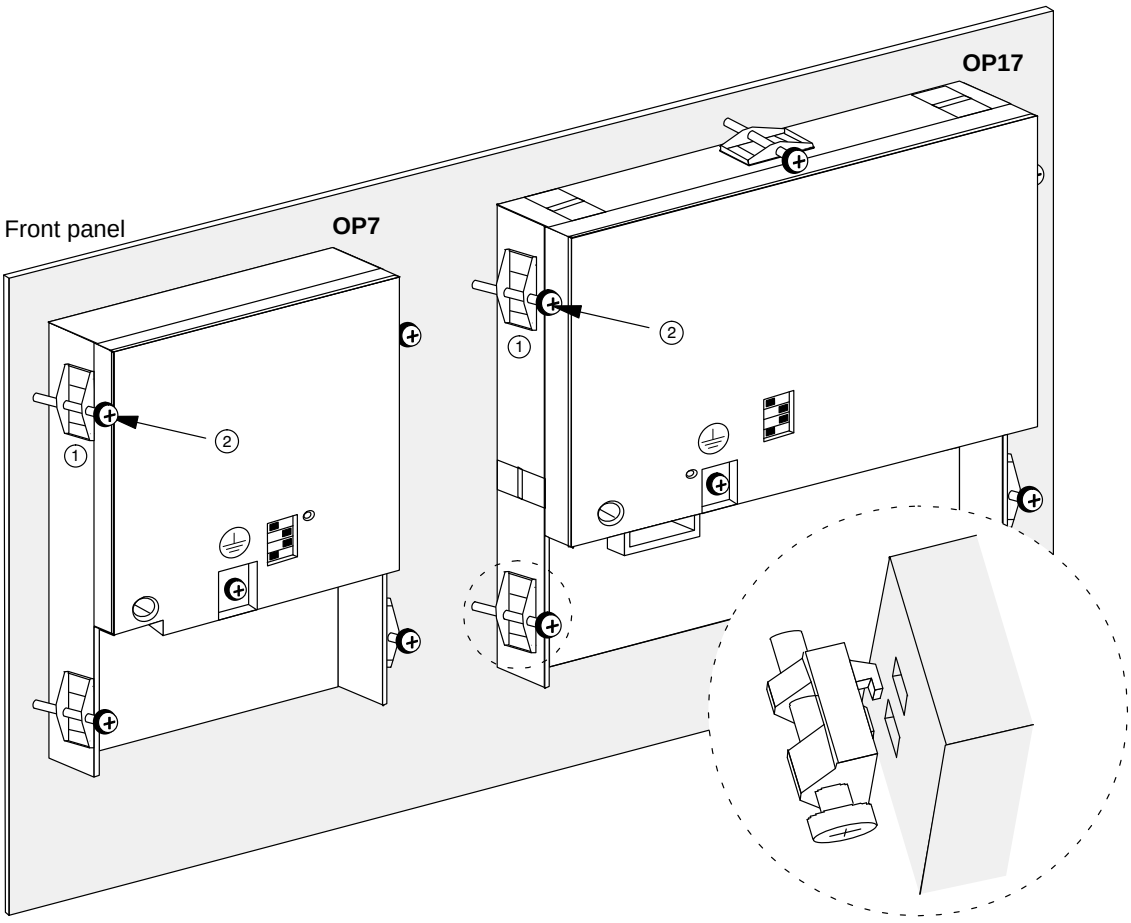
14.1 Mechanical Installation

Installing the OP

Step	Procedure
1	Push the enclosed gasket from the rear over the housing and insert the OP from the front in the prepared mounting cutout. Take suitable measures to prevent the OP from falling out of the front panel before it is finally fixed in position.
2	Insert the retaining hooks of the screw type clamps ① enclosed with the OP into the corresponding mounting locations in the housing of the OP. You require four screw type clamps for the OP7 and five for the OP17.
3	Tighten the OP from behind in the front panel using a screw-driver ②. Note: Make sure that the gasket fits properly on the front plate. Avoid excessively high torques.



14.2.1 Connecting the Power Supply

Terminal Block

There is a two-pin screw-type terminal on the lower side of the OP housing for connecting the power supply. The screw-type terminal is designed for cables having a cross-section not larger than 2.5 mm^2. The terminal screws are accessible via drill holes in the rear panel.

figure 14-1 shows the location of the screw-type terminals on the OP7 and OP17.

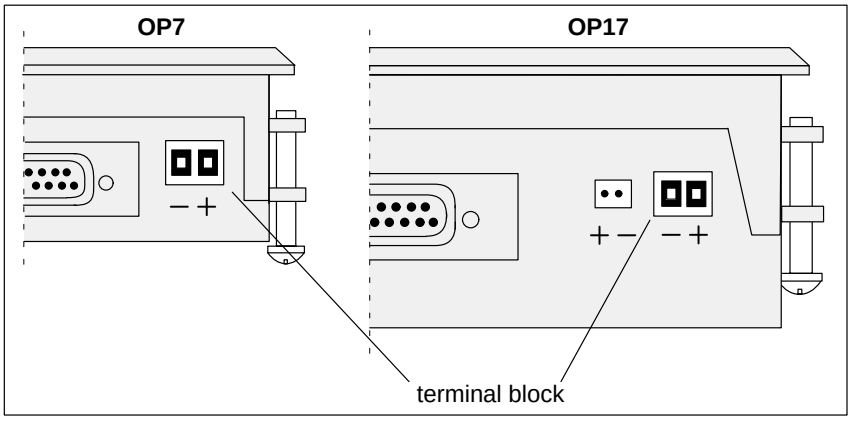


Figure 14-1 Connecting the Power Supply (View of Underside of OP)

Caution

- With a 24 V supply, make sure the extra-low voltage is isolated safely. Use only power supplies complying with ICE 364-4-41 or HD 384.04.41 (DE 0100. Part 410).
- The voltage supply must be within the permissible voltage range for the device in question (see chapter C), otherwise it is not possible to exclude the possibility of failures.

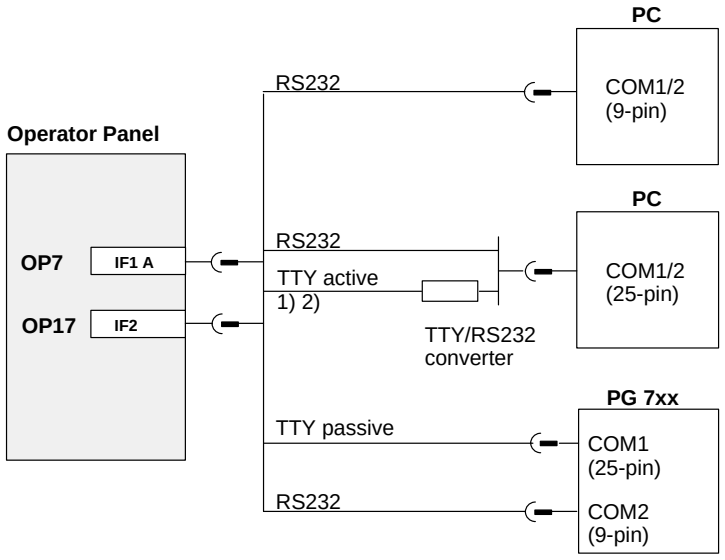
Chassis ground

Connect the chassis ground on the bottom of the device to the cabinet ground.

14.2.2 Connecting a Configuration Computer

Connection Configuration Scheme

Figure 14-2 shows you how to connect an OP7 and an OP17 temporarily to a configuration computer (PU or PC) for downloading the firmware and configuration data. Standard cables are available for the connections shown in the figure (refer to the ST80.1 catalog).



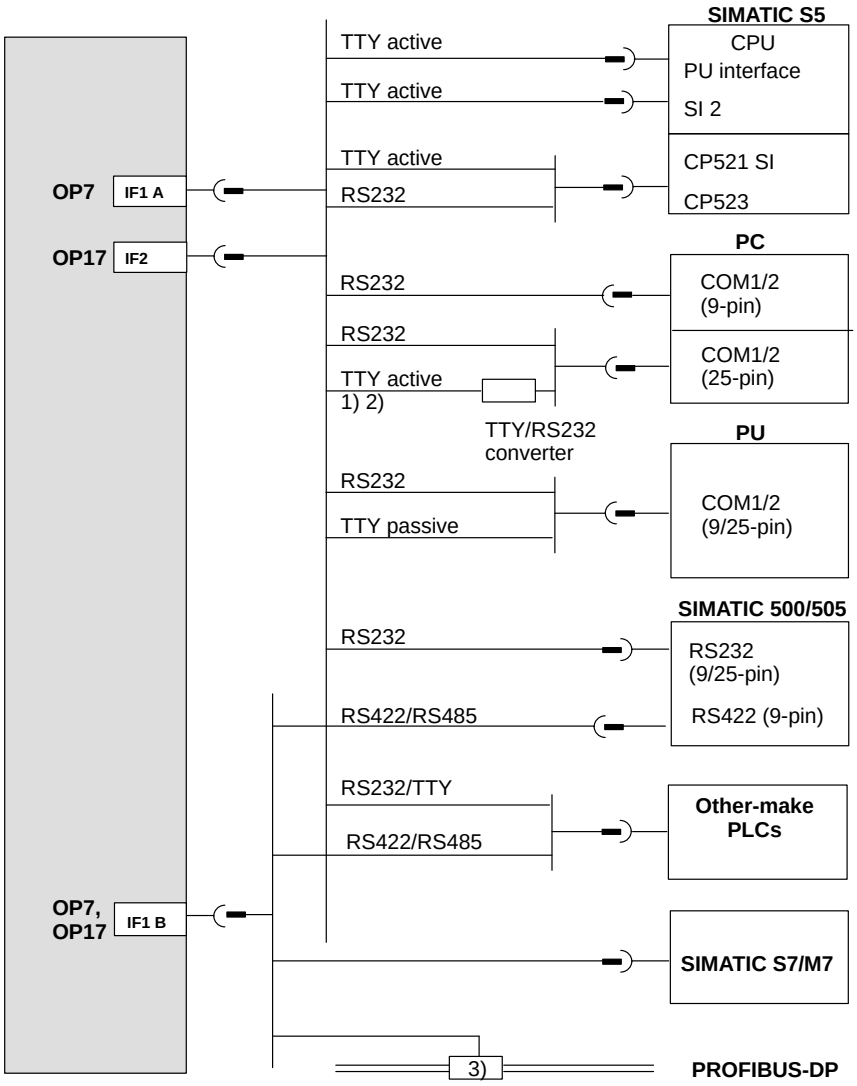
1) Not with OP7-DP and OP17
2) Do not use the converter cable from Siemens for connecting via TTY, since OP7-DP and OP17 do not supply 20 mA.

Figure 14-2 Connection Configuration Scheme for Configuration Computers

14.2.3 Connections to PLC

Connection Configuration Scheme

Figure 14-3 shows the basic options for connecting the OP to the PLC. For further details concerning the different OP versions please refer to Tables 16-1 and 16-2 in Chapter 16. Standard cables are available for the connections shown in the figure (refer to the ST80.1 catalog).



1) Not with OP7-DP and OP17-DP
2) Do not use the converter cable from Siemens for connecting via TTY, since OP7-DP and OP17-DP do not supply 20 mA.
3) Any PROFIBUS bus terminal (except FSK)

Figure 14-3 Connection Configuration Scheme for PLCs

Configuring interface IF1B

You can configure interface IF1B using the DIP switch at the rear of OP versions DP and DP-12. This involves changing over the RS422 receive data and the RTS signal. By default, the RTS signal is not required by the communicating peer.

The table shows the permissible settings for the DIP switch.

Communication via		Switch Position 1	2	3	4
RS422/RS485		OFF	ON	ON	OFF
PROFIBUS-DP	RTS at Pin 4 (default)	ON	OFF	OFF	OFF
	RTS at Pin 9 (as PG)	OFF	OFF	OFF	ON
	No RTS on connector	OFF	OFF	OFF	OFF

You will find the interface assignments of the different OP versions in appendix D of this manual.

15.2 Recommissioning

Procedure

If you want to replace a configuration already loaded on the OP with another one, proceed as follows:

Step	Procedure
1	Using a suitable standard cable, connect the configuration computer (PU or PC) to the interface of the OP: • IF1A for OP7 • IF2 for OP17
2	Switch on the power supply of the OP.
3	There are two ways to switch the OP to download mode: • **While normal operation is in progress** By calling the standard screen *System settings* → *OpMode* → *Download*. If necessary, enter the password for the required password level beforehand. • **During the startup phase of the OP** When switching on the power supply of the OP, press these three keys at the same time. ESC + ▶ + ▼ This key combination (”overall reset”) deletes the configuration memory. The OP then switches to download mode and waits for data to be downloaded from the PC/PU.
4	Start the download operation to the OP on the PC or PU. The OP checks the link to the PC or PU. If a link is not available or if it is not functioning properly, the OP issues a corresponding error message. If the link is in order, downloading of the configuration from the PC or PU is initiated to the OP. In doing so, the present configuration on the OP is overwritten by the new one. As long as data are not being transferred between the PC/PU and the OP, you can cancel Download mode by pressing ESC

Once the configuration has been successfully downloaded, the OP runs up again. If a start screen has been defined in the configuration, it is opened. If a start screen has not been defined, the OP displays the standby message.

Fault diagnosis

Any fault occurring during commissioning or in operation is normally displayed by means of an error message on the display of the OP.

You will find an overview of the most important system messages together with notes on troubleshooting in an appendix to this manual.

15.4 Testing the Configuration in OFFLINE Mode

Purpose

In *OFFLINE* mode, you can test the different functions and the configurations downloaded from the PC or PU independently of the PLC.

In OFFLINE mode, tags are not updated.

Procedure

Step	Procedure
1	Switch the OP to OFFLINE mode using the standard screen *System settings → OPMode*.
2	Check all configured screens for proper display.
3	Check the screen hierarchy.
4	Check the input fields.
5	Test the soft keys.
6	Check the different items of message text.
7	Test the function keys.

End of test

If errors occur when you perform the tests, you must download the configuration again.

15.5 Testing the Configuration in Conjunction with the PLC

Test with PLC connected

Once the tests in OFFLINE mode have been performed successfully, the OP is tested in conjunction with the PLC that you connected. This test determines whether the correct data areas have been configured.

Procedure

Step	Procedure
1	Connect the OP to the PLC.
2	Proper connection is indicated on the OP by a corresponding message.
3	Acknowledge this message.
4	Switch the OP to *ONLINE* mode by means of the standard screen *System settings → OPMode*. You can now test all items in your configuration for which communication with the PLC is necessary. Depending on the configuration, this might be • event and alarm messages, • buffers for event messages and alarm messages, • print functions, • automatic message printout, • screen selection, etc.

Tip

The OP17 has the built-in "**loop-through mode**" function.

The loop-through mode facilitates testing with the PLC during commissioning since there is then no need to keep on plugging the configuration computer alternately into the PLC and the OP.

15.6 Testing Communication via the PROFIBUS-DP

Bus fault LED

Mounted on the rear side of unit variants DP and DP-12 is a bus fault LED (figure 15-2). When the OP is connected to SIMATIC S7, this LED indicates that communication between the OP and the PLC over PROFIBUS-DP is OK by lighting up constantly. If the LED is constantly OFF, communication is disturbed.

The LED can be used for rapid diagnosis of any problems that might occur during communication.

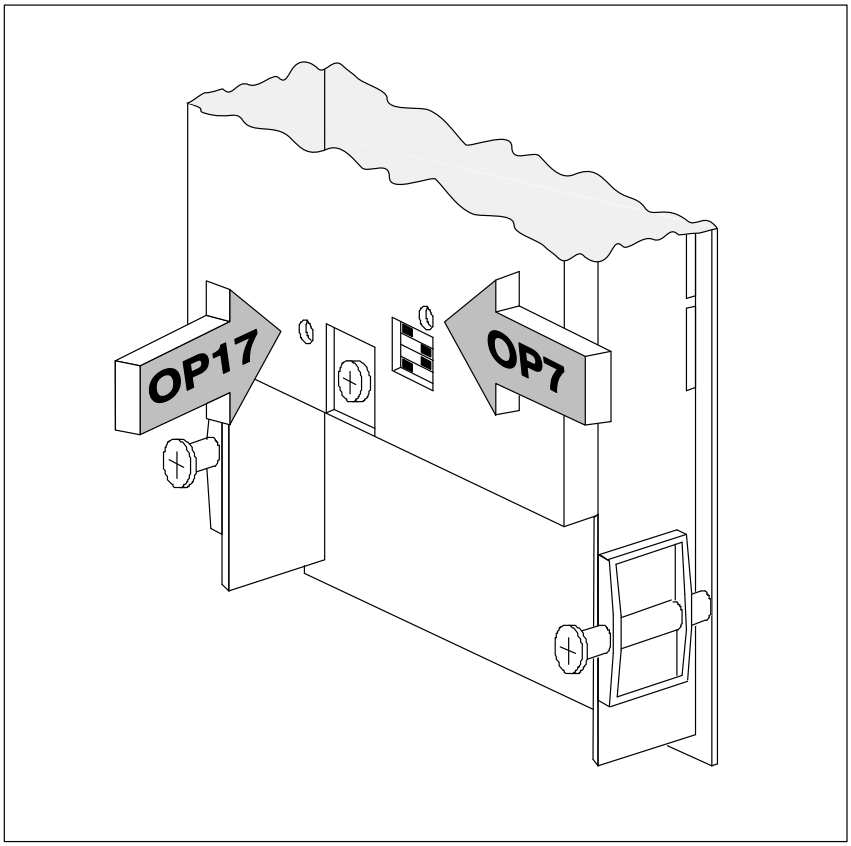


Figure 15-2 Location of the Bus Fault LED at the Rear of the OP

Device Description

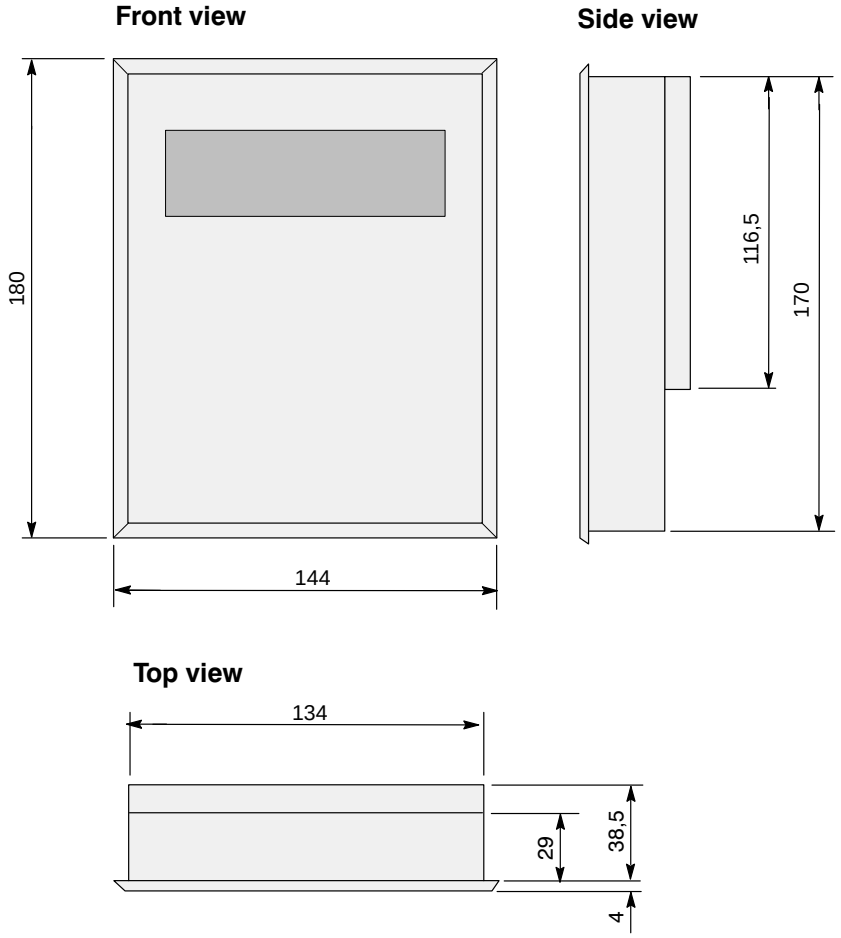
16

In this chapter

This chapter describes the versions, dimension drawings and connection elements of Operator Panels OP7 and OP17.

16.1 OP7

Dimensions



Mounting cutout

The OP7 requires the following mounting cutout (WxH):
135 $^{+1}$ mm x 171 $^{+1}$ mm.

Connection elements

The OP7 is available in versions PP, DP and DP-12. The versions differ only in as far as their communication options are concerned (refer to table 16-1). Figure 16-1 shows the connection elements on the underside of the OP7.

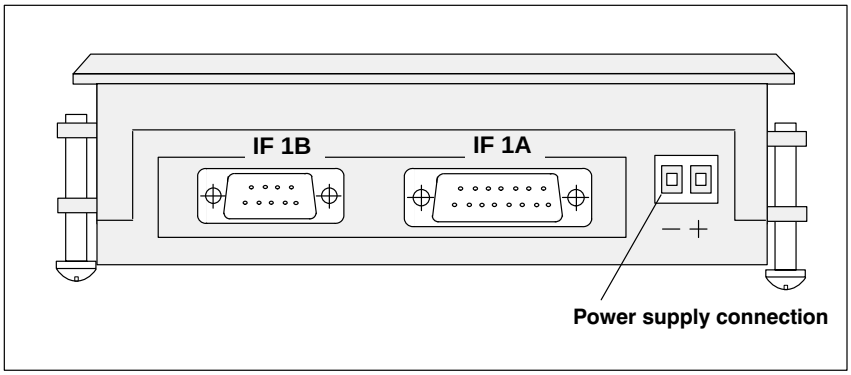


Figure 16-1 Locations of the Connection Elements on the Underside of the OP7

Table 16-1 Communication Options Featured by Different OP7 Versions

Connections	OP7		
	PP	DP	DP-12
SIMATIC S5			
– AS511 (TTY)	IF 1A	—	IF 1A
– FAP (TTY/RS232)	IF 1A	—	IF 1A
– PROFIBUS-DP up to 1.5 MBd	—	IF 1B	IF 1B
– PROFIBUS-DP up to 12 MBd	—	—	IF 1B
SIMATIC S7/M7			
– PPI	—	IF 1B	IF 1B
– MPI	—	IF 1B	IF 1B
– PROFIBUS-DP up to 1.5 MBd	—	IF 1B	IF 1B
– PROFIBUS-DP up to 12 MBd	—	—	IF 1B
SIMATIC 500/505			
– RS232	IF 1A	—	IF 1A
– RS422/RS485	IF 1B	—	IF 1B
Other PLCs			
– RS232/TTY	IF 1A	—	IF 1A
– RS422/RS485	IF 1B	—	IF 1B
PC/PU (TTY)	IF 1A	—	IF 1A
PC/PU (RS232)	IF 1A	IF 1A	IF 1A
Printer (TTY)	IF 1A	—	IF 1A
Printer (RS232)	IF 1A	IF 1A	IF 1A

Technical Data

C

Housing	OP7			OP17		
	PP	DP	DP-12	PP	DP	DP-12
Overall dimensions W x H x D	144 mm x 180 mm x 42.5 mm			240 mm x 204 mm x 54 mm		
Mounting cutout B x H	135 mm x 171 mm			231 mm x 195 mm		
Mounting depth	38.5 mm			50 mm		
Degree of protection – front – rear	IP65 IP20					
Weight approx.	0.430 kg			0.960 kg		

Memory	OP7			OP17		
	PP	DP	DP-12	PP	DP	DP-12
Flash memory for configuration data and data records	128 kbytes			256 kbytes		

Display	OP7			OP17		
	PP	DP	DP-12	PP	DP	DP-12
Type	LCD with LED backlighting					
Number of lines	4			4 or 8 (configurable)		
Characters per line	20			20 or 40 (depending on number of lines)		
Font size	8 mm			11 mm or 6 mm (depending on number of lines)		

Keyboard	OP7			OP17		
	PP	**DP**	**DP-12**	**PP**	**DP**	**DP-12**
Type	Touch-sensitive keyboard					
Number of system keys	22					
Number of LEDs	7			19 (16 of which two two-color)		
Number of function keys of which soft keys	8 8			24 16		

Voltage supply	OP7			OP17		
	PP	**DP**	**DP-12**	**PP**	**DP**	**DP-12**
Rated voltage	+24 V DC					
Permissible range	+18 ... +30 V DC					
Max. perm. transients	35 V (500 ms)					
Time between two transients	min. 50 sec					
Power input (at 24 V) – typical – max. contin. current	 190 mA 240 mA			 340 mA 390 mA		
Fusing – internal – external	 electronic fuse 1.6 A, quick-acting					

Buffering for OP17		OP17		
		PP	**DP**	**DP-12**
Internal	Message buffer Hardware clock	typ. 1 day at 40 °C [1] several days at 40 °C [1]		
External backup battery [2] (optional)	Type Voltage/capacity Message buffer/hardware clock	Lithium battery 3.6 V/approx. 1.5 Ah > 4 years		

1) The specified backup times apply only when the OP17 has been connected to the power supply for more than 12 hours

2) Subject to change

Interfaces	OP7			OP17		
	PP	**DP**	**DP-12**	**PP**	**DP**	**DP-12**
RS232	1	1	1	2	2	2
TTY	1	–	1	2	1	2
RS422/485	1	–	1	1	–	1
PPI/MPI/ PROFIBUS-DP (up to 1.5 Mbd)/ RS422/485	–	1	1	–	1	1
PPI/MPI/ PROFIBUS-DP (up to 12 Mbd)/ RS422/485	–	–	1	–	–	1

Ambient conditions	OP7			OP17		
	PP	**DP**	**DP-12**	**PP**	**DP**	**DP-12**
Operating temperature						
– vertical installation	0 °C ... 50 °C					
– horizontal installation	0 °C ... 35 °C					
Transportation, storage	–25 °C ... 70 °C					
Relative humidity						
– operation	≤ 95% no dew					
– transportation, storage	≤ 95%					
Shock resistance						
– operation	5 g/11 ms					
– transportation, storage	25 g/6 ms					
Vibration						
– operation	0.075 mm (10 Hz ... 58 Hz) 1 g (58 Hz ... 500 Hz)					
– transportation, storage	3.5 mm (5 Hz ... 12 Hz) 1 g (12 Hz ... 500 Hz)					
Max. pressure difference (front, rear)	2 hPa					
Air pressure						
– operation	706 ... 1030 hPa					
– transportation, storage	581 ... 1030 hPa					