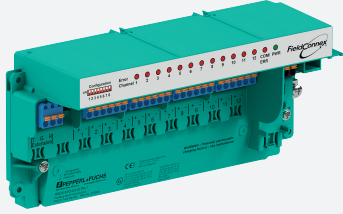


# Multi-Input/Output FieldConnex® Fieldbus R8D0-MIO-EX12.PA.1



- For discrete inputs and outputs
- Installation in Zone 1/Div. 1, intrinsically safe
- Sensors in Zone 0/Div. 1
- Connection to fieldbus acc. to FISCO or Entity
- For PROFIBUS PA
- DCS integration via GSD and FDT/DTM
- Monitors sensor condition
- Removable terminals
- Power, Com, Diagnostics, and Error LEDs
- Test points for easy troubleshooting

Multi-input/output for digital signals, module for DIN rail mounting



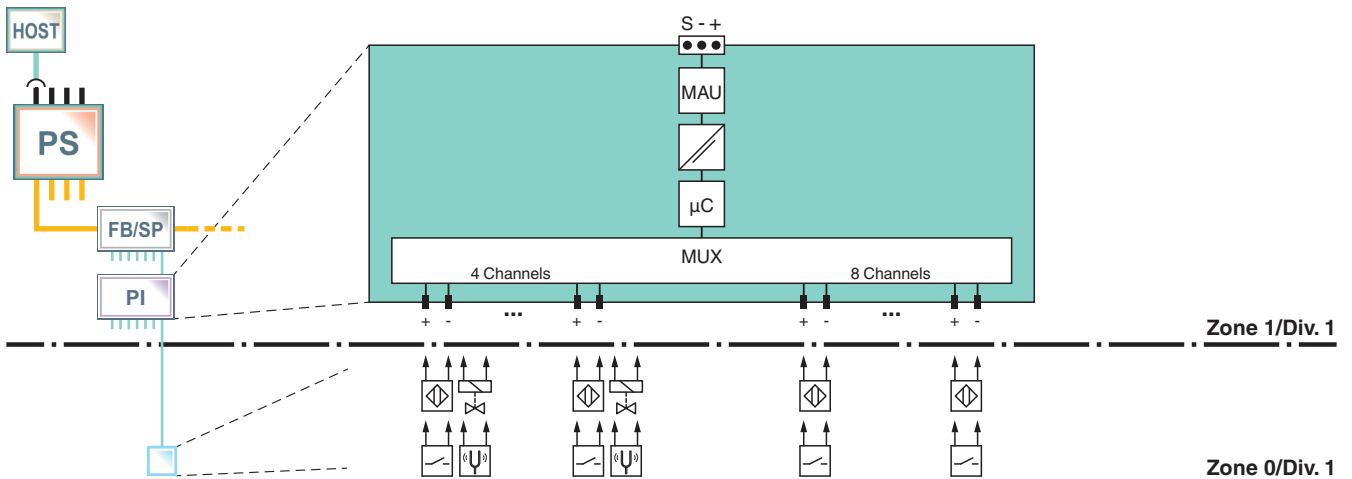
## Function

The multi-input/output (MIO) is a multifunctional device for DIN rail installation and connects discrete inputs and outputs to fieldbus. It is typically installed in a field enclosure close to the sensors in the hazardous area, thereby minimizing wiring. The MIO is certified intrinsically safe and as associated apparatus: inputs and outputs are intrinsically safe even when the fieldbus connection is not.

The MIO device provides connections for up to 12 discrete inputs and 4 discrete outputs. The device is compatible to components FD0-VC-Ex\* and FD0-BI-\* and offers control and position feedback for 4 low-power valves. Measurements for breakaway time and runtime can be set with limits for alarming. Automatic partial stroke testing is configurable. 4 inputs can be configured for vibrating forks and 1 input for frequency and counter signals, e. g., for rotating equipment.

The MIO communicates data, configuration, and alarms via one fieldbus address to the distributed control system (DCS). DCS integration utilizes GSD and FDT/DTM technology. Inputs can be configured all at once or individually. The fieldbus powers the sensors and the MIO itself. Additional power or wiring is not required.

## Connection



## Technical Data

| General specifications           |                      |
|----------------------------------|----------------------|
| Design / Mounting                | Cabinet installation |
| Installation in hazardous area   | Zone 1 / Div. 1      |
| Fieldbus connection              |                      |
| Fieldbus type                    | PROFIBUS PA          |
| FDE (Fault Disconnect Equipment) | 6.7 mA               |

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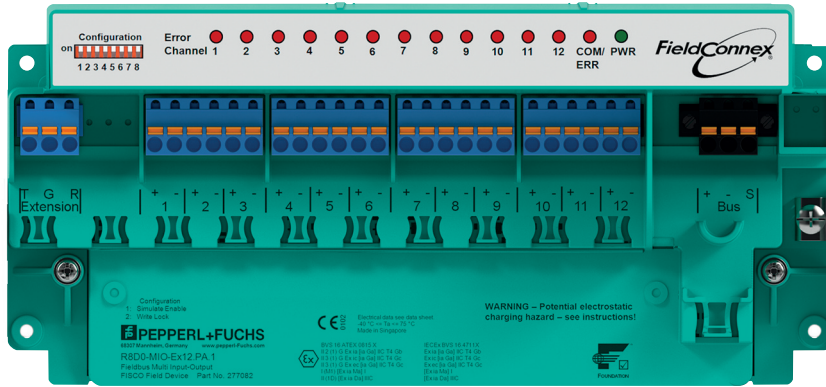
## Technical Data

|                                   |       |   |
|-----------------------------------|-------|---|
| Polarity                          |       | not polarity sensitive  |
| Rated voltage                     | $U_N$ | 9 ... 32 V  |
| Rated current                     | $I_N$ | max. 23 mA  |
| <b>Indicators/operating means</b> |       |   |
| LED PWR                           |       | green: on, bus voltage existent   |
| LED COM ERR                       |       | red, continuous lightning: hardware error; red, flashing: no bus activities or bus fault; off: no error |
| LED CHANNEL ERROR                 |       | red, flashing: lead breakage/short circuit; off: no error   |
| DIP switch                        |       | Address setting , write protection , simulation   |
| <b>Analog input</b>               |       |   |
| Number of inputs                  |       | 1   |
| Input type                        |       | Frequency input / Counter Input , channel 1   |
| Accuracy                          |       | 0.5 % of the measured value   |
| Switching frequency               |       | min. 0.1 Hz max. 5 kHz  |
| Pulse duration                    |       | min. 80 $\mu$ s   |
| Supply voltage                    |       | 5 V   |
| Supply current                    |       | 5 mA  |
| Line fault detection              |       | lead breakage , short circuit (not in counter mode)   |
| <b>Digital input</b>              |       |   |
| Number of inputs                  |       | 12  |
| Input type                        |       | Sensor input , channels 1, 4, 7, 10 multiplexed , cycle adjustable                                      |
| Supply voltage                    |       | 6.6 V   |
| Supply current                    |       | 5 mA  |
| Line fault detection              |       | lead breakage , short circuit   |
| Input type                        |       | Sensor input , channels 2, 3, 5, 6, 8, 9, 11, 12 multiplexed , cycle fixed                              |
| Supply voltage                    |       | 5 V   |
| Supply current                    |       | 5 mA  |
| Time delay before availability    |       | 2 ms  |
| Line fault detection              |       | lead breakage , short circuit   |
| <b>Digital output</b>             |       |   |
| Number of outputs                 |       | 4   |
| Output type                       |       | Low power valve , channels 1, 4, 7, 10  |
| Supply voltage                    |       | 6.6 V   |
| Supply current                    |       | 1.5 mA  |
| Line fault detection              |       | lead breakage , short circuit   |
| <b>Galvanic isolation</b>         |       |   |
| Foundation Fieldbus/Field circuit |       | safe galvanic isolation acc. to EN 60079-11, voltage peak value 375 V                                   |
| <b>Directive conformity</b>       |       |   |
| Electromagnetic compatibility     |       |   |
| Directive 2014/30/EU              |       | EN 61326-1:2013   |
| Low voltage                       |       |   |
| Directive 2014/35/EU              |       | EN 61010-1:2010   |
| <b>Standard conformity</b>        |       |   |
| Galvanic isolation                |       | EN 60079-11   |
| Electromagnetic compatibility     |       | NE 21:2011  |
| Degree of protection              |       | IEC/EN 60529  |
| Fieldbus standard                 |       | IEC 61158-2   |
| Shock resistance                  |       | EN 60068-2-27   |
| Vibration resistance              |       | EN 60068-2-6  |
| <b>Ambient conditions</b>         |       |   |
| Ambient temperature               |       | -50 ... 75 °C (-58 ... 167 °F) hazardous area<br>-50 ... 85 °C (-58 ... 185 °F) safe area               |
| Storage temperature               |       | -40 ... 85 °C (-40 ... 185 °F)  |
| Relative humidity                 |       | $\leq$ 95 % non-condensing  |

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## Technical Data

|  |  |
|--|--|
| Shock resistance   | 15 g , 11 ms   |
| Vibration resistance   | 5 g , 10 ... 150 Hz  |
| Pollution degree   | 2  |
| Corrosion resistance   | acc. to ISA-S71.04-1985, severity level G3   |
| <b>Mechanical specifications</b>                               |  |
| Connection type  | screw terminal , pluggable   |
| Core cross section   |  |
| Bus  | up to 2.5 mm <sup>2</sup>  |
| Inputs   | up to 2.5 mm <sup>2</sup>  |
| Housing material   | Polycarbonate  |
| Degree of protection   | IP20   |
| Mass   | approx. 290 g  |
| Mounting   | DIN rail mounting  |
| <b>Data for application in connection with hazardous areas</b> |  |
| EU-type examination certificate                                | BVS 16 ATEX E 075 X  |
| Marking  | Ⓜ II 2 (1) G Ex ib [ia Ga] IIC T4 Gb , Ⓜ II 3 (1) G Ex ic [ia Ga] IIC T4 Gc , Ⓜ II 3 (1) G Ex ec [ia Ga] IIC T4 Gc , Ⓜ I (M1) [Ex ia Ma] I , Ⓜ II (1) D [Ex ia Da] IIIC  |
| <b>PROFIBUS PA</b>   |  |
| Maximum safe voltage $U_m$                                     | 253 V  |
| Voltage $U_i$  | 24 V   |
| Current $I_i$  | 380 mA   |
| Power $P_i$  | 5.32 W   |
| <b>Field-side</b>  |  |
| Voltage $U_o$  | 9 V  |
| Current $I_o$  | 43 mA  |
| Power $P_o$  | 96 mW  |
| <b>Directive conformity</b>                                    |  |
| Directive 2014/34/EU   | EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-7:2015   |
| <b>International approvals</b>                                 |  |
| FM approval  | pending  |
| IECEx approval   | IECEx BVS 16.0051X   |
| Approved for   | Ex ib [ia Ga] IIC T4 Gb ,<br>Ex ic [ia Ga] IIC T4 Gc ,<br>Ex ec [ia Ga] IIC T4 Gc ,<br>[Ex ia Da] IIIC , [Ex ia Ma] I  |
| <b>Certificates and approvals</b>                              |  |
| Marine approval  | pending  |
| <b>General information</b>                                     |  |
| Supplementary information                                      | EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> . |



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**Additional Information**

**Type Code**

| Type Code          | Description   |
|--------------------|---|
| R8D0-MIO-Ex12.PA.1 | Multi-input/output PROFIBUS PA, IP20 for DIN rail mounting in cabinet with pluggable screw terminals  |
| R8D0-MIO-Ex12.PA.2 | Multi-input/output PROFIBUS PA, IP20 for DIN rail mounting in cabinet with pluggable spring terminals |

**Assembly**

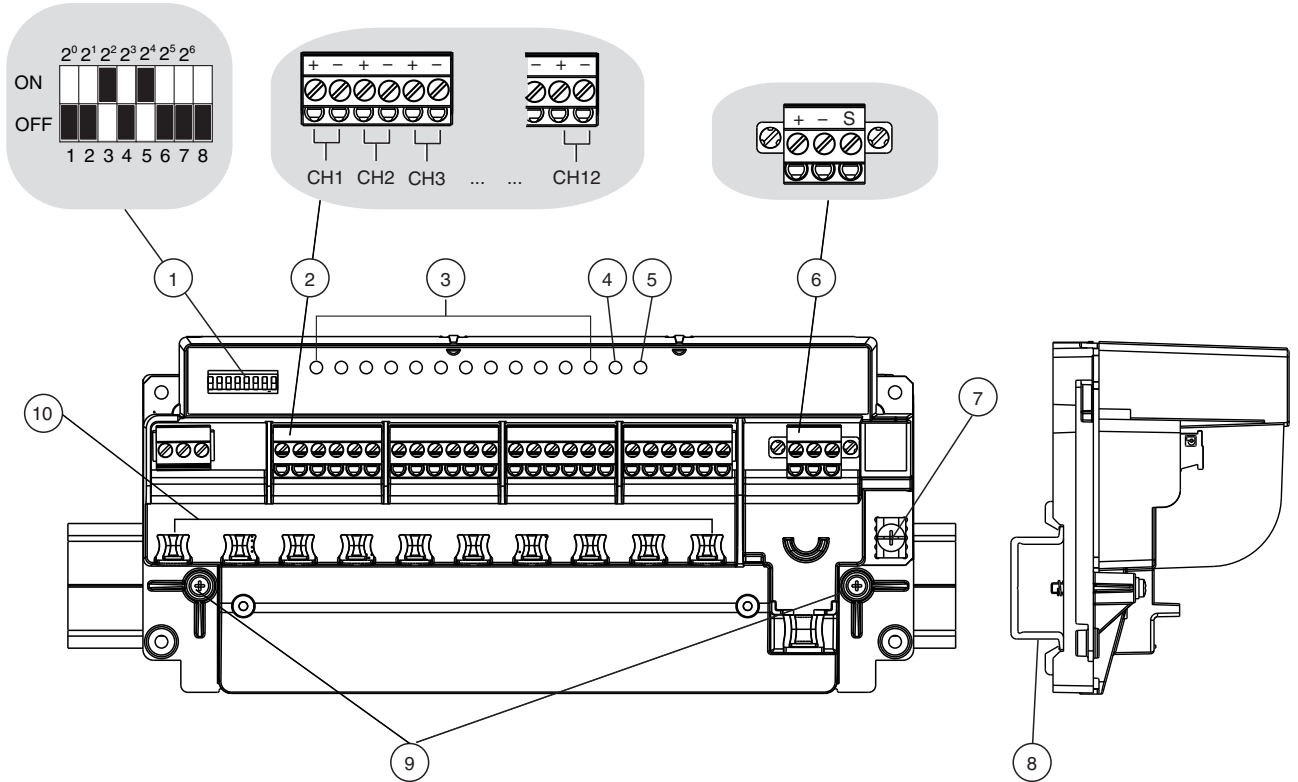


Figure 1: R8D0-MIO-Ex12.PA\*

- 1 DIP switch for configuration.
- 1 ... 7 Address switches
- 8 Hardware write protection
- Example: For setting the address to 20, the switches 3 and 5 are set to "ON":  $2^2 + 2^4 = 20$
- 2 4 terminals for connecting channels CH1 ... CH12
- 3 LED CH ERR 1 ... 12 for indicating channel errors
- 4 LED COM ERR for indicating communication errors
- 5 LED PWR for indicating operation
- 6 Fieldbus connection
- 7 Grounding terminal
- 8 DIN mounting rail
- 9 DIN mounting rail fixing screws
- 10 Cable fixtures

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Dimensions

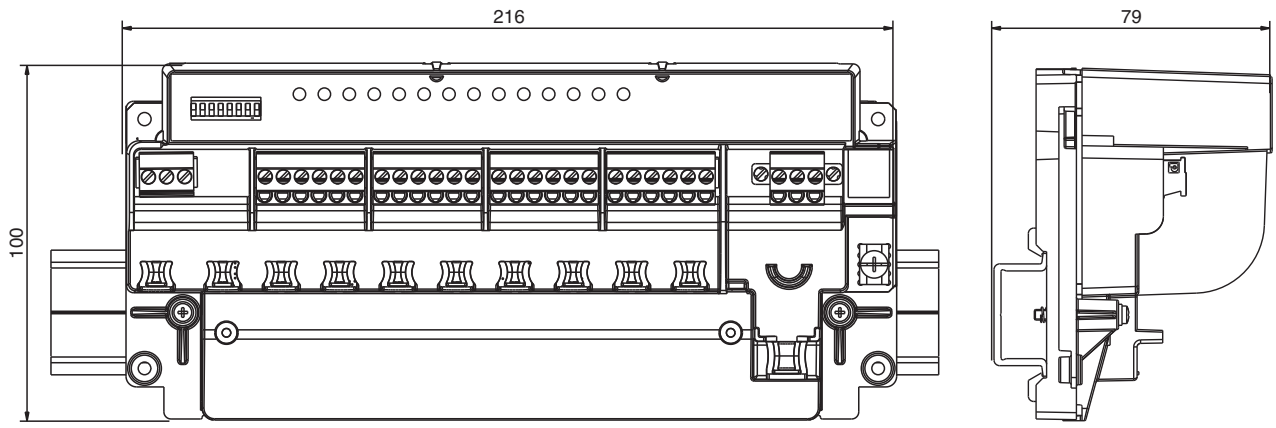


Figure 2: R8D0-MIO-Ex12.\* All dimensions in mm without tolerance indication.

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