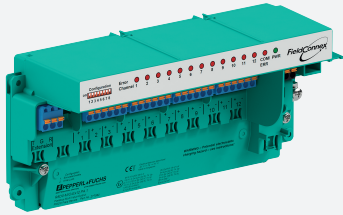


# Multi-Input/Output Device for Cabinet Installation

## R8D0-MIO-Ex12.PA\*



- 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



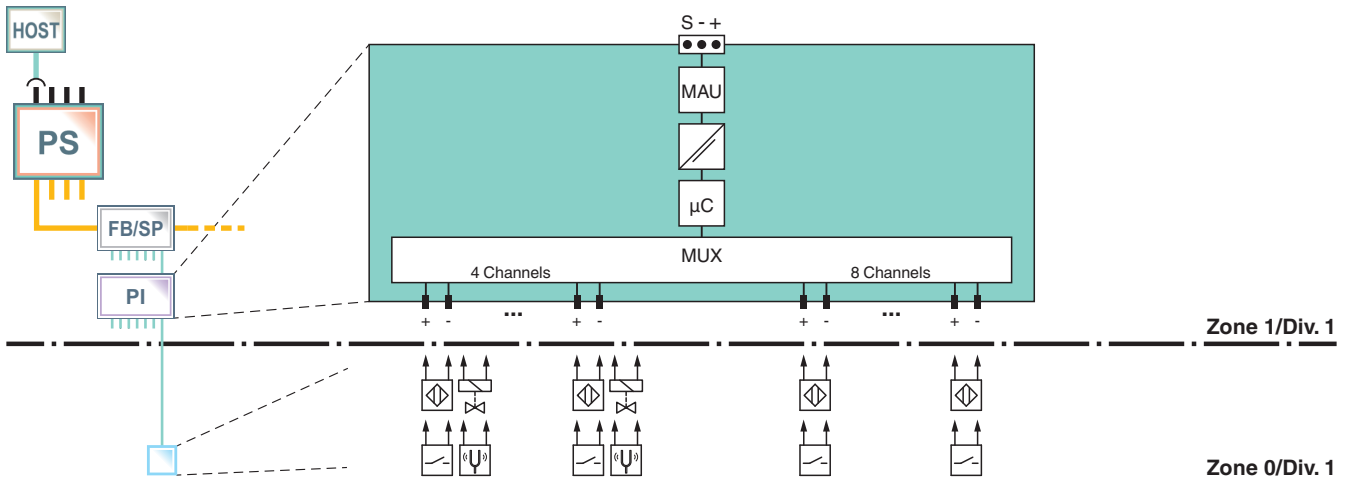
### Function

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

#### Fieldbus connection

Fieldbus type	PROFIBUS PA
FDE (Fault Disconnect Equipment)	6.7 mA
Polarity	not polarity sensitive
Rated voltage	U <sub>N</sub> 9 ... 32 V

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## Technical Data

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 -50 ... 85 °C (-58 ... 185 °F) safe area
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		≤ 95 % non-condensing
Shock resistance		15 g , 11 ms
Vibration resistance		5 g , 10 ... 150 Hz

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## Technical Data

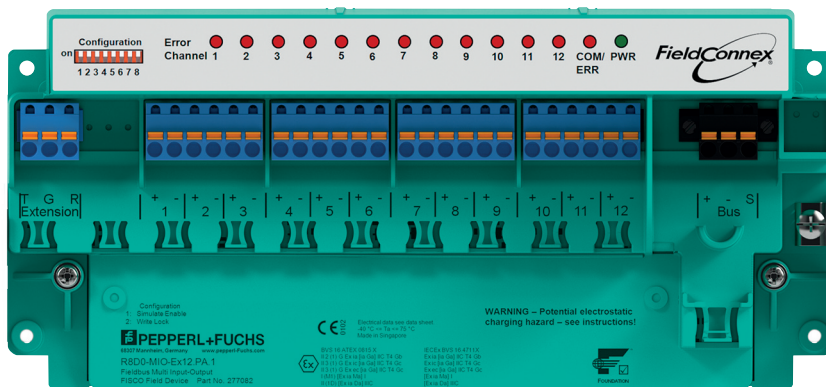
Pollution degree	2
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3
<b>Mechanical specifications</b>	
Connection type	plug-in terminals , spring terminal and screw terminal
Core cross section	
Bus	up to 2.5 mm <sup>2</sup>
Inputs	up to 2.5 mm <sup>2</sup>
Housing material	Polycarbonate
Degree of protection	IP20
Mass	approx. 290 g
Mounting	mounting on DIN rail in cabinet
<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] IIC
<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
Field-side	
Voltage $U_o$	9 V
Current $I_o$	43 mA
Power $P_o$	96 mW
Directive conformity	
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 , Ex ic [ia Ga] IIC T4 Gc , Ex ec [ia Ga] IIC T4 Gc , [Ex ia Da] IIC , [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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## Matching System Components

	<b>F.MIO.P12.*12.P.*.***.***.**00</b>	Multi-Input/Output Junction Box, Polyester (GRP)
	<b>F.MIO.S12.*12.P.*.***.***.**00</b>	Multi-Input/Output Junction Box, Stainless Steel

## Accessories

	<b>DTM FieldConnex</b>	FieldConnex® DTM Collection
	<b>Microsoft .NET</b>	Connection Software
	<b>PACTware 5.0</b>	FDT Framework
	<b>PACTware 4.1</b>	FDT Framework

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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**

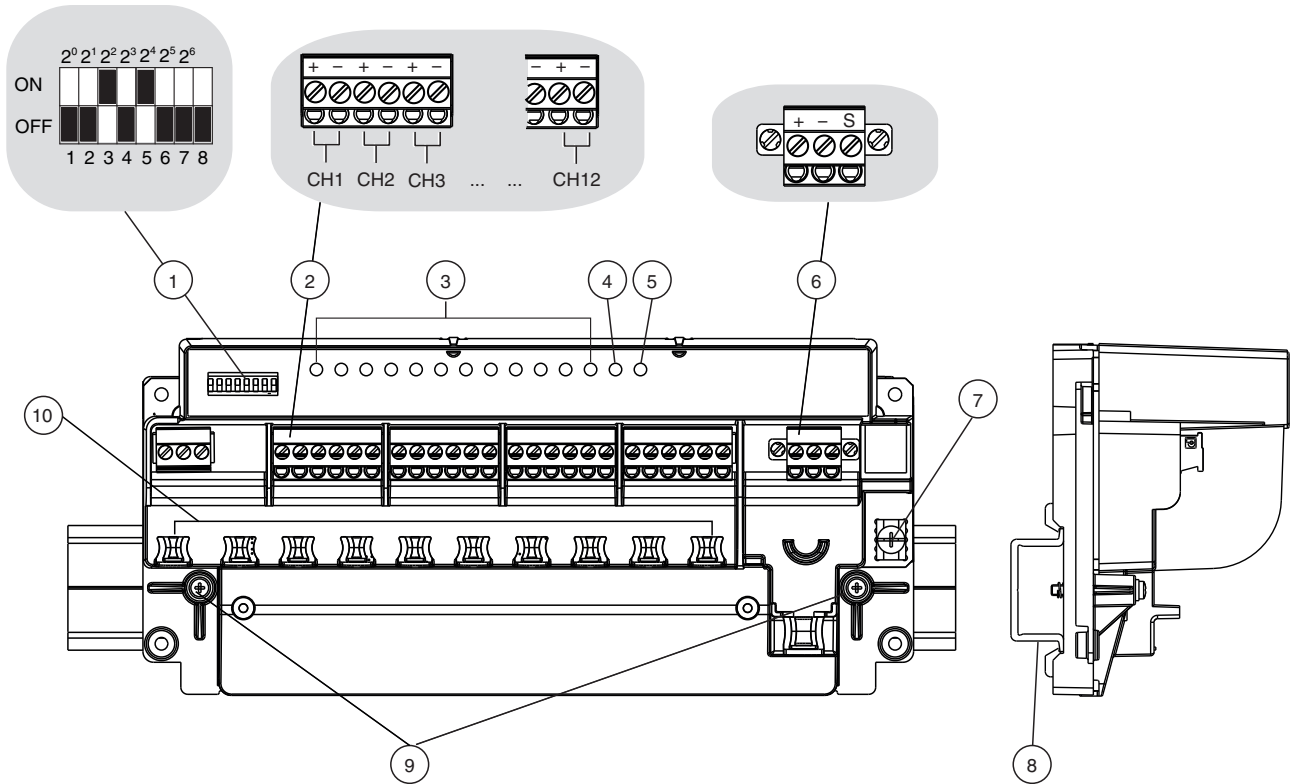


Figure 1: R8D0-MIO-Ex12.PA\*

- 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

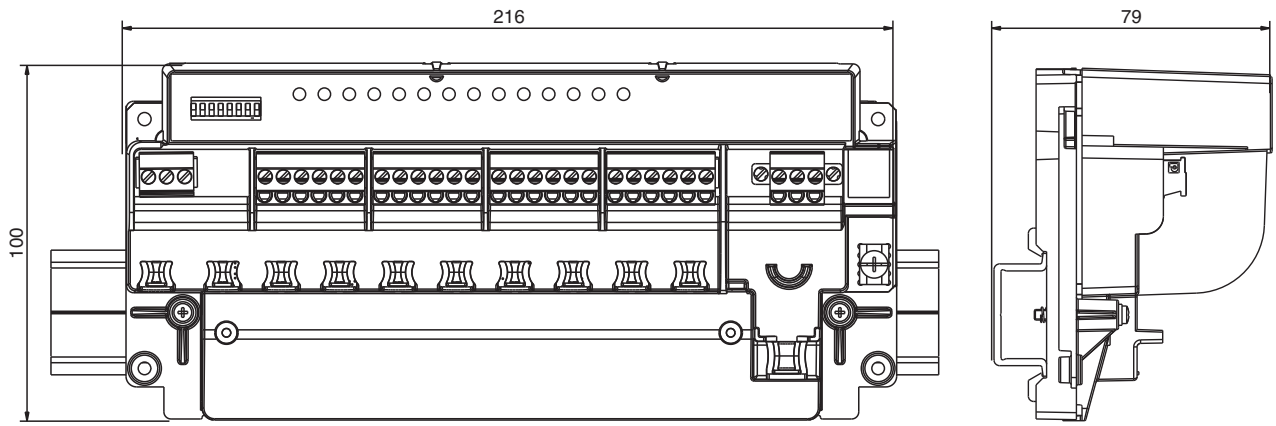


Figure 2: R8D0-MIO-Ex12.\* All dimensions in mm without tolerance indication.

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