

## Datasheet - AES 1165-2250



Guard door monitors and Safety control modules for Emergency Stop applications / Micro Processor based safety controllers (Series AES) / AES 116x

Preferred typ



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

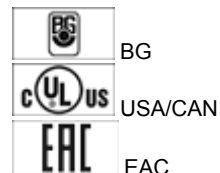
(Minor differences between the printed image and the original product may exist!)

### Ordering details

Product type description	AES 1165-2250
Article number	101170048
EAN Code	4030661297101
eCl@ss	27-37-19-01

### Approval

Approval




### Classification

Standards	EN ISO 13849-1, IEC 61508
PL	up d
Control category	up 3
PFH value	1.0 x 10 <sup>-7</sup> /h
- notice	up to max. 50.000 switching cycles/year and at max. 80% contact load
SIL	up 2
Mission time	20 Years

## Global Properties

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Permanent light	AES 116x
Standards	IEC/EN 60204-1, IEC 60947-5-3, IEC 61508, BG-GS-ET-14, BG-GS-ET-20
Compliance with the Directives (Y/N) 	Yes
Climatic stress	IEC 60947-5-3, BG-GS-ET-14
Mounting	snaps onto standard DIN rail to EN 60715
Terminal designations	IEC/EN 60947-1
Materials	
- Material of the housings	Plastic, glass-fibre reinforced thermoplastic, ventilated
- Material of the contacts	Ag-Ni, 10+0,2 µm gold flashed
Weight	200
Start conditions	Automatic
Start input (Y/N)	No
Feedback circuit (Y/N)	No
Start-up test (Y/N)	No
Reset after disconnection of supply voltage (Y/N)	Yes
Automatic reset function (Y/N)	Yes
Reset with edge detection (Y/N)	No
Pull-in delay	
- ON delay with automatic start	adjustable 0,1 / 1.0 s
Drop-out delay	
- Drop-out delay in case of emergency stop	< 50

## Mechanical data

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Connection type	Screw connection
Cable section	
- Min. Cable section	0,25
- Max. Cable section	2.5
Pre-wired cable	rigid or flexible
Tightening torque for the terminals	0,6
Detachable terminals (Y/N)	No
Mechanical life	20.000.000 operations
Electrical lifetime	150.000 operations for 230 VAC, 5 A (cos φ = 1)
resistance to shock	30 g / 11 ms
Resistance to vibration To EN 60068-2-6	10...55 HZ, Amplitude 0,35 mm, ± 15 %

## Ambient conditions

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Ambient temperature	
- Min. environmental temperature	0
- Max. environmental temperature	+55
Storage and transport temperature	
- Min. Storage and transport temperature	-25
- Max. Storage and transport temperature	+70
Protection class	
- Protection class-Enclosure	IP40
- Protection class-Terminals	IP20
- Protection class-Clearance	IP54
Air clearances and creepage distances To IEC/EN 60664-1	
- Rated impulse withstand voltage U <sub>imp</sub>	4.8 kV

- Overvoltage category	III To VDE 0110
- Degree of pollution	2 To VDE 0110

## Electromagnetic compatibility (EMC)

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EMC rating	10 V/m
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## Electrical data

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Rated DC voltage for controls	
- Max. rated DC voltage for controls	20.4
- Max. rated DC voltage for controls	27.6
Rated AC voltage for controls, 50 Hz	
- Min. rated AC voltage for controls, 50 Hz	-
- Max. rated AC voltage for controls, 50 Hz	-
Rated AC voltage for controls, 60 Hz	
- Min. rated AC voltage for controls, 60 Hz	-
- Max. rated AC voltage for controls, 60 Hz	-
Contact resistance	max. 100 mΩ
Power consumption	< 5
Type of actuation	DC
Switch frequency	1
Rated insulation voltage $U_i$	250 V
Rated operating voltage $U_e$	24 VDC $\pm$ 15%
Thermal test current $I_{the}$	6 A
Operating current $I_e$	0,2 A
Electronic protection (Y/N)	No

## Inputs

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### Monitored inputs

- Short-circuit recognition (Y/N)	Yes
- Wire breakage detection (Y/N)	Yes
- Earth connection detection (Y/N)	Yes
Number of shutters	1
Number of openers	2
Input resistance	approx. 4000 Ω at GND
Input signal "1"	10 ... 30 VDC
Input signal "0"	0 ... 2 VDC
Cable length	1000 m with 0,75 mm <sup>2</sup> (for Rated voltage)

## Outputs

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Stop category	0
Number of safety contacts	1
Number of signalling outputs	2
Switching capacity	
- Switching capacity of the safety contacts	min.10 mA, max. 6 A
- Switching capacity of the signaling/diagnostic outputs	Y1, Y2: max. 100 mA
Fuse rating	
- Protection of the safety contacts	6 A gG D-fuse
Fuse rating for the signaling/diagnostic outputs	short-circuit proof, p-type
Signalling output	Y1: Guard system 1, No authorised operation Y2: Guard system 2, No authorised operation

Utilisation category To EN 60947-5-1	AC-15: 230 V / 3 A DC-13: 24 V / 2 A
Number of undelayed semi-conductor outputs with signaling function	0
Number of undelayed outputs with signaling function (with contact)	0
Number of delayed semi-conductor outputs with signaling function.	0
Number of delayed outputs with signalling function (with contact).	0
Number of secure undelayed semi-conductor outputs with signaling function	0
Number of secure, undelayed outputs with signaling function, with contact.	0
Number of secure, delayed semi-conductor outputs with signaling function	0
Number of secure, delayed outputs with signaling function (with contact).	0

### LED switching conditions display

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LED switching conditions display (Y/N)	Yes
Number of LED's	1

### Integral system diagnosis \$missingShortName\$

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Integral system diagnosis ISD

- The following faults are registered by the safety monitoring modules and indicated by ISD
- Failure of door contacts to open or close
- Cross-wire or short-circuit monitoring of the switch connections
- Interruption of the switch connections
- Failure of the safety relay to pull-in or drop-out
- Fault on the input circuits or the relay control circuits of the safety monitoring module

### Miscellaneous data

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Applications



Safety sensor



Guard system

### Dimensions

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Dimensions

- Width 22.5 mm
- Height 100 mm
- Depth 121 mm

### notice

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

### notice - Wiring example

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

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.

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.

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

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

## Documents

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**Operating instructions and Declaration of conformity** (da) 206 kB, 09.07.2013

Code: mrl\_aes1165-2196-2250\_da

**Operating instructions and Declaration of conformity** (it) 432 kB, 02.01.2012

Code: mrl\_aes1165-2196-2250\_it

**Operating instructions and Declaration of conformity** (nl) 425 kB, 29.06.2010

Code: mrl\_aes1165-2196-2250\_nl

**Operating instructions and Declaration of conformity** (en) 798 kB, 05.03.2010

Code: mrl\_aes1165-2196-2250\_en

**Operating instructions and Declaration of conformity** (pl) 207 kB, 28.08.2013

Code: mrl\_aes1165-2196-2250\_pl

**Operating instructions and Declaration of conformity** (pt) 225 kB, 10.02.2014

Code: mrl\_aes1165-2196-2250\_pt

**Operating instructions and Declaration of conformity** (es) 421 kB, 29.03.2010

Code: mrl\_aes1165-2196-2250\_es

**Operating instructions and Declaration of conformity** (jp) 820 kB, 07.06.2011

Code: mrl\_aes1165-2196-2250\_jp

**Operating instructions and Declaration of conformity** (de) 518 kB, 29.06.2010

Code: mrl\_aes1165-2196-2250\_de

**Operating instructions and Declaration of conformity** (fr) 468 kB, 28.06.2011

Code: mrl\_aes1165-2196-2250\_fr

**Wiring example** (99) 20 kB, 21.08.2008

Code: Kaes1110

**Wiring example** (99) 17 kB, 22.08.2008

Code: Kaes1103

**Wiring example** (99) 13 kB, 22.08.2008

Code: kaes1121

**ISD tables (Integral System Diagnostics)** (de) 51 kB, 29.07.2008

Code: i\_ae2p01

**ISD tables (Integral System Diagnostics)** (en) 35 kB, 29.07.2008

Code: i\_ae2p02

**BG-test certificate** (en) 756 kB, 27.08.2018

Code: z\_135p02

**BG-test certificate** (de) 768 kB, 27.08.2018

Code: z\_135p01

**BG-test certificate** (en) 1 MB, 17.08.2018

Code: z\_113p02

**BG-test certificate** (de) 1 MB, 17.08.2018

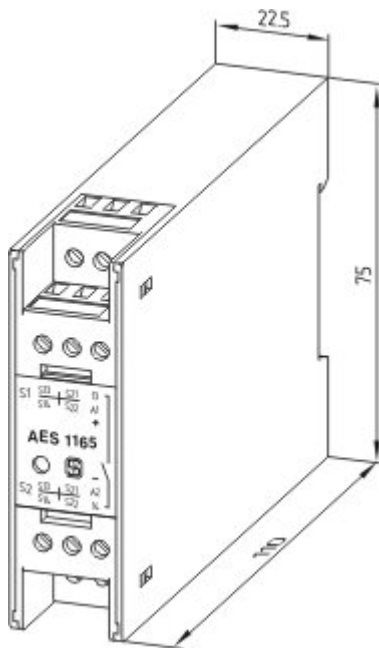
Code: z\_113p01

**EAC certification** (ru) 1 MB, 15.03.2018

Code: q\_aes01

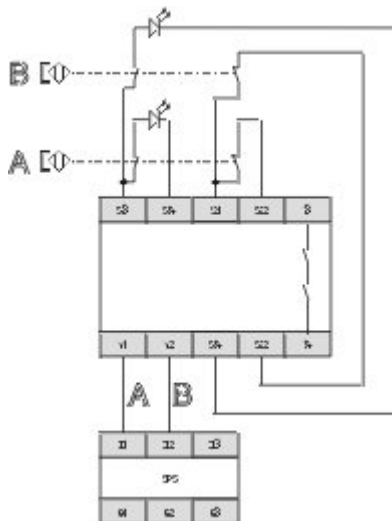
## Images

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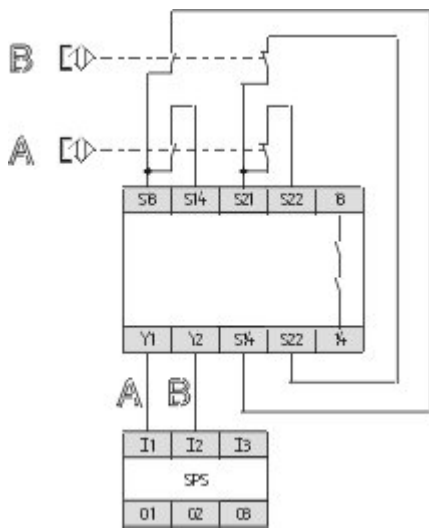
Dimensional drawing (basic component)

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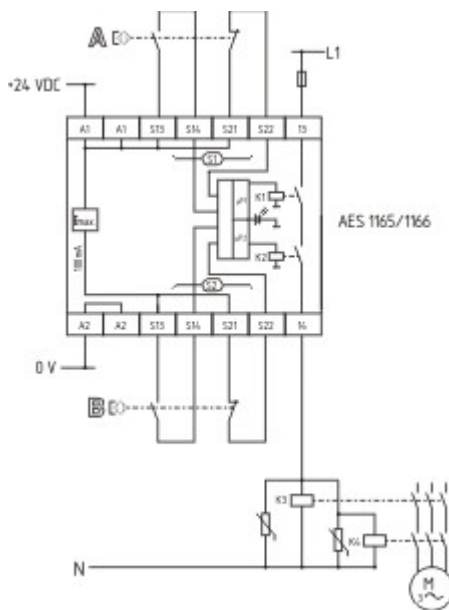


Wiring example

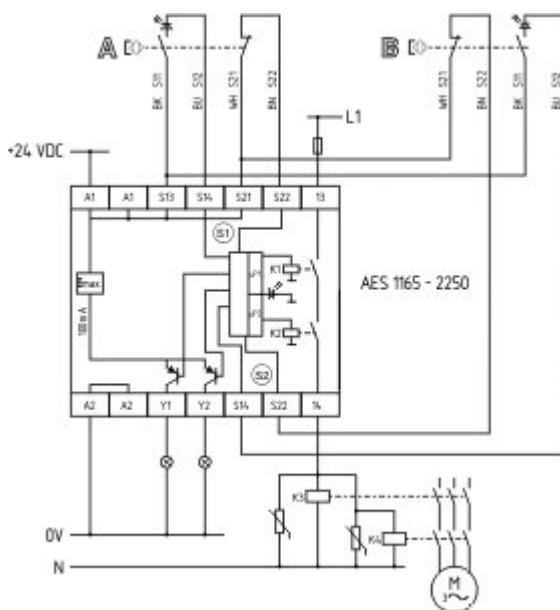
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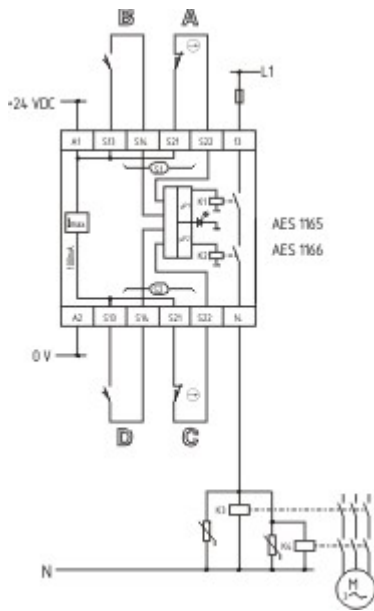
Wiring example



Wiring example



Wiring example



Wiring example

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The data and values have been checked thoroughly. Technical modifications and errors excepted.

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