

Magnetic switch For bypass level indicators Model BGU

WIKA data sheet LM 10.06



for further approvals
see page 3

Applications

- Magnetic switches for detecting the limits of levels in bypass or top-mounted level indicators
- Chemical and petrochemical industries, oil and natural gas extraction (on- and offshore)
- Shipbuilding, machine building
- Power generating equipment, power plants
- Pharmaceutical, food, water treatment, environmental engineering industries

Special features

- Proper functioning, even under extreme environmental influences, e.g. dirt, humidity, gases, dust, chips
- Compact and operationally safe design
- Mounting of the switches at the magnetic display with T-slot or with tightening strap
- Process temperature of -60 ... +380 °C (depending on version)



Magnetic switch, model BGU-S

Description

The model BGU magnetic switches serve to detect the limits of levels in bypass or top-mounted level indicators. They generate a binary signal which can be fed to downstream signalling or control equipment. Bistable versions enable the storage of signals.

The magnetic switches are mounted to the magnetic display with sliding blocks or directly to the level indicator with a tightening strap. The magnetic switches are available with different approvals and with SIL 1.

For selecting the optimum switch (switch model, approval, switching option, cable length, cable material) we offer application-related technical advice.

Options






- Switching option (series resistor R22 for PLC, wiring in accordance with NAMUR per DIN EN 60947-5-6)
- Cable length (1, 3 or 5 m, others on request)
- Cable material (PVC, silicone, PUR)

Model overview

Basic model	Material	Electrical connection	Switching element	Switching option	
				R (series resistor 22 Ω)	N (NAMUR) per EN 60947-5-6
BGU-S	Aluminium body	Cable outlet	Reed contact	x	x
BGU-A	Aluminium body + aluminium case A101	<ul style="list-style-type: none"> ■ M16 x 1.5 ■ M20 x 1.5 	Reed contact	x	x
BGU-M12	Aluminium body	M12 connector	Reed contact	x	x
BGU-VHT	Stainless steel case AV4	M20 x 1.5	Reed contact	x	x
BGU-AIH	Aluminium case A105	M20 x 1.5	Proximity switch high alarm	-	-
BGU-AIL	Aluminium case A105	M20 x 1.5	Proximity switch low alarm	-	-
BGU-V	Stainless steel body	Cable outlet	Reed contact	x	x
BGU-AL	Aluminium case XD-JB85	<ul style="list-style-type: none"> ■ M20 x 1.5 ■ 3/4" NPT 	Reed contact	x	x
BGU-AM	Aluminium case JBDR33	3/4" NPT	Microswitch	-	-
BGU-AX	Aluminium case JBDR33	3/4" NPT	Reed contact	x	x
BGU-AXP	Aluminium case XIHFCX3L	3/4" NPT	Reed contact	-	-
BGU-AMXP	Aluminium case XIHFCX3L	3/4" NPT	Microswitch	-	-
BGU-AHTXP	Aluminium case XIHFCX3L	3/4" NPT	Reed contact	-	-

Approvals

Basic model	Without approval	ATEX Ex i	DNV GL	ATEX Ex d	FM	EAC Ex	EAC LVD
BGU-S	x	x	x	-	-	x	x
BGU-A	x	x	x	-	-	x	x
BGU-M12	x	x	-	-	-	x	x
BGU-VHT	x	x	-	-	-	-	x
BGU-AIH	-	x	-	-	-	-	-
BGU-AIL	-	x	-	-	-	-	-
BGU-V	x	x	x	x	-	x	x
BGU-AL	-	-	-	x	-	-	-
BGU-AM	-	-	-	x	-	-	-
BGU-AX	-	-	-	x	-	-	-
BGU-AXP	-	-	-	-	x	-	-
BGU-AMXP	-	-	-	-	x	-	-
BGU-AHTXP	-	-	-	-	x	-	-

Logo	Description	Country
 	EU declaration of conformity <ul style="list-style-type: none"> ■ Low voltage directive ■ RoHS directive ■ ATEX directive (option) Hazardous areas <ul style="list-style-type: none"> - Ex i II 2G Ex ib IIC T6 ... T1 Gb II 2D Ex ib IIIC T80 ... T180 °C Db - Ex d II 2G Ex db IIC T6 ... T1 Gb II 2D Ex tb IIIC T80 ... T145 °C Db 	European Union
	FM Hazardous areas XP	USA
	EAC <ul style="list-style-type: none"> ■ Low voltage directive ■ Hazardous areas 	Eurasian Economic Community
	DNV GL <ul style="list-style-type: none"> ■ Ships, shipbuilding ■ Hazardous areas 	International

Approvals and certificates, see website

Switching power

Switching power	BGU-A	BGU-AIH	BGU-AIL	BGU-AHTXP	BGU-AL	BGU-AM
Standard + DNV GL + Ex d AC ≤ 230 V; ≤ 40 VA; ≤ 1 A DC ≤ 230 V; ≤ 20 W; ≤ 0.5 A	BGU-A BGU-AG	-	-	BGU-AHTXPF	BGU-ALD	-
Standard + DNV GL with series resistor AC ≤ 50 V; ≤ 40 VA; ≤ 300 mA DC ≤ 75 V; ≤ 20 W; ≤ 300 mA	BGU-AR BGU-ARG	-	-	-	-	-
Standard + DNV-GL with NAMUR AC ≤ 50 V; ≤ 30 VA; ≤ 10 mA DC ≤ 75 V; ≤ 20 W; ≤ 10 mA	BGU-AN BGU-ANG	-	-	-	-	-
Ex i + DNV GL standard or with series resistor U _i ≤ 36 V; I _i ≤ 100 mA; P _i ≤ 0.84 W	BGU-AI BGU-AGI BGU-ARI BGU-ARGI	-	-	-	-	-
Ex i + DNV GL + Ex d with NAMUR U _i ≤ 18.5 V; I _i ≤ 30 mA; P _i ≤ 0.4 W	BGU-ANI BGU-ANGI	-	-	-	BGU-ALND	-
Ex d with series resistor AC ≤ 230 V; ≤ 100 mA; ≤ 1 VA DC ≤ 230 V; ≤ 100 mA; ≤ 1 W	-	-	-	-	BGU-ALRD	-
Proximity switch always with NAMUR U _i ≤ 16 V; I _i ≤ 25 ... 76 mA; P _i ≤ 34 ... 242 mW	-	BGU-AIHI	BGU-AILI	-	-	-
Microswitch AC ≤ 230 V; ≤ 5 A DC ≤ 230 V; ≤ 5 A	-	-	-	-	-	BGU-AMD

Switching power	BGU-AMXP	BGU-AX	BGU-AXP	BGU-M12	BGU-S	BGU-V	BGU-VHT
Standard + DNV GL + Ex d AC ≤ 230 V; ≤ 40 VA; ≤ 1 A DC ≤ 230 V; ≤ 20 W; ≤ 0.5 A	-	BGU-AXD	BGU-AXPF	BGU-M12	BGU-S BGU-SG	BGU-V BGU-VG BGU-VD	BGU-VHT
Standard + DNV GL with series resistor AC ≤ 50 V; ≤ 40 VA; ≤ 300 mA DC ≤ 75 V; ≤ 20 W; ≤ 300 mA	-	-	-	BGU-M12R	BGU-SR BGU-SRG	BGU-VR BGU-VRG	BGU-VHTR
Standard + DNV-GL with NAMUR AC ≤ 50 V; ≤ 30 VA; ≤ 10 mA DC ≤ 75 V; ≤ 20 W; ≤ 10 mA	-	-	-	BGU-M12N	BGU-SN BGU-SNG	BGU-VN BGU-VNG	BGU-VHTN
Ex i + DNV GL standard or with series resistor U _i ≤ 36 V; I _i ≤ 100 mA; P _i ≤ 0.84 W	-	-	-	BGU-M12I BGU-M12RI	BGU-SI BGU-SGI BGU-SRI BGU-SRGI	BGU-VI BGU-VGI BGU-VRI BGU-VRGI	BGU-VHTI BGU-VHTRI
Ex i + DNV GL + Ex d with NAMUR U _i ≤ 18.5 V; I _i ≤ 30 mA; P _i ≤ 0.4 W	-	BGU-AXND	-	BGU-M12NI	BGU-SNI BGU-SNGI	BGU-VNI BGU-VNGI BGU-VND	BGU-VHTNI
Ex d with series resistor AC ≤ 230 V; ≤ 100 mA; ≤ 1 VA DC ≤ 230 V; ≤ 100 mA; ≤ 1 W	-	BGU-AXRD	-	-	-	BGU-VRD	-
Microswitch AC ≤ 230 V; ≤ 5 A DC ≤ 230 V; ≤ 5 A	BGU-AMXPF	-	-	-	-	-	-

Temperature range

Standard version (without Ex approval)

Temperature ranges	
Process temperature	
Cable version, reed ⁹⁾	-50 ... +180 °C
Aluminium case A101, reed	-50 ... +180 °C
Stainless steel case, reed	-196 ... +380 °C
Connector version, reed	-40 ... +100 °C
Ambient temperature	-40 ... +80 °C

Ignition protection type Ex i

Temperature ranges					
Process temperature					
Cable version, reed ⁹⁾	-40 ... +150 °C				
Aluminium case A101, reed	-40 ... +150 °C				
Stainless steel case, reed	-60 ... +380 °C				
Connector version, reed	-40 ... +100 °C				
Version with proximity switch (AIHI/AILI)	-40 ... +100 °C				
Ambient temperature	T1/T2	T3	T4	T5	T6
Cable version, reed	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C ¹⁾	-40 ... +80 °C ²⁾
Aluminium connection housing, reed	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C ¹⁾	-40 ... +80 °C ²⁾
Stainless steel case, reed	-60 ... +80 °C	-60 ... +80 °C	-60 ... +80 °C	-60 ... +80 °C ¹⁾	-60 ... +80 °C ²⁾
Connector version, reed	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C ¹⁾	-40 ... +80 °C ²⁾
Version with proximity switch (AIHI/AILI)	-40 ... +80 °C (for detailed information, see operating instructions)				
Max. operating temperature at the installation point (TB)					
Cable version, reed	+175 °C ³⁾	+175 °C ³⁾	+130 °C ^{3) 6)}	+95 °C ^{3) 1)}	+80 °C ²⁾
Aluminium connection housing, reed	+100 °C	+100 °C	+100 °C	+95 °C ¹⁾	+80 °C ²⁾
Stainless steel case, reed	+180 °C ⁴⁾	+180 °C ^{5) 7)}	+130 °C ⁸⁾	+95 °C ¹⁾	+80 °C ²⁾
Connector version, reed	+80 °C	+80 °C	+80 °C	+80 °C ¹⁾	+80 °C ²⁾
Version with proximity switch (AIHI/AILI)	≤ 30 ... 100 °C (for detailed information, see operating instructions)				
Max. surface temperature for dust protection, zone 21	TB + 5K				

Ignition protection type Ex d

Temperature ranges					
Process temperature					
Cable version, reed ⁹⁾	-40 ... +150 °C				
Aluminium case AL, reed	-40 ... +150 °C				
Aluminium case AX, reed + AM microswitch	-40 ... +80 °C				
Ambient temperature	T1/T2	T3	T4	T5	T6
Gas	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C	-40 ... +80 °C	-40 ... +75 °C
Dust, zone 21					
Cable version, reed	-40 ... +80 °C				
Aluminium case AL, reed	-40 ... +80 °C				
Aluminium case AX, reed + AM microswitch	-40 ... +55 °C				
Max. operating temperature at the installation point (TB)					
Cable version, reed	+140 °C ³⁾	+140 °C ³⁾	+125 °C ³⁾	+90 °C ³⁾	+75 °C
Aluminium case AL, reed	+140 °C	+140 °C	+125 °C	+90 °C	+75 °C
Aluminium case AX, reed + AM microswitch	+80 °C	+80 °C	+80 °C	+80 °C	+75 °C
Max. surface temperature for dust protection, zone 21	TB + 5K				

1) Ex i (T5) with NAMUR or series resistor max. 65 °C

2) Ex i (T5) with NAMUR or series resistor max. 50 °C

3) Only for silicone cable, PVC and PUR cable limited to max. 80 °C

4) Up to 200 °C on request

5) Up to 195 °C on request

6) Ex i (T5) silicone cable with NAMUR or series resistor max. 100 °C

7) With NAMUR or series resistor max. 175 °C

8) With NAMUR or series resistor max. 100 °C

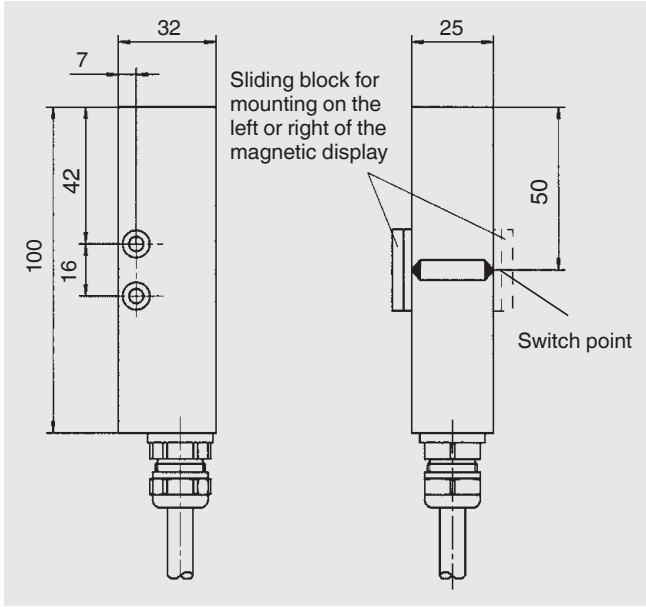
9) Depending on the cable selection; PVC cable = max. 100 °C; PUR cable = max. 80 °C; SIL cable max. 180 °C

Ingress protection

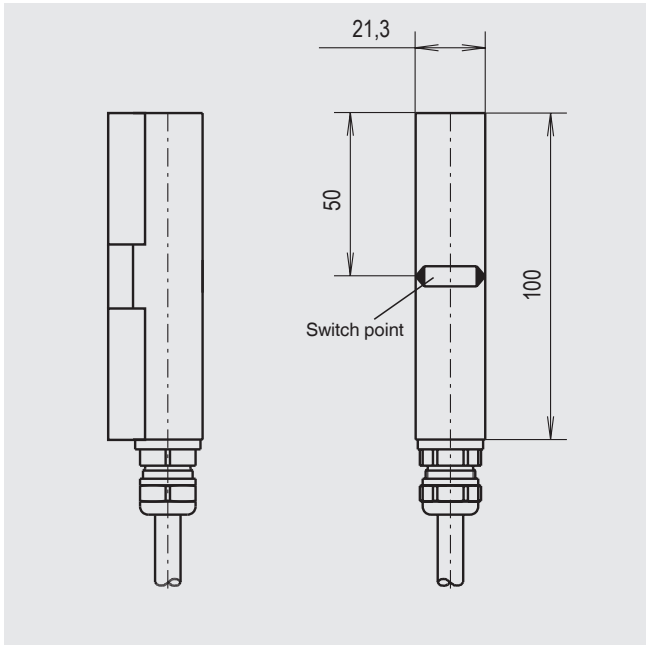
Ingress protection per IEC/EN 60529	Without approval	Ignition protection type Ex i	Ignition protection type Ex d
Cable version, reed	IP66	IP66	IP66/IP68
Aluminium case A101, reed	IP66/IP68	IP66/IP68	-
Stainless steel case, reed	IP66/IP68	IP66/IP68	-
Connector version, reed	IP67	IP67	-
Version with proximity switch (AIHI/AILI)	-	IP66/IP68	-
Aluminium case AL, reed	-	-	IP66/IP68
Aluminium case AX, reed + AM microswitch	-	-	IP65

Dimensions for basic model

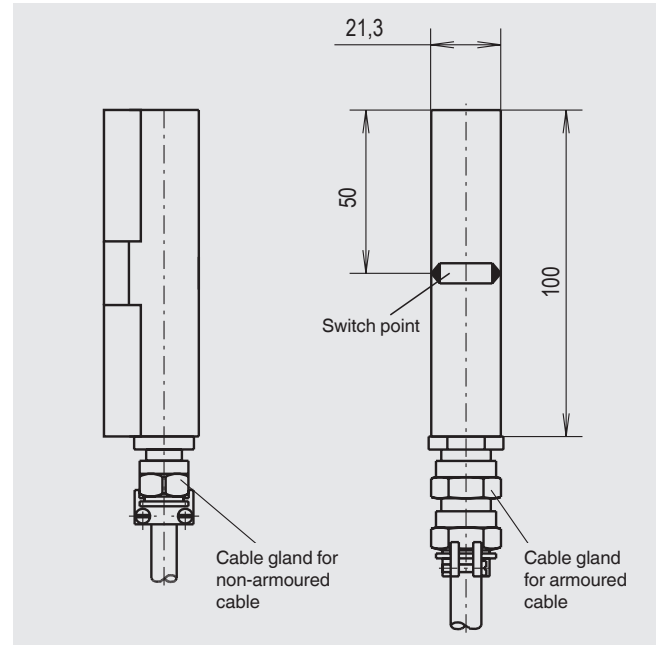
Model BGU-S



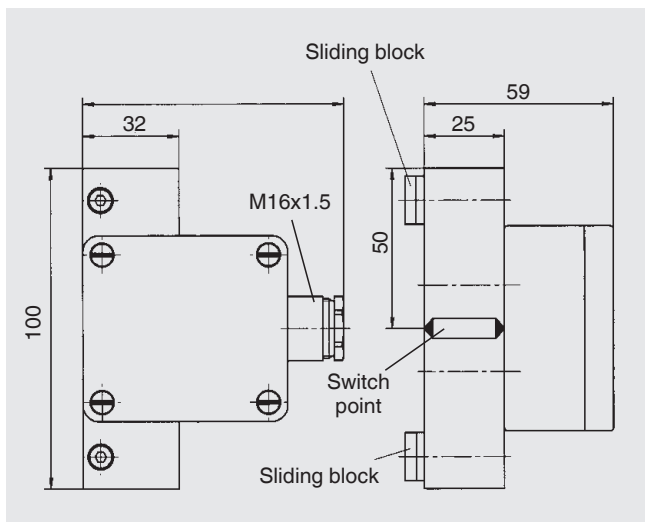
Model BGU-V



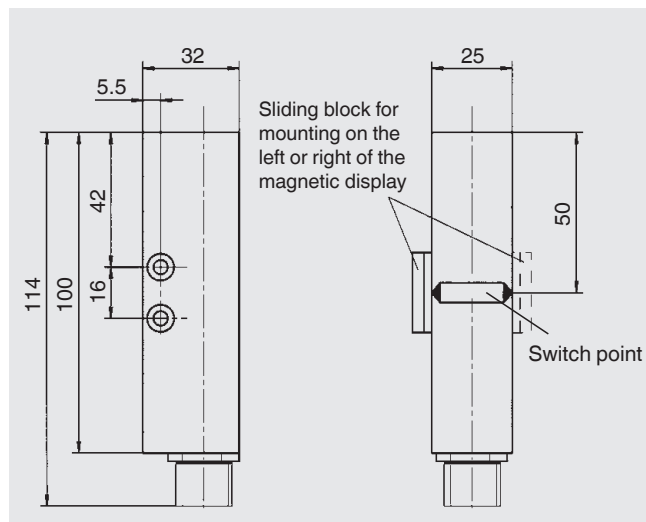
Model BGU-V, Ex d



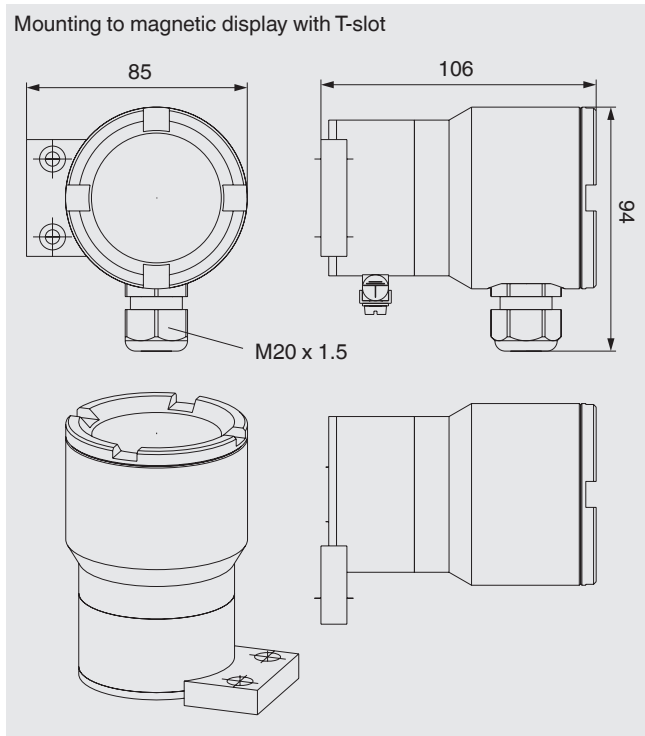
Model BGU-A



Model BGU-M12

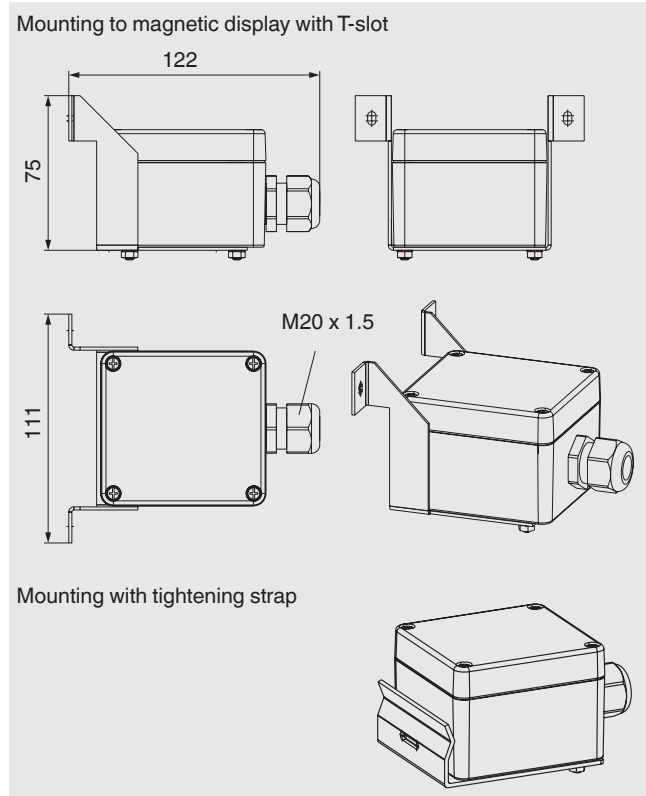


Model BGU-VHT

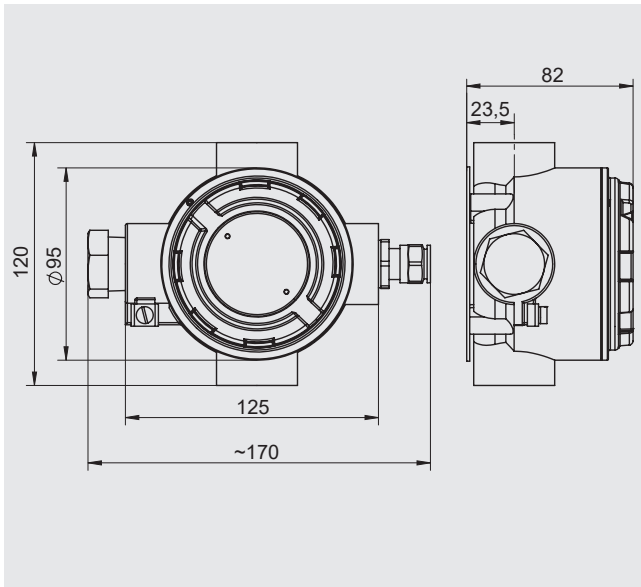


Attention: Mounting on the left must be specified if required

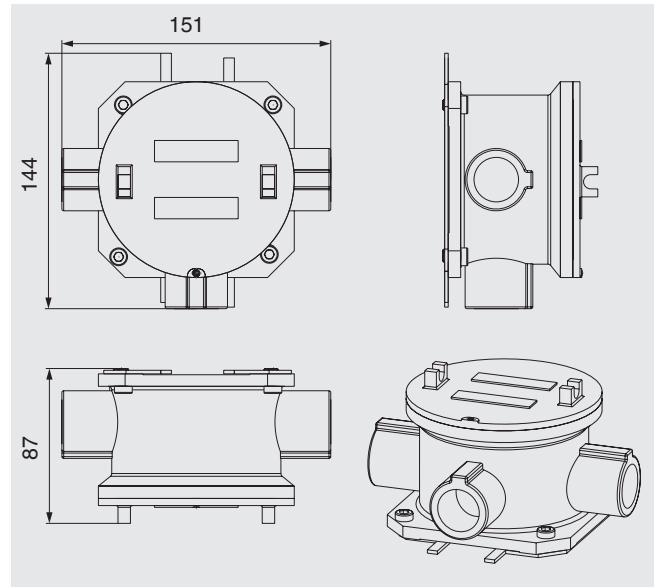
Model BGU-AIHI, AILI



Model BGU-ALD



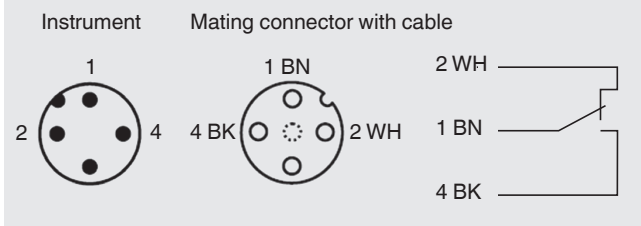
Model BGU-AMD, AXD



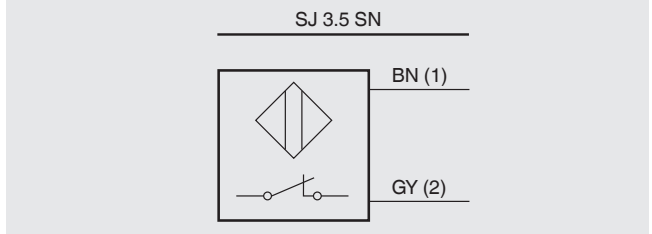
Electrical connections

<p>1 switch point</p>	<p>1 switch point Wiring for operation with a PLC</p>	<p>1 switch point NAMUR circuit per DIN EN 60947-5-6</p>
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M12 connector, pin assignment (for model BGU-M12)



Proximity switch (for models BGU-AIH and BGU-AIL)



Contact protection measures

The reed contacts should be protected against any voltage or current spikes that might occur.

Depending on the different load types different protective circuits are used.



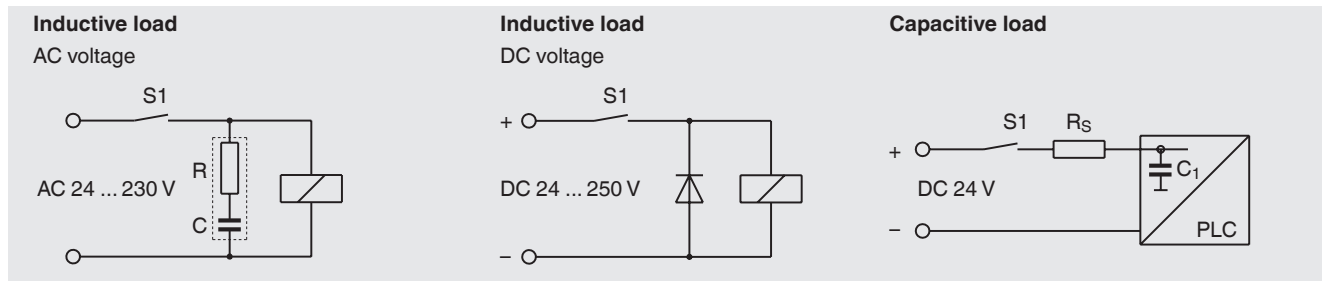
Model KFD2-ER-1.6



RC element

Contact protection relay	Contacts	Input	Supply voltage	Ex marking	Order no.
KFD2-ER-1.6	1 x change-over contact AC 250 V, 2 A	2 x contacts	DC 20 ... 30 V	-	123806
KFD2-SR2-Ex2.W	2 x change-over contact AC 253 V, 2 A	2 x contacts	DC 20 ... 30 V	II 1GD Ex ia IIC	124344
KFA6-ER-1.6	1 x change-over contact AC 250 V, 2 A	2 x contacts	AC 230 V	-	124341
KFA6-SR2-Ex2.W	2 x change-over contact AC 253 V, 2 A	2 x contacts	AC 230 V	II 1GD Ex ia IIC	123794

RC element	Capacitance	Resistance	Voltage	Order no.
B3/110	0.33 μ F	470 Ω	AC 110 V	126529
B3/230	0.33 μ F	820 Ω	AC 230 V	126530



Ordering information

To order the described product the order number (if available) is sufficient.

Alternatively:

Model / Approval / Switching option / Cable length / Cable material

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