



EN Operating instructions.....pages 1 to 6
Translation of the original operating instructions

FR Vous trouverez la version actuelle du mode d'emploi dans votre langue nationale officielle sur l'Internet, www.schmersal.net.

ES Encontrará el manual de instrucciones actual en su idioma oficial de la UE en nuestra página de Internet www.schmersal.net.

NL U vindt de huidige versie van de gebruikshandleiding in uw officiële landstaal op het Internet, www.schmersal.net.

IT Il manuale d'istruzioni aggiornato nella vostra lingua (lingua ufficiale UE) è scaricabile in Internet all'indirizzo www.schmersal.net.

JP EU公用語で書かれた最新の取扱説明書は、インターネット (www.schmersal.net) からダウンロードできます。

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1. About this document

1.1 Function

This operating instructions manual provides all the information you need for the mounting, set-up and commissioning to ensure the safe operation and disassembly of the safety switchgear. The operating instructions must be available in a legible condition and a complete version in the vicinity of the device.

1.2 Target group: authorised qualified personnel

All operations described in this operating instructions manual must be carried out by trained specialist personnel, authorised by the plant operator only.

Please make sure that you have read and understood these operating instructions and that you know all applicable legislations regarding occupational safety and accident prevention prior to installation and putting the component into operation.

The machine builder must carefully select the harmonised standards to be complied with as well as other technical specifications for the selection, mounting and integration of the components.

1.3 Explanation of the symbols used



Information, hint, note:

This symbol is used for identifying useful additional information.



Caution: Failure to comply with this warning notice could lead to failures or malfunctions.

Warning: Failure to comply with this warning notice could lead to physical injury and/or damage to the machine.

1.4 Appropriate use

The products described in these operating instructions are developed to execute safety-related functions as part of an entire plant or machine. It is the responsibility of the manufacturer of a machine or plant to ensure the correct functionality of the entire machinery or plant.

The safety switchgear must be exclusively used in accordance with the versions listed below or for the applications authorised by the manufacturer. Detailed information regarding the range of applications can be found in the chapter "Product description".

1.5 General safety instructions

The user must observe the safety instructions in this operating instructions manual, the country-specific installation standards as well as all prevailing safety regulations and accident prevention rules.



Further technical information can be found in the Schmersal catalogues or in the online catalogue on the Internet: www.schmersal.net.

The information contained in this operating instructions manual is provided without liability and is subject to technical modifications.



If multiple safety components are wired in series, the Performance Level to EN ISO 13849-1 will be reduced due to the restricted error detection under certain circumstances. The entire concept of the control system, in which the safety component is integrated, must be validated to EN ISO 13849-2.

There are no residual risks, provided that the safety instructions as well as the instructions regarding mounting, commissioning, operation and maintenance are observed.

1.6 Warning about misuse



In case of inadequate or improper use or manipulations of the safety switchgear, personal hazards or damage to machinery or plant components cannot be excluded. The relevant requirements of the standard EN ISO 13850 must be observed.

1.7 Exclusion of liability

We shall accept no liability for damages and malfunctions resulting from defective mounting or failure to comply with this operating instructions manual. The manufacturer shall accept no liability for damages resulting from the use of unauthorised spare parts or accessories.

For safety reasons, invasive work on the device as well as arbitrary repairs, conversions and modifications to the device are strictly forbidden; the manufacturer shall accept no liability for damages resulting from such invasive work, arbitrary repairs, conversions and/or modifications to the device.

2. Product description

2.1 Ordering code

This operating instructions manual applies to the following types:

BDF 100-①-G-ST with emergency stop

No.	Option	Description
①	NH	Emergency stop pushbutton without protective collar
	NHK	with protective collar

Enclosure with yellow cover

BDF 100-①-②-③-ST

No.	Option	Description
①	20	2 NO contacts
	11	1 NO contact / 1 NC contact
②	...	Selection of the actuator without indicator lamp
③	G/RD	Red indicator lamp (not for -LT, -LM)
	G/GN	Green indicator lamp (not for -LT, -LM)
	G/YE	Yellow indicator lamp (not for -LT, -LM)
	G/BU	Blue indicator lamp (not for -LT, -LM)
	G/WH	White indicator lamp (not for -LT, -LM)

Enclosure with black cover



In accordance with the Machinery Directive, the type plate of safety components is type plate is labelled "safety component".

Only if the information described in this operating instructions manual are realised correctly, the safety function and therefore the compliance with the Machinery Directive is maintained.

2.2 Actuator overview

Emergency stop pushbutton with latching

- without protective collar ordering suffix **NH**
- with protective collar ordering suffix **NHK**
- Pull to reset
- 1 NO contact / 2 NC contacts

Illuminated pushbutton LT

- with concave button
- Lamp replacement at the front
- 2 NO contacts or 1 NO / 1 NC contact

Pushbutton DT

- with concave button
- 2 NO contacts or 1 NO / 1 NC contact

Illuminated signal LM

- Lamp replacement at the front

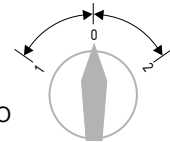
Selector switches WS20, SWS20

- 1 latched position
- 2 NO contacts or 1 NO / 1 NC contact



Selector switches WS30

- 2 latched positions to the left/right of the zero position
- 1 NO contact for each switching position for version -20 or 1 NC contact (position 1) and 1 NO contact (position 2) for version -11



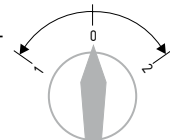
(Key-operated) Selector switches WT20, SWT20

- 1 touch position and automatic return to the zero position
- 2 NO contacts or 1 NO / 1 NC contact



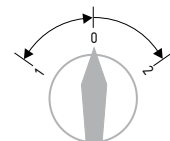
Selector switches WT30

- 2 touch positions to the left/right of the zero position and automatic return to the zero position
- 1 NO contact for each switching position for version -20 or 1 NC contact (position 1) and 1 NO contact (position 2) for version -11



Selector switches WTS30

- 1 touch position right and automatic return to the zero position and 1 latched position left of the zero position
- 1 NO contact for each switching position for version -20 or 1 NC contact (position 1) and 1 NO contact (position 2) for version -11



2.3 Special versions

For special versions, which are not listed in the order code below 2.1, these specifications apply accordingly, provided that they correspond to the standard version.

2.4 Destination and use

The modular BDF 100 control panel is installed on the safety guard of a machine or plant. It enables the operator to activate for instance the emergency stop, start/stop and reset functions.


The control panels can be cascaded on top of each other (stackwise) or next to each other (juxtaposed).



The user must evaluate and design the safety chain in accordance with the relevant standards and the required safety level.

2.5 Technical data

Standards:	EN 60947-5-1, EN 60947-5-5
Material of the enclosure:	glass-fibre reinforced thermoplastic, self-extinguishing
Protection class:	IP65
Connection:	Connector plug M12, 8-pole,
Ambient temperature:	- 25 °C ... + 65 °C
Climate resistance:	to DIN EN 60068 Part 2 - 30
Overvoltage category:	III
Degree of pollution:	3
Material of the contacts:	AgNi 10, gold-plated
Rated operating voltage U_r :	max. 24 V
Utilisation category:	AC-15 / DC-13
Rated operating current/voltage I_e/U_e :	AC-15: 2 A / 24 VAC DC-13: 1 A / 24 VDC
Thermal test current I_{the} :	2 A
Max. fuse rating:	2 A slow blow
Contact system:	Cross-Point system
Contact force:	0.5 N per contact point = 1 N per contact
Switching of low voltages:	min. 5 V / 1 mA
Switching frequency:	1,200 s/h
Rated insulation voltage U_i :	60 V
Bounce duration:	< 2 ms at 100 mm/s actuating speed
Mechanical life:	1 million operations; emergency stop 100,000 operations
Switch travel:	approx. 3 mm
Resistance to shock:	100 g / 6 ms
Resistance to vibrations:	20 g, 10 ... 100 Hz
Wiring configuration:	to EN 60947-1
Actuating force at travel end (1 NC/1 NO):	8 N
Lamp socket:	BA5S, LED, max. length 17 mm
LED change:	from front
LED power consumption (actuators):	16 mA
Power consumption indicator lamp, red:	20 mA

 Adapters providing the means for field wiring are available from the manufacturer. Refer to manufacturers information. Or equivalent. (See Schmersal online catalogue.)
For use in NFPA79, Industrial Machinery, only.
The power-source has to be an isolated secondary source limited by a listed fuse rated 3 A min. 24 VAC/DC.

2.6 Safety classification emergency stop

Standards:	EN ISO 13849-1
B_{10d} :	100,000
Service life:	20 years

$$MTTF_d = \frac{B_{10d}}{0,1 \times n_{op}} \quad n_{op} = \frac{d_{op} \times h_{op} \times 3600 \text{ s/h}}{t_{cycle}}$$

(Specifications can vary depending on the application-specific parameters h_{op} , d_{op} and t_{cycle} as well as the load.)

3. Mounting

3.1 General mounting instructions

For the correct fixing of the control panel, the device is provided with two mounting holes for M5 screws are provided. Any mounting position.

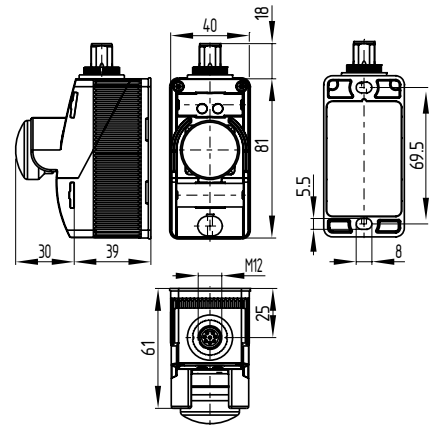


Please observe the remarks of the standards EN ISO 12100, EN 953 and EN 1088.

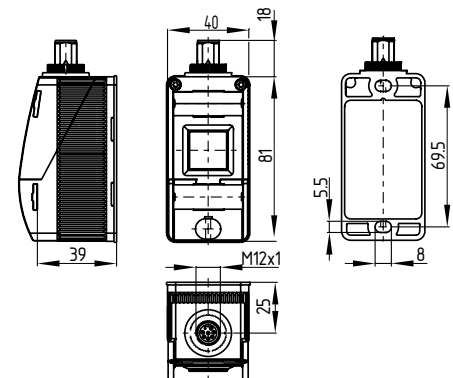
3.2 Dimensions

All measurements in mm.

BDF 100-NH...



BDF 100-...-



3.3 Fixing

Remove the cover of the enclosure (screws: Torx 10).



When opening the enclosure cover, please avoid damage to the connecting cables.



Caution!

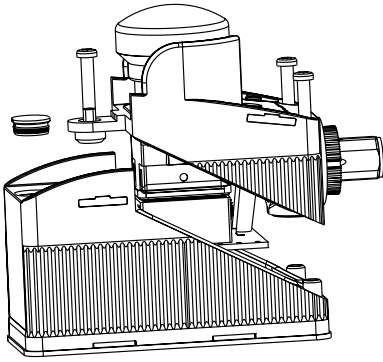
Do not touch electrostatically loaded elements.
Do not touch the printed circuit board.

Use 2 x M5 cylindrical screws ISO 4762 (DIN 912) for the assembly.



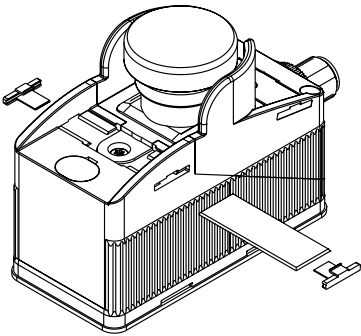
When closing the enclosure cover, please observe that the individual cables are not caught between the actuator and the contact element.

After fitting, the cover screws must be tightened with a tightening torque of 0.7 - 0.8 Nm.



3.4 Inscription plates with fastening clips

The identification fields can be labelled with two-layer plastic inscription fields (included in delivery). After that, they are fixed with the fastening clips (included in delivery).



4. Electrical connection

4.1 General information for electrical connection



The electrical connection may only be carried out by authorised personnel in a de-energised condition.

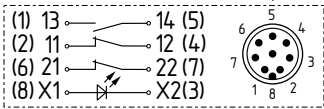
The connection to the operating panel is realised through an M12 connector. The M12 connector plug is A-coded. The operating panel must be wired in accordance with the pin configuration of the connector plug.

4.2 Pin configuration

The number in brackets indicates the PIN number of the connector. Control of the integrated or additional indicator lamp is through PIN 3 and PIN 8.

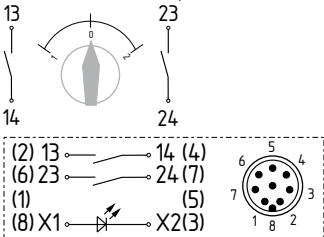
BDF 100-NH-...

1 NO contact / 2 NC contacts, contact variant emergency stop



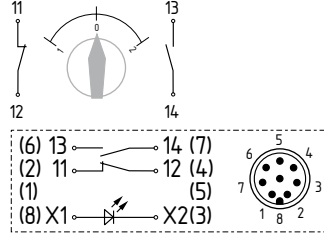
BDF 100-20-...

Contact variant -20, 2 NO contacts



BDF 100-11-...

Contact variant -11, 1 NO contact / 1 NC contact



Information for selecting the suitable connectors and connector plugs can be found in the Schmersal catalogues or in the online catalogue on the Internet: www.schmersal.net.

5. Set-up and maintenance

5.1 Functional testing

The safety function of the safety components must be tested. The following conditions must be previously checked and met:
The installation is executed according to the instructions.
The connection is executed correctly.
The cable is correctly executed and connected.

5.2 Maintenance

In case of correct installation in accordance with the above-described instructions, the component requires little maintenance. By use in extreme conditions, we recommend routine maintenance including the following steps:

1. Check the correct fixing of the control panel
2. Remove particles of dust and soiling
3. Check cable entry and connections

Damaged or defective components must be replaced.

6. Disassembly and disposal

6.1 Disassembly



The control panel must be disassembled in a de-energised condition only.

6.2 Disposal

The control panel must be disposed of in an appropriate manner in accordance with the national prescriptions and legislations.

7. Appendix

7.1 EC Declaration of conformity

	
<h2>EC Declaration of conformity</h2>	
Translation of the original declaration of conformity K.A. Schmersal GmbH Industrielle Sicherheitssysteme Mödinghofe 30, 42279 Wuppertal Germany Internet: www.schmersal.com	
We hereby certify that the hereafter described safety components both in its basic design and construction conform to the applicable European Directives.	
Name of the safety component:	BDF 100
Description of the safety component:	Control panel
Harmonised EC-Directives:	2006/42/EC EC-Machinery Directive ¹⁾ 2006/95/EC EC Low Voltage Directive ²⁾
Affixing of the CE conformity mark:	¹⁾ for safety components, whose type plate is labelled "safety component" ²⁾ for switchgear without safety function
Person authorized for the compilation of the technical documentation:	Ulrich Loss Mödinghofe 30 42279 Wuppertal
Place and date of issue:	Wuppertal, January 31, 2011
BDF 100-A-EN	
	Authorised signature Heinz Schmersal Managing Director



The currently valid declaration of conformity can be downloaded from the internet at www.schmersal.net.



K. A. Schmersal GmbH
Industrielle Sicherheitssysteme
Möddinghofe 30, D - 42279 Wuppertal
Postfach 24 02 63, D - 42232 Wuppertal

Telefon +49 - (0)2 02 - 64 74 - 0
Telefax +49 - (0)2 02 - 64 74 - 1 00
E-Mail: info@schmersal.com
Internet: <http://www.schmersal.com>