

## Datasheet - AES 2356



Guard door monitors and Safety control modules for Emergency Stop applications / Micro Processor based safety controllers (Series AES) / AES 235x



- Monitoring of BNS range magnetic safety sensors
- 3 safety contacts, STOP 0
- 2 Signalling outputs

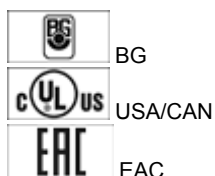
(Minor differences between the printed image and the original product may exist!)

### Ordering details

Product type description	AES 2356
Article number	101181683
EAN Code	4030661323145
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 235x
Standards	IEC/EN 60204-1, EN 60947-5-1, 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
- Material of the contacts	Ag-Ni, 0,2 µm gold flashed
Weight	342
Start input (Y/N)	No
Feedback circuit (Y/N)	Yes
Start-up test (Y/N)	Yes
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	0,2
- 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

## 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 253 VDC

Rated AC voltage for controls, 50 Hz

- Min. rated AC voltage for controls, 50 Hz 20.4 VAC
- Max. rated AC voltage for controls, 50 Hz 253 VAC

Rated AC voltage for controls, 60 Hz

- Min. rated AC voltage for controls, 60 Hz 20.4 VAC
- Max. rated AC voltage for controls, 60 Hz 253 VAC

Contact resistance max. 100 mΩ

Power consumption 5

Type of actuation DC

Switch frequency 3

Rated insulation voltage  $U_i$  250 V

Rated operating voltage  $U_e$  24 ... 230 VAC/DC

Thermal test current  $I_{the}$  6 A

Operating current  $I_e$  0,3 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) No

Number of shutters 2

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 3

Number of auxiliary contacts 0

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 = 100 mA

Fuse rating

- Protection of the safety contacts 6 A gG D-fuse
- Fuse rating for the signaling/diagnostic outputs short-circuit proof

Signalling output Y1: Authorized operation, safety contacts on;  
2 Y: Error, safety contacts off

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	2
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 45 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 a guard door up to PL 3 and Category #03#

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 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 (jp)** 607 kB, 11.11.2011

Code: mrl\_aes235x-255x-236x-256x\_jp

**Operating instructions and Declaration of conformity (fr)** 280 kB, 03.01.2018

Code: mrl\_aes235x-255x-236x-256x\_fr

**Operating instructions and Declaration of conformity (pl)** 294 kB, 03.01.2018

Code: mrl\_aes235x-255x-236x-256x\_pl

**Operating instructions and Declaration of conformity (en)** 276 kB, 16.11.2017

Code: mrl\_aes235x-255x-236x-256x\_en

**Operating instructions and Declaration of conformity (pt)** 281 kB, 03.01.2018

Code: mrl\_aes235x-255x-236x-256x\_pt

**Operating instructions and Declaration of conformity (es)** 278 kB, 03.01.2018

Code: mrl\_aes235x-255x-236x-256x\_es

**Operating instructions and Declaration of conformity (nl)** 278 kB, 03.01.2018

Code: mrl\_aes235x-255x-236x-256x\_nl

**Operating instructions and Declaration of conformity (it)** 279 kB, 03.01.2018

Code: mrl\_aes235x-255x-236x-256x\_it

**Operating instructions and Declaration of conformity (de)** 237 kB, 16.11.2017

Code: mrl\_aes235x-255x-236x-256x\_de

**Operating instructions and Declaration of conformity (da)** 281 kB, 03.01.2018

Code: mrl\_aes235x-255x-236x-256x\_da

**Wiring example (99)** 25 kB, 22.08.2008

Code: kaes2111

**BG-test certificate (en)** 1 MB, 25.07.2017

Code: z\_a21p02

**BG-test certificate (de)** 1 MB, 25.07.2017

Code: z\_a21p01

**BG-test certificate (de)** 266 kB, 02.03.2016

Code: z\_2aep01

**BG-test certificate (en)** 268 kB, 15.04.2016

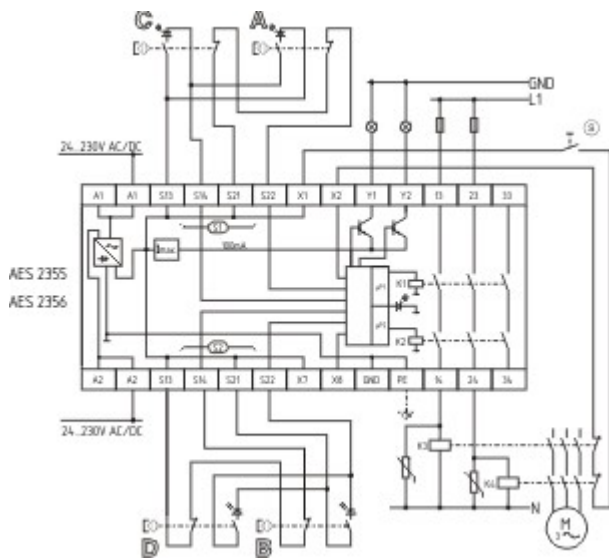
Code: z\_2aep02

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

Code: q\_aesp01

## Images

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Wiring example

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

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