

## Components for Automation



compatible with you compatible with you compatible with you compatible with you compatible with you

**Systeme Helmholz GmbH****The supplier of Simatic-compatible modules grows into the specialist in communication solutions**

Alongside the familiar Simatic-compatible modules, communication is the core business of Systeme Helmholz GmbH. With products for teleservice, Ethernet coupling, and CAN bus links, Systeme Helmholz provides you with varied ways of connecting your systems and of remotely controlling and monitoring machines. These are the features that will give you the decisive competitive edge in international business. The opening of the Helmholz Shanghai Office in May 2006 is intended to bolster our position on the Chinese and Asian markets still further. That will enable us to care for existing and new customer relations even better.

The new company headquarter will also be built as planned in 2007, considerably expanding our office and production capacity. This will create the conditions for a lasting win-win situation for our company but, above all, for our customers.

Please give us a little of your valuable time because you, too, will likely find the ideal solution for your application in the new catalog.

Yours truly



Manfred Helmholz



Carsten Bokholt



Karsten Eichmüller

Manfred Helmholz  
Executive Director

Carsten Bokholt  
Development Manager

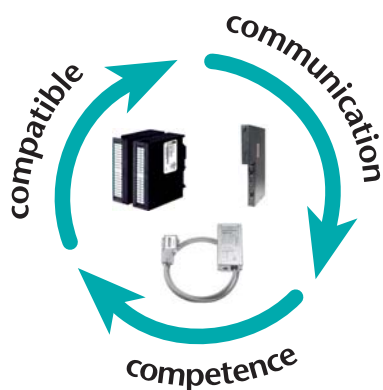
Karsten Eichmüller  
Sales Manager

**How to contact us:**

Orders by phone: +49 9135 73 80-0  
Orders by fax: +49 9135 73 80-50

**In the Internet:**

Homepage: <http://www.helmholz.com>  
E-mail: [info@helmholz.de](mailto:info@helmholz.de)



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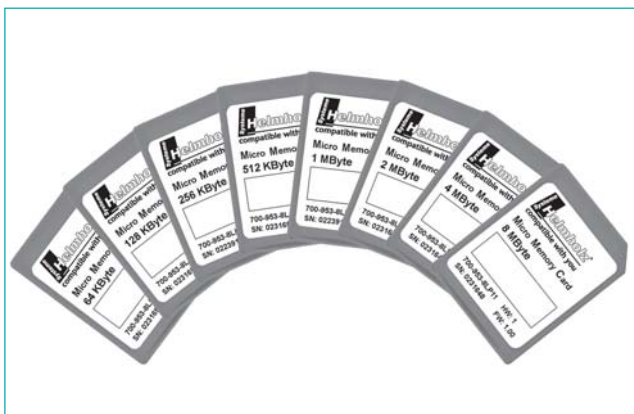


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# Components for the S7

## Micro Memory Cards



Micro Memory Cards

The Micro Memory Cards from the Systeme Helmholtz 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, 512 KB, 2 MB, 4 MB, 8 MB.

Micro Memory Cards with memory capacities 256 KB and 1 MB are new items in our product program that have just become available.

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



Ordering Data	
	Order-No.
<b>Micro Memory Cards</b>	
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	
<b>Micro Memory Cards</b>	
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 CPU C7

## Memory Cards



Memory card, short type



Memory cards from the Systeme Helmholtz GmbH, suitable for the S7, are designed for use in CPU modules CPU 313 to CPU 318-2.

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.
<b>Flash EPROM cards</b>	
short	
16 Kbytes	700-951-0KD00
32 Kbytes	700-951-0KE00
64 Kbytes	700-951-0KF00
128 Kbytes	700-951-0KG00
256 Kbytes	700-951-1KH00
512 Kbytes	700-951-0KJ00
1 Mbyte	700-951-1KK00
2 Mbytes	700-951-1KL00
4 Mbytes	700-951-1KM00
<b>RAM cards</b>	
short	
128 Kbytes	700-951-0AG00
256 Kbytes	700-951-1AH00
512 Kbytes	700-951-1AJ00
1 Mbyte	700-951-1AK00
2 Mbytes	700-951-1AL00

Technical Data	
<b>Flash EPROM cards</b>	
short	
Memory capacity	16 Kbytes 32 Kbytes 64 Kbytes 128 Kbytes 256 Kbytes 512 Kbytes 1 Mbyte 2 Mbytes 4 Mbytes
Applications	CPU 313 to 318-2
<b>RAM cards</b>	
short	
Memory capacity	128 Kbytes 256 Kbytes 512 Kbytes 1 Mbyte 2 Mbytes
Applications	CPU 318-2 <b>only</b>





Memory card long type

Memory cards from the Systeme Helmholtz GmbH, suitable for the S7, are designed for use in CPU modules CPU 412 to CPU 417.

We have been able to achieve top quality standards and a very advantageous price/performance ratio with the use of modern, manufacturing methods.

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

Ordering Data	
	Order-No.
<b>Flash EPROM Cards</b>	
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
<b>RAM cards</b>	
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

Technical Data	
<b>Flash EPROM cards</b>	
long	
Memory capacity	64 Kbytes 256 Kbytes 1 Mbyte 2 Mbytes 4 Mbytes 8 Mbytes 16 Mbyte
Applications	CPU 412 to 417
<b>RAM cards</b>	
long	
Memory capacity	64 Kbytes 256 Kbytes 1 Mbyte 2 Mbytes 4 Mbytes
Applications	CPU 412 to 417

## DEA 300, Digital Input Modules



Digital input modules with 16 and 32 inputs

The digital inputs convert the external binary signals from the process into the internal signal level of the programmable controller.

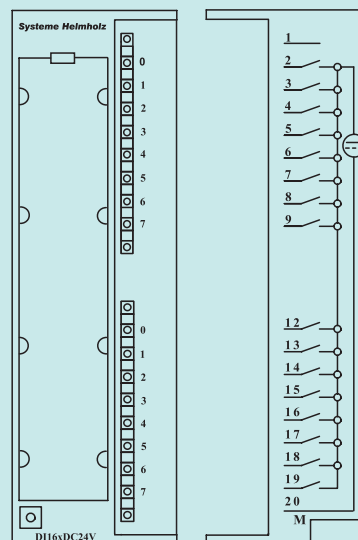
Green LEDs indicate the signal state of the inputs and outputs.

The inputs of the modules from the Systeme Helmholtz GmbH are also suitable for connection of 2-wire proximity switches.

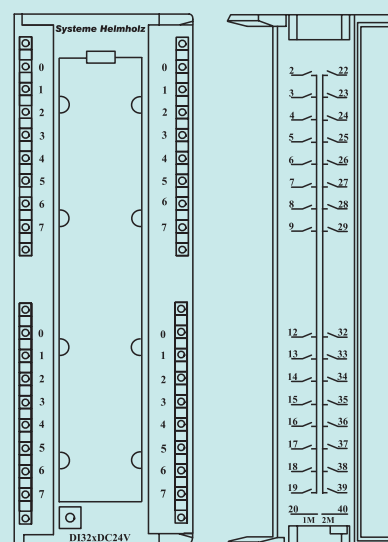
Modules with modified specifications or special modules can be supplied on request.

**Accessory-Note**

The Systeme Helmholtz GmbH supplies front connectors and cable sets (see page 27).



700-321-1BH02



700-321-1BL00

**Ordering Data**

	Order-No.
<b>DEA 300</b>	
16 inputs (DC 24 V)	700-321-1BH02
32 inputs (DC 24 V)	700-321-1BL00
Manual DEA 300, german/english	900-321-1DE11

## DEA 300, Digital Input Modules

Technical Data		
	700-321-1BH02	700-321-1BL00
<b>Number of inputs</b>	<b>16</b>	<b>32</b>
Isolation (from backplane bus) in groups of	yes (optocoupler) 16	yes (optocoupler) 16
<b>Input voltage</b> - 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
<b>Input current</b> - 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	yes max. 2 mA	yes 1,5 mA
<b>Cable length</b> - unshielded - shielded	max. 600 m max. 1000 m	600 m 1000 m
<b>Current consumption</b> - internal (backplane bus) - external (from +24 V)	typ. 20 mA max. 140 mA	30 mA 290 mA
Power loss (rated operation)	typ. 3.5 W	6.8 W
Front connector	20-way	40-way
<b>Permissible ambient temperature</b> - operating - transport and storage	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

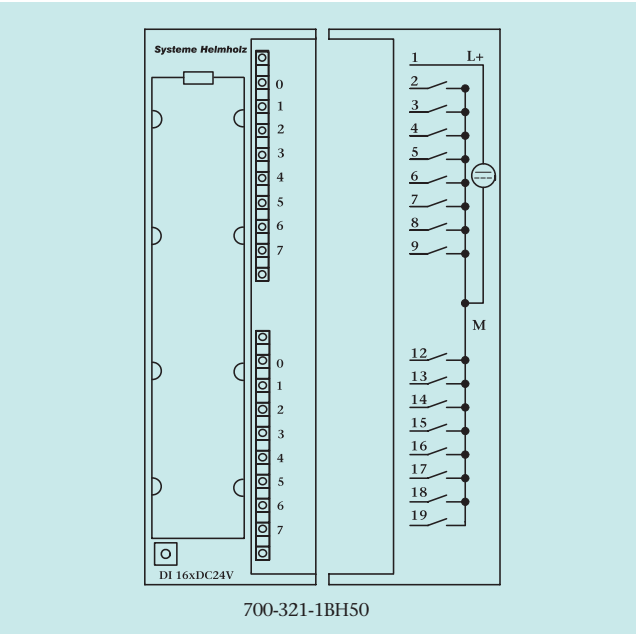
The digital inputs convert the external binary signals from the process into the internal signal level of the programmable controller. Green LEDs indicate the signal state of the inputs and outputs.

The inputs of the modules from the Systeme Helmholtz 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 Helmholtz GmbH supplies front connectors and cable sets (see page 27).



Ordering Data	
	Order-No.
DEA 300; 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	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
Permissible ambient temperature - operating - transport and storage	0°C ... 60°C -25°C ... 75°C

## DEA 300, Digital Input Module with Alerts



DEA 300, with Alerts

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.

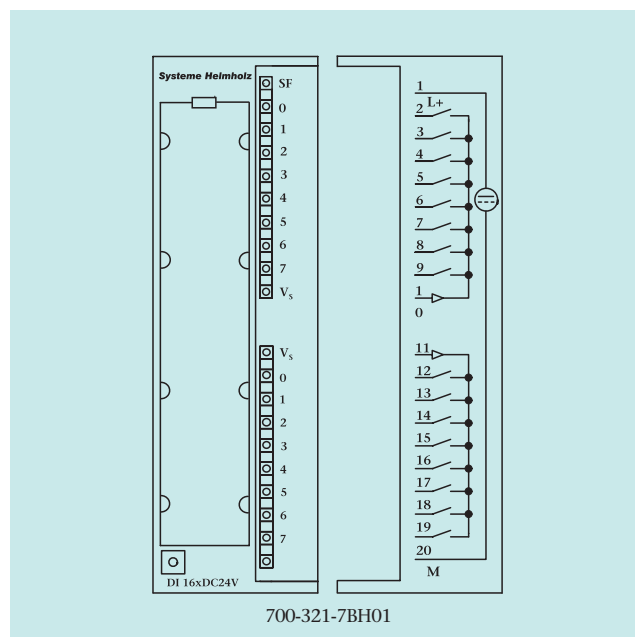
The inputs of the modules from the Systeme Helmholz GmbH are also suitable for connection of 2-wire proximity switches.

This module offers as additional features parameterizable diagnostic- and process alerts, as well as a parameterizable input delays.

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 27).



#### Technical Data

<b>Number of inputs</b>	<b>16</b>
Isolation against backplane bus in groups of	16
<b>Input voltage, reference potential is L+</b> - nom. value - for Signal "0" - for Signal "1"	DC 24 V -3 ... +5 V +13 ... +30 V
<b>Input current</b> - for Signal "1"	7 mA
Delay time parameterizable in groups by two	0,1 ... 20 ms
Diagnostics	parameterizable
Process alerts	parameterizable
Diagnostic alerts	parameterizable
<b>Conduction length</b> - unshielded - shielded	600 m 1000 m
<b>Current consumption</b> - internal (backplane bus) typ. - extern L+, DC 24 V	130 mA 90 mA
<b>Encoder power supply outputs</b> Output voltage	min L+ DC -2,5 V
Output current	0 ... 150 mA
Short circuit protection	electrical
Power loss (nominal operation)	3,9 W
Front connector	20-way
<b>Permissible ambient temperature</b> - operating - transport and storage	0°C ... 60°C -25°C ... 75°C

#### Ordering Data

	Order-No.
DEA 300, 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

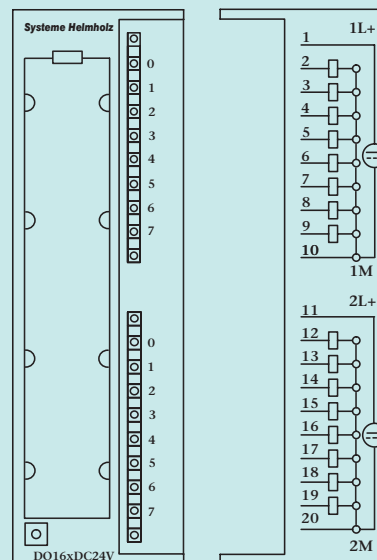
The digital outputs convert the internal signal level to the external signal level required for the process. Green LEDs indicate the signal state of the outputs.

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.

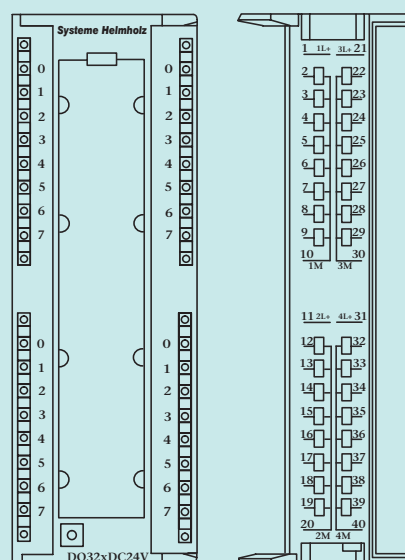
Modules with modified specifications or special modules can be supplied on request.

**Accessory-Note**

The Systeme Helmholz GmbH supplies front connectors and cable sets (see page 27).



700-322-1BH01



700-322-1BL00

**Ordering Data**

	Order-No.
<b>DEA 300</b>	
16 output (DC 24 V, 0.5 A)	700-322-1BH01
32 output (DC 24 V, 0.5 A)	700-322-1BL00
<b>Manual DEA 300, german/english</b>	900-321-1DE11

## DEA 300, Digital Output Modules

Technical Data		
	700-322-1BH01	700-322-1BL00
<b>Number of outputs</b>	<b>16</b>	<b>32</b>
Isolation (from backplane bus) in groups of	yes (optocoupler) 8	yes (optocoupler) 8
<b>Supply voltage <math>V_P</math>, <math>V_S</math></b>		
- nom. value	DC 24 V	DC 24 V
- ripple $V_{PP}$ max.	3.6 V	3.6 V
- permissible range (with ripple)	20 ... 30 V	20 ... 30 V
- value at $t < 10$ ms max.	50 V	50 V
<b>Output current</b>		
- nom. value	0.5 A	0.5 A
Short-circuit protection	electronic	electronic
Voltage induced on circuit interruption limited to	-48 V	-48 V
<b>Cable length</b>		
- unshielded max.	600 m	600 m
- shielded max.	1000 m	1000 m
<b>Current consumption</b>		
- internal (backplane bus) max.	45 mA	85 mA
- ext. w/o load (from +24 V) typ.	110 mA	220 mA
Power loss (nominal operation) typ.	5 W	6,8 W
Front connector	20-way	40-way
<b>Permissible ambient conditions</b>		
- ambient temperature (during operation)	0°C ... 60°C	0°C ... 60°C
- transport and storage temperature	-25°C ... 75°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.

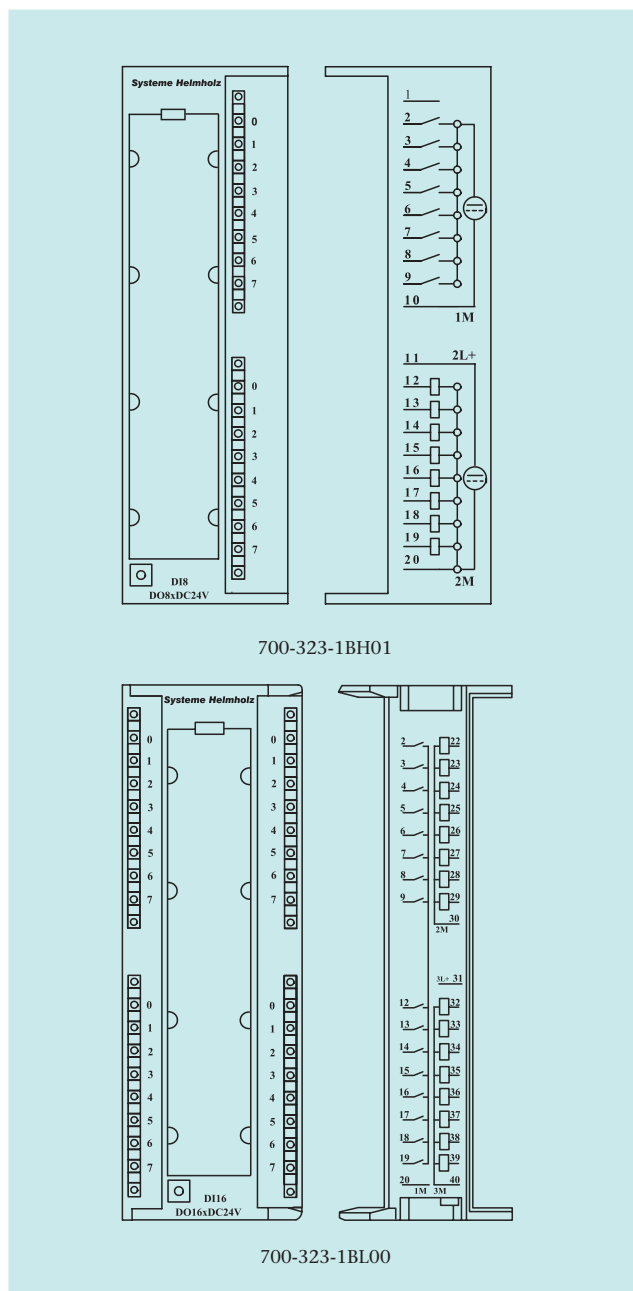
The digital outputs convert the internal signal level of the programmable controllers into the external binary signal level required for the process. Green LEDs indicate the signal state of the inputs and outputs.

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 27).

**Ordering Data**

	Order-No.
<b>DEA 300</b> 8 inputs (DC 24 V)/ 8 outputs (DC 24 V, 0.5 A)	<b>700-323-1BH01</b>
16 inputs (DC 24 V)/ 16 outputs (DC 24 V, 0.5 A)	<b>700-323-1BL00</b>
<b>Manual DEA 300</b> , german/english	<b>900-321-1DE11</b>

## DEA 300, Digital Input/Output Modules

Technical Data		
	700-323-1BH01	700-323-1BL00
<b>Number of inputs</b>	<b>8</b>	<b>16</b>
Isolation (from backplane bus) in groups of	yes (optocoupler) 8	yes (optocoupler) 16
<b>Input voltage</b> - 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
<b>Input current</b> - 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	yes max. 2 mA	yes 1.5 mA
<b>Cable length</b> - unshielded - shielded	max. 600 m max. 1000 m	600 m 1000 m
<b>Number of outputs</b>	<b>8</b>	<b>16</b>
Isolation (from backplane bus) in groups of	yes (optocoupler) 8	yes (optocoupler) 8
<b>Output current</b> - nom. value	0.5 A	0.5 A
Short-circuit protection	electronic	electronic
Voltage induced on circuit interruption limited to	- 48 V	- 48 V
<b>Cable length</b> - unshielded - shielded	max. 600 m max. 1000 m	600 m 1000 m
<b>Supply voltage <math>U_P</math>, <math>U_S</math></b> - nom. value - ripple $V_{PP}$ - permissible range (including ripple) - value at $t < 10$ ms	max. DC 24 V 3.6 V 20 ... 30 V max. 50 V	DC 24 V 3.6 V 20 ... 30 V 50 V
<b>Current consumption</b> - internal (backplane bus) - external (without load, from +24 V)	typ. 35 mA max. 62 mA	65 mA 110 mA
Power loss (nominal operation)	typ. 3.5 W	6.8 W
Front connector	20-way	40-way
<b>Permissible ambient temperature</b> - operating - transport and storage	0°C ... 60°C -25°C ... 75°C	0°C ... 60°C -25°C ... 75°C

## DEA 300, Digital Output Module; 2 Amps



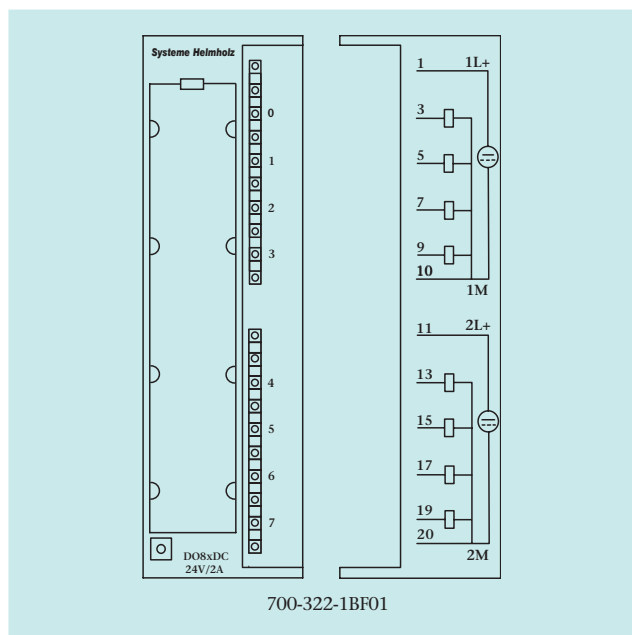
Digital output module ; 8 outputs, 2 amps

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 27).



Ordering Data	
	Order-No.
<b>DEA 300</b> 8 outputs (DC 24 V, 2 A)	<b>700-322-1BF01</b>
<b>Manual DEA 300</b> , german/english	<b>900-321-1DE11</b>

## Technical Data

<b>Number of outputs</b>	<b>8</b>
Isolation (from backplane bus) in groups of	yes (optocoupler) 4
<b>Supply voltage L+/L-</b> - 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
<b>Output current</b> - nom. value	2 A
<b>Aggregate current of the outputs</b> (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
<b>Cable length</b> - unshielded max. - shielded max.	600 m 1000 m
<b>Current consumption</b> - internal (backplane bus) max. - ext. without load (from +24 V) max.	25 mA 70 mA
Power loss (nominal operation) typ.	3.7 W
Front connector	20-way
<b>Permissible ambient temperature</b> - operating - transport and storage	0°C ... 60°C -25°C ... 75°C



## DEA 300, Digital Output Convert; Relays



Digital output convert; 8 relays

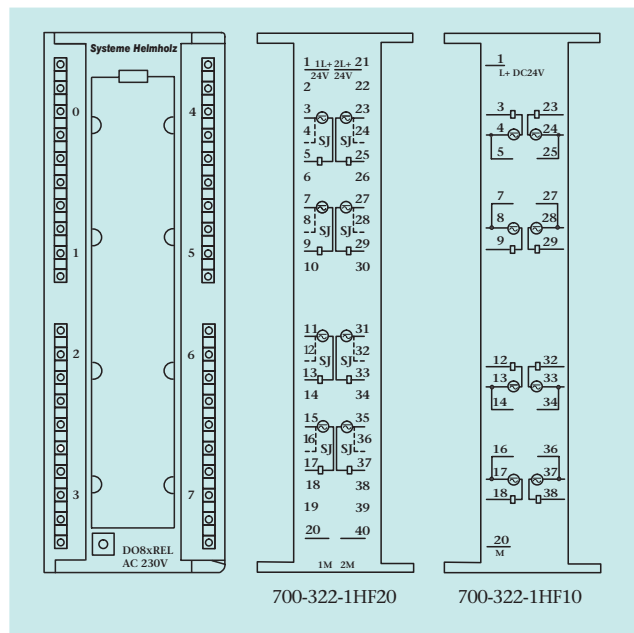
The digital outputs convert the internal signal level into the external signal levels required for the process.

A green LED indicates 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 27).



## Ordering Data

	Order-No.
<b>DEA 300</b> 8 output, relays, 5 A 8 output, relays, 5 A, snubber	<b>700-322-1HF10</b> <b>700-322-1HF20</b>
<b>Manual DEA 300, german/english</b>	<b>900-321-1DE11</b>

## Technical Data

<b>Number of outputs</b>	<b>8</b>
Nom. load voltage L+/L-	DC 24 V
Switching voltage	AC to 230 V DC to 120 V
<b>Output current</b> Aggregate current of the output (per group) max.	5 A
Isolation to backplane bus - in groups	optocoupler 1
<b>Switching frequency</b> - resistive load max. - inductive load max. - lamp load max. - mechanical max.	2 Hz 0.5 Hz 2 Hz 10 Hz
<b>Rated load</b> - resistive load max. - inductive load max.	5 A (AC 230 V) 5 A (DC 24 V) 2 A (AC 230 V) 2 A (DC 24 V)
<b>Expected life</b> - mechanical - resistive load	10 Mio. 5 A, 0.2 Mio.
<b>Permissible ambient temperature</b> - operating - transport and storage	0°C ... 60°C -25°C ... 75°C

DEA 300, Digital Output Convert; Relays



Digital output convert, 16 relays

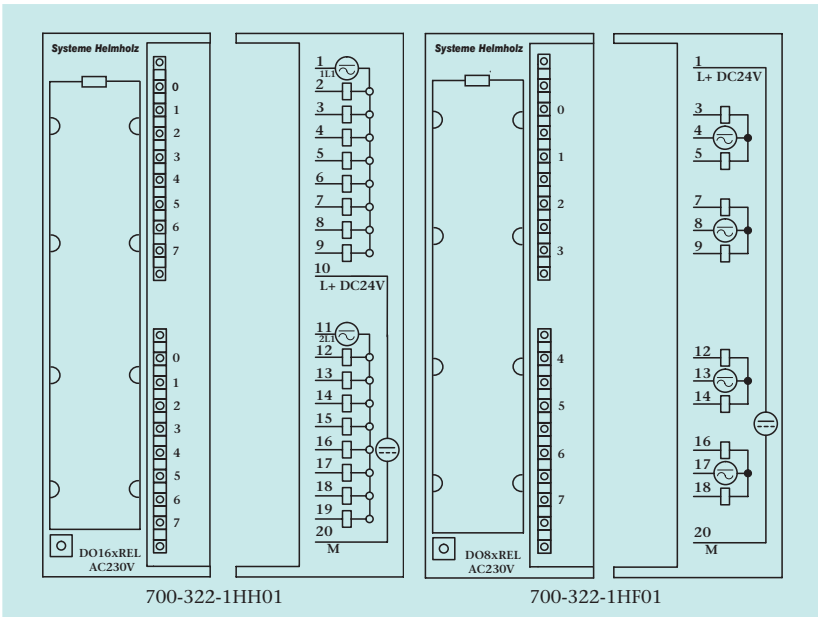
The digital outputs convert the internal signal level into the external signal levels required for the process. A green LED indicates the signal state of the outputs. The outputs of the modules from the Systeme Helmholz GmbH are suitable for connection of solenoid valves, contactors, and small-power 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 27).

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	optocoupler	optocoupler
- in groups	8	2
continuous thermal current	2 A	3 A
Switching frequency		
- resistive load max.	1 Hz	1 Hz
- inductive load max.	0.5 Hz	0.5 Hz
- lamp load max.	1 Hz	1 Hz
- mechanical max.	10 Hz	10 Hz
Rated load		
- resistive load max.	2 A (AC 230 V) 2 A (DC 24 V)	2 A (AC 230 V) 2 A (DC 24 V)
- inductive load max.	2 A (AC 120 V) 2 A (DC 24 V)	2 A (AC 120 V) 2 A (DC 24 V)
Expected life		
- mechanical	10 Mio.	10 Mio.
- resistive load	2 A, 1 Mio.	2 A, 0.7 Mio.
Perm. ambient temperature		
- operating	0°C ... 60°C	0°C ... 60°C
- transport and storage	-25°C ... 75°C	-25°C ... 75°C

Ordering Data	
	Order-No.
DEA 300	
16 outputs, relays, 2 A	700-322-1HH01
8 outputs, relays, 2 A	700-322-1HF01
Manual DEA 300, german/english	900-321-1DE11



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

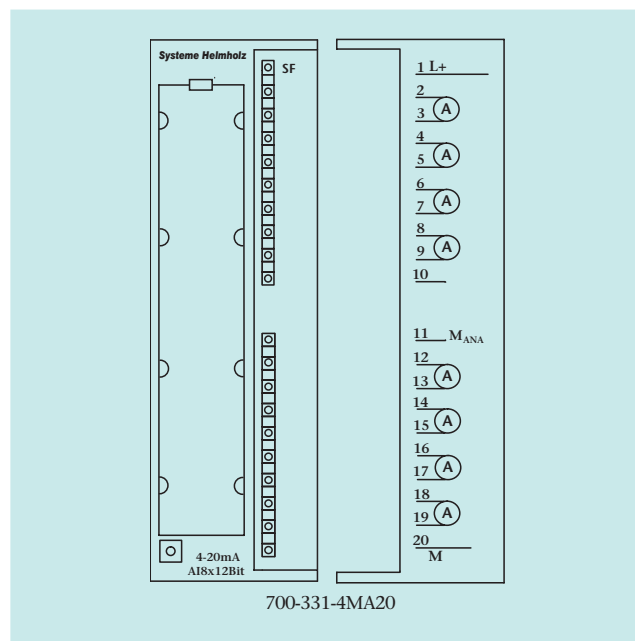


Analog input module

The analog input modules from the Systeme Helmholtz 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  $\pm 20$  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).



### Technical Data

<b>Number of inputs</b>	<b>8</b>
<b>Alarms</b> - Limit value alarm - Diagnostic alarm	parameterizable parameterizable for channels 0 and 2
<b>Diagnostics</b>	red LED for group error display
<b>Nom. load voltage L+/L-</b>	DC 24 V
<b>Polarity reversal protection</b>	yes
<b>Input ranges</b> - Current, 4 DMU - Current, 2 DMU	$\pm 3,2$ mA/25 $\Omega$ $\pm 10$ mA/25 $\Omega$ 0...20 mA/25 $\Omega$ 4...20 mA/25 $\Omega$ $\pm 20$ mA/25 $\Omega$ 4...20 mA/25 $\Omega$
<b>Permiss. input current for current input</b>	max. 40 mA
<b>Isolation against backplane bus</b>	yes
<b>Conversion time/resolution (per chann.)</b> - integration time - noise suppression for interference frequency - resolution (SG= sign) (depends on integration time)	2,5/16,6/20/100ms 400/60/50/10 Hz 9/12/12/14 Bit + SG
<b>Operational limit</b> max.	$\pm 0,6\%$
<b>Basic error limit at 25 °C</b> max.	$\pm 0,5\%$
<b>Cable length (shielded)</b>	200 m
<b>Current consumption</b> - internal (from backplane bus) - external (L+)	typ. 120 mA max. 200 mA
<b>Power loss</b> typ.	7 W
<b>Front connector</b>	20-way
<b>Permissible ambient temperature</b> - operating - transport and storage	0°C ... +60°C -25°C ... +75°C

### Ordering Data

	Order-No.
<b>AEA 300</b> 8 current inputs; for connecting current sensors	700-331-4MA20
<b>Manual AEA 300, german/english</b>	900-331-0AA01

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

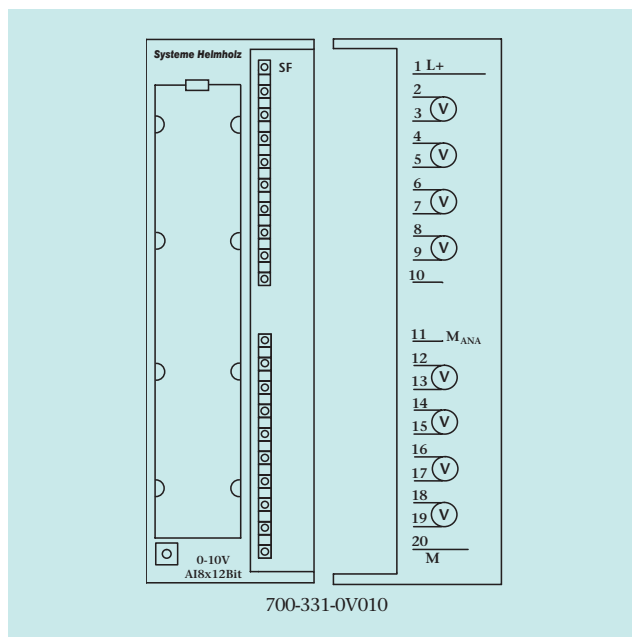


Analog input module

The analog input modules from the Systeme Helmholtz 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  $\pm 10$  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**).



700-331-0V010

### Technical Data

<b>Number of inputs</b>	<b>8</b>
<b>Alarms</b> - 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
<b>Input ranges</b> Voltage/ input impedance	$\pm 80$ mV/10 M $\Omega$ $\pm 250$ mV/10 M $\Omega$ $\pm 500$ mV/10 M $\Omega$ $\pm 1$ V/10 M $\Omega$ $\pm 2,5$ V/100 k $\Omega$ $\pm 5$ V 100 k $\Omega$ 1...5 V/100 k $\Omega$ $\pm 10$ V/100 k $\Omega$
Permiss. input voltage for voltage input max.	20 V
Isolation against backplane bus	yes
<b>Conversion time/resolution (per chann.)</b> - 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 + SG/12 + SG/12 + SG/14 + SG Bit
Operational limit max.	$\pm 0,6\%$
Basic error limit at 25 °C max.	$\pm 0,5\%$
Cable length (shielded) max.	200 m (50 m at $\pm 80$ mV)
<b>Current consumption</b> - internal (from backplane bus) typ. - external (L+) max.	120 mA 200 mA
Power loss typ.	7 W
Front connector	20-way
<b>Permissible ambient temperature</b> - operating - transport and storage	0°C ... +60°C -25°C ... +75°C

### Ordering Data

	Order-No.
<b>AEA 300</b> 8 voltage inputs; for connection of voltage sensors	<b>700-331-0V010</b>
<b>Manual AEA 300</b> , german/english	<b>900-331-0AA01</b>

## AEA 300, Analog Input Module for Connecting Resistance Thermometers

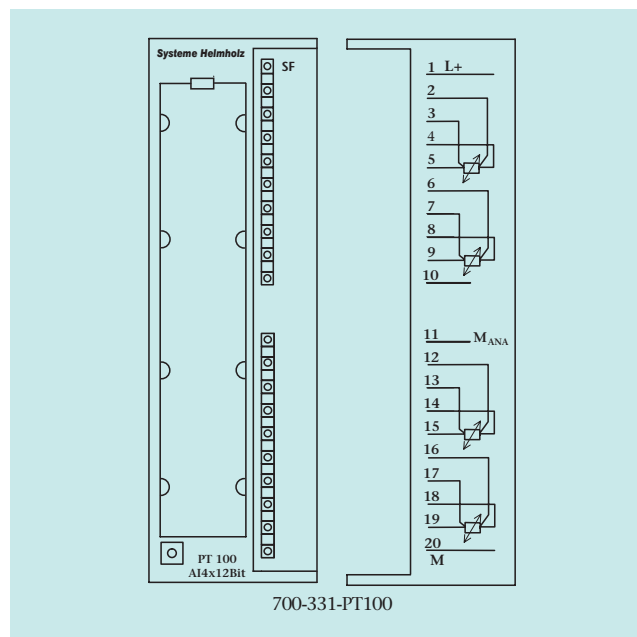


Analog input module

The analog input modules from the Systeme Helmholtz 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.

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**).



### Technical Data

<b>Number of inputs</b>	<b>4</b>
<b>Alarms</b> - 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 M $\Omega$
Resistance thermometer	Pt 100, Ni 100 (standard and climatic range)
Resistance	100, 150, 600 $\Omega$
Sensor connection	2, 3 or 4-wire connection
Isolation against backplane bus	yes
<b>Conversion time/resolution (per chann.)</b> - integration time - noise suppression for interference frequency - resolution (SG = sign) (depends on integration time)	2,5/16,3/20/100ms 400/60/50/10Hz  9 + SG/12 + SG/ 12 + SG/14 + SG Bit
Operational limit	max. $\pm 0,6\%$
Basic error limit at 25 °C	max. $\pm 0,5\%$
Cable length (shielded)	max. 200 m
<b>Current consumption</b> - internal (from backplane bus) - external (L+)	typ. 120 mA max. 200 mA
Power loss	typ. 7 W
Front connector	20-way
<b>Permissible ambient temperature</b> - operating - transport and storage	0°C ... +60°C -25°C ... +75°C

### Ordering Data

	Order-No.
<b>AEA 300</b> 4 Pt100/Ni100 resistance thermometers	<b>700-331-PT100</b>
<b>Manual AEA 300</b> , german/english	<b>900-331-0AA01</b>



## AEA 300, Analog Output Module; 4-Channel



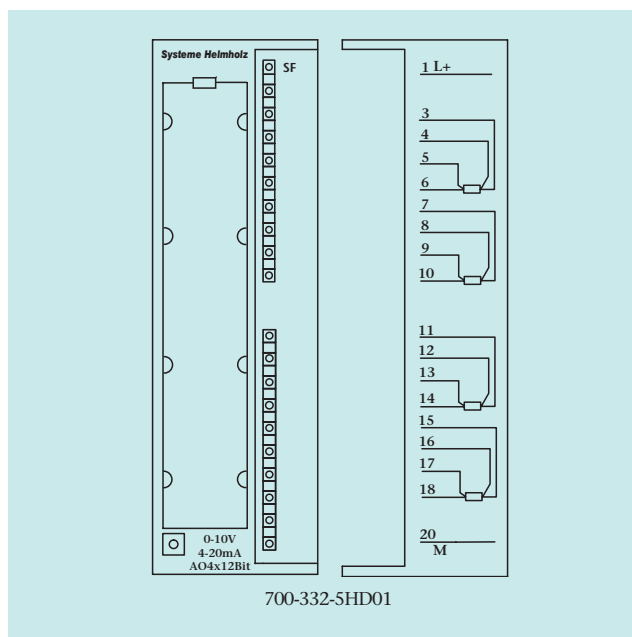
4-channel analog output module

The analog output modules from the Systeme Helmholtz 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  $\pm 10$  V or  $\pm 20$  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.



### Technical Data

<b>Number of outputs</b>	<b>4</b>
Diagnostics alarm	yes
Diagnostics	red LED for group error display
Nom. load voltage	DC 24 V
<b>Output ranges</b>	
- voltage outputs	0...10 V; $\pm 10$ V; 1...5 V
- current outputs	4...20 mA; $\pm 20$ mA; 0...20 mA
<b>Load impedance</b>	
- for voltage outputs	min. 1 k $\Omega$
- for current outputs	max. 500 $\Omega$
- at capacitive load	max. 1 $\mu$ F
- at inductive load	max. 10 mH
<b>Voltage output</b>	
- short-circuit protection	yes
- short-circuit current	max. 35 mA
<b>Current output</b>	
- open-circuit voltage	max. 18 V
isolation against backplane bus	yes
<b>Operational limit</b> (0 to 60 °C, with reference to output range)	
- voltage	$\pm 0,5$ %
- current	$\pm 0,6$ %
<b>Basic error limit</b> (operational limit at 25 °C, with reference to output range)	
- voltage	$\pm 0,4$ %
- current	$\pm 0,5$ %
Cable length (shielded)	max. 200 m
<b>Current consumption</b>	
- internal (from backplane bus)	typ. 60 mA
- external, without load	max. 240 mA
Power loss	typ. 3 W
Front connector	20-way
<b>Permissible ambient temperature</b>	
- operating	0°C ... +60°C
- transport and storage	-25°C ... +75°C

### Ordering Data

	Order-No.
<b>AEA 300</b> 4 outputs for connecting analog actuators	<b>700-332-5HD01</b>
<b>Manual AEA 300</b> , german/english	<b>900-331-0AA01</b>

## AEA 300, Analog Output Modules; 2-Channel

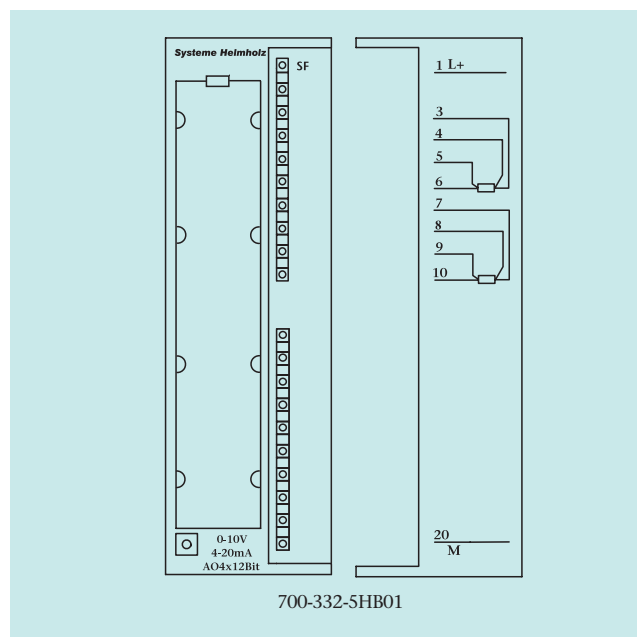


2-channel analog output module

The analog output modules from the Systeme Helmholtz 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  $\pm 10$  V or  $\pm 20$  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.



## Technical Data

<b>Number of outputs</b>	<b>2</b>
Diagnostics alarm	yes
Diagnostics	red LED for group error display
Nom. load voltage	DC 24 V
<b>Output ranges</b>	
- voltage outputs	0...10 V; $\pm 10$ V; 1...5 V
- current outputs	4...20 mA; $\pm 20$ mA; 0...20 mA
<b>Load impedance</b>	
- for voltage outputs	min. 1 k $\Omega$
- for current outputs	max. 500 $\Omega$
- at capacitive load	max. 1 $\mu$ F
- at inductive load	max. 10 mH
<b>Voltage output</b>	
- short-circuit protection	yes
- short-circuit current	max. 35 mA
<b>Current output</b>	
- open-circuit voltage	max. 18 V
isolation against backplane bus	yes
<b>Operational limit</b> (0 to 60 °C, with reference to output range)	
- voltage	$\pm 0,5$ %
- current	$\pm 0,6$ %
<b>Basic error limit</b> (operational limit at 25 °C, with reference to output range)	
- voltage	$\pm 0,4$ %
- current	$\pm 0,5$ %
Cable length (shielded)	max. 200 m
<b>Current consumption</b>	
- internal (from backplane bus)	typ. 60 mA
- external, without load	max. 120 mA
Power loss	typ. 3 W
Front connector	20-way
<b>Permissible ambient temperature</b>	
- operating	0°C ... +60°C
- transport and storage	-25°C ... +75°C

## Ordering Data

	Order-No.
<b>AEA 300</b> 2-channel analog output module	700-332-5HB01
Manual AEA 300, german/english	900-331-0AA01

## Dummymodule



Dummymodule

The new 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:

- 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

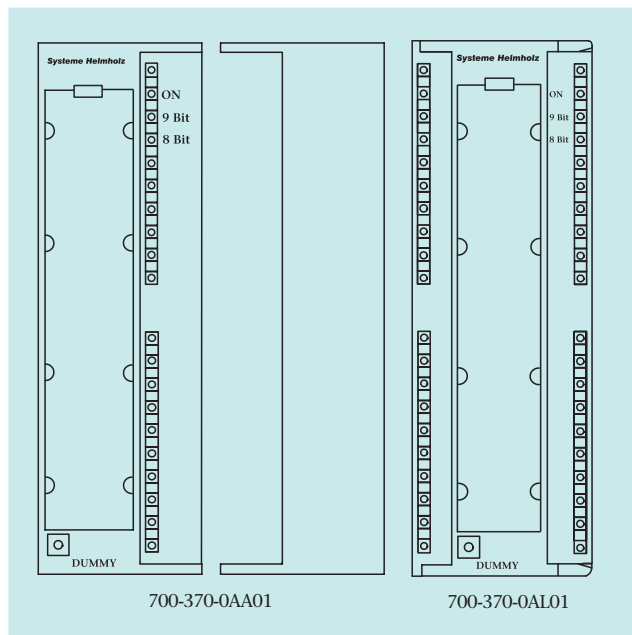
The newer safe method transmits a parity bit in addition to the useful data (9 bits per byte). That way transmission errors can be detected and incorrect connections avoided.

The CPUs known to us are capable of both transmission methods. Due 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.

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



The 9-bit method was introduced shortly after the market launch of the S7 300.

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.

### Technical Data

<b>Current consumption</b>	
- internal	5 mA
Power loss (nominal operation)	0,03 W
Front connector	-
<b>Permissible ambient temperature</b>	
- operating	0°C ... 60°C
- transport and storage	-25°C ... 75°C

## Front Connectors and Ready-wired Front Connectors

Front connectors 20-way and 40-way **EasyConnect®**

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.

The flat design permits optimum closing of the module front cover even with the connector fully wired.

The 20-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.

## Technical Data

<b>Front Connector 20-way connection</b>	screw-type terminals
cable w/o wire end ferrule	flexible conductor 0,25 -1,5 mm <sup>2</sup>
strip length	6 mm
max. tightening torque	0,5 Nm
weight	approx. 60 g
voltage at 60°C	3 A
current	230 V AC
<b>Front Connector 40-way connection</b>	<b>EasyConnect®</b>
cable <b>without wire end ferrules</b>	flexible conductor 0.34-1 mm <sup>2</sup>
strip length	8-10 mm
weight	approx. 70 g
voltage at 60°C	3 A
current	230 V AC
No wire end ferrule needed!	
<b>Permissible ambient temperature</b>	
- operating	0°C ... +60°C
- transport and storage	-25°C ... +80°C
- relative humidity	max. 75 % at +25°C

## Ordering Data

	Order-No.
<b>Front Connector for DEA 300</b>	
20-way with screw contacts	700-392-1AJ10
40-way with screw contacts	700-392-1AM00
40-way with <b>EasyConnect®</b> technology	700-392-1AM10
<b>Ready-wired Front Connectors<sup>1)</sup></b>	
<b>DEA 300</b>	
for screw connection, 20-way, 2m	700-392-1AJ10A
for screw connection, 20-way, 3m	700-392-1AJ10B
for screw connection, 20-way, 5m	700-392-1AJ10C
for <b>EasyConnect®</b> connection, 40-way, 2m	700-392-1AM10A
for <b>EasyConnect®</b> connection, 40-way, 3m	700-392-1AM10B
for <b>EasyConnect®</b> connection, 40-way, 5m	700-392-1AM10C

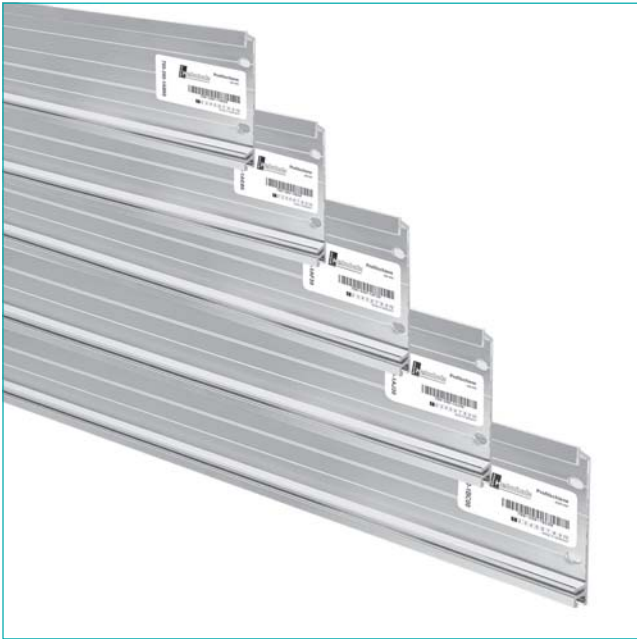
1) strands 0.5 mm<sup>2</sup> blue (RAL 5010). Labeling as on connector.



Ready-wired Front Connectors

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

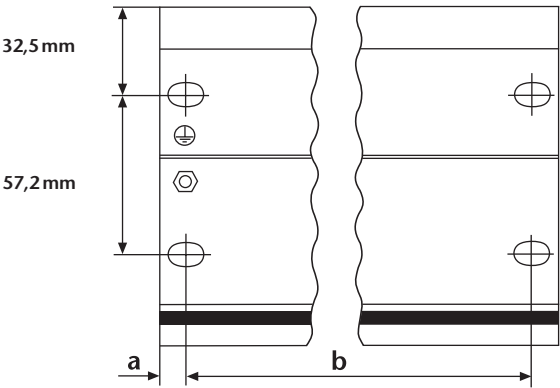
Mounting Rack



Mounting rack

For all DEA and AEA etc., we offer the mechanical module subrack for the S7-300, 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.
<b>Mounting rack</b>	
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



# PROFIBUS



## EasyConnect® PROFIBUS-Connector, 90°



EasyConnect® PROFIBUS connector

The new **EasyConnect®** PROFIBUS connector from the Systeme Helmholtz GmbH rounds off the range of bus connector products excellently. The new **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 metallized housing and integrated terminating resistors.

The Systeme Helmholtz GmbH offers the new **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.

### 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 <b>EasyConnect®</b> without prog. device connector 90° with prog. device connector 90°	700-972-0BA50 700-972-0BB50
Stripping tool for PROFIBUS	700-972-6AA00

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

Technical Data	
Programming device connector Order No. 700-972-0BB50 Order No. 700-972-0BA50	yes no
Dimensions (LxWxH mm)	72 x 40 x 17
Weight	approx. 40 g
Outgoing cable	vertical outgoing cable suitable for fast-connect stripping tool
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate max.	12 Mbit/s
Interfaces PROFIBUS station	SUB-D connector, 9-way
PROFIBUS cable	FC standard cable solid 0,64 mm <sup>2</sup>
Current consumption	4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption max.	12.5 mA
Permissible ambient conditions - operating temperature - transport/storage temperatur - relative humidity max.	0°C ... +60°C -25°C ... +80°C 75% at +25°C
Degree of protection	IP 40

## Bus Connector for PROFIBUS, 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 (A1, B1) and the outgoing bus (A2, B2) 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 without prog. device connector 90°	700-972-0BA12
with prog. device connector 90°	700-972-0BB12
Stripping tool for PROFIBUS	700-972-6AA00

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

## Technical Data

<b>Programming device connector</b> Order No. 700-972-0BB12 Order No. 700-972-0BA12		<b>yes</b> <b>no</b>
Dimensions (LxWxH mm)		64 x 40 x 17
Weight		approx. 40 g
Outgoing cable		vertical outgoing cable suitable for fast-connect stripping tool
Terminating resistor		Resistor combination integrated and connectable with slide switch
Transmission rate	max.	12 Mbit/s
<b>Interfaces</b> PROFIBUS station		SUB-D connector, 9-way
PROFIBUS cable		4 terminals for wires up to 1.0 mm <sup>2</sup>
Current consumption		4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption	max.	12.5 mA
<b>Permissible ambient conditions</b> - operating temperature - transport/storage temperature - relative humidity		0°C ... +60°C -25°C ... +80°C 75% at +25°C
Degree of protection		IP 40

## Bus Connectors for PROFIBUS 90° with diagnostic LEDs



Bus Connectors for PROFIBUS with diagnostic LEDs

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.

### Features

- 3 LEDs status displays
- Indicates bus operation, station transmitting, terminating resistor inserted
- Screw terminals
- Integrated terminating resistors
- No loosable parts
- Small housing



### Technical Data

<b>Programming device connector</b> Order No. 700-972-7BB12 Order No. 700-972-7BA12		<b>yes</b> <b>no</b>
Dimensions (LxWxH mm)		64 x 40 x 17
Weight		approx. 40 g
Outgoing cable		vertical outgoing cable suitable for fast-connect stripping tool
Terminating resistor		Resistor combination integrated and connectable with slide switch
Transmission rate	max.	12 Mbit/s
<b>Interfaces</b> PROFIBUS station		SUB-D connector, 9-way
PROFIBUS cable		4 terminals for wires up to 1.0 mm <sup>2</sup>
Current consumption		4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption	max.	35 mA
<b>Permissible ambient conditions</b> - operating temperature - transport/storage temperature - relative humidity		0°C ... +60°C -25°C ... +80°C 75% at +25°C
Degree of protection		IP 40

### Ordering Data

	Order-No.
<b>Bus connector for PROFIBUS with diagnostic LEDs</b> without prog. device connector 90° with prog. device connector 90°	700-972-7BA12 700-972-7BB12
<b>Stripping tool for PROFIBUS</b>	700-972-6AA00

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

## Bus Connectors for PROFIBUS, 35°



Bus connector 35° for PROFIBUS

## Features

- Metalized housing
- No loosable parts
- Integrated 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 Mbaud.

## Ordering Data

	Order-No.
<b>Bus connector for PROFIBUS</b>	
35° cable outlet, without prog. device connector	700-972-0BA41
35° cable outlet, with prog. device connector	700-972-0BB41

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

## Technical Data

Dimensions 35°, (LxWxH mm)	54 x 40 x 17
Weight	approx. 40 g
Outgoing cable, 35°	angled outgoing cable
Outgoing cable axial	axial outgoing cable, suitable for fast- connect stripping tool
Terminating resistor	Resistor combination integrated and connectable with slide switch
Transmission rate	max. 12 Mbit/s
<b>Interfaces</b>	
PROFIBUS station	SUB-D connector, 9-way
PROFIBUS cable	4 terminals for wires up to 1.0 mm <sup>2</sup>
Current consumption	DC 4.75 ... 5.25 V (must come from connected equip.)
<b>Permissible ambient conditions</b>	
- operating temperature	0°C ... +60°C
- transport/storage temperature	-25°C ... +75°C
- relative humidity	max. 75% at +25°C
Degree of protection	IP 40

## Bus Connectors for PROFIBUS axial



Axial bus connectors for PROFIBUS

### Features

- Metalized housing
- Integrated terminating resistor
- No loosable parts
- 180° cable outlet
- Screw terminals



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 Helmholtz GmbH offers the bus connector with an axial cable outlet and for transmission rates up to 12 Mbaud.

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.

Technical Data		
Dimensions axial, (LxWxH mm)	68 x 39,5 x 17	
Weight	approx. 40 g	
Outgoing cable, 35°	angled outgoing cable	
Outgoing cable axial	axial outgoing cable, suitable for fast- connect stripping tool	
Terminating resistor	Resistor combination integrated and connectable with slide switch	
Transmission rate	max.	12 Mbit/s
<b>Interfaces</b>		
PROFIBUS station	SUB-D connector, 9-way	
PROFIBUS cable	4 terminals for wires up to 1.0 mm²	
Current consumption	4.75 ... 5.25 V DC (must come from connected equip.)	
<b>Permissible ambient conditions</b>		
- operating temperature	0°C ... +60°C	
- transport/storage temperature	-25°C ... +75°C	
- relative humidity	max.	75% at +25°C
Degree of protection	IP 40	

## Bus Connector for PROFIBUS with „Atex“ accreditation



Bus connector for PROFIBUS with Atex accreditation

### Features

- Metalized housing
- No loosable parts
- Integrated 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.

### Ordering Data

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

### Technical Data

<b>Programming device connector</b>		
Order No. 700-973-0BB12		yes
Order No. 700-973-0BA12		no
Dimensions (LxWxH mm)		64 x 40 x 17
Weight		approx. 40 g
Outgoing cable		vertical outgoing cable suitable for fast-connect stripping tool
Terminating resistor		Resistor combination integrated and connectable with slide switch
Transmission rate	max.	12 Mbit/s
<b>Interfaces</b>		
PROFIBUS station		SUB-D connector, 9-way
PROFIBUS cable		4 terminals for wires up to 1,0 mm <sup>2</sup>
Current consumption		4.75 ... 5.25 V DC (must come from connected equip.)
Current consumption	max.	12.5 mA
<b>Permissible ambient conditions</b>		
- operating temperature		0°C ... +60°C
- transport/storage temperature		-25°C ... +80°C
- relative humidity		max. 75% at +25°C
Degree of protection		IP 40



## Bus Connectors for PROFIBUS with spring type terminals



Bus connector for PROFIBUS with spring type 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 spring type terminal is suitable for solid conductors up to a cross section of 0.5 mm<sup>2</sup>. 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 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.

### Features

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



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

### Technical Data

<b>Programming device connector</b>		
Order No. 700-973-0BA22		<b>no</b>
Order No. 700-973-0BB22		<b>yes</b>
Dimensions (LxWxH mm)		65 x 48 x 16
Weight		approx. 40 g
Outgoing cable		vertical outgoing cable suitable for fast-connect stripping tool
Terminating resistor		Resistor combination integrated and connectable with slide switch
Transmission rate	max.	12 Mbit/s
<b>Interfaces</b>		
PROFIBUS station		SUB-D connector, 9-way
PROFIBUS cable		4 terminals for wires up to 0.5 mm <sup>2</sup>
Current consumption		DC 4.75 ... 5.25 V (must come from connected equip.)
Current consumption	max.	12.5 mA
<b>Permissible ambient conditions</b>		
- operating temperature		0°C ... +60°C
- transport/storage temperature		-25°C ... +80°C
- relative humidity		max. 75% at +25°C
Degree of protection		IP 40

## Repeater for MPI and PROFIBUS; Active PROFIBUS Dropcable



Repeater for MPI and PROFIBUS

The RS485 repeater connects two PROFIBUS or MPI bus segments in RS485 technology with max. 32 nodes, including repeaters. With it, transmission rates of 9.6 Kbps to 12 Mbps are possible.

The transmission signals are regenerated and retransmitted by the repeater.

The repeater can therefore be used to implement long PROFIBUS segments.

### Commissioning aids:

- Switch for disconnecting segments
- Display of bus activity
- Disconnection of a segment if terminating resistor has been wrongly connected
- Terminating resistor for every segment
- Error display on bus
- Switch for disconnecting repeater functions

### Ordering Data

	Order-No.
MPI-/PROFIBUS-Repeater	700-972-0AA02

Transmission rate	max. Segment length
9,6 KBit/s	1000 m
19,2 KBit/s	1000 m
45,45 KBit/s	1000 m
93,75 KBit/s	1000 m
187,5 KBit/s	1000 m
500 KBit/s	400 m
1500 KBit/s	200 m
3000 KBit/s	100 m
6000 KBit/s	100 m
12000 KBit/s	100 m

### Technical Data

Dimensions (LxWxH mm)	115 x 110 x 35
Weight	approx. 240 g
<b>Power supply</b>	
Voltage	DC 24 V
Current consumption	max. 120 mA at 24 V
Segment connection	4x 2 terminal block
Interface	PG/OP
<b>PROFIBUS interface</b>	
Transmission rate	max. 12 Mbit/s autodetection
Protocol	PROFIBUS DP to EN 50 170
Connection	connection, SUB-D, 9-way
<b>Permissible ambient temperature</b>	
- operating	0°C ... +60°C
- transport and storage	-25°C ... +75°C
Degree of protection	IP 20



Dropcable PROFIBUS for PG

### Active PROFIBUS Dropcable for PG

The active PROFIBUS dropcable from the Systeme Helmholtz 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 its integrated electronic.



### Ordering Data

	Order-No.
Dropcable PROFIBUS for PG, 3 m	700-901-4BD00

## Terminal Block for MPI and PROFIBUS



Terminal block for MPI/PROFIBUS in a metal housing



The MPI/PROFIBUS terminal block allows connection of up to two devices to an MPI or PROFIBUS network.

Two 9-way SUB-D connectors are located in the housing of the MPI/PROFIBUS terminal block.

The PROFIBUS segments can be disconnected by a switch. This action connects a terminating resistor combination.

5 V and 24 V is available at both connectors for supplying MPI and PROFIBUS devices (e.g. SSW7 or operator terminals).

The MPI/PROFIBUS multiplexer can be mounted directly onto a DIN rail.

Ordering Data	
	Order-No.
Terminal block for MPI/PROFIBUS, in a metal housing	700-751-MPV20

Technical Data	
Dimensions (LxWxH mm)	115 x 110 x 35
Weight	approx. 230 g
<b>Power supply</b>	
Voltage	DC 24 V
Current consumption max.	200 mA at 24 V
<b>PROFIBUS interface</b>	
Transmission max.	12 Mbit/s
Connection	2x female, SUB-D 9-way 4x 2 terminal
<b>Perm. ambient temperature</b>	
- operating	0°C ... +60°C
- transport and storage	-25°C ... +75°C
Degree of protection	IP 20

## Multiplexer for MPI and PROFIBUS



Multiplexer for MPI-/PROFIBUS

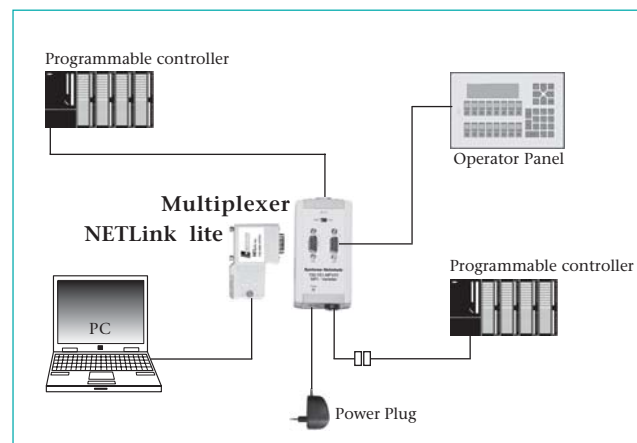
The MPI/PROFIBUS multiplexer permits connection of up to 3 devices to one MPI or PROFIBUS network.

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 a 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



### Ordering Data

	Order-No.
Multiplexer for MPI/PROFIBUS	700-751-MPV01
Power Plug (optional)	700-751-SNT01

### Technical Data

Dimensions (LxWxH mm)	105 x 54 x 30
Weight	approx. 135 g
<b>Power supply</b>	
Voltage	DC 24 V
Current consumption max.	200 mA at 24 V
<b>PROFIBUS interface</b>	
Transmission max.	12 Mbit/s
Connection	3x female, SUB-D, 9-way
<b>Perm. ambient temperature</b>	
- operating	0°C ... +60°C
- transport and storage	-25°C ... +75°C
Degree of protection	IP 20

## NETLink® PRO, Ethernet Gateway for MPI/PROFIBUS



NETLink® PRO, Ethernet Gateway

- Programming & configuring via Ethernet
- Visualization via Ethernet
- Teleservice via Internet

The new NETLink® PRO for programming, configuring and visualization of programmable controllers from Siemens is plugged directly into the CPU of the programmable controller via its 1.2 m connecting cable. The connecting cable is an active cable and therefore does not influence the MPI/PROFIBUS. The second programmer (PG) jack enables connection of a further device to the CPU of the programmable controller.

The new NETLink® PRO can optionally also be powered from an external 24 V DC power source.

At the controller end, the NETLink® PRO permits the full transmission rate of 12 Mbps via MPI and PROFIBUS. The transmission rate of the TCP network of 10 Mbps or 100 Mbps is automatically detected by the device. At the MPI end, the NETLink® PRO enables 12 simultaneous links. Moreover, the new NETLink® PRO features automatic baudrate detection and flexible configuration, such as DHCP and a Web interface.

An Ethernet jack instead of a permanently affixed Ethernet cable permits flexible connection.

The 3 m Ethernet connecting cable (straight) is provided with the NETLink® PRO.

The MPI/PROFIBUS is electrically isolated from the external 24 V DC power source and from the Ethernet interface (functional separation).

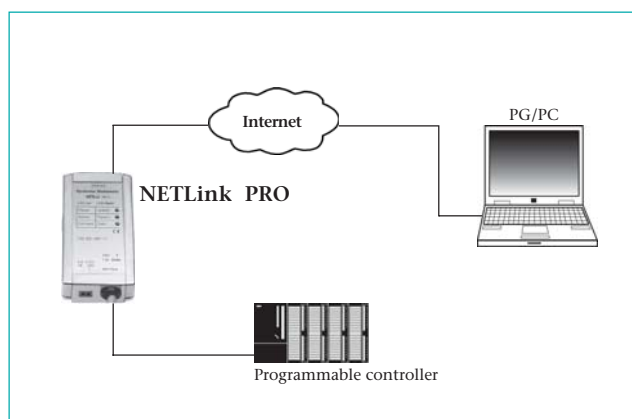
New is the support for RFC 1006 protocol (ISO on TCP).

The firmware is always updateable to the newest volume with the included update-program SHTools.

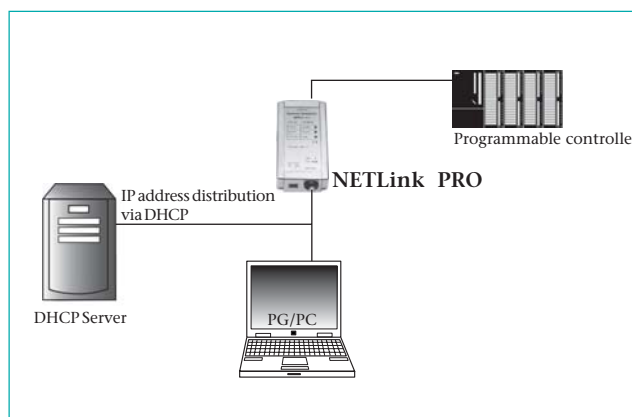
### Features

- MPI/PROFIBUS up to 12 Mbps, autobaud
- 12 links on MPI/PROFIBUS
- 6 links on TCP
- Power supply from the CPU
- External 24 V power source possible
- With programming device connector (PG) as standard
- DHCP, Web configuration
- RJ45 jack for connecting the TCP cable
- Support of all common Simatic<sup>1)</sup> Engineering Tools
- TCP/IP 10/100 Mbps
- ISO on TCP (RFC 1006)

## NETLink PRO



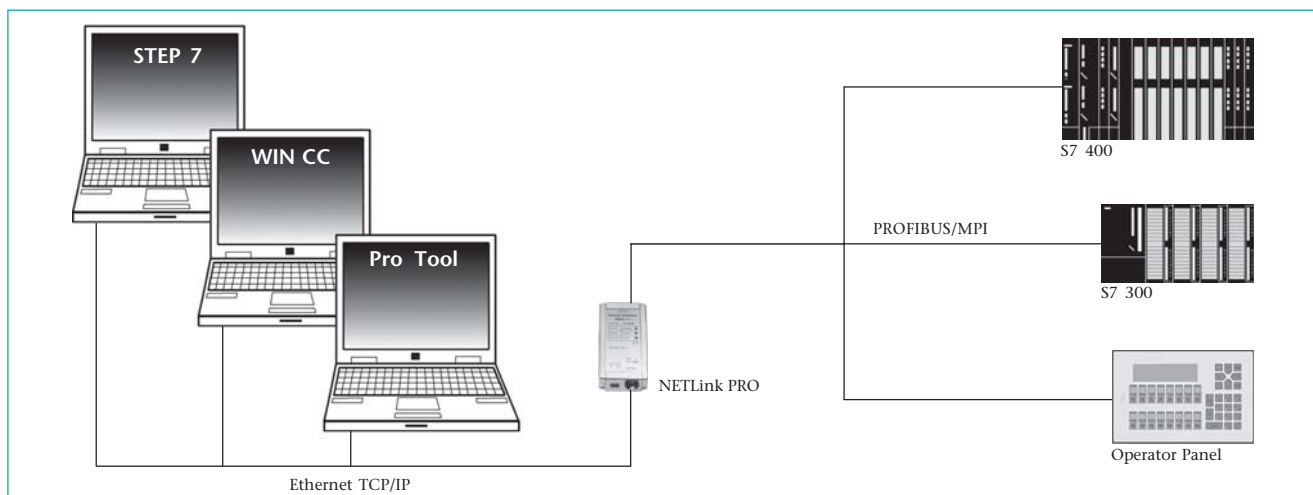
Application for NETLink® PRO in a WAN for example via dial inn router



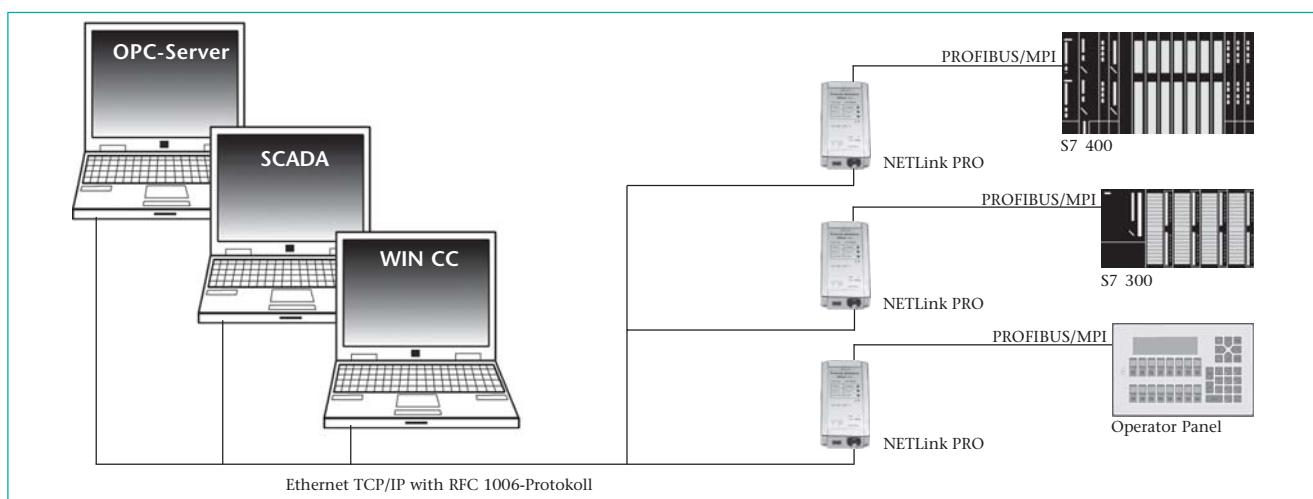
Application for NETLink® PRO in a LAN for example address distribution via DHCP

1) Simatic is a registered trademark of Siemens AG

# NETLink® PRO, Ethernet Gateway for MPI/PROFIBUS



Application example for programming and projecting with Siemens-Software



Application example for RFC 1006 (ISO on TCP)

## Ordering Data

	Order-No.
<b>NETLink® PRO</b> (incl. 3 m Ethernet cable)	<b>700-881-MPI11</b>
Crossover-adapter	<b>700-880-CROSS</b>
DIN rail adapter short	<b>700-751-HSH01</b>
Power Plug (optional)	<b>700-751-SNT01</b>

## Technical Data

Dimensions (LxWxH mm)	105 x 54 x 30
Weight	approx. 250 g
<b>Power Supply</b>	
Voltage	DC +24 V ±25 %
Current consumption max.	150 mA
<b>Communication interface</b>	
Type	10 Base-T/100 Base-TX
Connector	RJ45
Transmission rate	10/100 MBit/s, autodetection
<b>MPI/PROFIBUS</b>	
Type	RS485
Transmission rate max.	12 MBit/s
Connector	SUB-D, 9-way with PG interface and terminating resistor
Protocols	FDL frames
Operating temperature	0°C...60°C
Indicators	3 LEDs, therefrom 2 two coloured
Degree of protection	IP 20



## NETLink® USB, Highspeed USB Gateway for MPI/PROFIBUS



NETLink® USB, Highspeed USB Gateway

- Programming and configuration via USB
- Visualization via USB

The new 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 a further device to the CPU of the programmable controller.

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 new 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.

The firmware is always updateable to the newest volume with the included update-program SHTools.

### Ordering Data

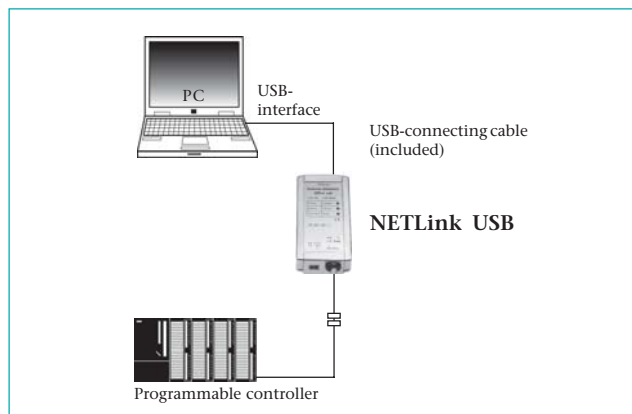
	Order-No.
<b>NETLink® USB</b> (incl. 3m USB cable)	<b>700-890-MPI11</b>
DIN rail adapter short Power Plug (optional)	<b>700-751-HSH01</b> <b>700-751-SNT01</b>

1) Simatic is a registered trademark of Siemens AG

### Features

- MPI/PROFIBUS up to 12 Mbps, autobaud
- USB 2.0 up to 480 Mbps
- 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<sup>1)</sup> Engineering Tools

## NETLink® USB



Application for NETLink® USB

### Technical Data

Dimensions (LxWxH mm)	105 x 54 x 30
Weight	approx. 250 g
<b>Power Supply</b>	
Voltage	DC 24 V $\pm 25\%$ / DC 5 V USB
Current consumption	max. 150 mA at DC 24 V / max. 500 mA at DC 5 V USB
<b>Communication interface</b>	
Type	USB 2.0
Connector	USB-A
Transmission rate	12 MBit / 480 MBit
<b>MPI/PROFIBUS</b>	
Type	RS485
Transmission rate	max. 12 MBit/s
Connector	SUB-D, 9-way with PG interface and terminating resistor
Protocols	FDL frames
Operating temperature	0°C...60°C
Indicators	3 LEDs, therefrom 2 two coloured
Degree of protection	IP 20



## NETLink® lite, Ethernet-Gateway for MPI/PROFIBUS



NETLink® lite, Ethernet-Gateway for MPI/PROFIBUS

- Programming and configuration
- Teleservice

Installed in a SUB-D shell, it contains a complete field bus participant with a 10/100 Mbps Ethernet interface.

It is connected directly to the field bus connector of a automation device and connects it to the next switch or hub via a Ethernet cable.

The NETLink® lite can be used both in an MPI and in a PROFIBUS network.

The 24 volt power supply is drawn via the MPI/PROFIBUS connection.

The driver supplied, links the NETLink® lite into the programming software. All programming functions are available.

The crossover adapter permits direct connection of the NETLink® lite to a laptop or PC without a hub or switch.

The NETLink® PRO is used for permanent installations for example visualizations and operating data record.

# NETLink lite

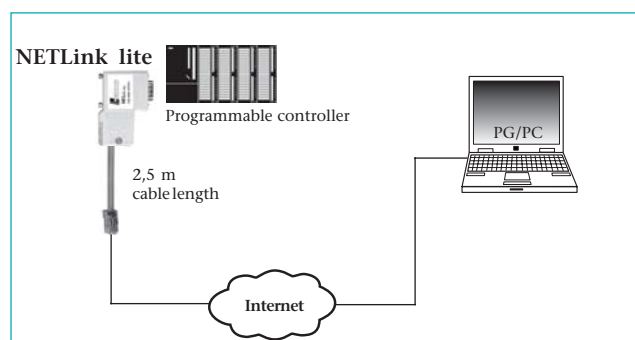


## Ordering Data

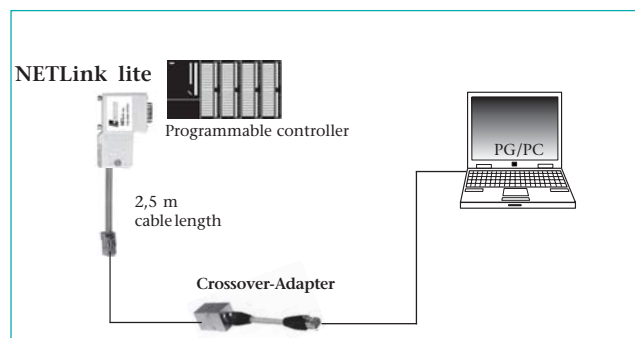
	Order-No.
NETLink® lite with S7-Switch	700-880-MPI01
Crossover-adapter	700-880-CROSS

## Features

- MPI/PROFIBUS up to 12 MBit/s
- 4 links to MPI/PROFIBUS
- 2 links to TCP
- Power supply from PLC
- Support of all common Simatic<sup>1)</sup> Engineering Tools
- TCP/IP 10/100 MBit/s



Application for the NETLink® lite in a WAN for example via dial in router



Application for the NETLink® lite (with crossover adapter) for direct connection to your Network card

## Technical Data

Dimensions (LxWxH mm)	65 x 48 x 16
Weight	approx. 150 g (incl. cable and connector)
<b>Power supply</b> Voltage Current consumption	DC 24 V 70 mA
<b>Communication Interface:</b> <b>Ethernet Connection</b> Type: Standard	10 Base-T 100 Base-TX
Connector	RJ45
Transmission rate	10/100 MBit/s autodetection
<b>MPI</b> Transmission rate max.	12 MBit/s
Data link	FDL frames
Operating temperature	0°C to 55°C
Indicators	2 LEDs, one of them 2-coloured, communication status
Degree of protection	IP 20

## 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, S7-200, S7-300, S7-400, C7- and S5 controllers. Addressing of the variables can be performed completely in STEP7 semantics and can, if required, be imported directly from an Excel file or a STEP7 project.

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 and S7-400, 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

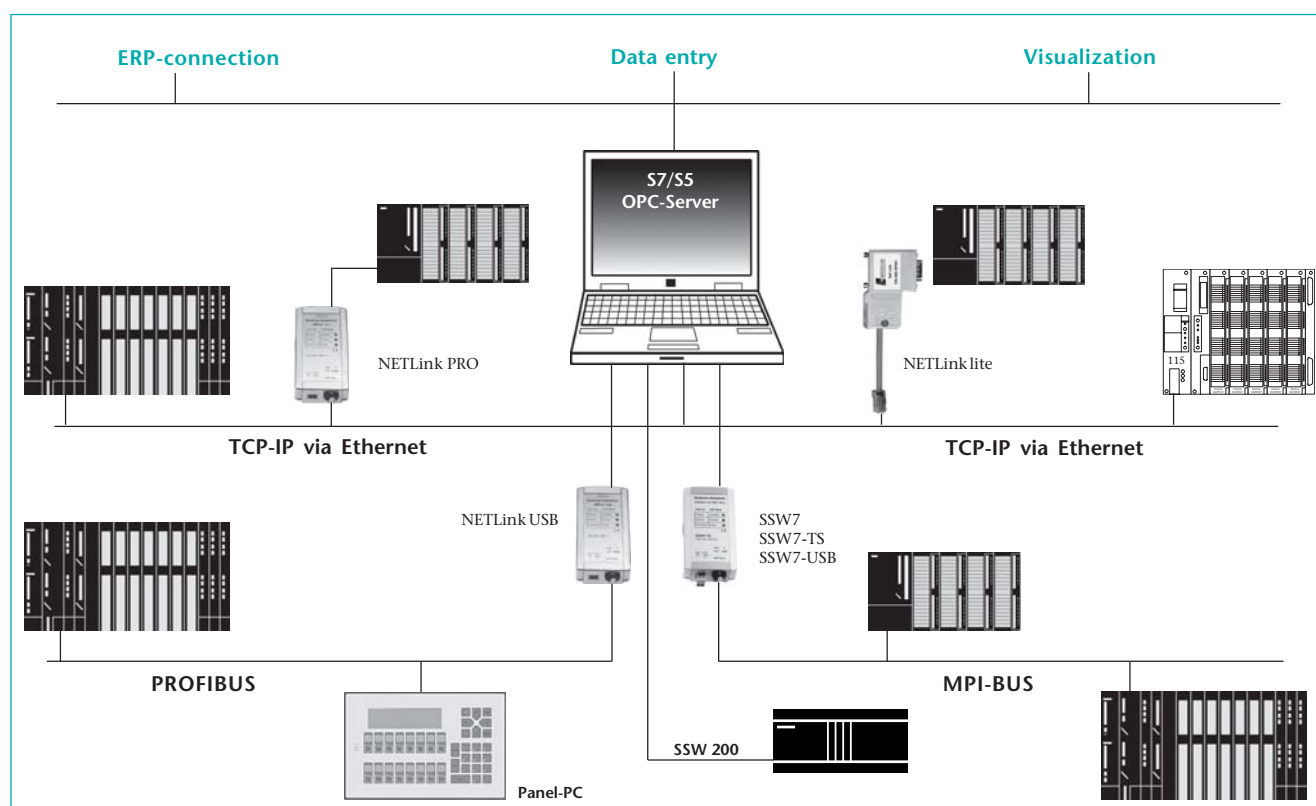
There are many ways of connecting the controllers to the S7/S5 OPC server such as TCP/IP, PROFIBUS, MPI, PPI or AS511.

For communication, Systeme Helmholtz GmbH provides the following devices:

- SSW7, SSW7-TS, SSW7-USB for MPI
- NETLink PRO, NETLink USB, NETLink lite for MPI and PROFIBUS
- SSW3 and SSW4 for AS511

Also a selection of communication modules of other manufactures, such as CP243, CP343, and CP443 from Siemens are supported.

The current OPC server version and further technical information is available for downloading at [www.helmholz.de](http://www.helmholz.de).



### Ordering Data

	Order-No.
S7-OPC-Server (Single licence)	800-880-OPC10
S7-OPC-Server with USB-Dongle	800-880-OPC20

# MPI-Bus



SSW7, MPI-Programming Adapter



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 Kbaud). The MPI interface operates with 187.5 Kbit/s or 19.2 Kbit/s.

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

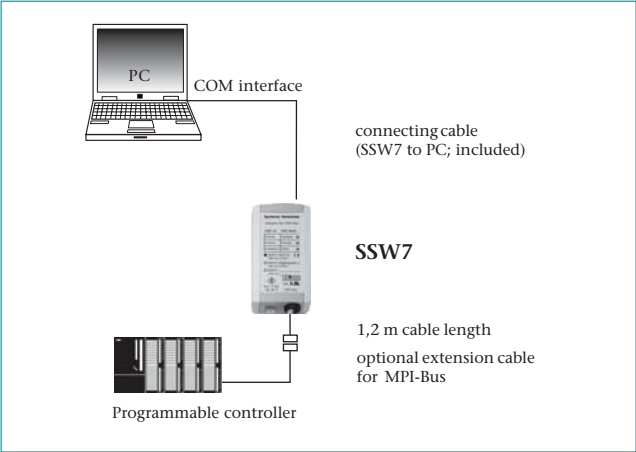
DIN rail clips, extension cables (see page 50) as well as multiplexers (see page 38ff) are available for the SSW7.

The firmware is always updateable to the newest volume with the included update-program SHTools.

Ordering Data	
	Order-No.
MPI-Adapter SSW7 (incl. 3 m programming cable)	700-751-1VK21
DIN rail adapter short	700-751-HSH01
Power Plug (optional)	700-751-SNT01

Features

- Programming and visualization
- Transmission rate up to 115 Kbaud
- MPI up to 187,5 Kbit/s
- Power supply via programming device or via external 24 V supply



Application for SSW7

Technical Data	
<b>SSW7</b>	
Dimensions (LxWxH mm)	105 x 54 x 30
Weight	approx. 180g
Supply voltage	+24 V ±25 % from PLC or extern
Current consumption	approx. 70 mA
<b>MPI interface</b>	
Type	RS485
Transmission rate	19.2 or 187.5 Kbit/s
Cable connector	SUB-D 9-way
<b>Communication interface</b>	
Type	RS232
Transmission type	serial asynchronous
Transmission rate	9.6...115 Kbaud
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

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.

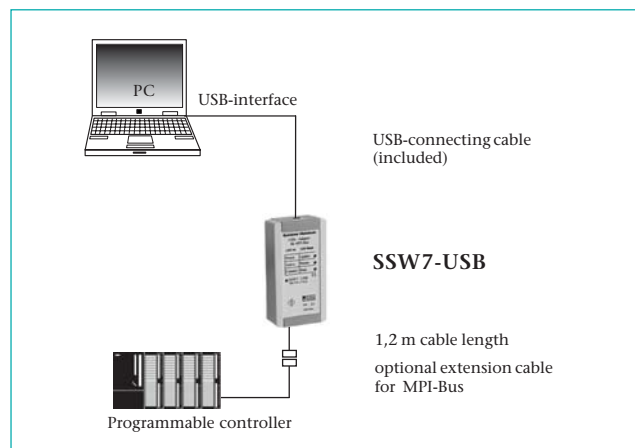
#### Accessory-Note

DIN rail clips, extension cables (see page 50) as well as multiplexers (see page 38ff) are available for the SSW7-USB.

The firmware is always updateable to the newest volume with the included update-program SHTools.

#### Features

- Programming and visualization
- Transmission rate up to 115 Kbaud
- MPI up to 187,5 Kbit/s
- Virtual COM-port for flexible applications



Application for SSW7-USB

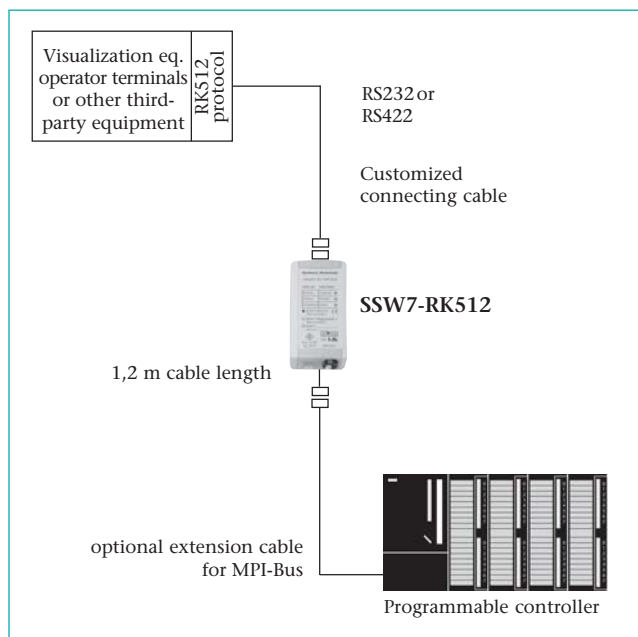
#### Ordering Data

	Order-No.
MPI-Adapter SSW7-USB (incl. 3 m USB cable)	700-755-1VK21
DIN rail adapter short	700-751-HSH01

#### Technical Data

<b>SSW7-USB</b>	
Dimensions (LxWxH mm)	105 x 54 x 30
Weight	approx. 180g
Supply voltage	5 V via USB
Current consumption	approx. 200 mA
<b>MPI interface</b>	
Type	RS485
Transmission rate	19.2 or 187.5 Kbit/s
Cable connector	SUB-D, 9-way
<b>Communication interface</b>	
Type	USB 1.1
Protocols	PC <-> S7
Connection	USB-A female
Degree of protection	IP 20

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



SSW7-RK512

### 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.

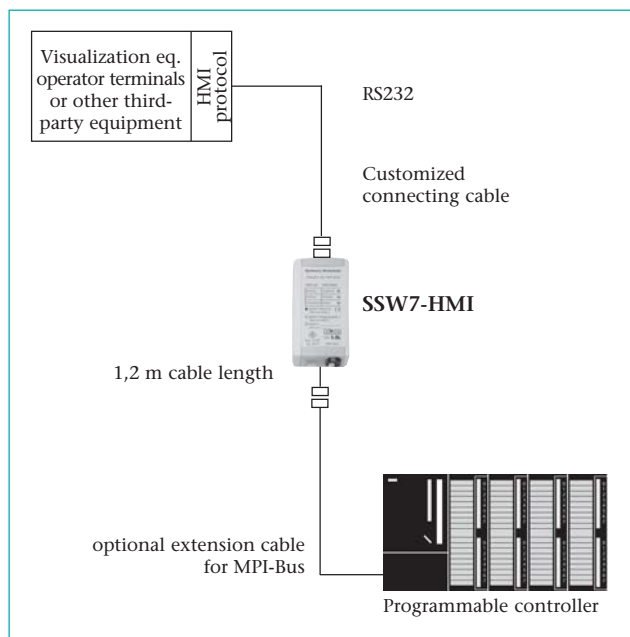
The RS232 interface of the SSW7-RK512 has automatic baudrate detection for adapting itself to the connected device (between 9.6 and 115 Kbaud). The MPI interface operates with 187.5 Kbit/s.

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 50) as well as multiplexers (see page 38ff) are available for the SSW7-RK512 and the SSW7-HMI.



SSW7-HMI

### 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 Kbaud).

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.

### 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

### Ordering Data

	Order-No.
MPI-Adapter SSW7-HMI	700-751-9VK11
DIN rail adapter short Power Plug (optional)	700-751-HSH01 700-751-SNT01

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

## Technical Data

	SSW7-HMI	SSW7-RK512	SSW7-RK512 with RS422
Dimensions (LxWxH mm)	105 x 54 x 30	105 x 54 x 30	105 x 54 x 30
Weight	approx. 180g	approx. 180g	approx. 180g
Supply voltage (from AG or current supply)	+24 V $\pm$ 25 %	+24 V $\pm$ 25 %	+24 V $\pm$ 25 %
Current consumption	approx. 70 mA	approx. 70 mA	approx. 70 mA
<b>MPI interface</b>			
Type	RS485	RS485	RS485
Transmission rate	19.2 or 187.5 Kbit/s	187.5 Kbit/s	187.5 Kbit/s
Cable connector	SUB-D, 9-way with PG interface and terminating resistor	SUB-D, 9-way with PG interface and terminating resistor	SUB-D, 9-way with PG interface and terminating resistor
<b>Communication interface</b>			
Type	RS232	RS232	RS422
Transmission type	serial asynchronous	serial asynchronous	serial asynchronous
Transmission rate	4.8...115 Kbaud	9.6...115 Kbaud	9.6...115 Kbaud
Parity	odd	even	even
Data format	8 bit	8 bit	8 bit
Protocols	HMI	RK512 with 3964/R	RK512 with 3964/R
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.

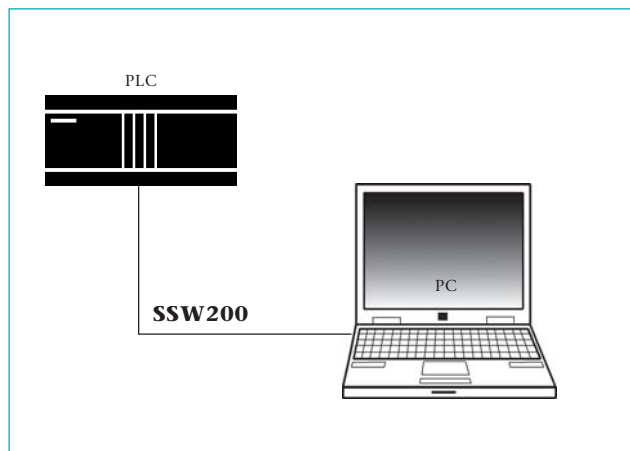
### Ordering Data

	Order-No.
<b>MPI-Accessory</b>	
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)	700-751-HSH10
<b>Extension cable</b>	
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

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



### Ordering Data

	Order-No.
<b>SSW200</b> for connecting PC to a CPU, 3 m	700-751-2VK11

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

### Technical Data

<b>PPI interface</b>	
Type	RS485
Transmission rate (depending on switch position)	1200, 2400, 9600, 19200, 38400 Kbit/s
Connectors	SUB-D 9-way
<b>Communication interface</b>	
Type	RS232
Transmission mode	serial asynchron
Transmission rate (depending on switch position)	1200, 2400, 9600, 19200, 38400 Kbaud
Female connector	SUB-D, 9-way

# Teleservice



## SSW7-TS



SSW7-TS

The SSW7-TS permits teleservice of a system via the telephone line. Commercially available modems can be used for this task.

The SSW7-TS has automatic baudrate detection at the RS232 interface with which it can adapt itself to the PC or the modem (between 9.6 and 115 Kbaud). The MPI interface operates at 187.5 Kbit/s or with 19.2 Kbit/s.

The PC must be installed with the teleservice module for the programming software 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.

We supply the SSW7-TS with an additional programming interface on the connector including switchable terminating resistor. The necessary SHTools software is provided.

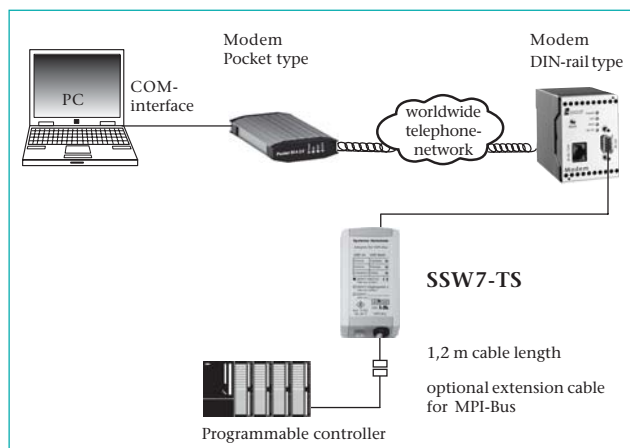
#### Accessory-Note

DIN rail clips, extension cables (see page 50) as well as multiplexers (see page 38ff) are available for the SSW7-TS.

Ordering Data	
	Order-No.
MPI-Adapter SSW7-TS	700-751-8VK21
DIN rail adapter short Power Plug (optional)	700-751-HSH01 700-751-SNT01

## Features

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



Application for SSW7-TS

## Technical Data

<b>SSW7-TS</b>	
Dimensions (LxWxH mm)	105 x 54 x 30
Weight	approx. 180g
Supply voltage	+24 V $\pm$ 25 % from PLC or extern
Current consumption	approx. 70 mA
<b>MPI interface</b>	
Type	RS485
Transmission rate	19.2 or 187.5 Kbit/s
Cable connector	SUB-D, 9-way with PG interface and terminating resistor
<b>Communication interface</b>	
Type	RS232
Transmission type	serial asynchronous
Transmission rate	9.6...115 Kbaud
Parity	odd
Data format	8 bit
Protocols	PC <-> S7 via modem or local
Connection	connector, SUB-D, 9-way
Degree of protection	IP 20

## SSW7-TS with integrated Modem; analog/ISDN



SSW7-TS with integrated modem; analog/ISDN

With the SSW7-TS with modem, teleservice of a system can be performed via the MPI bus.

An analog 56k modem prepared for use in more than 90 countries is integrated into the housing of the SSW7-TS. The ISDN modem supports the European DSS1 protocol.

The 9-way SUB D connector can be connected for parameterization or for in-situ use as a PC adapter.

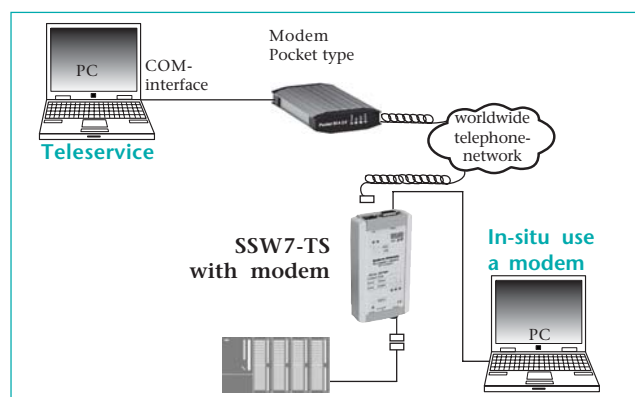
The built-in modem can also be used directly on the serial interface.

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 a new operating system via a modem link. That enables functional expansion of an adapter already installed in the system. The necessary SHTools software is provided.

## Features

- Teleservice
- List of countries with more than 90 destination countries
- Password protection
- Re-Call function
- Online update function
- In-situ use as programming adapter



## Applications

The analog/ISDN modem can be used for teleservicing a VISU/SCADA application even without a TS function. Settings are made using microswitches on the adapter housing.

## Ordering Data

	Order-No.
<b>MPI-Adapter</b>	
<b>SSW7-TS with modem analog<sup>1)</sup></b> (incl. DIN rail adapter; 2x telephone cable RJ11 + TAE, each 3 m; 3 m programming cable)	<b>700-751-8MD21</b>
<b>SSW7-TS with modem ISDN<sup>1)</sup></b> (incl. DIN rail adapter; RJ11 telephone cable, 3 m; 3 m programming cable)	<b>700-751-8IS21</b>
<b>Power Plug (optional)</b>	<b>700-751-SNT01</b>

1) Export restriction for:  
AF, AO, IQ, IR, KP, LB, LY, MZ, RW, SD, SY State: 08-2006

## Technical Data

<b>SSW7-TS with modem</b>	
Dimensions (LxWxH mm)	130 x 68 x 30
Weight	approx. 220g
Supply voltage	+24 V $\pm$ 25 % from PLC or extern
Current consumption	approx. 110 mA
<b>MPI interface</b>	
Type	RS485
Transmission rate	19.2 or 187.5 Kbit/s
Cable connector	SUB-D, 9-way with PG interface and terminating resistor
<b>Communication interface</b>	
Type	RS232, 2-wire dial-up (analog), ISDN So
Transmission type	serial asynchronous
Transmission rate	9.6...115 Kbaud
Parity	-
Data format	8 bit
Protocols	PC <-> S7 via modem or local
Connection	connector, SUB-D, 9-way and RJ11
Degree of protection	IP 20

## SSW7-TS with integrated GSM-Modem



SSW7-TS with integrated GSM-Modem

With the SSW7-TS with GSM modem, teleservice of a system can be performed via the MPI bus.

A Quadband GSM modem is integrated into the housing of the SSW7-TS.

The 9-way SUB-D connector can be connected for parameterization or for in-situ use as a PC adapter.

The SSW7-TS with GSM-modem receives its power from the CPU via the MPI cable. If 24 V are not available at the point of connection or if several MPI adapters are connected to a CPU at the same time, 24 V can be supplied from an external source.

The SSW7-TS with GSM-Modem can also be updated with a new firmware via modem. Like that, a function extension is also possible with an adapter already integrated in an application. The update Software SHTools is included.

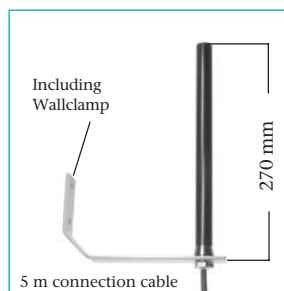
The GSM-modem can be used for teleservice the VISU/SCADA without MPI interface, by setting the "in-situ" option on the SSW7-TS with GSM-modem.

A DIN rail adapter for DIN rail mounting is also included.

### Ordering Data

	Order-No.
<b>MPI-Adapter SSW7-TS with modem GSM<sup>1)</sup></b> (incl. DIN rail adapter; 3 m programming cable)	<b>700-751-8IS21</b>
Local triband antenna	<b>700-751-ANT01</b>
Quadband magnetical-antenna	<b>700-751-ANT02</b>
Patch triband antenna	<b>700-751-ANT03</b>
Portable quadband antenna	<b>700-751-ANT04</b>
Power Plug (optional)	<b>700-751-SNT01</b>
GSM antenna extension cable, 5 m	<b>700-751-ANK01</b>
GSM antenna extension cable, 10 m	<b>700-751-ANK02</b>
GSM antenna extension cable, 15 m	<b>700-751-ANK03</b>

1) Export restriction for:  
AF, AO, IQ, IR, KP, LB, LY, MZ, RW, SD, SY State: 08-2006



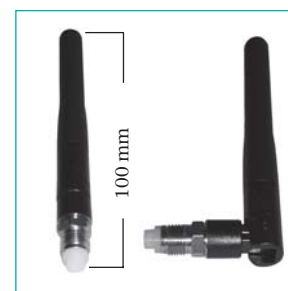
Static triband antenna for wall mounting (in- and outside)



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



Quadband magnetical antenna



Portable quadband antenna with knuckle for mobile use

### Note

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

### Technical Data

<b>SSW7-TS with GSM modem</b>	
Dimensions (LxWxH mm)	130 x 68 x 30
Weight	approx. 220g
Supply voltage	+24 V $\pm$ 25 % from PLC or extern
Current consumption	approx. 180 mA
<b>MPI interface</b>	
Type	RS485
Transmission rate	19.2 or 187.5 Kbit/s
Cable connector	SUB-D, 9-way with PG interface and terminating resistor
<b>GSM-Frequency</b>	Quadband: GSM850, EGSM900, DCS1800, PCS1900
Transmit power	Class 4 (2W) for GSM850/EGSM900 Class 1 (1W) for DCS1800/PCS1900
<b>Communication interface</b>	
Type	RS232
Transmission type	serial asynchronous
Transmission rate	300...115 Kbaud
Protocols	PC $\leftrightarrow$ S7 via modem or local, transparent via modem
Connection	connector, SUB-D, 9-way
Degree of protection	IP 20

## TS 300, Teleservicemodule for the PLC Rack



TS300, Teleservicemodule for the PLC-Rack

With the TS 300, teleservice of a system can be performed via the MPI bus.

The TS 300 has a single-width S7-300 housing for mounting on the sectional rail. An analog 56k modem prepared for use in more than 80 countries is integrated into the housing of the TS 300. TAE and RJ11 cables are included in the scope of supply. As alternatives, versions with ISDN or GSM functionality are also available.

The TS 300 can establish an MPI link with the CPU via the backplane bus. The power supply is also drawn from the backplane bus. Therefore, for installation of a teleservice solution, only the phone line is required. The TS 300 does not need to be configured in the hardware configuration of the PLC and can therefore be retrofitted at any time.

Alternately, the TS 300 can be powered from an external 24 V source. The MPI connection can also be established externally via a 9-way sub D jack.

Ordering Data	
	Order-No.
<b>TS 300 with modem analog<sup>1)</sup></b> (incl. 3 m USB cable; 2x telephone cable, RJ11+TAE, each 3m)	<b>700-753-8MD21</b>
<b>TS 300 with modem ISDN<sup>1)</sup></b> (incl. 3 m USB cable; RJ11 telephone cable, 3m)	<b>700-753-8IS21</b>
<b>TS 300 with modem GSM<sup>1)</sup></b> (incl. 3 m USB cable)	<b>700-753-8GS21</b>
MPI-connecting cable, 0.5 m	<b>700-753-6VK11</b>
Mountingrack Adapter for DIN-Rail (optional)	<b>700-390-6BA00</b>

1) Export restriction for:  
AF, AO, IQ, IR, KP, LB, LY, MZ, RW, SD, SY State: 08-2006

## Features

- TS adapter in the S7 rack for Teleservice
- Communication via the backplane bus or externally
- List of countries with more than 90 destination countries (analog)
- Analog, ISDN, GSM (available soon)
- USB interface for parameterization or in-situ use
- Password
- Re-Call function
- Online update function
- Alert functions and switch outputs usable via back plane bus (soon available; analog/ISDN)
- Mode change via Teleservice (available soon)

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. The update Software SHTools is included.

GSM antenna extension cable see page 54.

Technical Data	
<b>TS 300</b>	
Dimensions (LxWxH mm)	116 x 40 x 124
Weight	approx. 270g
Supply voltage	+24 V $\pm$ 25 % extern or 5 V via backplanebus
Current consumption	typ. approx. 500 mA via backplanebus ca. 130 mA external (analog/ISDN) ca. 170 mA external (GSM)
<b>MPI interface</b>	
Type	RS485
Transmission rate	19.2 or 187.5 Kbit/s
Connection	SUB-D, 9-way or backplanebus
<b>Communication interface</b>	
Type	USB 1.1, 2-wire dial-up (analog), ISDN So
Protocols	PC <-> S7 via modem or local
Connection	USB-A jack and RJ11



## DIN rail modems, Pocket type modem for Teleservice



DIN rail type modem



Pocket type modem

With the SSW7-TS it is possible to service a plant remotely via the phone line. Commercial type modems can be used for that purpose. The Systeme Helmholtz GmbH offers modems in DIN rail and pocket versions. The modems are available both for analog and for ISDN phone connections. Suitable phone cables are included. The DIN rail mounting modem can be operated at a voltage of 10 to 24 V. The pocket type modem is supplied with a 230 V connector PSU.

The 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, as a fax, or as an SMS.

The dedicated parameterizing software is included.

### Features

- List of countries with more than 90 destination countries
- Alarm inputs
- Switching outputs
- Industrial design

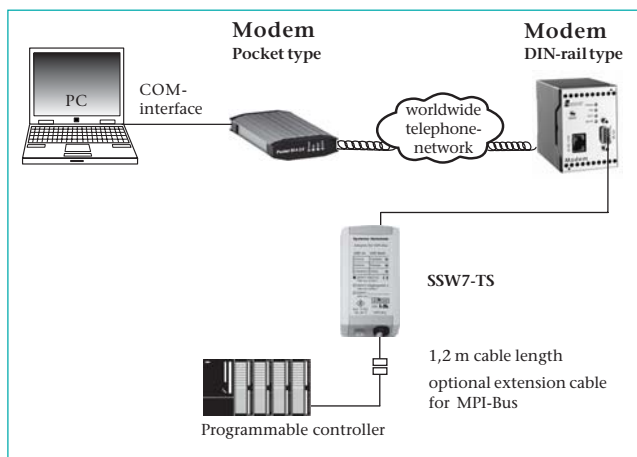
### Ordering Data

	Order-No.
<b>SSW7-TS</b>	<b>700-751-8VK21</b>
<b>Modem, Pocket type, analog<sup>1)</sup></b> (incl. 2 m RS232 cable; 2x telephone cable, RJ11+TAE, each 3 m)	<b>700-751-MDM06</b>
<b>Modem, DIN rail type, analog<sup>1)</sup></b> (incl. 2 m RS232 cable; 2x telephone cable, RJ11+TAE, each 3 m)	<b>700-751-HSM11</b>
<b>Modem, Pocket type, ISDN<sup>1)</sup></b> (incl. 2 m RS232 cable; telephone cable RJ11, 3 m)	<b>700-751-MDM05</b>
<b>Modem, DIN rail type, ISDN<sup>1)</sup></b> (incl. 2 m RS232 cable; telephone cable RJ11, 3 m)	<b>700-751-HSM02</b>
Power Plug (optional)	<b>700-751-SNT01</b>

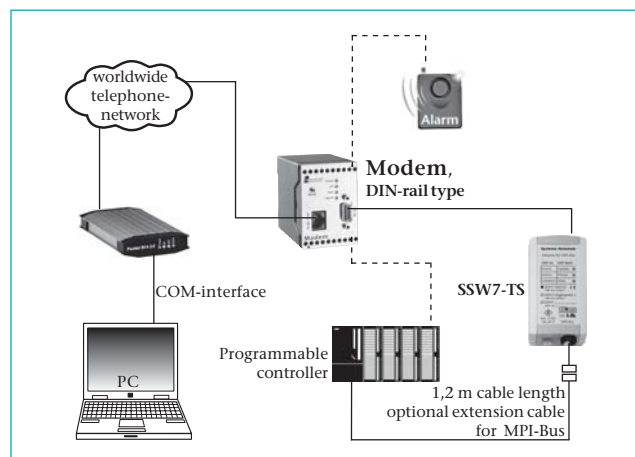
1) Export restriction for:  
AF, AO, IQ, IR, KP, LB, LY, MZ, RW, SD, SY State: 08-2006



## DIN rail modems, Pocket type modem 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

Design	Pocket, analog	DIN rail, analog	Pocket, ISDN	DIN rail, ISDN
Degree of protection for housing	IP 20	housing IP 40/ clamps IP 20	IP 20	housing IP 40/ clamps IP 20
Dimension (LxWxH mm)	71 x 128 x 22	55 x 110 x 75	71 x 128 x 22	55 x 110 x 75
Ambient temp.	0...+55°C	0...+55°C	0...+55°C	0...+55°C
Air humidity	0-95% non condensing	0-95% non condensing	0-95% non condensing	0-95% non condensing
Supply voltage	DC 8-10 V via supplied plug-in power supply	DC 10-24 V	DC 8-10 V via supplied plug-in power supply	DC 10-24 V
Power consumption	max. 2 W	approx. 2.5 W	max. 1 W	approx. 0.5 W
Interface	RS232 9-way	RS232 9-way	RS232 9-way	RS232 9-way
Interface speed	300-115.200 bit/s	300-115.200 bit/s	300-230.400 bit/s	300-230.400 bit/s
Network interface	analog phone network RJ11 female	analog phone network via screw terminals or RJ45 female	ISDN via RJ45	ISDN network via screw terminals or RJ45
Line requirements	2-wire dial-up	2-wire dial-up	ISDN So	ISDN So
Watchdog	no	yes	yes	yes
Reset key	no	yes	no	yes
Status display	4 LEDs (Power, OH, DCD, RX/TX)	4 LEDs (Power, OH, DCD, RX/TX)	8 LEDs (L1, L2, B1, B2, RX/TX, DCD, DTR)	4 LEDs (Power, OH, DCD, RX/TX)
Electrical isolation	to telephone	to telephone	to telephone	to telephone
Alertinput	-	2	-	2
Switching output	-	2 relays	-	2 relays

## 56K-Modem „small“; USB



56K- modem „small“

The slimline DIN rail modem 56K „small“ provides a low-cost alternative for data transmission. Its slim design qualifies 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.



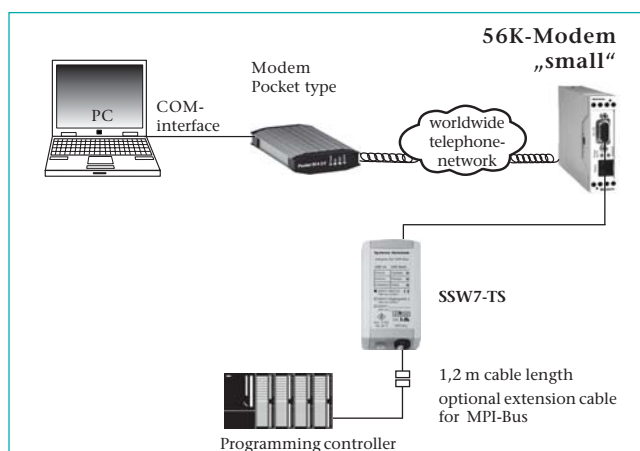
56K- modem USB „small“

The DIN rail modem 56K USB „small“ is a particularly slender analog modem for industrial use for installation on DIN sectional rails.

In the switching cabinets of plants, machines and in building technologies, the modems are easy to fit thanks to their slim width of only 23 mm. Via the USB interface, the devices can be connected to all common controllers that feature a USB port.

The DIN rail modem 56k USB „small“ does not contain any alarm inputs and switching outputs like the DIN rail modem 56K.

24 V DC power supply.



Application for 56K-modem „small“

### Ordering Data

	Bestell-Nr.
<b>56K-Modem „small“<sup>1)</sup></b> (incl. 2 m RS232 cable; 2x telephone cable, RJ11+TAE, each 3 m)	<b>700-751-HSM21</b>
<b>56K-Modem USB „small“<sup>1)</sup></b> (incl. 1 m USB cable; 2x telephone cable, RJ11+TAE, each 3 m)	<b>700-751-HSM31</b>

1) Export restriction for:  
AF, AO, IQ, IR, KP, LB, LY, MZ, RW, SD, SY State: 08-2006

### Technical Data

	56K-Modem „small“	56K-Modem USB „small“
Dimension (L x W x H mm)	23 x 110 x 75	23 x 110 x 75
Degree of protection for housing	housing IP 40/ clamps IP 20	housing IP 40/ clamps IP 20
Ambient temp.	0...+55°C	0...+55°C
Air humidity	0-95% non condensing	0-95% non condensing
Supply voltage	DC 12-24 V	DC 12-24 V
Power consumption	approx. 1,6 W	approx. 1,6 W
Interface	RS232 9-polig	USB 2.0 jack
Interfacespeed	300-115.200 Bit/s	300-115.200 Bit/s
Network interface	analog phone network RJ12 female	analog phone network RJ12 female
Linerequirements	2-wire dial-up	2-wire dial-up
Software update	yes	yes
Watchdog	no	no
Reset-key	no	no
Status display	2LEDs (Power, Rx/Tx & OH/OCD)	2LEDs (Power, Rx/Tx & OH/OCD)
Alarm input	-	-
Switching output	-	-

## GSM-Modem



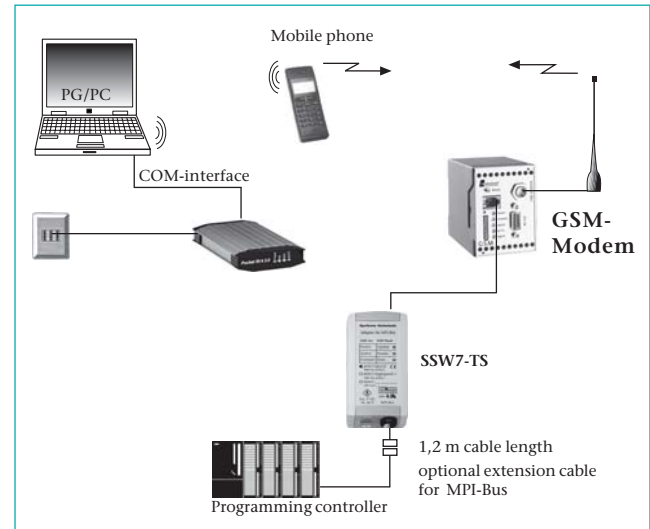
GSM modem

The Systeme Helmholtz GSM Modem 4.1 transmits data in the cellphone network (900MHz and 1800MHz). It is parameterized through the RS232 interface. The modem can be powered with a voltage of 10 to 60 V DC. A flash update of the firmware is possible by setting up a GSM data link. 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. 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 54.

**Note**

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

**Application for GSM modem**

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

Ordering Data	
	Bestell-Nr.
<b>GSM-Modem<sup>1)</sup></b> (incl. 2 m RS232 cable)	<b>700-751-GSM02</b>
Local triband antenna	700-751-ANT01
Quadband magnetic antenna	700-751-ANT02
Patch triband antenna	700-751-ANT03
Portable quadband antenna	700-751-ANT04
GSM antenna extension cable, 5 m	700-751-ANK01
GSM antenna extension cable, 10 m	700-751-ANK02
GSM antenna extension cable, 15 m	700-751-ANK03

1) Export restriction for:  
AF, AO, IQ, IR, KP, LB, LY, MZ, RW, SD, SY State: 08-2006

**Technical Data**

GSM-Modem	
Dimensions (L x W x H mm)	55 x 110 x 75
Degree of protection for housing	housing IP 40/ clamps IP 20
Ambient temp.	0...+55°C
Air humidity	0-95% non condensing
Supply voltage	DC 10-24 V
power consumption	max 2,1 W
Interface	RS232 9-way
Interface Speed	300-115.200 Bit/s
Network interface	FME-antenna socket
Line requirements	Dualband GSM- Networks: Class 4 (2W@900MHz) Class 1 (1W@1.800MHz)
Software update	yes
Watchdog	yes
Reset-key	ja
Status display	5LEDs (Power, Connect, Status, Signal, Rx/Tx)
Alarminput	2
Switching output	2 relays



# CAN-Bus

## CAN 300, Communication Module



CAN 300, communication module

The CAN 300 module from the Systeme Helmholz GmbH for use in a S7-300<sup>1)</sup> 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 Kbit/s to 1 Mbit/s.

The CAN 300 module can also be run as Layer 2, CANopen Master, CANopen Slave and with Lenze System bus.

The CAN 300 module contains the power management 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.

**CAN**  
connected

**CAN**open

Member of: **CiA**

**Note**

Informations about software and handling blocks are available on page 64 and 65.

**Technical Data**

Dimensions (LxWxH mm)	116 x 40 x 125
Weight	approx. 280 g
<b>Power supply</b> Voltage	+5 V DC via backplane bus
Current consumption	typ. 160 mA max. 190 mA
<b>CAN interfaces</b> Type	ISO/DIN 11898, CAN High Speed physical Layer
Transmission rate	10 Kbit/s to 1 Mbit/s
Protocol	CAN 2.0A (11 bit) CAN 2.0B (29 bit) CANopen Master CANopen Slave LENZE Systembus
Connection	connector, SUB-D, 9-way
<b>Configuration interfaces</b> Type	RS232, serial asynchronous
Transmission rate	9.6 KBit/s
Format	8/N/1
Connection	connector, SUB-D, 9-way
<b>Permissible ambient temperature</b> - operating - transport and storage	0°C ... +60°C -25°C ... +75°C

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

**Ordering Data**

	Order-No.
<b>CAN 300</b> , communication module	700-600-CAN01
<b>Programming cable</b> PC to CAN 300 communication module	700-610-0VK11
<b>Manual CAN 300</b> , german/english	900-600-CAN01
<b>CAN Training Course</b> (see page 68)	400-600-CAN01

## CAN 300, Communication Module with DNV certificate



CAN 300, communication module (DNV)



The CAN 300 module from the Systeme Helmholtz GmbH for use in a S7-300<sup>1)</sup> 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 Kbit/s to 1 Mbit/s.

The CAN 300 module can also be run as Layer 2, CANopen Master, CANopen Slave and with Lenze System bus.

The CAN 300 module contains the power management 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 64 and 65.

**The CAN 300 module is DNV (Det Norske Veritas) „peripheral equipment“ approved for increased application conditions (-25°C...+70°C).**

### Technical Data

Dimensions (LxWxH mm)	116 x 40 x 125
Weight	approx. 280 g
<b>Power supply</b> Voltage	+5 V DC via backplane bus
Current consumption	typ. 160 mA max. 190 mA
<b>CAN interfaces</b> Type	ISO/DIN 11898, CAN High Speed physical Layer
Transmission rate	10 Kbit/s to 1 Mbit/s
Protocol	CAN 2.0A (11 bit) CAN 2.0B (29 bit) CANopen Master CANopen Slave LENZE Systembus
Connection	connector, SUB-D, 9-way
<b>Configuration interfaces</b> Type	RS232, serial asynchronous
Transmission rate	9.6 KBit/s
Format	8/N/1
Connection	connector, SUB-D, 9-way
<b>Permissible ambient temperature</b> - operating - transport and storage	-25°C ... +70°C -25°C ... +75°C

### Ordering Data

	Order-No.
<b>CAN 300</b> , communication module (DNV)	700-600-CAN81
<b>Programming cable</b> PC to CAN 300 communication module	700-610-0VK11
<b>Manual CAN 300</b> , german/english	900-600-CAN01
<b>CAN Training Course</b> (see page 68)	400-600-CAN01

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

## CAN 400, Communication Module



CAN 400, communication module

**CAN**  
connected

**CAN**open

 Member of: **CiA**

The CAN 400 module from the Systeme Helmholtz GmbH for use in a S7-400<sup>1)</sup> 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 Kbit/s to 1 Mbit/s.

The CAN 400 module can also be run as Layer 2, CANopen Master, CANopen Slave and with Lenze System bus.

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 64 and 65.

#### Technical Data

Dimensions (LxWxH mm)	290 x 210 x 25	290 x 210 x 25
Weight	approx. 900 g	approx. 900 g
<b>Power supply</b>		
Voltage	DC +5 V via backplane bus	DC +5 V via backplane bus
Current consumption	typ. 160 mA max. 190 mA	160 mA 190 mA
<b>CAN interfaces</b>		
Number	1	2
Type	ISO/DIN 11898, CAN High Speed physical Layer	ISO/DIN 11898, CAN High Speed physical Layer
Transmission rate	10 Kbit/s to 1 Mbit/s	10 Kbit/s to 1 Mbit/s
Protocol	CAN 2.0A (11 bit) CAN 2.0B (29 bit) CANopen Master CANopen Slave LENZE Systembus	CAN 2.0A (11 bit) CAN 2.0B (29 bit) CANopen Master CANopen Slave LENZE Systembus
Connection	SUB-D connector, 9-way	2 x SUB-D connector, 9-way
Status signal	6 LEDs	10 LEDs
<b>Configuration interfaces</b>		
Type	USB 1.1	USB 1.1
Connection	USB A-female	USB A-female
<b>Permissible ambient temperature</b>		
- operating	0°C ... +60°C	0°C ... +60°C
- transport and storage	-25°C ... +75°C	-25°C ... +75°C

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

#### Ordering Data

	Order-No.
<b>CAN 400-1</b> , Communication module with 1 CAN interface	<b>700-640-CAN11</b>
<b>CAN 400-2</b> , Communication module with 2 CAN interfaces	<b>700-640-CAN21</b>
<b>Manual CAN 400</b> , german/english	<b>900-640-CAN21</b>
<b>CAN Training Course</b> (see page 68)	<b>400-600-CAN01</b>

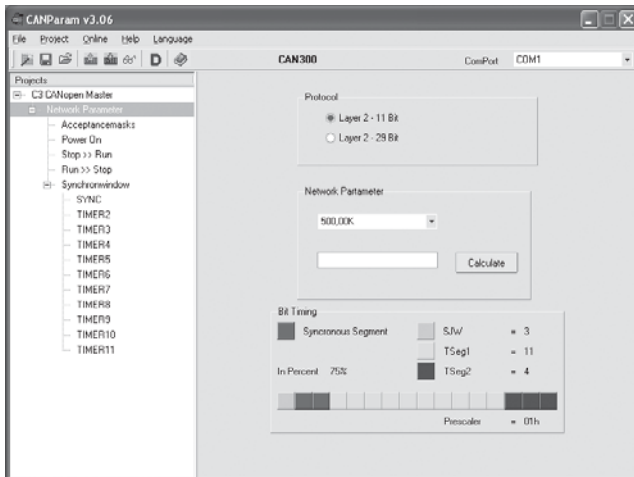


## CAN Software

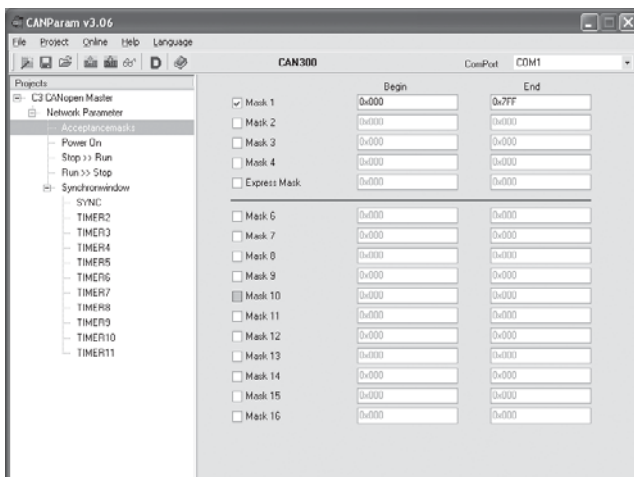
### Parameterization Tool CANParam

The CAN modules are parameterized on the PC using the CANParam parameterization tool (contained in the 800-600-1AA11 and 800-600-1LZ11 software packages). 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).

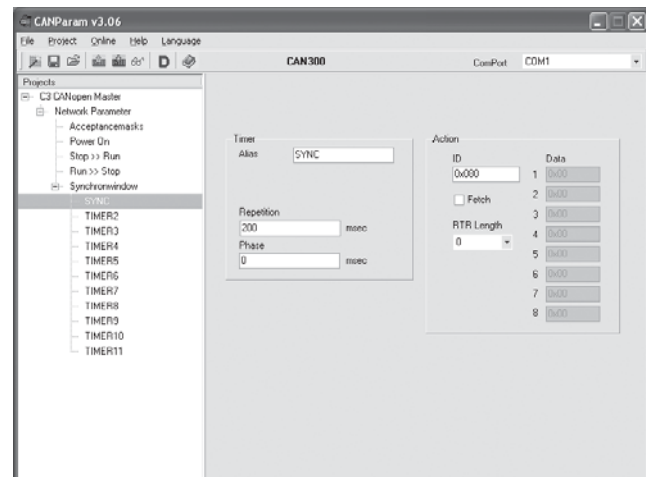


The CAN modules contain acceptance masks. These masks can be used to enable or disable various telegram IDs for reception. Express masks filter high-priority CAN telegrams so that they can be forwarded directly to the PLC.

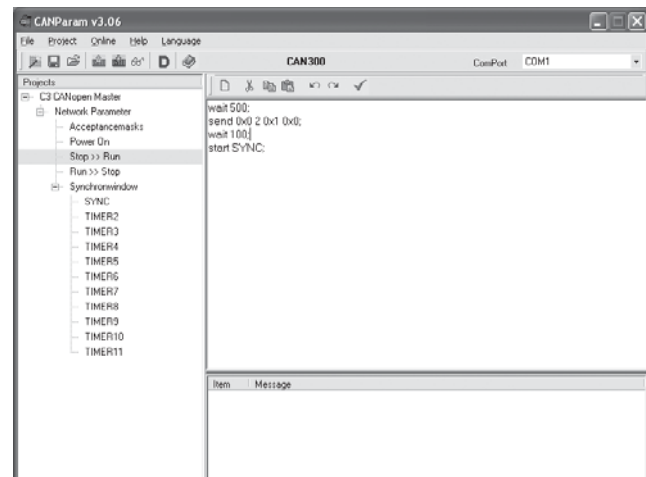


For time-dependent events, such as the SYNC telegram in the case of CANopen, up to 11 timers (CAN 300) or 16 timers (CAN 400) are available in the CAN modules up to a resolution of 1ms. Each timer can transmit any CAN telegram. The timers can be started, stopped, and changed from the PLC.

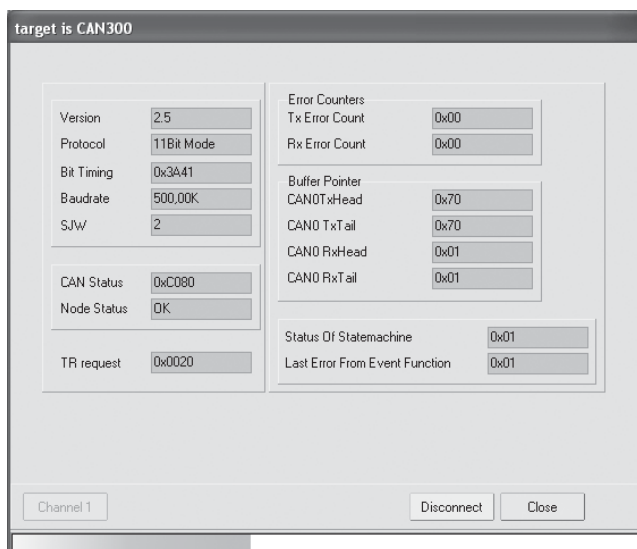
The timer 0 can also be used for synchronized transmission of CAN telegrams. It defines the time window in which *all* data will be transmitted synchronously.



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) or a FM-module (CAN 400) and addressed in the STEP7<sup>1)</sup> program via handling blocks.

For the CAN modules, handling blocks are available for layer 2 communication, for CANopen Master (DS301 V4) or for the LENZE system bus. 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:

Block	Function
FC 60 CANSEND	Transmit CAN telegram
FC 61 CANRCV	Read CAN telegram from the module
FC 63 CANSYNCSSEND	Transmit CAN telegram to a timer

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

### Table software packages:

Content	800-600-1AA11	800-600-1LZ11
CANParam V2.x	X	X
Layer 2 handling blocks	X	X
CANopen Master data handling	X	-
LENZE system bus data handling	-	X
CANopen Slave data handling	on request	-
Manuals as PDF	X	X

One copy of each software package must be purchased.

1) STEP® is a registered trademark of Siemens AG

### Function scope of the CANopen Master data handling function:

Block	Function
FC 40	Initialization (restart)
FC 41	Read SDO
FC 41	Transmit SDO
FC 42	SDO block download
FC 42	SDO block upload
FC 43	Spontaneous receive (NMT,PDO)
FC 44	Transmit PDO
FC 45	Request PDO
FC 47	Nodeguarding/Heartbeat
FC 48	Network management
FC 49	Cycle
DB-PDO	Received PDO data
CAN-DB	Management DB

### Function scope of the LENZE system bus data handling function:

Block	Function
FC 50 LSCANINIT	Initialization (restart)
FC 51 LSCANPARA	Transmit and read parameter data
FC 52 LSCANPDO	Transmit process data
FC 54 LSCANLAY2	Transmit Layer 2 telegram
FC 58 LCANNMT	Network management functions
FC 59 LCANCYCL	Cyclic communication
DB-PDO	Received PDO data
CAN-DB	Management DB

### 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
LENZE-handling blocks for CAN CD with parameterization software „CANParam“, handling blocks „Layer 2“ and „LENZE-Systembus“	800-600-1LZ11
CANopen Slave handling blocks	on request
CAN Trainig Course (see page 68)	400-600-CAN01

## DP/CAN coupler



DP/CANcoupler

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 12MBit/s are supported, on the CAN bus, up to 1MBit/s.

The PROFIBUS address is set via a DIP switch.

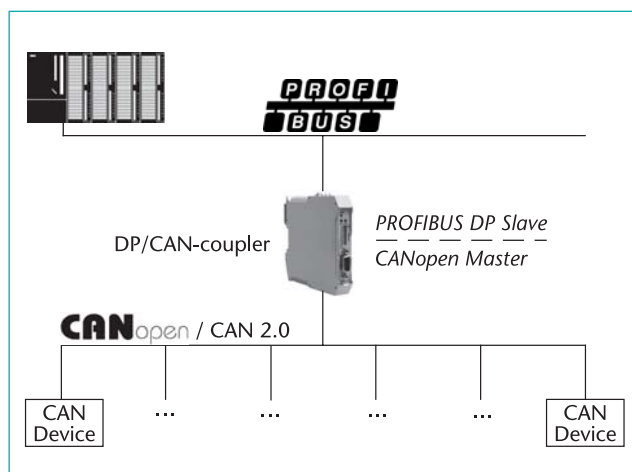
Parameterization of the CANopen nodes via SDO telegrams and management of emergency messages is also possible.

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.

### Features

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



### Ordering Data

	Order No.
DP/CAN-coupler	700-650-CAN01

## Bus Connector for CAN Bus



Bus connector for CAN bus with (l.) and without (r.) connection jack

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 segment. 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.



Bus connector for CAN bus, axial

**CAN**  
connected

**ciA**

Member of:

## Ordering Data

	Order No.
<b>Bus connector for CAN bus</b>	
without additional connection jack	700-690-0BA11
with additional PG connection jack	700-690-0BB11
<b>Axial</b>	700-690-0CA12

## Technical Data

Order-No. 700-690-0BB11	<b>Connection jack</b>
Order-No. 700-690-0BA11	<b>yes</b>
Order-No. 700-690-0CA12	<b>no</b>
Dimensions (LxWxH mm)	65 x 48 x 16
Weight	approx. 40 g
Outgoing cable	vertical outgoing cable
Terminating resistor	Resistance 120 Ω; integrated and connectable with slide switch
Transmission rate	max. 1 Mbit/s
<b>Interfaces</b>	
CAN bus station	SUB-D connector, 9-way
CAN bus cable	6 terminals for wires up to 1.0 mm <sup>2</sup>
<b>Permissible ambient conditions</b>	
- operating temperature	0°C ... +60°C
- transport/storage temperature	-25°C ... +75°C
- relative humidity	max. 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 Step7
- DP/CAN coupler

The trainings take place in our head quarter in Weisendorf. 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](http://www.helmholz.com)).

Make an appointment with one of our specialists for your own in-depth consultation.



### Ordering Data

	Order No.
<b>Training Course</b> CAN/CANopen/CAN products, 1 day	<b>400-600-CAN01</b>

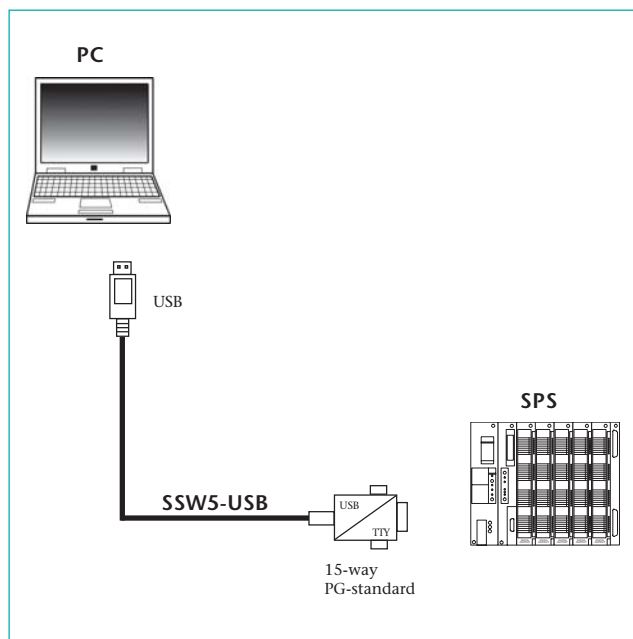
# Components for the S5



## SSW7/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

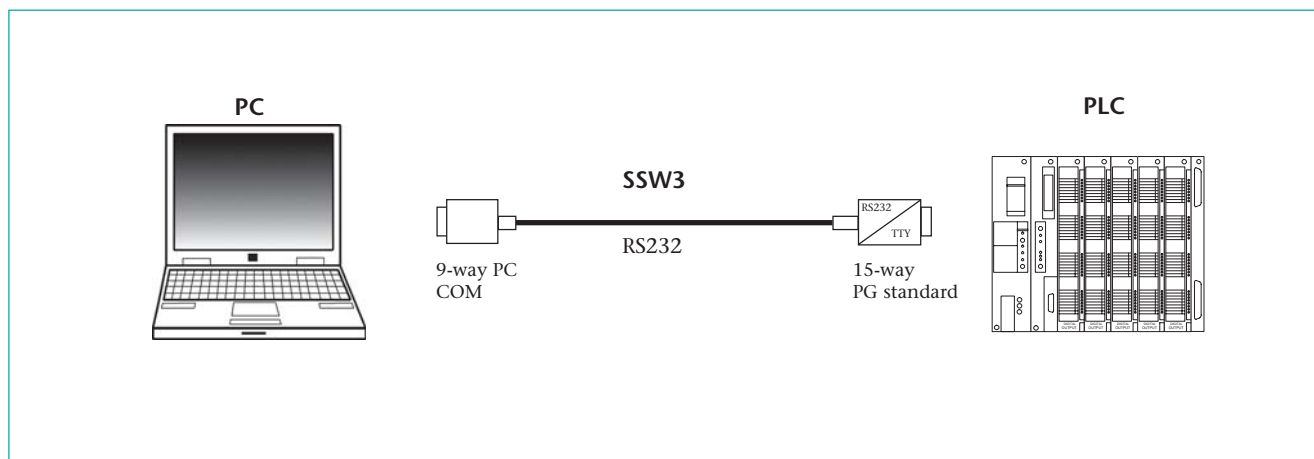
SSW5-USB	Order-No.
SSW5-USB, programming cable, length 3 m	700-750-0US13
SSW5-USB, programming cable, length 5 m	700-750-1US13

### Technical Data

Conversion	USB to TTY
Transmission	USB
Interface	USB
TTY interface	SUB-D male connector, 15-way
Max. transmission rate	38400 bit/s
Max. cable length	5 meters
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

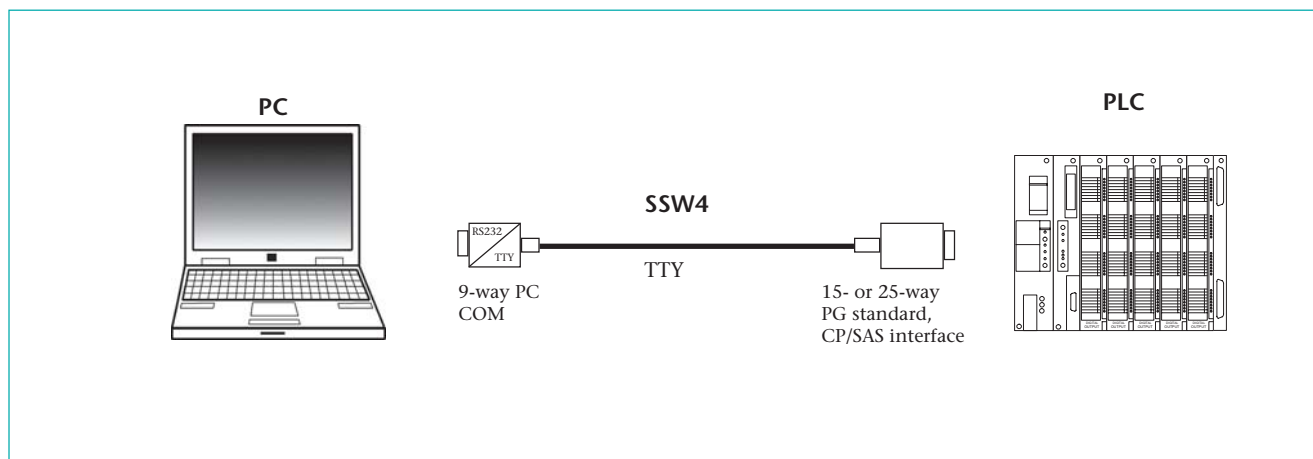
### Ordering Data

	Order-No.
<b>Interface converter cable</b>	
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 bit/s
Max. cable length	15 meters
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

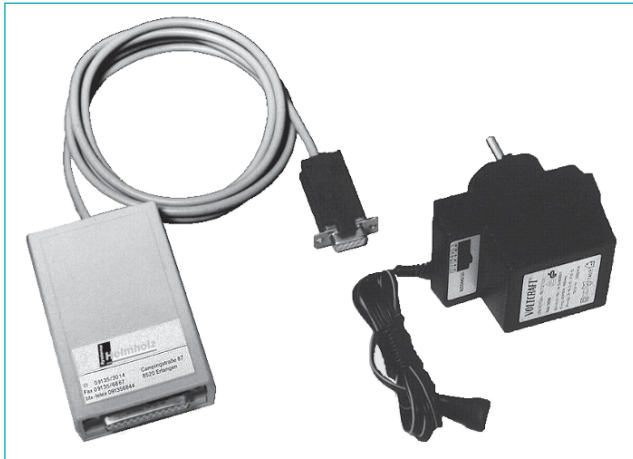
### Ordering Data

	Order-No.
<b>Interface converter cable</b>	
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
<b>Special lengths on request (up to 200m)</b>	
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 bit/s
Max. cable length	200 meters
Source of supply voltage	PC

## SSW1 RS232-TTY Converter



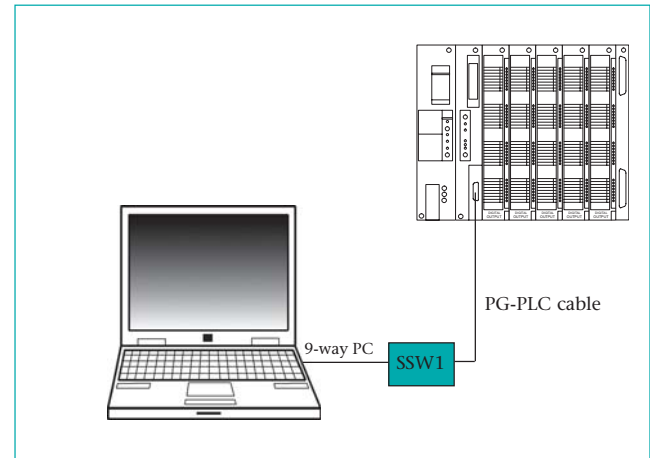
SSW1 interface converters

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.
<b>Interface converter</b> SSW1 including connector power pack	700-750-0AA11
<b>Connecting cable</b> SSW1 - PG interface 20 m SSW1 - SAS 523/525 TTY 20 m	700-750-0VK11 700-750-0VK21
<b>Connector power pack as single item</b>	700-750-1AA11

## Technical Data

RS232 interface	9-way PC standard
TTY interface	25-way PG 675/685 standard
Max. transmission rate	38400 bit/s
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 Helmholtz GmbH, suitable for the S5, are designed for use in CPU main memory and CP modules.

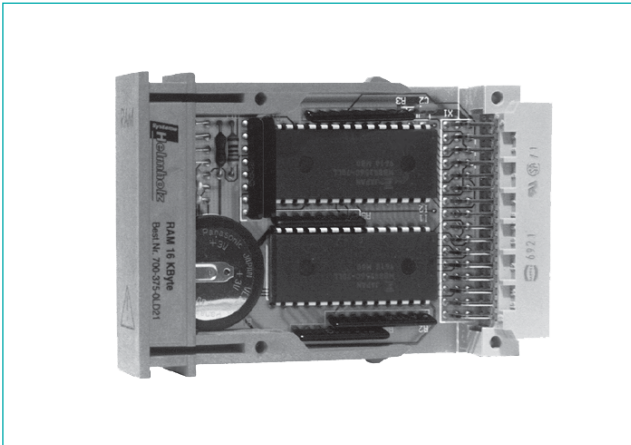
We have been able to achieve a very advantageous price performance ratio with the use of modern, high-quality manufacturing methods.

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

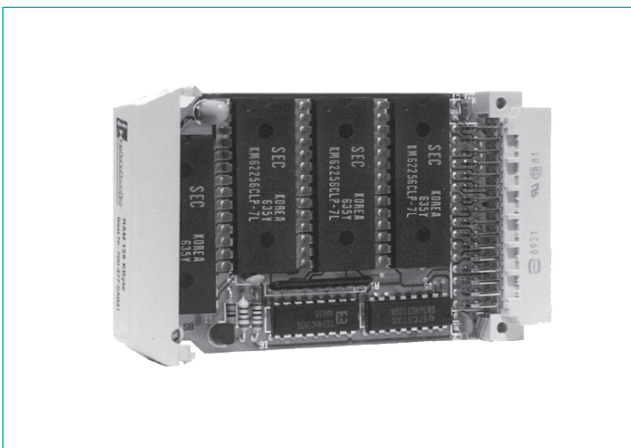
Ordering Data	
	Order-No.
<b>Flash EPROM cards</b> short 5 V 128 KByte 256 KByte 512 KByte 1 MByte	<b>700-374-1KG11</b> <b>700-374-1KH21</b> <b>700-374-1KJ11</b> <b>700-374-1KK21</b>
<b>Flash EPROM cards</b> long 5 V 128 KByte 256 KByte 1 MByte	<b>700-374-2KG21</b> <b>700-374-2KH21</b> <b>700-374-2KK21</b>
<b>RAM cards</b> long 256 KByte	<b>700-374-2AH21</b>

Technical Data	
<b>Flash EPROM cards</b> short 5 V Memory capacity	128 KByte 256 KByte 512 KByte 1 MByte
Applications	CPU 945
<b>Flash EPROM cards</b> long 5 V Memory capacity	128 KByte 256 KByte 1 MByte
Applications	CPU 928 B
<b>RAM Cards</b> long Memory capacity	256 KByte
Applications	CP 581

## RAM Submodule



RAM submodule 375



RAM submodule 377 long type

RAM submodules from the Systeme Helmholtz 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.

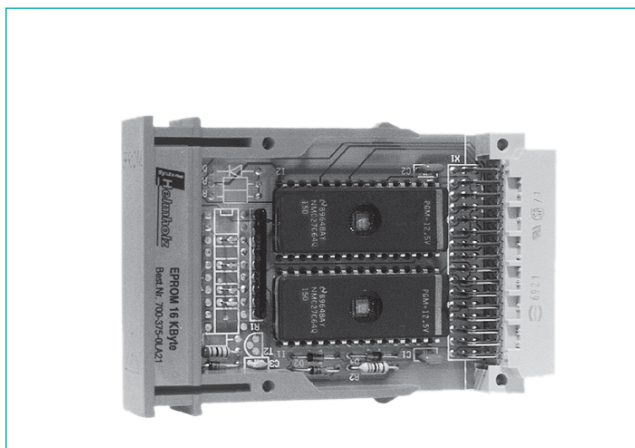
## Ordering Data

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

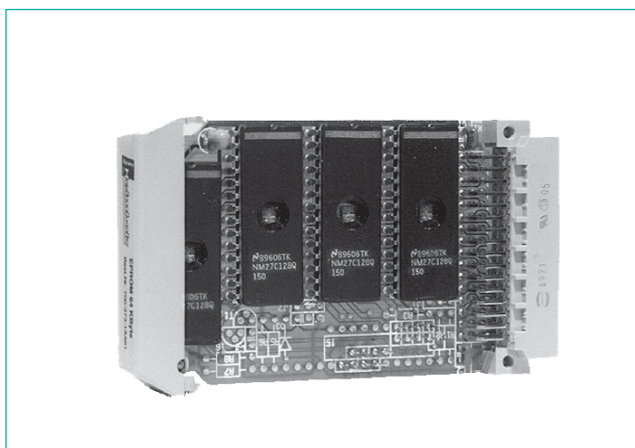
## Technical Data

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

## EPROM, EEPROM



EPROM submodule 375



EPROM submodule 373

EPROM and EEPROM submodules from the Systeme Helmholtz GmbH, suitable for the S5, are designed for use in CPU main memories and in WF and CP modules.

All Helmholtz 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.

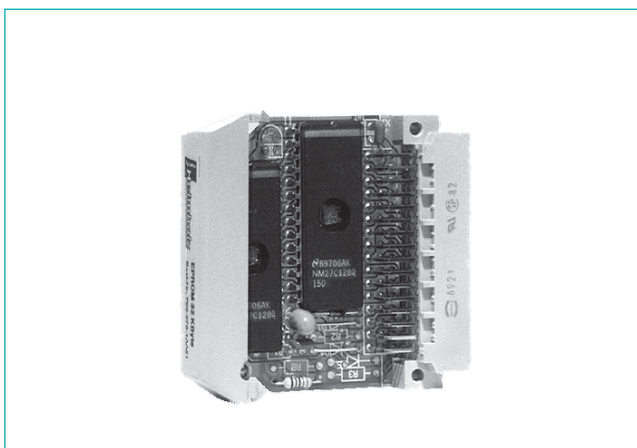
EPROM submodules with the ordering code -1LAxx or -1AAxx are equivalent to the new CMOS submodules and can be programmed on new PUs with the new fast programming algorithms.

The memory submodules cover the range of the most common submodules. We can manufacture special submodules for individual customer requirements within a short time.

### Ordering Data

	Order-No.
<b>EPROM submodules series 375</b>	
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	700-375-1LA15
16 KByte	700-375-1LA21
32 KByte	700-375-1LA41
64 KByte	700-375-1LA61
128 KByte	700-375-1LA71
<b>EPROM submodules series 373</b>	
32 KByte	700-373-1AA41
64 KByte	700-373-1AA61
128 KByte	700-373-1AA81
<b>EEPROM submodules series 375</b>	
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, EEPROM



EPROM submodule 376

## Ordering Data

	Order-No.
EPROM submodules series 376	
16 KByte	700-376-1AA11
32 KByte	700-376-1AA21
64 KByte	700-376-1AA31



## DEA 115, Digital Input/Output Modules



Digital input/output module

The digital input modules from the Systeme Helmholtz 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.
<b>DEA 115</b> 32 inputs (DC 24 V) non isolated	700-420-7LA11
32 inputs (DC 24 V) isolated	700-430-7LA12
<b>DEA 115</b> 32 output (DC 24 V; 0.7 A) non isolated	700-441-7LA12
32 output (DC 24 V; 0.7 A) isolated	700-451-7LA12

## DEA 115, Digital Input/Output Modules

Technical Data			
		700-420-7LA11	700-430-7LA12
<b>Number of inputs</b>		<b>32</b>	<b>32</b>
<b>Isolation</b> - in groups of		no -	yes 8
<b>Input voltage</b> (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 +13 to +33 V
<b>Input current</b> - for "1" signal	typ.	8.9 mA	8.5 mA
Permiss. quiescent current for 2-wire Bero	min.	1.5 mA	1.5 mA
<b>Delay time</b> <sup>1)</sup> - turn on - turn off	typ. typ.	2.3 ms 2.5 ms	2.3 ms 4.6 ms
<b>Cable length</b> - unshielded - shielded	max. max.	600 m 1000 m	600 m 1000 m
Front connector		46-way	46-way
		700-441-7LA12	700-451-7LA12
<b>Number of outputs</b>		<b>32</b>	<b>32</b>
<b>Isolation</b> - in groups of		no -	yes (optocoupler) 8
<b>Supply voltage</b> $V_P$ , $V_S$ - 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
<b>Output current for "1" signal</b> - 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	$V_P - 50$ V
<b>Switching frequency for</b> - resistive load - lamps - inductive load	max. max. max.	1 kHz 100 Hz 2 Hz (at 0.3 A/0.7 H) 1 Hz (at 0.5 A/0.4 H)	1 kHz 100 Hz 2 Hz (at 0.3 A/0.7 H) 1 Hz (at 0.5 A/0.4 H)
<b>Slope times</b> - turn on - turn off	typ. typ.	0.13 ms 0.05 ms	0.2 ms 0.06 ms
<b>Total load capability</b> - 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 $\mu$ A	300 $\mu$ A
<b>Signal level of the outputs</b> - for "0" signal - for "1" signal	max. min.	+2 V $V_P - 1,0$ V	+2 V $V_P - 1,0$ V

1) Other delay times on request

## DEA 135, Digital Input/Output Modules



Digital input module

The digital input modules from the Systeme Helmholtz 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.
<b>DEA 135</b> 32 input (DC 24 V) non-isolated	700-420-4UA14
32 input (DC 24 V) isolated	700-430-4UA14
<b>DEA 135</b> 32 output (DC 24 V; 0.7 A) non-isolated	700-441-4UA14
32 output (DC 24 V; 0.7 A) isolated	700-451-4UA14
<b>Front Connectors 497 for DEA 135</b> 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
<b>Number of inputs</b>		<b>32</b>	<b>32</b>
<b>Isolation</b> - in groups of		no -	yes 32 <sup>1)</sup>
<b>Input voltage</b> (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
<b>Delay time</b> <sup>2)</sup> - turn on - turn off		typ. typ. 2.3 ms 2.1 ms	2.3 ms 5.2 ms
<b>Cable length</b> - unshielded - shielded		max. max. 600 m 1000 m	600 m 1000 m
Enable input F <b>Input voltage</b> (nom. value) - for enable - for disable Input current of the F input		typ. DC 24 V +13 to +33 V -33 to +5 V 5 mA	DC 24 V +13 to +33 V -33 to +5 V 5 mA
		700-441-4UA14	700-451-4UA14
<b>Number of outputs</b>		<b>32</b>	<b>32</b>
<b>Isolation</b> - in groups of		no -	yes (optocoupler) 32 <sup>3)</sup>
<b>Supply voltage</b> V <sub>P</sub> , V <sub>S</sub> - nominal value - ripple V <sub>pp</sub> - 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
<b>Output current for "1" signal</b> - nominal value - permissible range - transient peak load (t=10 ms, d=20 %)		max. 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 <sub>P</sub> - 50 V	U <sub>P</sub> - 50 V
Switching frequency for - resistive load - lamps - inductive load		max. max. max. 1 kHz 100 Hz 2 Hz (at 0.3 A/0.7 H) 1 Hz (at 0.5 A/0.4 H)	1 kHz 100 Hz 2 Hz (at 0.3 A/0.7 H) 1 Hz (at 0.5 A/0.4 H)
<b>Total load capability</b> - 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
<b>Signal level of the outputs</b> - for "0" signal - for "1" signal		max. min. +2 V U <sub>P</sub> - 1.0 V	+2 V U <sub>P</sub> - 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 Helmholtz 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.
<b>AEA 115</b> 16 voltage/current inputs or 8 Pt 100 resistance thermometer non-isolated	<b>700-465-7LA13</b>
<b>Meas. range subm. 498 for AEA 115</b> ±50 mV/±500 mV/Pt 100 ±100 mV/±1 V ±1 V/±10 V ±2 mA/±20 mA 4 ... 20 mA; 2-wire ±500 mV/±5 V 4 ... 20 mA; 4-wire	<b>700-498-1AA11</b> <b>700-498-1AA21</b> <b>700-498-1AA31</b> <b>700-498-1AA41</b> <b>700-498-1AA51</b> <b>700-498-1AA61</b> <b>700-498-1AA71</b>

Technical Data	
Number of inputs	16 voltage/current inputs, 8 Pt 100 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	min. 10 M Ω
700-498-1AA11	90 k Ω
700-498-1AA21	50 k Ω
700-498-1AA31, 700-498-1AA61	31.25 Ω
700-498-1AA51, 700-498-1AA71	25 Ω
Basic error limits	± 2 ‰
± 50 mV/Pt 100	± 1.5 ‰
± 500 mV	± 3.5 ‰
± 1 V/± 5 V/± 10 V	± 2.5 ‰
± 20 mA/+ 4 to 20 mA	
Basic error limits	(0°C to +55°C)
± 50 mV/Pt 100	± 5 ‰
± 500 mV	± 4.5 ‰
± 1 V/± 5 V/± 10 V	± 7.7 ‰
± 20 mA/+ 4 to 20 mA	± 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)	typ. 200 mA
- external (at 24 V)	typ. 20 mA/transducer
Cable length	
- shielded	max. 200 m max. 20 m/50 mV
Power loss (rated operation)	typ. 1.0 W
Space requirement	1 slot
Front connector	46-way
Permissible ambient temperature	
- operating	0°C to +55°C
- transport and storage	-25°C to +75°C

## AEA 115, Analog Output Modules



Analog output module

The analog output modules from the Systeme Helmholtz 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.

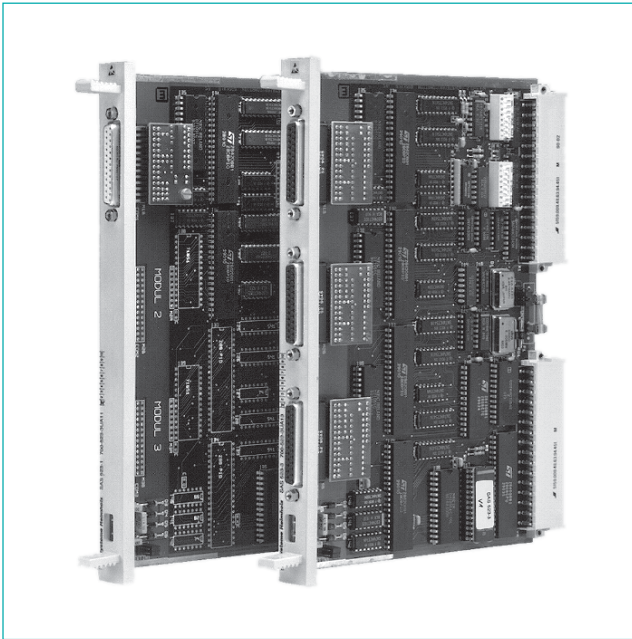
## Ordering Data

	Order-No.
<b>AEA 115</b> isolated 8 outputs, $\pm 10$ V/0 to 20 mA 8 outputs, $\pm 10$ V 8 outputs, + 1 to 5 V/4 to 20 mA	<b>700-470-7LA13</b> <b>700-470-7LB13</b> <b>700-470-7LC13</b>

## Technical Data

	700-470-7LA13	700-470-7LB13	700-470-7LC13
<b>Number of outputs</b>	<b>8</b>	<b>8</b>	<b>8</b>
<b>Isolation</b> - in groups of All outputs referenced to $M_{ANA}$	yes (optocoupler) 8	yes (optocoupler) 8	yes (optocoupler) 8
<b>Nominal output value</b> - voltage - current	$\pm 10$ V/min. 3.3 k $\Omega$ 0 to 20 mA/max. 300 $\Omega$	$\pm 10$ V/min. 3.3 k $\Omega$ -	1 to 5 V/min. 3.3 k $\Omega$ 4 to 20 mA/max.300 $\Omega$
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	$\pm 2.5^{0/100}$	$\pm 2.5^{0/100}$	$\pm 2.5^{0/100}$
Operational limits (0°C to +55°C)	$\pm 6^{0/100}$	$\pm 6^{0/100}$	$\pm 6^{0/100}$
Supply voltage L+	DC 24 V	DC 24 V	DC 24 V
<b>Cable length</b> - shielded max.	200 m	200 m	200 m
<b>Current consumption</b> - 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
<b>Permissible ambient temperature</b> - operating - transport and storage	0°C to +55°C -25°C to +75°C	0°C to +55°C -25°C to +75°C	0°C to +55°C -25°C to +75°C

## SAS 523/525 Serial Interface Modules



SAS 523 interface module

The SAS 523/525 communication processors from the Systeme Helmholtz 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, barcode 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.

### 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 bit/s and 38400 bit/s for each channel.

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



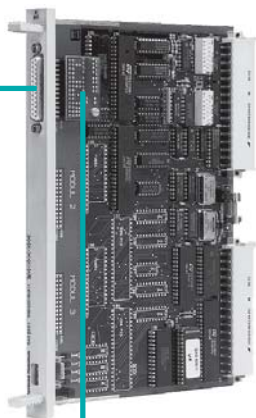
## SAS 523/525 Serial Interface Modules

**Protocols****SAS 523/525**

- Open drivers
- Bus operation
- Break handshake
- SAS Highspeed

**SAS 525**

- RK512

**Interface submodules**

- TTY
- RS232
- RS485 non-isolated
- RS485 isolated

**Ordering Data**

	Order-No.
<b>Serial interface</b>	
SAS 523-1	700-523-3UA11
SAS 523-2	700-523-3UA12
SAS 523-3	700-523-3UA13
<b>Serial interface</b>	
SAS 525-1	700-525-3UA11
SAS 525-2	700-525-3UA12
SAS 525-3	700-525-3UA13
<b>Interface modules SAS 523/525</b>	
TTY	700-523-1UA11
RS232	700-523-1UA21
RS485 non-isolated	700-523-1UA41
RS485 isolated	700-523-1UA51
<b>Manual SAS 523/525</b> german/english	900-523-0AA11
<b>Data handling blocks for SAS 523</b> 3 1/2" disk DOS format PLC 115 ... PLC 155	802-523-1AA61
<b>Data handling blocks SAS 525</b> 3 1/2" disk DOS format PLC 115 ... PLC 155	802-525-1AA61

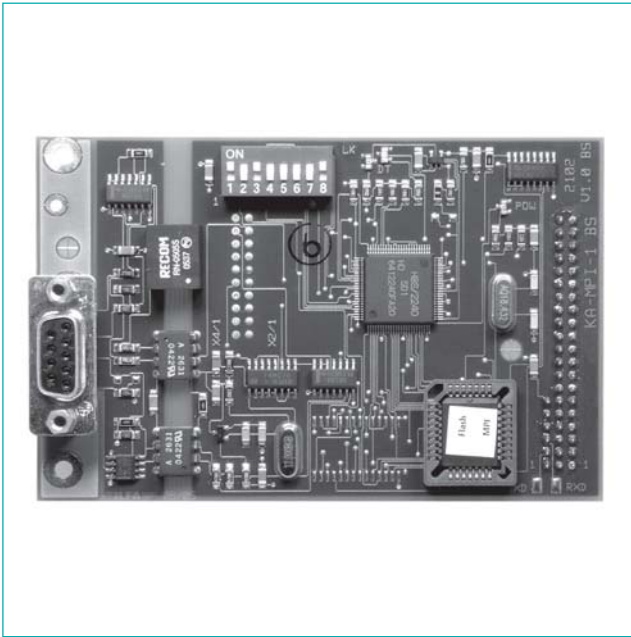
**Technical Data**

Supply voltage	+ 5 V ± 5%
<b>Current consumption</b>	
- SAS 523-1/525-1	350 mA
- SAS 523-2/525-2	410 mA
- SAS 523-3/525-3	460 mA
- TTY submodule	10 mA
additionally, if active	40 mA / 24 V
- RS232 submodule	10 mA
- RS422/485 submodule	140 mA
Transmission mode	serial asynchronous
Transmission rate	150 to 38400 bit/s
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	1000 m
RS232	16 m
RS422/485	1200 m (twisted pair)



# Service

## Customer-Specific Development



Customer-specific MPI board

Systeme Helmholtz 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 Win 3.x and Win95
- 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

The Systeme Helmholtz GmbH also offers product training for:

- CAN 300 and S7 link
- S7 Teleservice
- NetLink and OPC-server
- MPI-Bus

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.

Ask for your own individual offer!



### Ordering Data

	Order-No.
CAN/CANopen/CAN-modules (1 day)	400-600-CAN01
MPI-BUS/Teleservice/NETLink (1 day)	400-600-MPI01

## Fax Order Form

Just copy, fill in and fax.

To:

**Systeme Helmholtz GmbH**  
Gewerbegebiet Ost 36  
D-91085 Weisendorf  
Germany

Fax: +49 9135/73 80-50  
Phone: +49 9135/73 80-0

Your address:

\_\_\_\_\_  
Name of contact

\_\_\_\_\_  
Company

\_\_\_\_\_  
Street/No.

\_\_\_\_\_  
Postcode/City

\_\_\_\_\_  
Phone/Fax

Pos.	Order No.	Product name	Qty	Unit price	Total price

Delivery address (if different from above):

\_\_\_\_\_  
Company

\_\_\_\_\_  
Street/No.

\_\_\_\_\_  
Postcode/City

\_\_\_\_\_  
Date/Signature

## Contacts in Germany



### Distribution North Germany

#### Holster Industrieelektronik GmbH

Fasanenstieg 14  
D-22397 Hamburg  
Thomas D. Holster  
Phone: +49 (40) 605 18 18  
Fax: +49 (40) 605 55 93  
holster@arcor.de

### Distribution East Germany

#### B-S-K Industrievertretungen

Holzmühlenstrasse 4  
D-09212 Limbach-Oberfrohna  
Siegfried Renner  
Phone: +49 (376 09) 583 55  
Fax: +49 (376 09) 583 56  
info@renner-bsk.de

### Distribution Baden-Württemberg

#### Schönthaler & Weinhold GmbH

Bühlstrasse 20  
D-73630 Remshalden-Grünbach  
Hans Joachim Schönthaler,  
Peter Prantner, Timo Stegmüller  
Phone: +49 (71 51) 617 04  
Fax: +49 (71 51) 60 93 62  
info@schoenthaler-weinhold.com  
www.schoenthaler-weinhold.com

### Headquarters

#### Systeme Helmholz GmbH

Gewerbegebiet Ost 36  
D-91085 Weisendorf  
Karsten Eichmüller  
Phone: +49 (91 35) 73 80-0  
Fax: +49 (91 35) 73 80-50  
karsten.eichmueller@helmholz.de

### Distribution Bavaria

#### Systeme Helmholz GmbH

Gewerbegebiet Ost 36  
D-91085 Weisendorf  
Martin Fröhlich  
Phone: +49 (91 35) 73 80-0  
Fax: +49 (91 35) 73 80-50  
martin.froehlich@helmholz.de

### Distribution West Germany

#### Systeme Helmholz GmbH

Gewerbegebiet Ost 36  
D-91085 Weisendorf  
Martin Güll  
Phone: +49 (91 35) 73 80-0  
Fax: +49 (91 35) 73 80-50  
martin.guell@helmholz.de

#### H-I Elektronik Vertrieb GmbH

Buscher Strasse 1  
D-47269 Duisburg  
Thomas Dohmen  
Stephan Schmücker  
Phone: +49 (203) 76 14 03  
Fax: +49 (203) 76 44 00  
vertrieb@h-i-elektronik.de  
www.h-i-elektronik.de



The **Systeme Helmholtz GmbH** is present in the following countries:



Austria



Belgium



Chile



China



Czech Republic



Egypt



Finland



France



Hungary



Italy



Malaysia



Netherlands



Norway



Poland



Portugal



Romania



Singapore



Slovakia



South-Africa



Spain



Sweden



Switzerland



Turkey



United Arabien Emirates



United Kingdom



USA

Please find the contact details of our sales partner on our homepage [www.helmholz.com](http://www.helmholz.com)



Your salespartner

