



AES 1165

- Monitoring of BNS range magnetic safety sensors
- 1 safety contact, STOP 0

Data

Ordering data

Note (Delivery capacity) Phased-out product

EAN (European Article Number) 4030661297026

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ETIM number, version 6.0 EC001449

Available until 31.12.2021

Approval - Standards

Certificates BG
 cULus
 EAC

General data

Standards	IEC/EN 60204-1 IEC 60947-5-3 BG-GS-ET-14 BG-GS-ET-20 EN ISO 13849-1
Climatic stress	BG-GS-ET-14 IEC 60947-5-3
Enclosure material	Glass-fibre reinforced thermoplastic, ventilated
Material of the contacts, electrical	Ag-Ni 10 and 0.2 µm gold-plated
Gross weight	155 g

General data - Features

Stop-Category	0
Wire breakage detection	Yes
Short-circuit recognition	Yes
Automatic reset function	Yes
Reset after disconnection of supply voltage	Yes
Earth connection detection	Yes
Integral System Diagnostics, status	Yes
Number of inputs for NC	2
Number of inputs for NO	2
Number of LEDs	1
Number of safety contacts	1

Safety appraisal

Standards	EN ISO 13849-1 IEC 61508
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Safety appraisal - Relay outputs

Performance Level, up to	d
Control category to EN13849	3
PFH-value	1.00×10^{-7} /h
Notice	for max. 50,000 switching cycles/year and max. 80% contact load
Safety Integrity Level (SIL), suitable for applications in	2
Mission time	20 Year(s)

Mechanical data

Mechanical life, minimum	20,000,000 Operations
Mounting	Snaps onto standard DIN rail to EN 60715

Mechanical data - Connection technique

Terminal Connector	Screw connection rigid or flexible
Terminal designations	IEC/EN 60947-1
Cable section, minimum	0.25 mm ²
Cable section, maximum	2.5 mm ²
Tightening torque of Clips	0.6 Nm

Mechanical data - Dimensions

Width	22.5 mm
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Height	100 mm
Depth	121 mm

Ambient conditions

Degree of protection of the enclosure	IP40
Degree of protection of the mounting space	IP54
Degree of protection of clips or terminals	IP20
Ambient temperature, minimum	+0 °C
Ambient temperature, maximum	+55 °C
Storage and transport temperature, minimum	-25 °C
Storage and transport temperature, maximum	+70 °C
Resistance to vibrations to EN 60068-2-6	10...55 Hz, Amplitude 0.35 mm, $\pm 15\%$
Resistance to shock	30 g / 11 ms

Ambient conditions - Insulation value

Rated impulse withstand voltage U_{imp}	4 kV
Overvoltage category	III
Degree of pollution to IEC/EN 60664-1	2

Electrical data

Frequency range	50 Hz 60 Hz
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Thermal test current	6 A
Rated operating voltage	24 VAC -15% / +10% 24 VDC -10%/+20%, residual ripple max. 10%
Rated AC voltage for controls, 50 Hz, minimum	20.4 VAC
Rated control voltage at AC 50 Hz, maximum	26.4 VAC
Rated AC voltage for controls, 60 Hz, minimum	20.4 VAC
Rated control voltage at AC 60 Hz, maximum	26.4 VAC
Rated AC voltage for controls at DC minimum	20.4 VDC
Rated control voltage at DC, maximum	28.8 VDC
Electrical power consumption	5 W
Contact resistance, maximum	0.1 Ω
Note (Contact resistance)	in new state
Drop-out delay in case of power failure, typically	80 ms
Drop-out delay in case of emergency, typically	20 ms
Pull-in delay at automatic start, maximum, typically	100 ms
Pull-in delay at RESET, typically	20 ms

Electrical data - Safe relay outputs

Voltage, Utilisation category AC15	230 VAC
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Current, Utilisation category AC-15	6 A
Voltage, Utilisation category DC13	24 VDC
Current, Utilisation category DC13	6 A
Switching capacity, minimum	10 VDC
Switching capacity, minimum	10 mA
Switching capacity, maximum	250 VAC
Switching capacity, maximum	8 A

Electrical data - Digital inputs

Input signal, HIGH Signal "1"	10 ... 30 VDC
Input signal, LOW Signal "0"	0 ... 2 VDC
Conduction resistance, maximum	40 Ω

Electrical data - Digital Output

Voltage, Utilisation category DC12	24 VDC
Current, Utilisation category DC12	0.1 A

Electrical data - Relay outputs (auxiliary contacts)

Switching capacity, maximum	24 VDC
Switching capacity, maximum	2 A

Electrical data - Electromagnetic compatibility (EMC)

EMC rating

EMC-Directive

Integral system diagnosis (ISD)

Note (ISD -Faults) The following faults are registered by the safety monitoring modules and indicated by ISD.

Faults

Failure of the safety relay to pull-in or drop-out

Failure of door contacts to open or close

Cross-wire or short-circuit monitoring of the switch connections

Interruption of the switch connections

Fault on the input circuits or the relay control circuits of the safety monitoring module

Other data

Note (applications)

Safety sensor

Guard system

Notes

Note (General)

Inductive loads (e.g. contactors, relays, etc.) are to be suppressed by means of a suitable circuit.

Circuit example

Note (Wiring diagram)

The wiring diagram is shown with guard doors closed and in de-energised condition.

Monitoring 2 guard door(s), each with a magnetic safety sensor of the BNS range

If one or two external relays or contactors are used to switch the load, the system can then only be classified in Category 3 to EN ISO 13849-1, if exclusion of the fault "Failure of the external contactors" can be substantiated and is documented, e.g. by using reliable down-rated contactors. A second contactor leads to an increase in the level of security by redundant switching to switch the load off.

The ISD tables (Integral System Diagnostics) for analysis of the fault indications and their causes are shown in the appendix.

Expansion of enable delay time: The enable delay time can be increased from 0.1 s to 1 s by changing the position of a jumper link connection under the cover of the unit.

To secure 2 guard doors up to PL d and Category 3

can be found in the manual. Technical amendments and errors possible.

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