

## Datasheet - AES 1235



Guard door monitors and Safety control modules for Emergency Stop applications / Monitoring of electromechanical and non-contact switchgear / AES 123x



- Monitoring of BNS range magnetic safety sensors
- 2 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 1235
Article number	1170049
EAN code	4030661297118

### Approval

Approval



### Classification

Standards	EN ISO 13849-1, IEC 61508
PL	up d
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	2
Mission time	20 Years
Control category	up 3

### Global Properties

Product name	AES 123x
Standards	IEC/EN 60204-1, IEC 60947-5-3, EN 954-1, BG-GS-ET-14, BG-GS-ET-20
Compliance with the Directives (Y/N) 	Yes
Climatic stress	EN 60068-2-3, 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, 0,2 µm gold flashed
Weight	160 g
Start conditions	Automatic or Start button
Start input (Y/N)	No
Feedback circuit (Y/N)	Yes
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 ms

## Mechanical data

Connection type	Screw connection
Cable section	
- Min. Cable section	0,25 mm <sup>2</sup>
- Max. Cable section	2.5 mm <sup>2</sup>
Pre-wired cable	rigid or flexible
Tightening torque for the terminals	0,6 Nm
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

Ambient temperature	
- Min. environmental temperature	0°C
- Max. environmental temperature	+ 55°C
Storage and transport temperature	
- Min. Storage and transport temperature	- 25°C
- Max. Storage and transport temperature	+ 70°C
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

- Min. rated DC voltage for controls 20.4 V
- Max. rated DC voltage for controls 27.6 V

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 W

Type of actuation DC

Switch frequency 1 Hz

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) optional
- Wire breakage detection (Y/N) Yes
- Earth connection detection (Y/N) Yes

Number of shutters adjustable 1 piece -> 0 piece

Number of openers adjustable 1 piece -> 2 piece

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 2 piece

Number of auxiliary contacts 0 piece

Number of signalling outputs 2 piece

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 YNo authorised operation off., safety contacts

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 piece
Number of undelayed outputs with signaling function (with contact)	0 piece
Number of delayed semi-conductor outputs with signaling function.	0 piece
Number of delayed outputs with signalling function (with contact).	0 piece
Number of secure undelayed semi-conductor outputs with signaling function	0 piece
Number of secure, undelayed outputs with signaling function, with contact.	0 piece
Number of secure, delayed semi-conductor outputs with signaling function	0 piece
Number of secure, delayed outputs with signaling function (with contact).	0 piece

### LED switching conditions display

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

### Integral system diagnosis ISD

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

Monitoring 1 guard door(s), each with a magnetic safety sensor of the BNS range

The feedback circuit monitors the position of the contactors K3 and K4.

Start push button A start push button (NO) can optionally be connected into the feedback circuit. With the guard door closed, the enabling paths are

then not closed until the start push button has been operated.

If neither start button nor feedback circuit are connected, a jumper connection must be mounted between X1 and A1.

If only one external relay or contactor is used to switch the load, the system can be classified in Control Category 3 to EN 954-1, if exclusion of the fault "Failure of the external contactor" can be substantiated and is documented, e.g. by using a reliable down-rated contactor. A second contactor leads to an increase in the level of security by redundant switching to switch the load off.

Modification for 2 NC contacts:

The safety monitoring module can be modified to monitor two NC contacts by bridging the terminals A1 and X2. The short-circuit recognition between connections then becomes inoperative.

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** (br) 426 kB, 12.07.2010

[http://127.0.0.1/Bilddata/Si\\_baust/Pdf/Aes1235/bedien/br/mrl\\_aes\\_1235\\_1236\\_br.pdf](http://127.0.0.1/Bilddata/Si_baust/Pdf/Aes1235/bedien/br/mrl_aes_1235_1236_br.pdf)

**Operating instructions and Declaration of conformity** (en) 752 kB, 02.12.2009

[http://127.0.0.1/Bilddata/Si\\_baust/Pdf/Aes1235/bedien/EN/mrl\\_aes\\_1235\\_1236\\_en.pdf](http://127.0.0.1/Bilddata/Si_baust/Pdf/Aes1235/bedien/EN/mrl_aes_1235_1236_en.pdf)

**Operating instructions and Declaration of conformity** (jp) 1 MB, 30.11.2010

[http://127.0.0.1/Bilddata/Si\\_baust/Pdf/Aes1235/bedien/JP/mrl\\_aes\\_1235\\_1236\\_jp.pdf](http://127.0.0.1/Bilddata/Si_baust/Pdf/Aes1235/bedien/JP/mrl_aes_1235_1236_jp.pdf)

**Operating instructions and Declaration of conformity** (it) 661 kB, 02.12.2009

[http://127.0.0.1/Bilddata/Si\\_baust/Pdf/Aes1235/bedien/IT/mrl\\_aes\\_1235\\_1236\\_it.pdf](http://127.0.0.1/Bilddata/Si_baust/Pdf/Aes1235/bedien/IT/mrl_aes_1235_1236_it.pdf)

**Operating instructions and Declaration of conformity** (fr) 918 kB, 02.12.2009

[http://127.0.0.1/Bilddata/Si\\_baust/Pdf/Aes1235/bedien/FR/mrl\\_aes\\_1235\\_1236\\_fr.pdf](http://127.0.0.1/Bilddata/Si_baust/Pdf/Aes1235/bedien/FR/mrl_aes_1235_1236_fr.pdf)

**Operating instructions and Declaration of conformity** (es) 662 kB, 02.12.2009

[http://127.0.0.1/Bilddata/Si\\_baust/Pdf/Aes1235/bedien/ES/mrl\\_aes\\_1235\\_1236\\_es.pdf](http://127.0.0.1/Bilddata/Si_baust/Pdf/Aes1235/bedien/ES/mrl_aes_1235_1236_es.pdf)

**Operating instructions and Declaration of conformity** (pt) 678 kB, 11.05.2010

[http://127.0.0.1/Bilddata/Si\\_baust/Pdf/Aes1235/bedien/pt/mrl\\_aes\\_1235\\_1236\\_pt.pdf](http://127.0.0.1/Bilddata/Si_baust/Pdf/Aes1235/bedien/pt/mrl_aes_1235_1236_pt.pdf)

**Operating instructions and Declaration of conformity** (nl) 663 kB, 02.12.2009

[http://127.0.0.1/Bilddata/Si\\_baust/Pdf/Aes1235/bedien/NL/mrl\\_aes\\_1235\\_1236\\_nl.pdf](http://127.0.0.1/Bilddata/Si_baust/Pdf/Aes1235/bedien/NL/mrl_aes_1235_1236_nl.pdf)

**Operating instructions and Declaration of conformity** (de) 757 kB, 02.12.2009

[http://127.0.0.1/Bilddata/Si\\_baust/Pdf/Aes1235/bedien/DE/mrl\\_aes\\_1235\\_1236\\_de.pdf](http://127.0.0.1/Bilddata/Si_baust/Pdf/Aes1235/bedien/DE/mrl_aes_1235_1236_de.pdf)

**Wiring example** (99) 20 kB, 22.08.2008

[http://127.0.0.1/Bilddata/Si\\_baust/Aes1235/Schaltun/kaes1141.pdf](http://127.0.0.1/Bilddata/Si_baust/Aes1235/Schaltun/kaes1141.pdf)

**Wiring example** (99) 20 kB, 22.08.2008

[http://127.0.0.1/Bilddata/Si\\_baust/Aes1235/Schaltun/Maes1111.pdf](http://127.0.0.1/Bilddata/Si_baust/Aes1235/Schaltun/Maes1111.pdf)

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

[http://127.0.0.1/Bilddata/Si\\_baust/Pdf/Aes1135/ISD/i\\_ae2p02.pdf](http://127.0.0.1/Bilddata/Si_baust/Pdf/Aes1135/ISD/i_ae2p02.pdf)

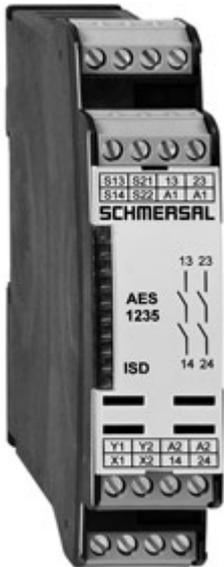
**ISD tables (Integral System Diagnostics)** (de) 51 kB, 29.07.2008

[http://127.0.0.1/Bilddata/Si\\_baust/Pdf/Aes1135/ISD/i\\_ae2p01.pdf](http://127.0.0.1/Bilddata/Si_baust/Pdf/Aes1135/ISD/i_ae2p01.pdf)

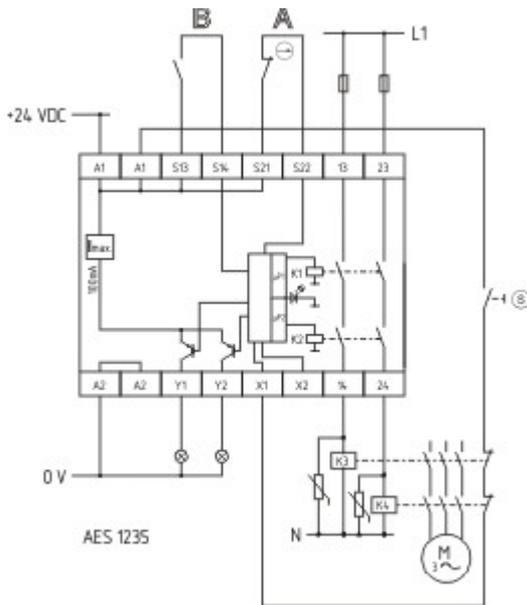
**BG-test certificate** (de) 531 kB, 05.01.2011

[http://127.0.0.1/Bilddata/Si\\_baust/Pdf/Aes1135/baumuste/z\\_135p01.pdf](http://127.0.0.1/Bilddata/Si_baust/Pdf/Aes1135/baumuste/z_135p01.pdf)

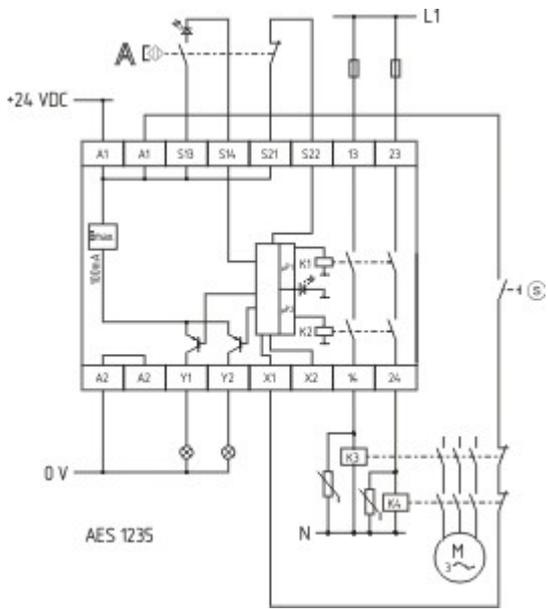
## Images



Product photo



Wiring example



Wiring example

K.A. Schmersal GmbH, Möddinghofe 30, D-42279 Wuppertal  
 The data and values have been checked thoroughly. Technical modifications and errors excepted.  
 Generiert am 21.04.2011 - 09:48:43h Kasbase 1.4.7 DBI