SIEMENS

SIMOVERT MASTERDRIVES

Betriebsanleitung
Operating Instructions

CBP / CBP2 - Kommunikationsbaugruppe PROFIBUS

CBP / CBP2 - Communication Board PROFIBUS

Ausgabe / Edition: AC

Bestell-Nr. / Order No.: 6SE7087-6NX84-0FF0

Contents

0 Definitions and Warnings

Qualified personnel

For the purpose of this documentation and the product warning labels, a "Qualified person" is someone who is familiar with the installation, mounting, start-up, operation and maintenance of the product. He or she must have the following qualifications:

- Trained or authorized to energize, de-energize, ground and tag circuits and equipment in accordance with established safety procedures.
- Trained or authorized in the proper care and use of protective equipment in accordance with established safety procedures.
- Trained in rendering first aid.

DANGER

For the purpose of this documentation and the product warning labels, "Danger" indicates death, severe personal injury or substantial property damage will result if proper precautions are not taken.

WARNING

For the purpose of this documentation and the product warning labels, "Warning" indicates death, severe personal injury or property damage can result if proper precautions are not taken.

CAUTION

For the purpose of this documentation and the product warning labels, "Caution" indicates that minor personal injury or material damage can result if proper precautions are not taken.

NOTE

For the purpose of this documentation, "Note" indicates important information about the product or about the respective part of the documentation which is essential to highlight.

WARNING

- Hazardous voltages are present in this electrical equipment during operation.
- Non-observance of the warnings can thus result in severe personal injury or property damage.
- Only qualified personnel should work on or around the equipment
- This personnel must be thoroughly familiar with all warning and maintenance procedures contained in this documentation.
- The successful and safe operation of this equipment is dependent on correct transport, proper storage and installation as well as careful operation and maintenance.

CAUTION

Components which can be destroyed by electrostatic discharge (ESD)

The board contains components which can be destroyed by electrostatic discharge. These components can be easily destroyed if not carefully handled. If you have to handle electronic boards, please observe the following:

- Electronic boards should only be touched when absolutely necessary.
- The human body must be electrically discharged before touching an electronic board.
- Boards must not come into contact with highly insulating materials - e.g. plastic parts, insulated desktops, articles of clothing manufactured from man-made fibers.
- Boards must only be placed on conductive surfaces.
- Boards and components should only be stored and transported in conductive packaging (e.g. metalized plastic boxes or metal containers).
- If the packing material is not conductive, the boards must be wrapped with a conductive packaging material, e.g. conductive foam rubber or household aluminium foil.

The necessary ESD protective measures are clearly shown in the following diagram:

- a = Conductive floor surface
- b = ESD table
- c = ESD shoes
- d = ESD overall
- e = ESD chain
- f = Cubicle ground connection

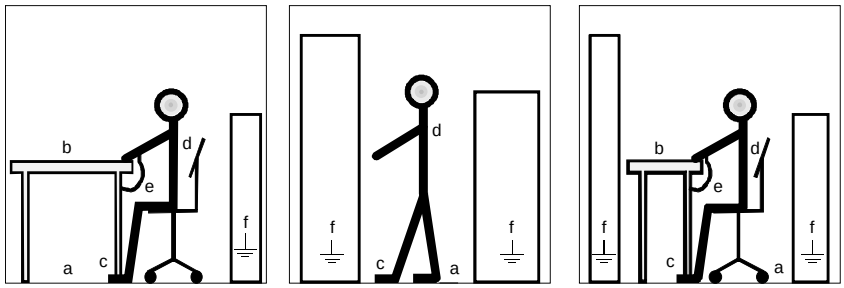


Fig. 0-1 ESD protective measures

1 Description

The CBP optional board (PROFIBUS communications board) is for linking drives to higher-level automation systems via PROFIBUS.

The optional board has three LEDs (green, yellow, red) for providing information on the current operating status.

Voltage is supplied from the basic unit.

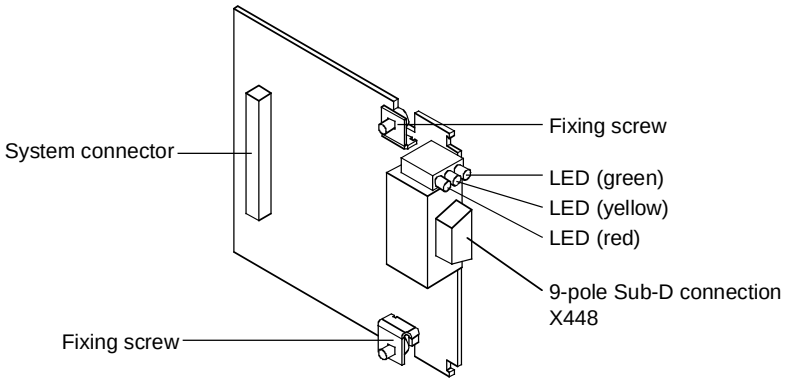


Fig. 1-1 View of the CBP optional board

Data exchange via PROFIBUS

The bus system enables very fast transfer of data between higher-level systems (e.g. SIMATIC, SIMADYN D, PC/PGs) and the drives. Access to the drives is made in the bus system according to the master-slaves method. The drives are always the slaves and each slave is clearly defined by its address.

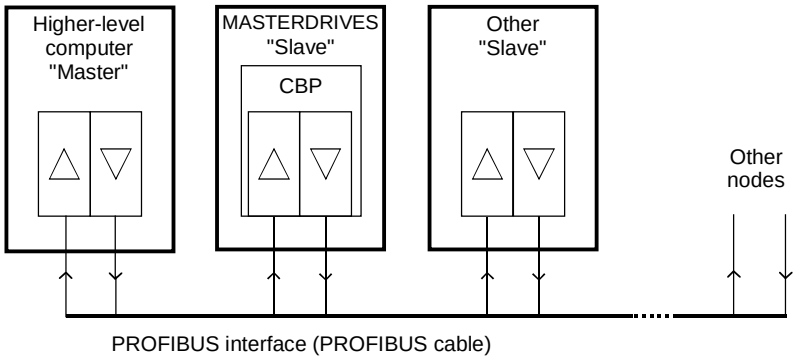


Fig. 1-2 PROFIBUS connections

PROFIBUS telegram

Data is exchanged via telegrams. Useful data are transferred in each telegram which can be divided up into two groups:

- 1. Parameters (parameter identifier value, PKW)
- 2. Process data (PZD)

Protocol frame (Header)	**Useful data**		Protocol frame (Trailer)
	Parameters (PKW)[1)]	**Process data (PZD)**	

1)PKW: Parameter identifier value

Fig. 1-3 Structure of useful data in the PROFIBUS DP telegram

In the PKW area, all data intended for reading or writing parameter values and for reading parameter characteristics are transferred.

In the PZD area, all information necessary for guiding a variable-speed drive is transferred. Control information (control words) and setpoints are given to the slaves by the PROFIBUS DP master. Information on the status of the slaves (status words) and actual values are transferred in the reverse direction.

The length of the PKW and PZD data portions in the telegram is determined by the master. The master also specifies the baud rate. Only the bus address and, if necessary, the telegram failure time are set on the slave.

2 Technical Data

Order number	CBP: 6SE7090-0XX84-0FF0 CBP2: 6SE7090-0XX84-0FF5
Size (length x width)	90 mm x 83 mm
Pollution degree	Pollution degree 2 acc. to IEC 664-1 (DIN VDE 0110/T1), moisture condensation is not permissible in operation
Mechanical strength During stationary operation - Deflection - Acceleration During transport - Deflection - Acceleration	Acc. to DIN IEC 68-2-6 (for correctly installed board) 0.15 mm in frequency range 10 Hz to 58 Hz 19.6 m/s² in frequency range > 58 Hz to 500 Hz 3.5 mm in frequency range 5 Hz to 9 Hz 9.8 m/s² in frequency range > 9 Hz to 500 Hz
Climate class	Class 3K3 to DIN IEC 721-3-3 (in operation)
Type of cooling	Natural-air cooling
Permissible ambient or coolant temperature - during operation - during storage - during transport	 0° C to +70° C (32° F to 158° F) -25° C to +70° C (-13° F to 158° F) -25° C to +70° C (-13° F to 158° F)

Permissible humidity rating	Relative air humidity	≤ 95 % during transport and storage ≤ 85 % in operation (condensation not permissible)
Supply voltage	5 V ± 5 %, max. 600 mA, internally from basic unit	
Output voltage	5 V ± 10 %, max. 100 mA, electrically isolated supply (X448/Pin 6) - for bus termination of the serial interface or - for supply of an OLP (Optical Link Plug)	
Data transfer rate	max. 12 MBaud	

Table 2-1 Technical Data

NOTE

For reasons of space, optical link plugs cannot be used for Compact units, types 1 and 2!

3 Installation

If the inverters/converters are ordered with optional functions, the optional boards are already installed in the units when they are delivered.

It is possible to retrofit optional boards and this can be carried out by the user.

For this purpose, there are either three or up to six slots on the basic unit depending on the type of construction for mounting the optional boards.

An exact description of installation is included with the relevant basic unit. As the unit has to be removed and opened in order to install optional boards, attention must be paid to the ESD measures. Please refer to the operating instructions of the basic unit in this regard.

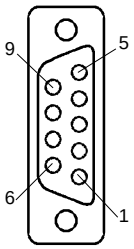
NOTE

Generally, you can install the CBP optional board (communication board PROFIBUS) in every slot. However, bear in mind that a sensor board always requires slot C.

Two CBPs can be fitted per device.

4 Connecting-up

X448 - Profibus connector



The CBP optional board has a 9-pole Sub-D socket (X448) which is provided for connecting it up to the PROFIBUS system. The connections are floating.

Pin	Designation	Significance	Range
1	SHIELD	Ground connection	
2	-	Not connected	
3	RxD/TxD-P	Receive/transmit data - P (B / B')	RS485
4	CNTR-P	Control signal P	TTL
5	DGND	PROFIBUS data reference potential (C / C')	
6	VP	Supply voltage Plus	5 V ± 10 %
7	-	not connected	
8	RxD/TxD-N	Receive/transmit data - N (A / A')	RS485
9	-	not connected	

Table 4-1 Connection X448

Cable connectors

The cables must be connected via the PROFIBUS connector, as this contains the bus terminating resistors.
The possible PROFIBUS connectors with the different cable outputs are illustrated in the following:

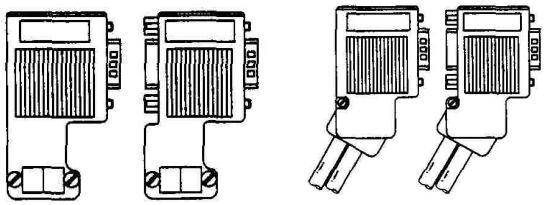


Fig. 4-1 PROFIBUS connectors

Bus terminating resistors

The terminating resistors must be powered up at the last node in the ring because otherwise data transfer is not able to operate satisfactorily.
The cable shield must be connected on both sides and through a large surface area.

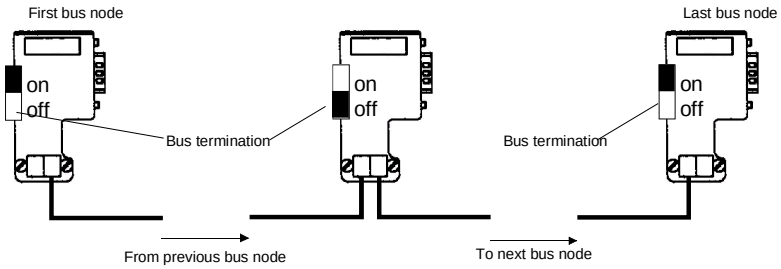
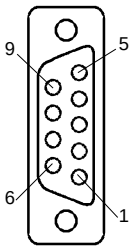


Fig. 4-2 Position of the bus terminating resistors

X448 - USS



CBP2 only:
X448 pin assignments for connection to USS.
The connections are floating.

Pin	Designation	Significance	Range
1	SHIELD	Ground connection	
2	-	Not connected	
3	RxD/TxD-P	Receive/transmit data - P (B / B')	RS485
4	-	Not connected	
5	DGND	data reference potential (C / C')	
6	VP	Supply voltage Plus	5 V ± 10 %
7	-	not connected	
8	RxD/TxD-N	Receive/transmit data - N (A / A')	RS485
9	-	not connected	

Table 4-2 Connection X448

The CBP2 does **not** have an internal bus connection. An external bus connection can be wired to pins 5/6.

5 Displays

There are three LED displays on the front of the CBP optional board which supply information on the current operating status. The following LEDs are provided:

- CBP operating (red)
- Data transfer with basic unit (yellow)
- Useful data transfer via PROFIBUS (green)

NOTE

- During normal operation, all three LEDs repeatedly light up at the same time and for the same length of time (flashing)!
- If an LED is continuously on or off, this indicates an exceptional condition (parameterization phase or fault)!

Operating display

LED	Status	Diagnostic information
Red	Flashing	CBP operating; voltage supply on
Yellow	Flashing	Fault-free data exchange with the basic unit
Green	Flashing	Fault-free useful data transfer via the PROFIBUS

Table 5-1 Operating display of the CBP

Fault display

LED	Status	Diagnostic information
Red	off/on	Voltage supply for CBP cut off; replace CBP or basic unit
Yellow	off/on	Data exchange with the basic unit is not possible; replace CBP or basic unit
Green	off/on	Transfer of useful data via PROFIBUS is not possible; PROFIBUS cable not connected or is defective

Table 5-2 CBP fault display

6 Start-up

After installation of the CBP optional board has been completed, an automatic self-test will be carried out when the basic unit (converter/inverter) is powered-up.

Afterwards, the new board may have to be logged in on the basic unit and provided with a bus address. Please refer to the documentation on the basic unit for further details in this respect.

NOTE

Please refer to the documentation for the respective basic unit regarding instructions for parameterization using the quick procedure.

Bisher sind folgende Ausgaben erschienen:
The following editions have been published so far:

Ausgabe Edition	Interne Sachnummer Internal Item Number
AA	477 755 4070 76 J AA-74
AB	477 755 4070 76 J AB-74
AC	477 755 4070 76 J AC-74

Ausgabe AC besteht aus folgenden Kapiteln:
Version AC consists of the following chapters:

	Kapitel	Chapter	Seitenzahl Pages	Ausgabedatum Version date
0	Definitionen und Warnungen	Definitions and warnings	4	08.99
1	Beschreibung	Description	3	08.99
2	Technische Daten	Technical Data	2	08.99
3	Montage	Installation	1	08.99
4	Anschließen	Connecting-up	3	08.99
5	Anzeigen	Displays	2	08.99
6	Inbetriebsetzung	Start-up	1	08.99

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Änderungen vorbehalten

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