

## 9. Control panels

### Description

#### Area of application

Ergonomic operation of the main machine functions at the human-machine interface is a key factor in safety. The control units should be mounted as close as possible to the safety doors so that operators have an overview of the process.

BDF Series control units meet this requirement. This series has been designed for mounting onto the commercially available aluminium profile systems of machine enclosures and you can quickly attach them and integrate them in the ambient structure.

#### Design and way of functioning

The range is based on a high-quality design with slim line housing (only 40 mm) made from impact-resistant plastic. Two designs are available to accommodate one or four command devices or indicator lights.

Users can choose from a large product portfolio of illuminated control push buttons, selector switches and selector buttons, LED illuminated indicators, key-operated switches and standards-compliant Emergency-Stop command devices. Positioning of the pushbuttons on the control panel is also freely selectable. Labelling fields allow you to label the functions individually.

This makes it possible for machine builders to use the BDF range to represent the most common operator functions like Emergency Stop, ON / OFF, Forwards / Backwards, Operating Mode Selection, display of operating status conditions or error messages, etc. All the command devices and indicator lights have been developed for industrial applications and have been tried and tested in other series of the command device product portfolio.

Information for the selection of suitable safety relay modules can be found in the chapter "Safety relay modules" (refer to page 218).

The system also includes a mounting plate to combine the control panel with a solenoid interlock and an ergonomic door handle. The BDF200-AS variant is available to integrate operating devices into the AS Interface Safety at Work (AS-i SaW) communications network.







## Sample application



The photo shows a combination with the BDF200 and an AZM 200 solenoid interlock, including a B30 door-handle actuator with the mounting plate as an elegant safety door solution. This positive connection between the BDF200 control panel and the AZM 200 solenoid interlock offers machine operators a whole new level of convenience.

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### Overview of the series

		
	■ BDF100...-NH	■ BDF100...
<b>Key Features</b>	<ul style="list-style-type: none"> <li>• Control panel with emergency stop</li> <li>• Emergency stop function with and without protective collar</li> <li>• Slim, shock-resistant thermoplastic enclosure</li> <li>• For mounting on commercially available aluminium profile systems</li> </ul>	<ul style="list-style-type: none"> <li>• Control panel with one control element</li> <li>• Slim, shock-resistant thermoplastic enclosure</li> <li>• For mounting on commercially available aluminium profile systems</li> <li>• Large product portfolio of operating and lighting elements</li> </ul>
<b>Other versions</b>		
AS-i SaW (refer to page 266)	–	–
<b>Technical features</b>		
<b>Electrical characteristics</b>		
Max. switching capacity U/I	24 VAC / 2 A; 24 VDC / 1 A	24 VAC / 2 A; 24 VDC / 1 A
Switching of low voltages	5 V / 1 mA	5 V / 1 mA
<b>Circuit versions</b>		
Emergency stop	2 NC / 1 NO	–
Command devices	–	1 NO / 1 NC; 2 NO
Emergency stop with indicator lamp	2 NC / 1 NO	–
Command devices with indicator lamp	–	1 NO / 1 NC; 2 NO
<b>Mechanical data</b>		
Housing material	glass-fibre reinforced thermoplastic, self-extinguishing	glass-fibre reinforced thermoplastic, self-extinguishing
Dimensions (W x H x D)		
with protective collar	40 x 99 x 69 mm	–
Without protective collar	40 x 99 x 49 mm	40 x 99 x 49 mm
Connection	Connector plug M12, 8-pole	Connector plug M12, 8-pole
<b>Ambient conditions</b>		
Ambient temperature	–25 °C ... +65 °C	–25 °C ... +65 °C
Protection class	IP65	IP65
<b>Safety classification</b>		
Standards	ISO 13849-1	ISO 13849-1
B <sub>10D</sub> NC contact	100,000	100,000
Certificates		



To get detailed information about the products and certificates, visit [www.schmersal.net](http://www.schmersal.net).



■ BDF200-NH-...

■ BDF200...

■ BDF200-NH-...-2920

■ BDF200-...-2920

- Control panel with emergency stop and 3 control elements
- Emergency stop function with and without protective collar
- Slim, shock-resistant thermoplastic enclosure
- For mounting on commercially available aluminium profile systems
- Large product portfolio of operating and lighting elements

- Control panel with 4 control elements
- Slim, shock-resistant thermoplastic enclosure
- For mounting on commercially available aluminium profile systems
- Large product portfolio of operating and lighting elements

- Connector plug M12, 12-pole
- Control panel with emergency stop and 3 control elements
- Emergency stop function with and without protective collar
- Slim, shock-resistant thermoplastic enclosure
- For mounting on commercially available aluminium profile systems
- Large product portfolio of operating and lighting elements

- Connector plug M12, 12-pole
- Control panel with 4 control elements
- Slim, shock-resistant thermoplastic enclosure
- For mounting on commercially available aluminium profile systems
- Large product portfolio of operating and lighting elements

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24 VAC / 2 A;  
24 VDC / 1 A  
5 V / 1 mA

24 VAC / 2 A;  
24 VDC / 1 A  
5 V / 1 mA

24 VAC / 1.5 A;  
24 VDC / 1 A  
5 V / 1 mA

24 VAC / 1.5 A;  
24 VDC / 1 A  
5 V / 1 mA

2 NC / 1 NO

–

2 NC

–

1 NC / 1 NO; 2 NO

1 NC / 1 NO; 2 NO

1 NC / 1 NO

1 NC / 1 NO

2 NC

–

–

–

1 NO

1 NO

–

–

glass-fibre reinforced  
thermoplastic, self-extinguishing

glass-fibre reinforced  
thermoplastic, self-extinguishing

glass-fibre reinforced  
thermoplastic, self-extinguishing

glass-fibre reinforced  
thermoplastic, self-extinguishing

40 x 220 x 69 mm

–

40 x 220 x 69 mm

–

40 x 220 x 49 mm

40 x 220 x 49 mm

40 x 220 x 49 mm

40 x 220 x 49 mm

M20 cable gland  
with plug-in terminals

M20 cable gland  
with plug-in terminals

Connector plug M12, 12-pole

Connector plug M12, 12-pole

–25 °C ... +65 °C  
IP65

–25 °C ... +65 °C  
IP65

–25 °C ... +65 °C  
IP65

–25 °C ... +65 °C  
IP65

ISO 13849-1

ISO 13849-1

ISO 13849-1

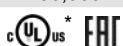
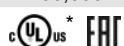
ISO 13849-1

100,000

100,000

100,000

100,000



\* Approval under preparation

## 9. Control panels

### Actuating elements



Emergency stop pushbutton NH	Emergency stop pushbutton NHK	Pushbutton DT..				
 <ul style="list-style-type: none"><li>■ Mushroom-shaped plastic button, Ø 30 mm</li><li>■ Without protective collar: ordering suffix NH</li><li>■ Pull to reset</li><li>■ 1 NO contact / 2 NC contacts</li></ul>	 <ul style="list-style-type: none"><li>■ Mushroom-shaped plastic button, Ø 30 mm</li><li>■ With protective collar: ordering suffix NHK</li><li>■ Pull to reset</li><li>■ 1 NO contact / 2 NC contacts</li></ul>	 <ul style="list-style-type: none"><li>■ With concave button, button surface 19 x 19 mm</li><li>■ 2 NO contacts or 1 NO contact / 1 NC contact</li><li>■ Printing is possible on request</li><li>■ Refer to the table below for the ordering suffix</li></ul>				
Indicator lights LM..	Mushroom push button PT..	Illuminated pushbutton LT..				
 <ul style="list-style-type: none"><li>■ Illuminated surface 19 x 19 mm</li><li>■ Lamp replacement at the front</li><li>■ Printing is possible on request</li><li>■ Refer to the table below for the ordering suffix</li></ul>	 <ul style="list-style-type: none"><li>■ Button surface 25 x 25 with rounded edges</li><li>■ Without latching</li><li>■ 2 NO contacts or 1 NO contact / 1 NC contact</li><li>■ Printing is possible on request</li><li>■ Refer to the table below for the ordering suffix</li></ul>	 <ul style="list-style-type: none"><li>■ With concave button, button surface 19 x 19 mm</li><li>■ 2 NO contacts or 1 NO contact / 1 NC contact</li><li>■ Lamp replacement at the front</li><li>■ Printing is possible on request</li><li>■ Refer to the table below for the ordering suffix</li></ul>				
Ordering suffix	yellow	red	green	blue	black	white
 Mushroom push button PT..	PTYE	PTRD	PTGN	PTBU	PTBK	PTWH
 Pushbutton DT..	DTYE	DTRD	DTGN	DTBU	DTBK	DTWH
 Illuminated pushbutton LT..	LYTE	LTRD	LTGN	LTBU		LTWH
 Indicator lights LM..	LMYE	LMRD	LMGN	LMBU		LMWH

For detailed information on selection, visit [www.schmersal.net](http://www.schmersal.net).

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### Actuating elements



Maintained selector switches / spring-return selector switches		Maintained selector switches / spring-return selector switches		Key-operated selector switches/buttons	
 <ul style="list-style-type: none"> <li>Version with standard toggle, anthracite</li> <li>Refer to the table below for the ordering suffix</li> </ul>		 <ul style="list-style-type: none"> <li>Version with long toggle, anthracite</li> <li>Refer to the table below for the ordering suffix</li> </ul>		 <ul style="list-style-type: none"> <li>Version with high-quality cylinder lock; therefore, IP65 in this case too</li> <li>Key can be removed in all positions</li> <li>Refer to the table below for the ordering suffix</li> </ul>	
Ordering suffix	Selector switch	Selector switch	Selector switch	Selector switch	Selector switches
					
	1 latched position	2 latched positions to the left/right of the zero position	1 momentary position and automatic return to the zero position	2 touch positions to the left/right of the zero position and automatic return to the zero position	1 momentary position on the right and automatic return to the zero position and 1 maintained position to the left of the zero position
	2 NO or 1 NO / 1 NC	1 NO per position or 1 NC (position 1) / 1 NO (position 2)	2 NO or 1 NO / 1 NC	1 NO per position or 1 NC (position 1) / 1 NO (position 2)	1 NO per position or 1 NC (position 1) / 1 NO (position 2)
 Standard toggle	WS20	WS30*	WT20	WT30*	WTS30*
 Long toggle	WS21	WS31*	WT21	WT31*	WTS31*
 Key-operated switch	SWS20		SWT20		


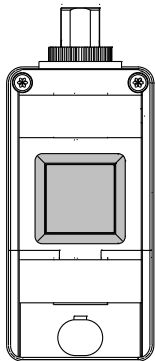



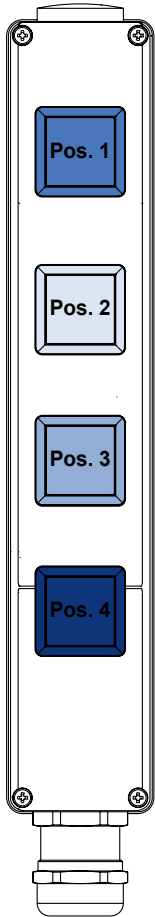





\* not for -2920 version

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### Combination options





Actuating elements	BDF100 with	BDF200				Control panels
		At pos. 1	At pos. 2	At pos. 3	At pos. 4	
 NH	•	•				<b>BDF100</b> 
 NHK	•	•				
 PT..		•	•	•	•	
 DT..	•	•	•	•	•	<b>BDF200</b> 
 LT..	•	•	•	•	•	
 LM..		•	•	•	•	
 SW.20	•		•	•		
 W..0	•		•	•		
 W..1	•		•	•		

## 9. Control panels

### Preferred types and accessories



Series	Fitting At pos. 1	Pos. 2	Pos. 3	Pos. 4	Indicator lamp	Type designation	Material number
<b>BDF100</b> 	NH	---	---	---	red	BDF100-NH-G-ST	101215862
	NHK	---	---	---		BDF100-NHK-G-ST	101211974
	LTBU	---	---	---	---	BDF100-11-LTBU-ST	101216402
	LTGN	---	---	---		BDF100-11-LTGN-ST	101216247
	SWS20	---	---	---		BDF100-11-SWS20-ST	101217193
	WS20	---	---	---	green	BDF100-11-WS20-G/GN-ST	103001068
	LTBU	---	---	---	---	BDF100-20-LTBU-ST	101217770
	LTGN	---	---	---		BDF100-20-LTGN-ST	101217217
<b>BDF200</b> 	NH	LTGN	LTGN	LTYE	red	BDF200-NH-10-LTGN-LTGN-LMYE-G24	103000487
		LTYE	SWS20	LTBU		BDF200-NH-10-LTYE-SWS20-LTBU-G24	103000657
		LTBU	LTRD	LTGN	---	BDF200-NHK-20-LTGN-LTBU-LTRD	101212033
		SWS20	LTGN	LTRD		BDF200-NHK-20-LTGN-LTBU-LTRD	101212023
		LT	LT	LT	red	BDF200-NH-10-LT-LT-LT-G24-2875 <sup>1)</sup>	103007781
		LT	LT	LT	---	BDF200-NH-11-LT-LT-LT-2875 <sup>1)</sup>	103007782
		LT	LT	LT		BDF200-NH-11-LT-LT-LT-2875/2920 <sup>1)2)</sup>	103015461
		LT	LT	LT		BDF200-NH-20-LT-LT-LT-2875 <sup>1)</sup>	103007783
		SWS20	LT	LT		BDF200-NH-11-SWS20-LT-LT-2875 <sup>1)</sup>	103007789
		SWS20	LT	LT		BDF200-NH-20-SWS20-LT-LT-2875 <sup>1)</sup>	103007790
	NHK	WT30	DTRD	DTGN	---	BDF200-NHK-11-WT30-DTRD-DTGN	101212034
		LTGN	LTBU	LTRD		BDF200-NHK-20-LTGN-LTBU-LTRD	101211180
		LT	LT	LT	red	BDF200-NHK-10-LT-LT-LT-G24-2875 <sup>1)</sup>	103007784
		LT	LT	LT	---	BDF200-NHK-11-LT-LT-LT-2875 <sup>1)</sup>	103007785
		LT	LT	LT		BDF200-NHK-11-LT-LT-LT-2875/2920 <sup>1)2)</sup>	on request
		LT	LT	LT		BDF200-NHK-20-LT-LT-LT-2875 <sup>1)</sup>	103007786
		SWS20	LT	LT		BDF200-NHK-11-SWS20-LT-LT-2875 <sup>1)</sup>	103007791
		SWS20	LT	LT		BDF200-NHK-20-SWS20-LT-LT-2875 <sup>1)</sup>	103007792
	LT	LT	LT	LT	---	BDF200-LT-11-LT-LT-LT-2875 <sup>1)</sup>	103007787
		LT	LT	LT		BDF200-LT-11-LT-LT-LT-2875/2920 <sup>1)2)</sup>	on request
		LT	LT	LT		BDF200-LT-20-LT-LT-LT-2875 <sup>1)</sup>	103007788

<sup>1)</sup> Type designation -2875: the coloured button caps are included in the scope of delivery as an accessory pack for customers to mount themselves.

<sup>2)</sup> with connector plug M12, 12 pole

AZM 200	MP BDF 200	101214126
 <ul style="list-style-type: none"> <li>Can be combined with the AZM200 solenoid interlock</li> <li>For more information, visit <a href="http://www.schmersal.net">www.schmersal.net</a></li> </ul>	 <ul style="list-style-type: none"> <li>Mounting plate for combination of AZM 200 solenoid interlock with -B30 actuator and BDF200 control panel</li> </ul>	

To see a wide range of other types, visit [www.schmersal.net](http://www.schmersal.net).