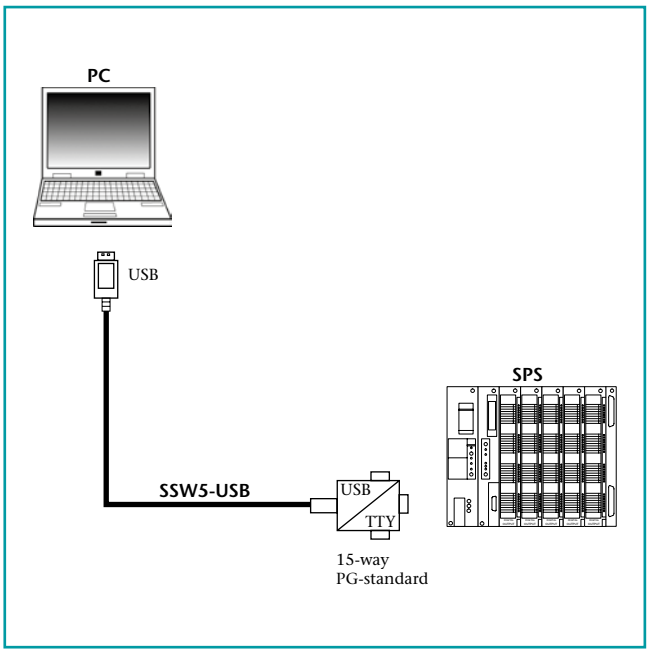


Ordering Data	
	Order-No.
SSW5/LAN (inkl. 3 m Ethernet cable)	**700-750-LAN13**
Manual SSW5/LAN, German/English	**900-750-LAN13**

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

SSW5-USB Programming Cable

SSW5-USB programming cable

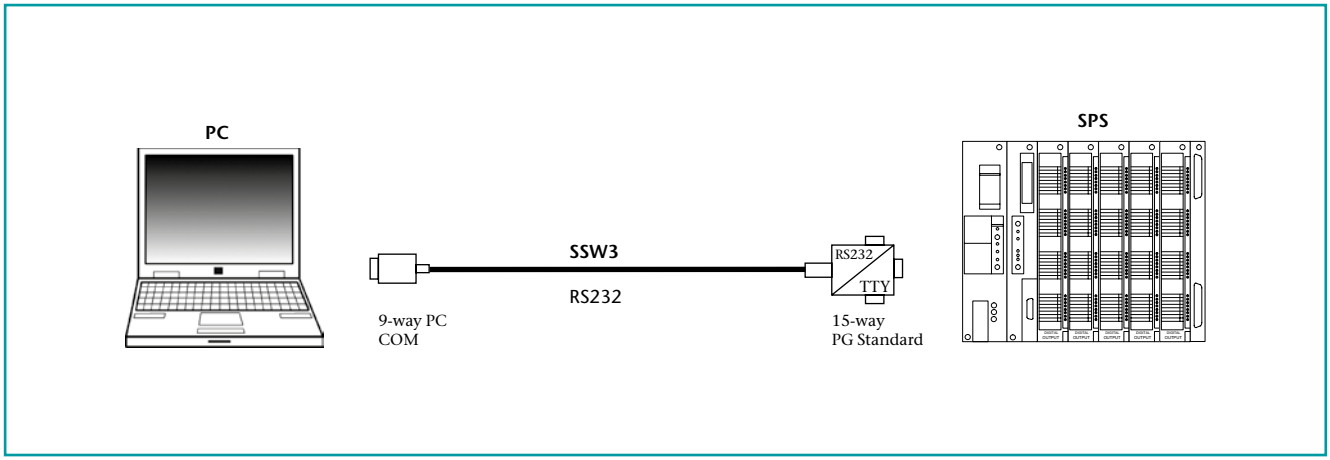


The SSW5-USB programming cable enables a connection between a PC or Laptop via USB to an S5 PLC.
A special virtual COM-port driver enables the usage of common programming tools, e.g. Step5 V7.2 from Siemens.
The SSW5-USB is equipped with a 15-pole Sub-D connector.

Ordering Data	
	Order-No.
SSW5-USB, programming cable, length 3 m	**700-750-0US13**
SSW5-USB, programming cable, length 5 m	**700-750-1US13**
Manual SSW5-USB, German/English	**900-750-0US13**

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

SSW3 RS232-TTY Converter Cable



SSW3 interface converter cable

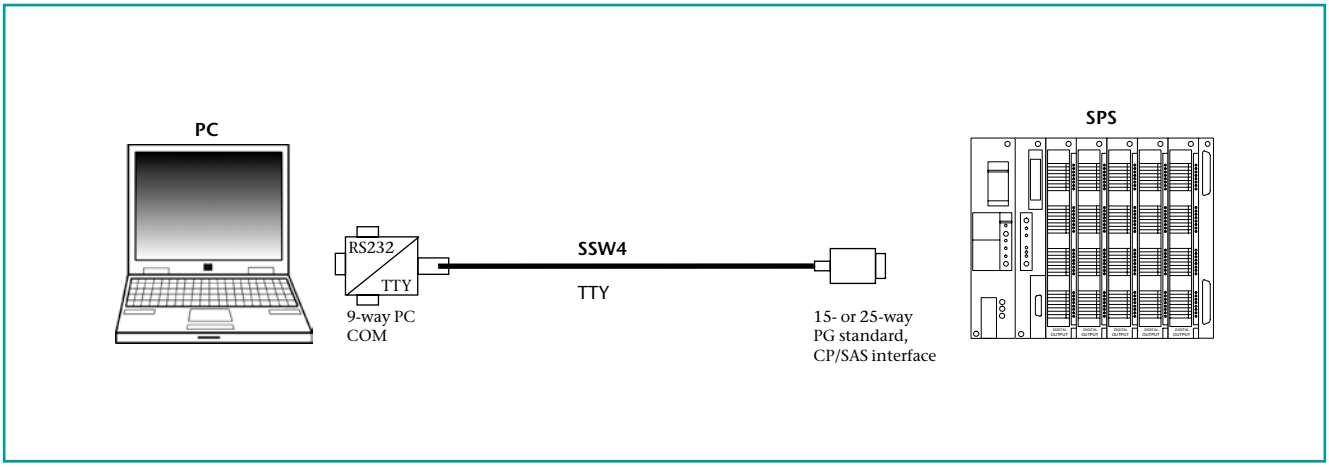
The SSW3 converter cable permits a connection between a PC and a PLC.
The RS232/TTY converter is completely integrated in the 15-way connector housing. An external power supply is therefore not required.
The data signals are transmitted via an **RS232** link.

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

Ordering Data	
	Order-No.
Interface converter cable	
SSW3, length 5 m	**700-750-0AA13**
SSW3, length 10 m	**700-750-1AA13**
SSW3, length 15 m	**700-750-2AA13**

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

SSW4 RS232-TTY Converter Cable



Interface converter cable SSW4

The SSW4 converter cable permits a connection between a PC and a PLC.
The RS232/TTY converter is completely integrated in the 9-way connector housing and ensures complete isolation. On the TTY side the SSW4 uses the current sources of the remote unit, the RS232 side is powered via the RS232 status signals. The software used must set the status line accordingly.
The data signals are transmitted through a TTY connection. Because the electronics is housed in the 9-way connector housing, it is possible to make up customized connecting cables for various TTY assignments on request.

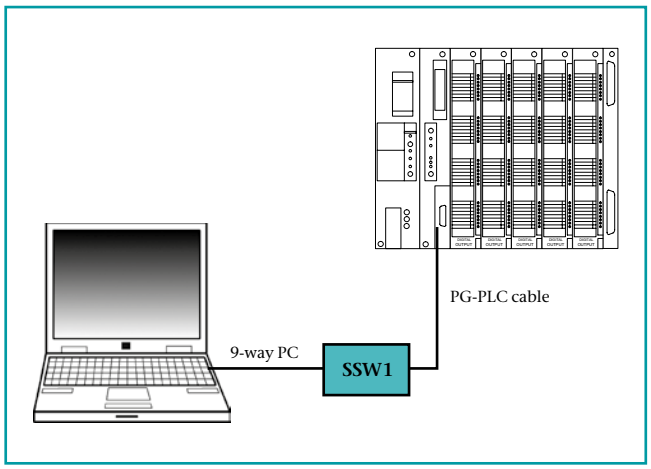
Application in conjunction with:
- Any programming software for PLC on a PC
- On-line link with the PLC for data exchange
- Visualization and communication software

Ordering Data	Order-No.
Interface converter cable	
SSW4, length 5 m,15-way	**700-750-0AA24**
SSW4, length 10 m,15-way	**700-750-1AA24**
SSW4, length 15 m,15-way	**700-750-2AA24**
SSW4, length 25 m,15-way	**700-750-3AA24**
SSW4, length 50 m,15-way	**700-750-4AA24**
SSW4, length 5 m, 25-way	**700-750-0AA14**
SSW4, length 10 m, 25-way	**700-750-1AA14**
SSW4, length 15 m, 25-way	**700-750-2AA14**
SSW4, length 25 m, 25-way	**700-750-3AA14**
SSW4, length 50 m, 25-way	**700-750-4AA14**
Special lengths on request (up to 200m)	
SSW4, 15-way	**700-750-0SO24**
SSW4, 25-way	**700-750-0SO14**

Technical Data	
Conversion	RS232 to TTY
Transmission	TTY
RS232 interface	SUB-D female connector, 9-way
TTY interface	SUB-D male connector, 15- or 25-way
Max. transmission rate	9600 Bps
Max. cable length	200 meters
Source of supply voltage	PC

SSW1 RS232-TTY Converter

SSW1 interface converters



The SSW1 is a universal interface converter from RS232 to TTY level.
It is connected to the PC via the 9-way SUB-D male connector of the interface converter directly to a COM interface. On the PLC side it is connected via a PG-PLC connecting cable that is also used with the PG 675 or PG 685.
The standard application is the use of programming or visualization software on a PC in on-line operation with a long-distance connection with the PLC.
The SSW1 is also suitable for numerous other tasks for which RS232-TTY conversion is required. Because of the external voltage supply, the SSW1 provides 20 mA current sources and is therefore also suitable for communication applications in which the potential unit does not have a current source. The connector and cable assignments can be obtained on request.

Ordering Data	Order-No.
Interface converter SSW1 including connector power pack	**700-750-0AA11**
Connecting cable	
SSW1 - PG - interface 20 m	**700-750-0VK11**
SSW1 - SAS 523/525 TTY 20 m	**700-750-0VK21**
Connector power pack, as single item	**700-750-1AA11**

Technical Data	
RS232 interface	9-way, PC standard
TTY interface	25-way PG 675/685 standard
Max. transmission rate	38400 Bps
Supply voltage	8 to 24 V
Power consumption	80 mA

Memory Cards

Memory card, short type

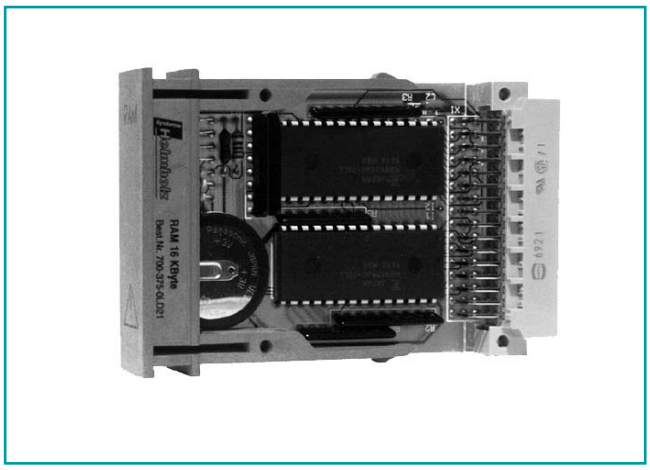
Memory card, long type

Memory cards from the Systeme Helmholz GmbH, suitable for the S5, are designed for use in CPU main memory and CP modules.
We have been able to achieve a very advantageous price performance ratio with the use of modern, high-quality manufacturing methods.
Our product program covers the range of the most common submodules.

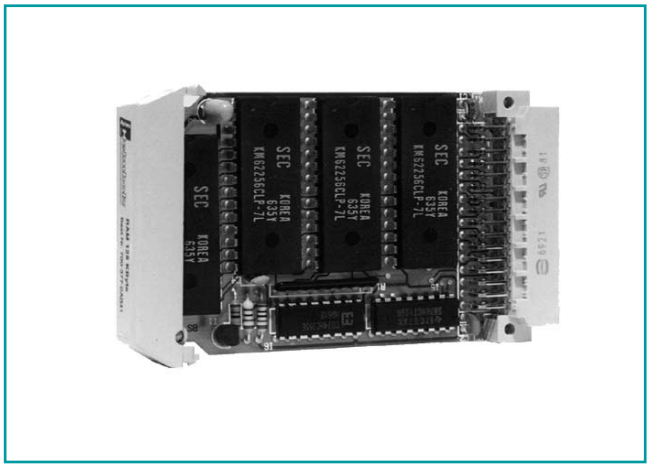
Ordering Data	Order-Nr.
Flash EPROM cards short 5 V	
128 kByte	700-374-1KG11
256 kByte	700-374-1KH21
512 kByte	700-374-1KJ11
1 MByte	700-374-1KK21
Flash EPROM cards long 5 V	
128 kByte	700-374-2KG21
256 kByte	700-374-2KH21
1 MByte	700-374-2KK21
RAM cards long	
256 kByte	700-374-2AH21

Technical Data	
Flash EPROM Cards, short 5 V Memory capacity	128 kByte 256 kByte 512 kByte 1 MByte
Applications	CPU 945
Flash EPROM cards, long 5 V Memory capacity	128 kByte 256 kByte 1 MByte
Applications	CPU 928 B
RAM cards, long Memory capacity	256 kByte
Applications	CP 581

RAM Submodule



RAM submodule 375



RAM submodule 377, long type

RAM submodules from the Systeme Helmholz GmbH, suitable for the S5, are designed for use in CPU main memory and in WF and CP modules.
The RAM submodules, series 375 and series 377 (short type) feature a battery backup integrated into the submodule. The RAMs are even backed up while the submodule is removed from its slot. Unintentional removal of the submodule no longer results in loss of data. That often makes the use of EEPROM submodules unnecessary.

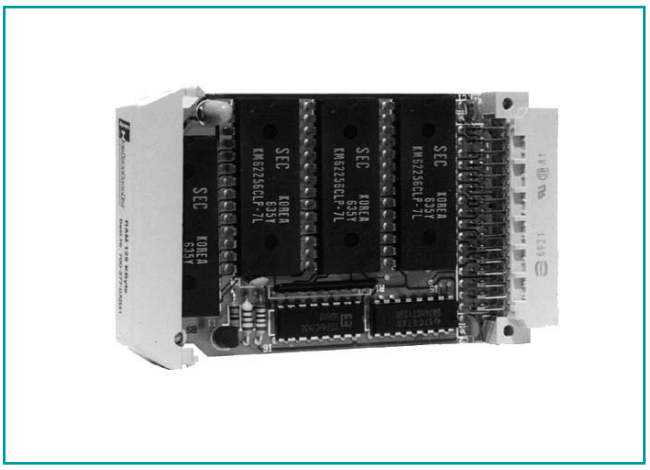
Ordering Data

	Order-No.
RAM submodules series 375	
with battery	
8 kByte	**700-375-0LD11**
16 kByte	**700-375-0LD21**
32 kByte	**700-375-0LD31**
RAM submodules series 377	
short type	
64 kBytes with battery	**700-377-0AA11**
16 kBytes without battery	**700-377-0AA21**
32 kBytes without battery	**700-377-0AA32**
64 kBytes without battery	**700-377-0BA31**
RAM submodules series 377	
long type	
32 kByte	**700-377-0AB21**
64 kByte	**700-377-0AB31**
128 kByte	**700-377-0AB41**

Technical Data

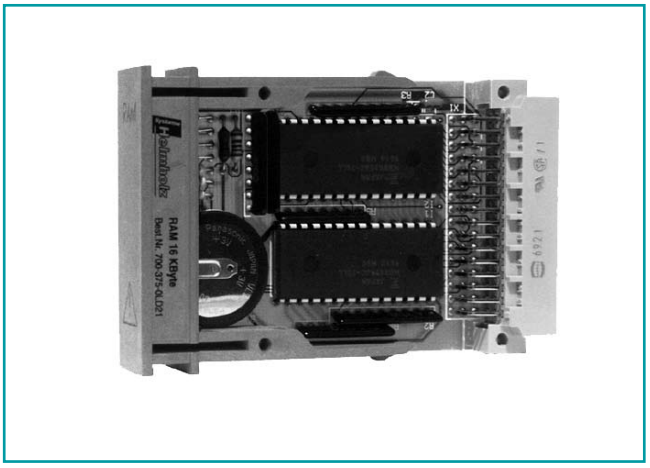
RAM submodules series 375 Memory capacity	 8 kByte 16 kByte 32 kByte
Backup	3 V lithium battery
Applications	AG 115, CP 530
RAM submodules series 377 short type with battery Memory capacity	 64 kByte
Backup	3 V lithium battery
Applications	PLC 135
RAM submodules series 377 short type without battery Memory capacity	 16 kByte 32 kByte 64 kByte
Applications	PLC 135
RAM submodules series 377 short type without battery Memory capacity	 32 kByte 64 kByte 128 kByte
Applications	PLC 155, WF 470, CP 525, CP 526, CP 527

EPROM, EEPROM

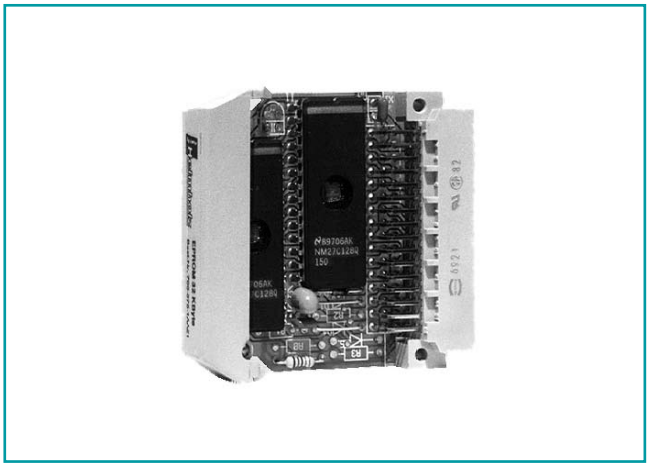


EPROM submodule 373

EPROM and EEPROM submodules from the Systeme Helmholz GmbH, suitable for the S5, are designed for use in CPU main memories and in WF and CP modules.
All Helmholz EPROM submodules with the ordering code -0LAxx or -0AAxx can be programmed on all programmers, including the old PG 675/685.
These EPROM submodules use the tested CMOS technology so that your investment is protected, but they can easily be programmed with the old program numbers and programming voltage that were applicable to NMOS submodules if a special adapter is used.
EPROM submodules with the ordering code -1LAxx or -1AAxx are equivalent to the new CMOS submodules and can be programmed on PUs with the new fast programming algorithms.
The memory submodules cover the range of the most common submodules. We can manufacture special submodules for individual customer requirements within a short time.



EPROM submodule 375



EPROM submodule 376

Ordering Data	Order-No.
EPROM submodules series 375	
8 kByte	700-375-0LA15
16 kByte	700-375-0LA21
32 kByte	700-375-0LA41
64 kByte	700-375-0LA61
128 kByte	700-375-0LA71
8 kByte, with new CMOS submodules	700-375-1LA15
16 kByte, with new CMOS submodules	700-375-1LA21
32 kByte, with new CMOS submodules	700-375-1LA41
64 kByte, with new CMOS submodules	700-375-1LA61
128 kByte, with new CMOS submodules	700-375-1LA71
EPROM submodules series 373	
32 kByte	700-373-1AA41
64 kByte	700-373-1AA61
128 kByte	700-373-1AA81
EEPROM submodules series 375	
2 kByte	700-375-0LC11
4 kByte	700-375-0LC21
8 kByte	700-375-0LC31
16 kByte	700-375-0LC41
8/16 kByte	700-375-0LC45
EPROM submodules series 376	
16 kByte	700-376-1AA11
32 kByte	700-376-1AA21
64 kByte	700-376-1AA31

Technical Data	
EPROM modules series 375	
Memory capacity	8 kByte 16 kByte 32 kByte 64 kByte 128 kByte
Areas of application	PLC 95, PLC 100, PLC 115, CP 530
EPROM modules series 376	
Memory capacity	16 kByte 32 kByte
Einsatzmöglichkeiten	PLC 91351), IP 257
EPROM modules series 373	
Memory capacity	32 kByte 64 kByte 128 kByte
Areas of application	PLC 155, WF 470, CP 524, CP 525, CP 526, CP 527
EEPROM modules series 375	
Memory capacity	2 kByte 4 kByte 8 kByte 16 kByte 32 kByte
Areas of application	PLC 95, PLC 100, PLC 115, CP 530

1) The new version of the CPU 928B now only uses memory cards

DEA 115, Digital Input/Output Modules

Digital input/output module

The digital input modules from the Systeme Helmholz GmbH convert the external binary signals from the process into the internal signal level of the programmable controllers. The digital output modules convert the internal signal level of the programmable controllers into the external binary signal level required for the process. Green LEDs indicate the signal status of the inputs and outputs.
The signal lines are connected to the corresponding front connectors. You can identify them on the labeling strip next to the LEDs.
You can remove and insert the modules and front connectors during operation without damaging the modules.

Ordering Data	
	Order-No.
DEA 115 32 inputs (DC 24 V) non isolated	**700-420-7LA11**
32 inputs (DC 24 V) isolated	**700-430-7LA12**
DEA 115 32 outputs (DC 24 V; 0,7 A) non isolated	**700-441-7LA12**
32 outputs (DC 24 V; 0,7 A) isolated	**700-451-7LA12**

DEA 115, Digital Input/Output Modules

Technical Data			
		700-420-7LA11	**700-430-7LA12**
Number of inputs		**32**	**32**
Isolation • in groups of		no -	yes 8
Input voltage (nom. value) • for “0” signal • for “1” signal		DC 24 V -33 to +5 V +13 to +33 V	DC 24 V -33 to +5 V + 3 to +33 V
Input current • for “1” signal	typ.	8.9 mA	8.5 mA
Permiss. quiescent current for 2-wire Bero	min.	1.5 mA	1.5 mA
Delay time [1] • turn on • turn off	typ. typ.	2.3 ms 2.5 ms	2.3 ms 4.6 ms
Cable length • unshielded • shielded	max. max.	600 m 1000 m	600 m 1000 m
Front connector		46-way	46-way
		700-441-7LA12	**700-451-7LA12**
Number of outputs		**32**	**32**
Isolation • in groups of		no -	yes (optocoupler) 8
Supply voltage V_P, V_S • nominal value • ripple V_{pp} • permissible range (with ripple) • value at t < 10 ms	 max. max.	DC 24 V 3.6 V 20 to 30 V 50 V	DC 24 V 3.6 V 20 to 30 V 50 V
Output current for “1” signal • nominal value • permissible range • transient peak load (t=10 ms, d=20%)	 max.	0.5 A 5 mA to 0.7 A 1.5 A	0.5 A 5 mA to 0.7 A 1.5 A
Lamp load (at nominal voltage)	max.	16.5 W	16.5 W
Inductive load	max.	0.2 H (bei 0.7 A) 0.4 H (bei 0.5 A) 1.1 H (bei 0.3 A)	0.2 H (bei 0.7 A) 0.4 H (bei 0.5 A) 1.1 H (bei 0.3 A)
Overload protection		electronic	electronic
Voltage induced on circuit interruption limited (internally) to	typ.	V_P - 50 V	V_P - 50 V
Switching frequency for • resistive load • lamps • inductive load	max. max. max.	1 kHz 100 Hz 2 Hz (bei 0.3 A/0.7 H) 1 Hz (bei 0.5 A/0.4 H)	1 kHz 100 Hz 2 Hz (bei 0.3 A/0.7 H) 1 Hz (bei 0.5 A/0.4 H)
Slope times • turn on • turn off	typ. typ.	0.13 ms 0.05 ms	0.2 ms 0.06 ms
Total load capability • without fan at 55°C • without fan at 35°C • with fan at 55°C		60% 100% 100%	60% 100% 100%
Residual current for “0” signal	max.	300 µA	300 µA
Signal level of the outputs • for „0“ signal • for „1“ signal	max. min.	+2 V U_P-1,0 V	+2 V U_P-1,0 V

1) Other delay times on request

DEA 135, Digital Input/Output Modules

Digital input module

The digital input modules from the Systeme Helmholz GmbH convert the external binary signals from the process into the internal signal level of the programmable controllers. The digital output modules convert the internal signal level of the programmable controllers into the external binary signal level required for the process. Green LEDs indicate the signal status of the inputs and outputs.
Red LEDs indicate an overload or short-circuit of outputs. The alarm output H carries a “1” signal if an overload or short-circuit has been detected on an output. It is possible to connect up to 16 alarm outputs in parallel.
With an enable input F it is possible to suppress the output of signals. It is possible to deactivate this function by removing a jumper on the module.
The signal lines are connected to the corresponding front connectors. You can identify them on the labeling strip next to the LEDs. Labels are provided to identify the modules and front connectors.
You can remove and insert the modules and front connectors during operation without damaging the modules.

Ordering Data	
	Order-No.
DEA 135	
32 inputs (DC 24 V)	
non-isolated	**700-420-4UA14**
32 inputs (DC 24 V)	
isolated	**700-430-4UA14**
DEA 135	
32 outputs (DC 24 V; 0,7 A)	
non-isolated	**700-441-4UA14**
32 outputs (DC 24 V; 0,7 A)	
isolated	**700-451-4UA14**
Front Connectors 497 for DEA 135	
for crimp connection	
without spring contacts	
single width, 42-way	**700-497-4UA12**
for screw connection	
single width, 42-way	**700-497-4UB31**

DEA 135, Digital Input/Output Modules

Technical Data			
		700-420-4UA14	**700-430-4UA14**
Number of inputs		**32**	**32**
Isolation • in groups of		no -	yes 32[1]
Input voltage (nom. value) • for "0" signal • for "1" signal		DC 24 V -33 to +5 V +13 to +33 V	DC 24 V -33 to +7 V + 13 to +33 V
Permiss. quiescent current for 2-wire Bero	min.	1.5 mA	2.5 mA
Delay time [2] • turn on • turn off	 typ. typ.	 2.3 ms 2.1 ms	 2.3 ms 5.2 ms
Cable length • unshielded • shielded	 max. max.	 600 m 1000 m	 600 m 1000 m
Enable input F **Input voltage** (nom. value) • for enable • for disable		 DC 24 V +13 to +33 V -33 to +5 V	 DC 24 V +13 to +33 V -33 to +5 V
Input current of the F input	typ.	5 mA	5 mA
		700-441-4UA14	**700-451-4UA14**
Number of outputs		**32**	**32**
Isolation • in groups of		no -	yes (optocoupler) 32[3]
Supply voltage V_P, V_S • nominal value • ripple Vpp • permissible range (with ripple) • value at t < 10 ms	 max.	 DC 24 V 3.6 V 20 ... 30 V 50 V	 DC 24 V 3,6 V 20 ... 30 V 50 V
Output current for "1" signal • nominal value • permissible range • transient peak load (t=10 ms, d=20%)	 max.	 0.5 A 5 mA to 0,7 A 1.5 A	 0.5 A 5 mA to 0,7 A 1.5 A
Lamp load (at nominal voltage)	max.	16.5 W	16.5 W
Inductive load	max.	0.2 H (at 0.7 A) 0.4 H (at 0.5 A) 1.1 H (at 0.3 A)	0.2 H (at 0.7 A) 0.4 H (at 0.5 A) 1.1 H (at 0.3 A)
Overload protection		electronic	electronic
Voltage induced on circuit interruption limited (internally) to	typ.	V_P-50 V	U_P-50 V
Switching frequency for • resistive load • lamps • inductive load	 max. max. max.	 1 kHz 100 Hz 2 Hz (bei 0.3 A/0.7 H) 1 Hz (at 0.5 A/0.4 H)	 1 kHz 100 Hz 2 Hz (bei 0.3 A/0.7 H) 1 Hz (bei 0.5 A/0.4 H)
Total load capability • without fan at 55°C • without fan at 35°C • with fan at 55°C	 	 60% 100% 100%	 60% 100% 100%
Residual current for "0" signal	max.	300 µA	300 µA
Signal level of the outputs • for „0" signal • for „1" signal	 max. min.	 +2 V U_P-1.0 V	 +2 V U_P-1.0 V

1) Other groupings on request
2) Other delay times on request
3) Insulation in 2 groups of 16 on request

AEA 115, Analog Input Modules

Analog input module

The analog input modules from the Systeme Helmholz GmbH convert the analog signals from the process to the internal signal level of the programmable controllers.
The signal lines are connected to the corresponding front connectors. You can identify them on the labeling strip.

Ordering Data	
	Order-No.
AEA 115 16 voltage/current inputs or 8 Pt100 resistance thermometer non-isolated	**700-465-7LA13**
Meas. range subm. 498 for AEA 115	
±50 mV/±500 mV/Pt100	**700-498-1AA11**
±100 mV/±1 V	**700-498-1AA21**
±1 V/±10 V	**700-498-1AA31**
±2 mA/±20 mA	**700-498-1AA41**
4 ... 20 mA; 2-wire	**700-498-1AA51**
±500 mV/±5 V	**700-498-1AA61**
4 ... 20 mA; 4-wire	**700-498-1AA71**

Technical Data		
Number of inputs		16 voltage/current inputs, 8 Pt100 resistance thermometers
Isolation		no
Permissible voltage between reference potential of a sensor and a central grounding point	max.	±1 V
Nominal input value		selectable for 4 chan. with meas. range submodules, see ordering data meas. range subm.
Digital representation of the input signal		12 Bits + sign or 13 Bits two's complement
Input resistance depending on meas. range submodule 700-498-1AA11 700-498-1AA21 700-498-1AA31, 700-498-1AA61 700-498-1AA51, 700-498-1AA71 700-498-1AA41	 min.	 10 MΩ 90 kΩ 50 kΩ 31.25 Ω 25 Ω
Basic error limits ±50 mV/Pt100 ±500 mV ±1 V/±5 V/±10 V ±20 mA/+ 4 to 20 mA		 ±2 ‰ ±1.5 ‰ ±3.5 ‰ ±2.5 ‰
Basic error limits ±50 mV/Pt100 ±500 mV ±1 V/±5 V/±10 V ±20 mA/+4 to 20 mA		(0°C to +55°C) ±5 ‰ ±4,5 ‰ ±7.7 ‰ ±6.7 ‰
Conversion time (settable)		20 ms for 50 Hz 16.6 ms for 60 Hz
Supply voltage • nom. value		 DC 24 V
Current consumption • internal (at 5 V) • external (at 24 V)	 typ. typ.	 200 mA 20 mA/transducer
Cable length • shielded	 max. max.	 200 m 20 m / 50 mV
Power loss (rated operation)	typ.	1.0 W
Space requirement		1 slot
Front connector		46-way
Surrounding air temperature Transport and storage temperature		0°C ... +55°C -25°C ... +75°C

AEA 115, Analog Output Modules

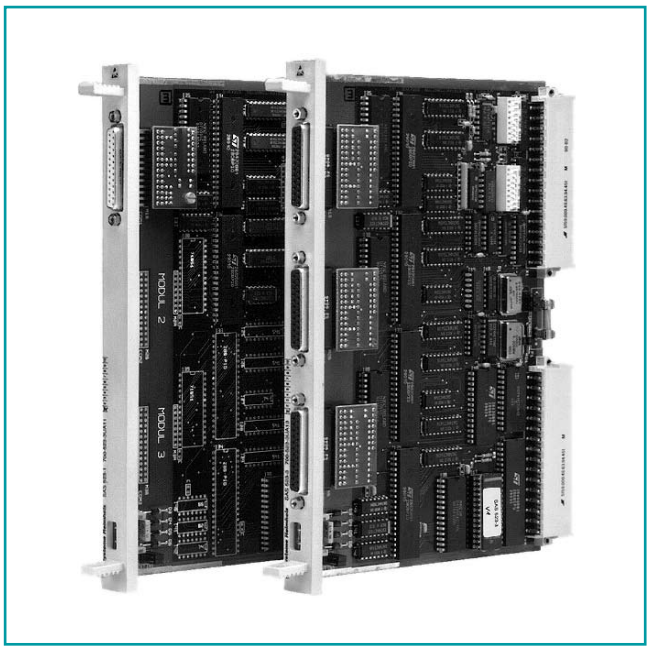
Analog output module

The analog output modules from the Systeme Helmholz GmbH convert the internal signal level of the programmable controllers to the analog signal level required for the process.
The signal lines are connected to the corresponding front connectors. You can identify them on the labeling strip.

Ordering Data	
	Order-No.
AEA 115 isolated 8 outputs, ± 10 V/0 to 20 mA 8 outputs, ± 10 V 8 outputs, + 1 to 5 V/4 to 20 mA	 **700-470-7LA13** **700-470-7LB13** **700-470-7LC13**

Technical Data			
	700-470-7LA13	**700-470-7LB13**	**700-470-7LC13**
Number of outputs	**8**	**8**	**8**
Isolation • in groups of All outputs referenced to M_{ANA}	yes (optocoupler) 8	yes (optocoupler) 8	yes (optocoupler) 8
Nominal output value • voltage • current	 ±10 V/min. 3,3 k Ω 0 ... 20 mA/max. 300 Ω	 ±10 V/min. 3,3 k Ω -	 1 ... 5 V/min. 3,3 k Ω 4 ... 20 mA/max. 300 Ω
Overload protection	yes	yes	yes
Digital representation of the output signals	11 Bits + sign	11 Bits + sign	11 Bits + sign
Linearity of the nom. range	±2.5 ‰	±2.5 ‰	±2.5 ‰
Operational limits (0°C to +55°C)	±6 ‰	±6 ‰	±6 ‰
Supply voltage L+	DC 24 V	DC 24 V	DC 24 V
Cable length • shielded max.	 200 m	 200 m	 200 m
Current consumption • internal (at 5 V) typ. • external (at 24 V, without load) typ.	 300 mA 350 mA	 300 mA 350 mA	 300 mA 350 mA
Power loss (rated operation) typ.	10 W	10 W	10 W
Space requirement	1 slot	1 slot	1 slot
Front connector	46-way	46-way	46-way
Surrounding air temperature Transport and storage temperature	0°C ... +55°C -25°C ... +75°C	0°C ... +55°C -25°C ... +75°C	0°C ... +55°C -25°C ... +75°C

SAS 523/525 Serial Interface Modules



SAS 523 interface module

The SAS 523/525 communication processors from the Systeme Helmholz GmbH are for linking programmable controllers with other items of equipment with a serial interface.
The SAS 525 not only has an open driver but also the 3964/3964R procedure with RK512 frame structure.
You can connect, for example printers, personal computers, bar-code readers, weighing machines, terminals, keyboards, or other process peripherals that have a serial interface and in the case of the SAS 525, all devices that use the RK512 computer link.
The SAS 523-1/525-1 has one, the SAS 523-2/525-2 two, the SAS 523-3/525-3 three serial interfaces.
The modules can be used in PLCs (without a fan tier) in the central controller or expansion unit and in the IM slot. A CP slot is not required.
If you are using the open driver and if you have implemented bus transmission, the modules can buffer 255 bytes per channel and direction of data flow, handle the serial communication actively and therefore off-load the CPU.
The open transmission protocol of the SAS 525 is the same as that of the SAS 523. In addition a driver can be initialized for the RK512 protocol.
Data exchange with the programmable controller is executed by function blocks (data handling blocks), which are parameterized by the user.

Programming
It is not necessary to program the modules. They are parameterized using DIL switches and data handling blocks for initializing the modules.

Interface
The interface is suitable for transmission of
- 20 mA current-loop signals (TTY)
- RS232
- RS422/485.

It is configured by plugging in an interface submodule. The transmission rate can be set separately between
150 Bps and 38400 Bps for each channel.

Note
Please also order the appropriate interface submodule for each interface.

Technical Data

Supply voltage	+5 V ±5%
Current consumption • SAS 523-1/525-1 • SAS 523-2/525-2 • SAS 523-3/525-3 • TTY submodule additionally, if active • RS232 submodule • RS422/485 submodule	 350 mA 410 mA 460 mA 10 mA 40 mA / 24 V 10 mA 140 mA
Transmission mode	serial asynchronous
Transmission rate	150 to 38400 Bps
Parity	even, odd, none
Data format	7 or 8 Bits
Handshake	RTS, CTS (RS232) break (TTY) bus (RS422/485)
Procedure for SAS 525 Protocol for SAS 525	3964/3964R RK512
Connector	SUB-D, 25-way
Max. cable length TTY RS232 RS422/485	 1000 m 16 m 1200 m (twisted pair)

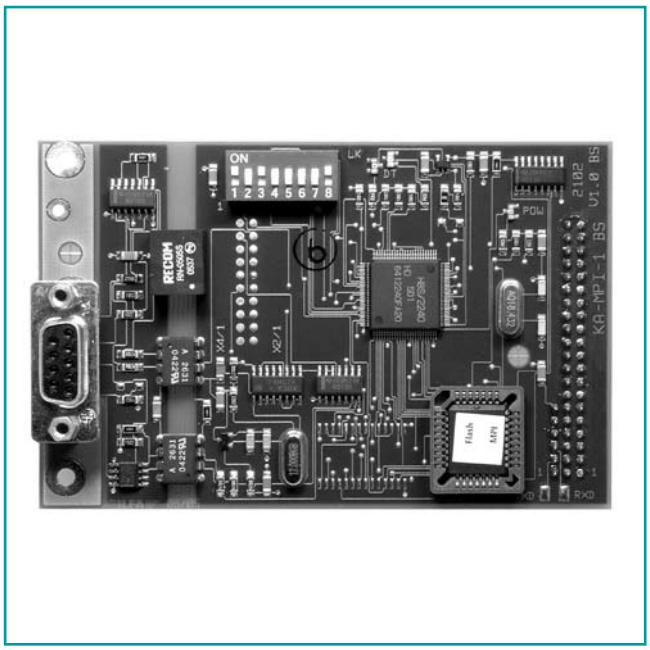
Ordering Data

	Order-No.
Serial interface	
SAS 523-1	**700-523-3UA11**
SAS 523-2	**700-523-3UA12**
SAS 523-3	**700-523-3UA13**
Serial interface	
SAS 525-1	**700-525-3UA11**
SAS 525-2	**700-525-3UA12**
SAS 525-3	**700-525-3UA13**
Interface modules SAS 523/525	
TTY	**700-523-1UA11**
RS232	**700-523-1UA21**
RS485 non-isolated	**700-523-1UA41**
RS485 isolated	**700-523-1UA51**
Manual SAS 523/525	
German/English	**900-523-0AA11**
Data handling blocks for SAS 523	
31/2“ disk DOS format	
PLC 115 ... PLC 155	**802-523-1AA61**
Data handling blocks SAS 525	
31/2“ disk DOS format	
PLC 115 ... PLC 155	**802-525-1AA61**

Service

Individual Developments
Training Courses

Customer-Specific Development



Customer-specific MPI board

Systeme Helmholz is your supportive partner for individual hardware and software development.
Years of experience in the development and manufacture of electronic components and comprehensive know-how in automation enable us to find a tailored solution for your requirements.

We can offer you the following services:
- Creation of specifications and costing
- Complete development of the hardware and software
- Mechanical design of the housing
- Tool design for injection molding tools
- Operating system development
- Software for parameterizing under Microsoft Windows
- CE conformity tests
- Projecting and building of test equipment

Compliance with the general guidelines for quality assurance and the valid EMC regulations is already ensured during development.
Moreover, we are able to conduct the series production of your products. The products are manufactured, tested and delivered according to ISO 9001:2000.
With our modern and flexible development and manufacturing capacity we are able to implement small to medium-sized projects very quickly.

More examples of customer-specific applications
Hardware:
- Special variants DEA 300
- MPI-PROFIBUS Gateways for customer-specific protocols
- Operating units for building technologies

Software:
- CANopen slave handling block
- Special protocols for linking customer-specific devices to PLC
- Production data acquisition and evaluation in a network environment under Windows
- Application development for Windows 9x/ME/200 with Borland Builder, C++ or Borland Delphi

Training Courses, PROFIBUS Service

The Systeme Helmholz GmbH also offers product training for:

- CAN Bus
- S7 Teleservice/Teleservice/Router
- NETLink® and OPC-server

The trainers will teach you all you need to know about correct handling of products by way of practical examples.
Make an appointment with one of our specialists for your own in-depth consultation.

Please request your individual offer!

PROFIBUS Service

Your new service provider for field bus systems.

The transmission quality of field bus systems is a basic requirement for stably running machines and plants. Ever more complex applications and ever greater volumes of data can be transmitted quickly and reliably. We want to help you!

Systeme Helmholz GmbH offers not only a broad range of products for the PROFIBUS and CAN bus but also, with immediate effect, the following services connected with the field bus systems:

- Troubleshooting
- Diagnostics
- Planning support
- Seminars

The aim is to implement your individual requirements in cooperation with you.

Please request your individual offer!

Ordering Data	
Training Course	**Order-No.**
CAN/CANopen®/CAN-modules (1 day)	**400-600-CAN01**

Fax Order Form

Just copy, fill in and fax.

To:

Systeme Helmholz GmbH
Hannberger Weg 2
91091 Großenseebach
Germany

Fax: +49 9135 7380-110
Phone: +49 9135 7380-0

Your address:

Name of contact

Company

Street/No.

Postcode/City

Phone/Fax

Pos.	Order-No.	Product name	Quantity	Unit price	Total price

Delivery address (if different from above):

Company

Street/No.

Postcode/City

Date/Signature

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