

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.
- Suitable for the use in systems up 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

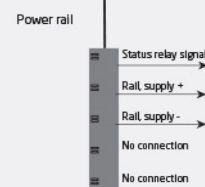
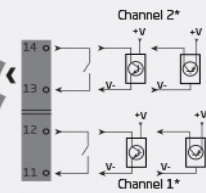
- The devices can be mounted vertically or horizontally without distance between neighbouring units.

Applications

Output signals:



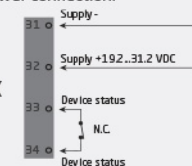
Input signals:



* 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..... | RU C-DK.HA65.B.00355/19 |
| DNV Marine..... | TAA00000JD |
| ClassNK..... | TA24034M |
| SIL..... | SIL 2 certified & fully assessed acc. to IEC 61508 |