

Systeme
Helmholz®

KLINKMANN



CAN-Bus

CAN-Bus Modules for S7-300/400

DP/CAN Coupler

CAN-Bus Connector

CAN 300 PRO, Communication Module



CAN 300 PRO, communication module

The CAN 300 PRO module of Systeme Helmholz GmbH for use in an S7-300¹⁾ from Siemens permits connection of CAN stations with the programmable controller.

The module can be slotted either in the central controller or in the expansion unit.

The CAN 300 PRO module supports CAN 2.0A (11 bit) and CAN 2.0B (29 bit) frames with a freely selectable baudrate of 10 Kbps to 1 Mbps.

The CAN 300 PRO module can send and receive CAN frames in Layer 2 operating mode. The data of the CANopen slaves can be processed as a process image in CANopen Master operating mode in the PLC. Applications as a CANopen Slave and with the LENZE system bus are also possible. Application examples are provided for standard applications including motor control with CANopen. Data handling blocks for the SAE J1939 protocol are also available.

The CAN 300 PRO module contains 16 freely settable timers. Each timer can trigger a freely programmable CAN telegram. That way, it is easy to implement the synchronous protocols in common use in drive and servo systems using the CAN 300 PRO module.

The DIP switch for setting the baudrate and the station address facilitate commissioning. An optional micro memory card stores the project so that the parameterization or the module is quickly replaced during servicing.

6 LEDs indicate the operating status of the module. A USB interface is available for diagnostics and parameterization tasks.

Note

On pages 73 and 74 you will find information about the parameterization software CANParam and about the data handling blocks for the PLC.

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

Ordering Data	
	Order-No.
CAN 300 PRO, communication module	700-600-CAN12
Micro Memory Card, 128 kByte	700-953-8LG11
USB cable, 3m	700-755-7VK11
Manual CAN 300 PRO, German/English	900-600-CAN12
CAN Training Course (see page 78)	400-600-CAN01

CAN
connected

CANopen

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Technical Data	
Dimensions (LxWxH mm)	116 x 40 x 125
Weight	approx. 280 g
Power supply Voltage	+5 V DC via backplane bus
Current consumption	typ. 160 mA max. 190 mA
CAN interfaces Type	ISO/DIN 11898-2 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 SAE J1939 LENZE Systembus
Connection	connector, SUB-D, 9-way
Status display	6 LEDs
Configuration interfaces Type	USB 1.1
Connection	USB-B female connector
surrounding air temperature	0°C ... 60°C
transport and storage temperature	-25°C ... 75°C

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

CAN 300, Communication Module with DNV certificate



CAN 300, communication module (DNV)



The CAN 300 module from the Systeme Helmholz GmbH for use in a S7-300¹⁾ 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 73 and 74.

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

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
Power supply Voltage	+5 V DC via backplane bus
Current consumption	typ. 160 mA max. 190 mA
CAN interfaces Type	ISO/DIN 11898 -2 CAN High Speed physical Layer
Transmission rate	10 kBit/s bis 1 MBit/s
Protocol	CAN 2.0A (11 Bit) CAN 2.0B (29 Bit) CANopen Master CANopen Slave LENZE-Systembus SAE J1939
Connection	connector, SUB-D, 9-way
Configuration interfaces Type	RS232, serial asynchronous
Transmission rate	9,6 kBit/s
Format	8/N/1
Connection	connector, SUB-D, 9-way
surrounding air temperature	-25°C ... 60°C
transport and storage temperature	-25°C ... 75°C

Ordering Data	
	Order-No.
CAN 300 , communication module (DNV)	700-600-CAN81
Programming cable PC to CAN 300 communication module	700-610-0VK11
Manual CAN 300 , German/English CAN Training Course (see page 78)	900-600-CAN01 400-600-CAN01

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

CAN 400, Communication Module



CAN 400, communication module

The CAN 400 module from the Systeme Helmholtz GmbH for use in a S7-400¹⁾ 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

Information about software and handling blocks are available on page 73 and 74.

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

Ordering Data	
	Order-No.
CAN 400-1, Communication module with 1 CAN interface	700-640-CAN11
CAN 400-2, Communication module with 2 CAN interfaces	700-640-CAN21
Manual CAN 400, German/English	900-640-CAN21
CAN Training Course (see page 78)	400-600-CAN01

CAN
connected

CANopen

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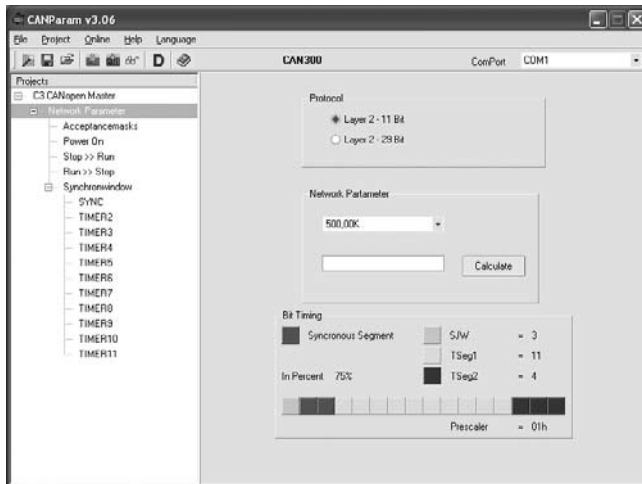
Technical Data		
	CAN 400-1	CAN 400-2
Dimensions (LxWxH mm)	290 x 210 x 25	290 x 210 x 25
Weight	approx. 900 g	approx. 900 g
Power supply Voltage	DC +5 V via backplane bus	DC +5 V via backplane bus
Current consumption	560mA	600mA
CAN interfaces		
Number	1	2
Type	ISO/DIN 11898,-2 CAN High Speed physical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

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Parameterization Tool CANParam

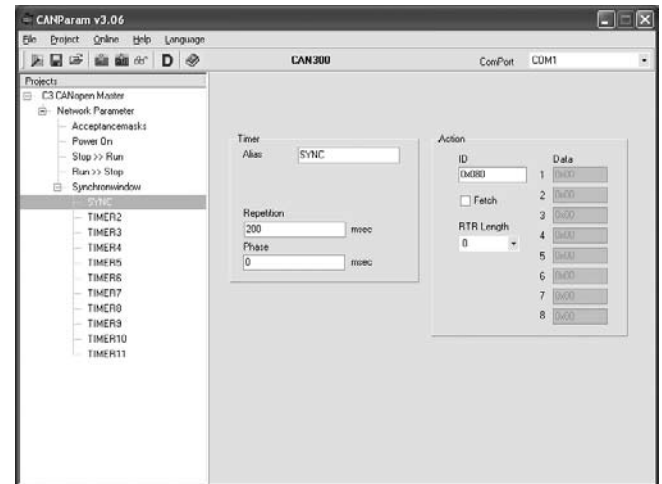
The CAN modules are parameterized on the PC using the CANParam parameterization tool (contained in the 800-600-1AA11 and 800-600-1LZ11 software packages). That makes setting the communication parameters easy. The parameterization of a module can be stored in a project on the PC.

The CAN modules support both the protocol format CAN 2.0A (11 bit) and CAN 2.0B (29 bit).



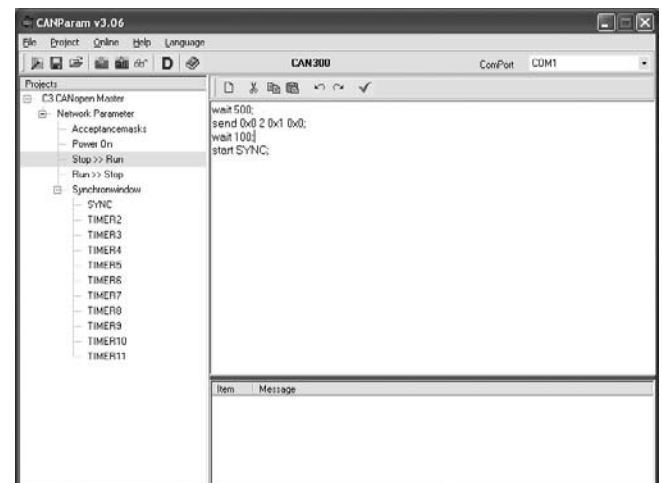
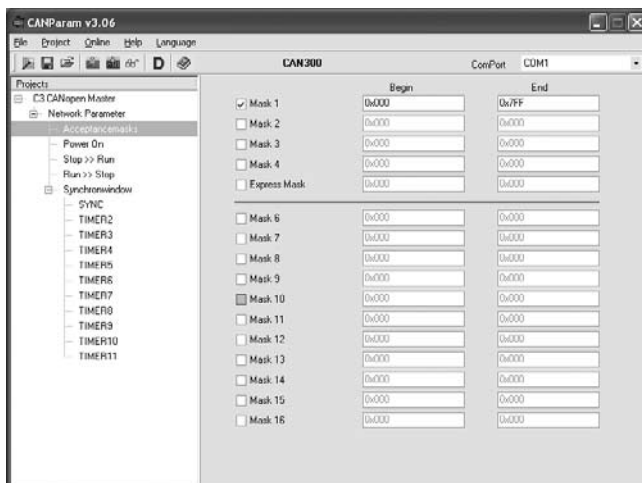
For time-dependent events, such as the SYNC telegram in the case of CANopen, up to 11 timers (CAN 300) or 16 timers (CAN 400) are available in the CAN modules up to a resolution of 1ms. Each timer can transmit any CAN telegram. The timers can be started, stopped, and changed from the PLC.

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.



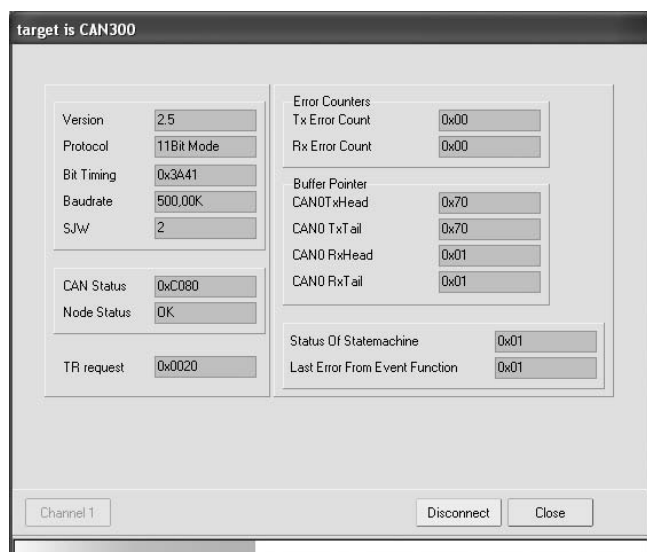
The CAN modules contain acceptance masks. These masks can be used to enable or disable various telegram IDs for reception. Express masks filter high-priority CAN telegrams so that they can be forwarded directly to the PLC.

CAN telegrams can be transmitted or timers started via freely programmable scripts on certain events such as „Power ON“ or „PLC Stop -> Run“.



CAN Software

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 an FM-module (CAN 400) and addressed in the STEP7¹⁾ 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:

- Transmit CAN telegram
- Read CAN telegram from the module
- Transmit CAN telegram to a timer
- Timer start/stop
- module reset

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

Function scope of the CANopen Master data handling function:

- Read SDO
- Transmit SDO
- SDO segmented download
- SDO segmented upload
- Spontaneous receive (NMT,PDO, Emergency)
- Transmit PDO
- Request PDO
- Nodeguarding/Heartbeat
- Network management

Table software packages

Content	800-600-1AA11	800--600-1LZ11
CANParam parameterization tool	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) S7-300 and STEP7 are registered trademarks of Siemens AG

Function scope of the LENZE system bus data handling function:

- Transmit and read parameter data
- Transmit process data
- Transmit Layer 2 telegram
- Network management functions
- Cyclic communication

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 CAN Training Course (see page 78)	on request 400-600-CAN01

DP/CAN coupler CANopen



DP/CAN coupler

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.

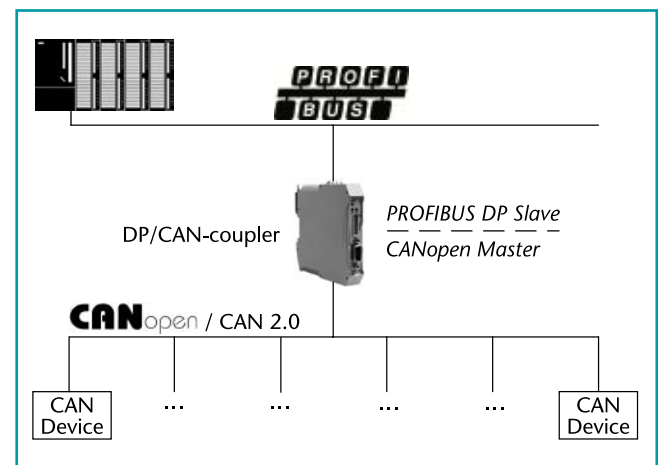
Parameterization of the CANopen nodes via SDO telegrams and management of emergency messages is also possible.

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



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

Ordering Data

	Order-No.
DP/CAN-coupler CANopen Manual German/English	700-650-CAN01 900-650-CAN01

DP/CAN coupler Layer 2



DP/CAN coupler Layer 2

The DP/CAN layer 2 coupler of Systeme Helmholtz GmbH allows you to connect any number of CAN nodes to the Profibus DP. The DP/CAN layer 2 coupler must be parameterized in the hardware configurator as a PROFIBUS node. The GSD files required for this purpose are supplied with the device.

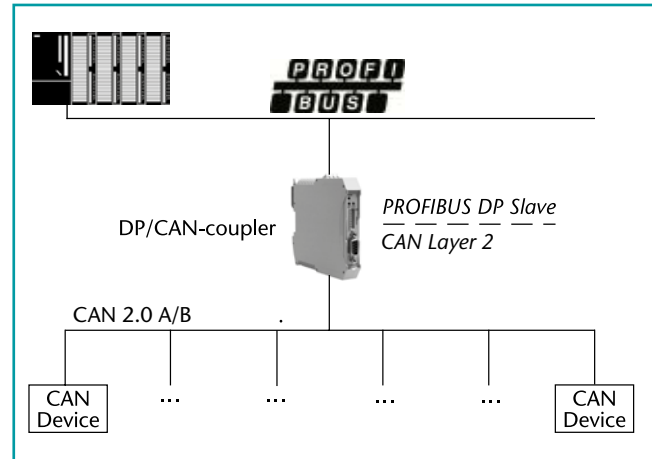
The PROFIBUS side is configured as a DP slave. The interfaces meets EN 50170 and are electrically isolated. Baudrates of 9.6 kBaud to 12 Mbaud are automatically detected. The size of the input and output information is up to 320 bytes.

The CAN bus interface meets ISO/DIN 11898-2 and is electrically isolated.

The DP/CAN coupler can send and receive any number of CAN messages. Messages can be defined with a fixed identifier, whose data are always visible in the PROFIBUS as an I/O image. Alternatively the DP/CAN layer 2 coupler can be equipped with a receive buffer for any number of CAN messages.

Features

- up to 1 Mbps CAN baudrate
- up to 12 Mbps PROFIBUS-DP
- address setting via DP switch
- simple configuration via GSD file
- any protocols possible via layer 2
- CAN 2.0 A (11 Bit)
- CAN 2.0 B (29 Bit)
- timer for cyclic telegrams
- 3 Status LEDs



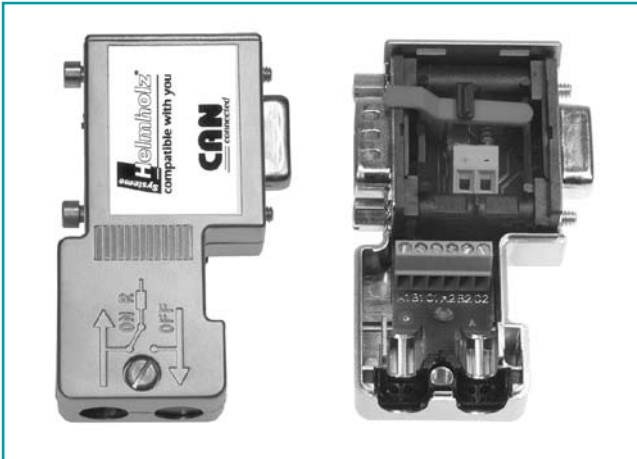
Technical Data

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

Ordering Data

	Order-No.
DP/CAN-coupler Layer 2 Manual German/English	700-651-CAN01 700-651-CAN01

Bus Connector for CAN Bus



„Smaller dimension“ CAN Bus Connector

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 Helmholtz GmbH offers the bus connector with a vertical outgoing cable and for transmission rates up to 1 Mbit/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

Features

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

CAN
connected

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

Technical Data	
Order-No. 700-690-0BB11	Connection jack yes
Order-No. 700-690-0BA11	no
Order-No. 700-690-0CA12	no
Dimensions (LxWxH mm)	65 x 48 x 16
Weight	approx. 40 g
Terminating resistor	Resistance 120 Ω; integrated and connectable with slide switch
Transmission rate	max. 1 MBit/s
Interfaces	
CAN bus station	SUB-D connector, 9-way
CAN bus cable	6 terminals for wires up to 1.0 mm ²
surrounding air temperature	0°C ... +60°C
transport and 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
- Programming in Step7
- DP/CAN coupler

The trainings take place in our head quarter in Großenseebach. But it is also possible to have on-site trainings. Please ask for your individual offer.

You can find the actual dates for our trainings and registration form on our website (www.helmholz.com).

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

