

Solenoid / alarm driver



9203B

- Universal Ex driver for solenoids, acoustic alarms and LEDs
- Extended self-diagnostics
- 1 or 2 channels
- Can be supplied separately or installed on power rail, PR 9400
- SIL 2-certified via Full Assessment



Advanced features

- Universal I.S. driver for the control of solenoids etc. with various I.S. data by way of three built-in I.S. barriers.
- Two hardware versions make it possible to choose either Low (35 mA) or High (60 mA) current output.
- Configuration and monitoring by way of detachable display front (PR 4500).
- Selection of direct or inverted function for each channel via PR 4500 and the possibility of reducing the output current to the hazardous area to suit the application.
- Optional monitoring of the output current to the hazardous area by way of PR 4500.
- Optional redundant supply via power rail and/or separate supply.

Application

- 9203B can be mounted in the safe area or in zone 2 / Class 1, Division 2 and transmit signals to zone 0, 1, 2 and zone 20, 21, 22 including M1 mining / Class I/II/III, Div. 1, Gr. A-G.
- Driver for the control of ON / OFF solenoids, acoustic alarms and LEDs mounted in safe or hazardous area.
- The 9203B is controlled by an NPN/PNP signal or a switch signal.
- Monitoring of internal error events via the individual status relay and/or a collective electronic signal via the power rail.
- The 9203B has been designed, developed and certified for use in SIL 2 applications according to the requirements of IEC 61508.
- Failure rates for 9203B correspond to Performance Level "d" according to ISO-13849.

Technical characteristics

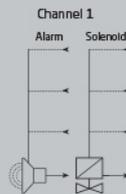
- 1 green and 2 yellow/red front LEDs indicate operation status and malfunction.
- 2.6 kVAC galvanic isolation between input, output and supply.

Mounting

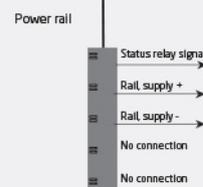
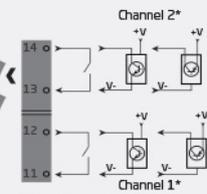
- The devices can be mounted vertically or horizontally without distance between neighbouring units.

Applications

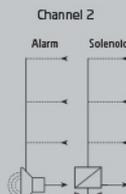
Output signals:



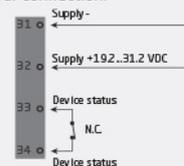
Input signals:



* For full overview of input connections, refer to page 16.



Power connection:



Supply via power rail
**Zone 2 & Cl. 1, Div. 2, gr. A-D
or Safe Area**

**Zone 0, 1, 2,
20, 21, 22, M1 &
Cl. I/II/III, Div. 1
gr. A-G**

Order:

Type	Output	Channels	Input	I.S. / Ex approvals
9203B	Low current :1	Single :A	Opto/ switch :-	ATEX, IECEx, FM, INMETRO, CCC, EAC-Ex, UKEX :-
		Double :B	PNP :1	UL 913, ATEX, IECEx, FM, INMETRO, CCC, EAC-Ex, UKEX :-U9
	High current :2	Single :A	NPN :2	KCs, ATEX, IECEx, FM, INMETRO, CCC, EAC-Ex, UKEX :-KCs

Output loads:

Terminal	9203B1Axx (1 channel) / 9203B1Bxx (2 channels)		
	41-42 / 51-52	41-43 / 51-53	41-44 / 51-54
Vout. no load	Min. 24 V	Min. 24 V	Min. 24 V
Vout. with load	Min. 12.5 V	Min. 13.5 V	Min. 14.5 V
Iout. max	35 mA	35 mA	35 mA

Terminal	9203B2Axx (1 channel)					
	41-42		41-43		41-44	
Vout. no load	Min. 24 V		Min. 24 V		Min. 24 V	
Vout. with load	Min. 11.5 V	Min. 9 V	Min. 12.5 V	Min. 10 V	Min. 13.5 V	Min. 11 V
Iout. max	50 mA	60 mA	50 mA	60 mA	50 mA	60 mA

Environmental Conditions

Operating temperature.....	-20°C to +60°C
Storage temperature.....	-20°C to +85°C
Calibration temperature.....	20...28°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP20
Installation in.....	Pollution degree 2 & meas. / overvoltage cat. II

Mechanical specifications

Dimensions (HxWxD).....	109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ PR 4500.....	109 x 23.5 x 131 mm
Weight approx.....	170 g
DIN rail type.....	DIN EN 60715/35 mm
Wire size.....	0.13...2.08 mm ² AWG 26...14 stranded wire
Screw terminal torque.....	0.5 Nm
Vibration.....	IEC 60068-2-6
2...13.2 Hz.....	±1 mm
13.2...100 Hz.....	±0.7 g

Common specifications

Supply

Supply voltage.....	19.2...31.2 VDC
Fuse.....	1.25 A SB / 250 VAC
Max. required power.....	≤ 1.9 W / ≤ 3.1 W (1 / 2 ch.) - low current
Max. required power.....	≤ 2.5 W (1 ch.) - high current
Max. power dissipation, 1 / 2 ch.....	≤ 1.1 W / ≤ 2.0 W (1 / 2 ch.) - low current
Max. power dissipation.....	≤ 1.7 W (1 ch.) - high current

Isolation voltage

Test /working: Input to any.....	2.6 kVAC / 300 VAC reinforced isolation
Output 1 to output 2.....	1.5 kVAC / 150 VAC reinforced isolation
Status relay to supply.....	1.5 kVAC / 150 VAC reinforced isolation
Programming.....	PR 4500 communication interfaces
EMC immunity influence.....	< ±0.5% of span
Extended EMC immunity: NAMUR NE21, A criterion, burst.....	< ±1% of span

Input specifications

NPN and mechanical switch

Trig level LOW.....	≤ 2.0 VDC
Trig level HIGH.....	≥ 4.0 VDC
Max. external voltage.....	28 VDC
Input impedance.....	3.5 kΩ

PNP

Trig level LOW.....	≤ 8.0 VDC
Trig level HIGH.....	≥ 10.0 VDC
Max. external voltage.....	28 VDC
Input impedance.....	3.5 kΩ

Output specifications

Status relay

Max. voltage.....	125 VAC / 110 VDC
Max. current.....	0.5 AAC / 0.3 ADC
Max. AC power.....	62.5 VA / 32 W
Output ripple.....	< 40 mVRMS

Observed authority requirements

EMC.....	2014/30/EU & UK SI 2016/1091
LVD.....	2014/35/EU & UK SI 2016/1101
ATEX.....	2014/34/EU & UK SI 2016/1107
RoHS.....	2011/65/EU & UK SI 2012/3032
EAC.....	TR-CU 020/2011
EAC Ex.....	TR-CU 012/2011
EAC LVD.....	TR-CU 004/2011

Approvals

ATEX.....	KEMA 07ATEX0147 X
IECEx.....	KEM 09.0001X
UKEX.....	DEKRA 21UKEX0181X
UKEX.....	DEKRA 23UKEX0106X
c FM us.....	FM19US0057X / FM19CA0030X
INMETRO.....	DEKRA 23.0008X
c UL us, UL 61010-1.....	E314307
c UL us, UL 913.....	E233311 (only 9203xxxx-U9)
CCC.....	2020322304003423
KCs.....	21_AV4BO_0182X / 21_AV4BO_0183X (only 9203Bxxx-KCs)
EAC Ex.....	EAEU KZ 7500361.01.01.08756
DNV Marine.....	TAA00000JD
ClassNK.....	TA24034M
SIL.....	SIL 2 certified & fully assessed acc. to IEC 61508