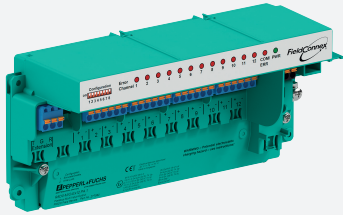


Multi-Input/Output Device for Cabinet Installation



R8D0-MIO-Ex12.FF*

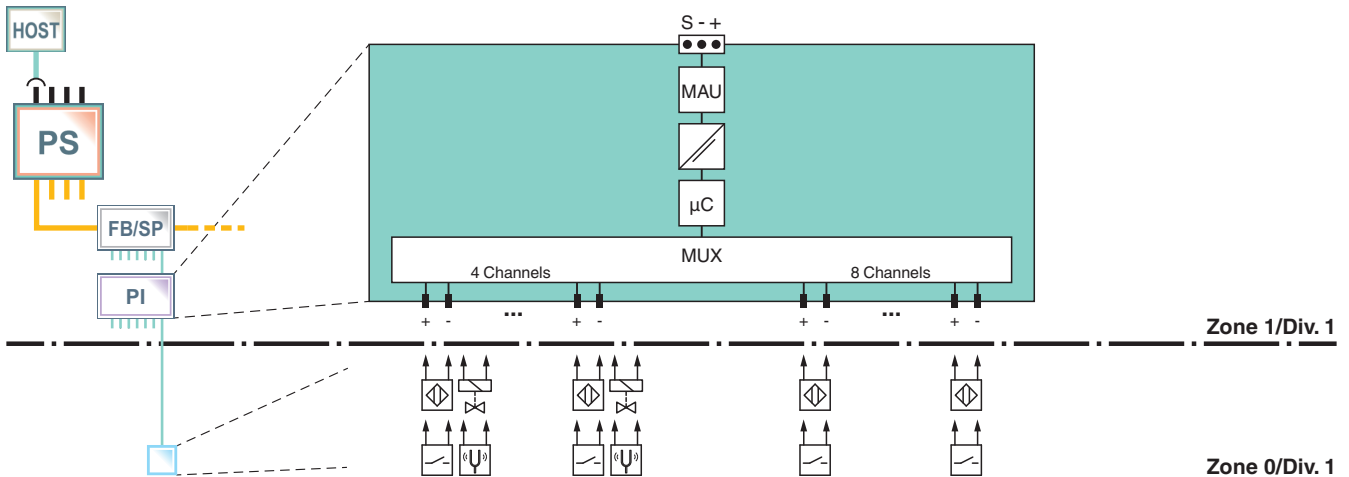
- For discrete inputs and outputs
- Installation in Zone 1/Div. 1, intrinsically safe
- Sensors in Zone 0/Div. 1
- Connection to fieldbus acc. to FISCO or Entity
- For FOUNDATION Fieldbus H1
- PCS integration via device description and function blocks
- Monitors sensor condition
- Removable terminals
- 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, alarms and function blocks to the distributed control system (DCS). The fieldbus powers the sensors and the MIO itself, extra power or wiring are not required.

Connection



Technical Data

General specifications	
Design / Mounting	Cabinet installation
Fieldbus interface	
Fieldbus type	FOUNDATION Fieldbus
Physical layer profile	profile type 511 (FISCO), profile type 111 (Entity)
ITK version	6.1.1

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Pepperl+Fuchs Group
www.pepperl-fuchs.com

USA: +1 330 486 0002
pa-info@us.pepperl-fuchs.com

Germany: +49 621 776 2222
pa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091
pa-info@sg.pepperl-fuchs.com

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Technical Data

Implementation		resource block 1x RS function block 4x DO, 12x DI, 1x AI, 2x MDI, 1x MDO transducer block 4x TB
FDE (Fault Disconnect Equipment)		6.7 mA
Polarity		not polarity sensitive
Rated voltage	U_N	9 ... 32 V
Rated current	I_N	max. 23 mA
Indicators/operating means		
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
Analog input		
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 μ s
Supply voltage		5 V
Supply current		5 mA
Line fault detection		lead breakage , short circuit (not in counter mode)
Digital input		
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
Digital output		
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
Galvanic isolation		
Foundation Fieldbus/Field circuit		safe galvanic isolation acc. to EN 60079-11, voltage peak value 375 V
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013
Low voltage		
Directive 2014/35/EU		EN 61010-1:2010
Standard conformity		
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
Ambient conditions		

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pa-info@sg.pepperl-fuchs.com

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Technical Data

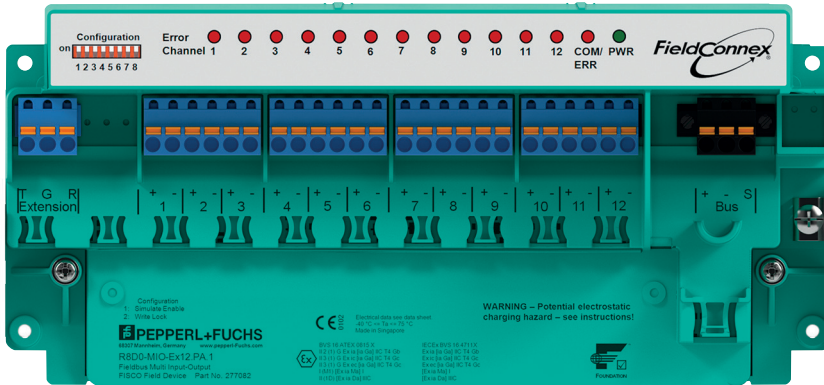
Ambient temperature	-50 ... 75 °C (-58 ... 167 °F) hazardous area -50 ... 85 °C (-58 ... 185 °F) safe area
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
Relative humidity	≤ 95 % non-condensing
Shock resistance	15 g , 11 ms
Vibration resistance	5 g , 10 ... 150 Hz
Pollution degree	2
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3
Mechanical specifications	
Connection type	plug-in terminals , spring terminal and screw terminal
Core cross-section	
Bus	up to 2.5 mm ²
Inputs	up to 2.5 mm ²
Housing material	Polycarbonate
Degree of protection	IP20
Mass	approx. 290 g
Mounting	mounting on DIN rail in cabinet
Data for application in connection with hazardous areas	
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
Field-side	
Voltage U _o	9 V
Current I _o	43 mA
Power P _o	96 mW
FOUNDATION Fieldbus	
Maximum safe voltage U _m	253 V
Voltage U _i	24 V
Current I _i	380 mA
Power P _i	5.32 W
Directive conformity	
Directive 2014/34/EU	EN 60079-0:2012 , EN 60079-11:2012 , EN 60079-7:2015
International approvals	
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] IIIC , [Ex ia Ma] I
Certificates and approvals	
Marine approval	pending
General information	
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 www.pepperl-fuchs.com .

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pa-info@us.pepperl-fuchs.comGermany: +49 621 776 2222
pa-info@de.pepperl-fuchs.comSingapore: +65 6779 9091
pa-info@sg.pepperl-fuchs.com

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Matching System Components

	F.MIO.P12.*12.F.*.***.***. **00
	F.MIO.S12.*12.F.*.***.***. **00

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Additional Information

Type Code

Type Code	Description
R8D0-MIO-Ex12.FF.1	Multi-input/output FOUNDATION Fieldbus H1, IP20 for DIN rail mounting in cabinet with pluggable screw terminals
R8D0-MIO-Ex12.FF.2	Multi-input/output FOUNDATION Fieldbus H1, IP20 for DIN rail mounting in cabinet with pluggable spring terminals

Assembly

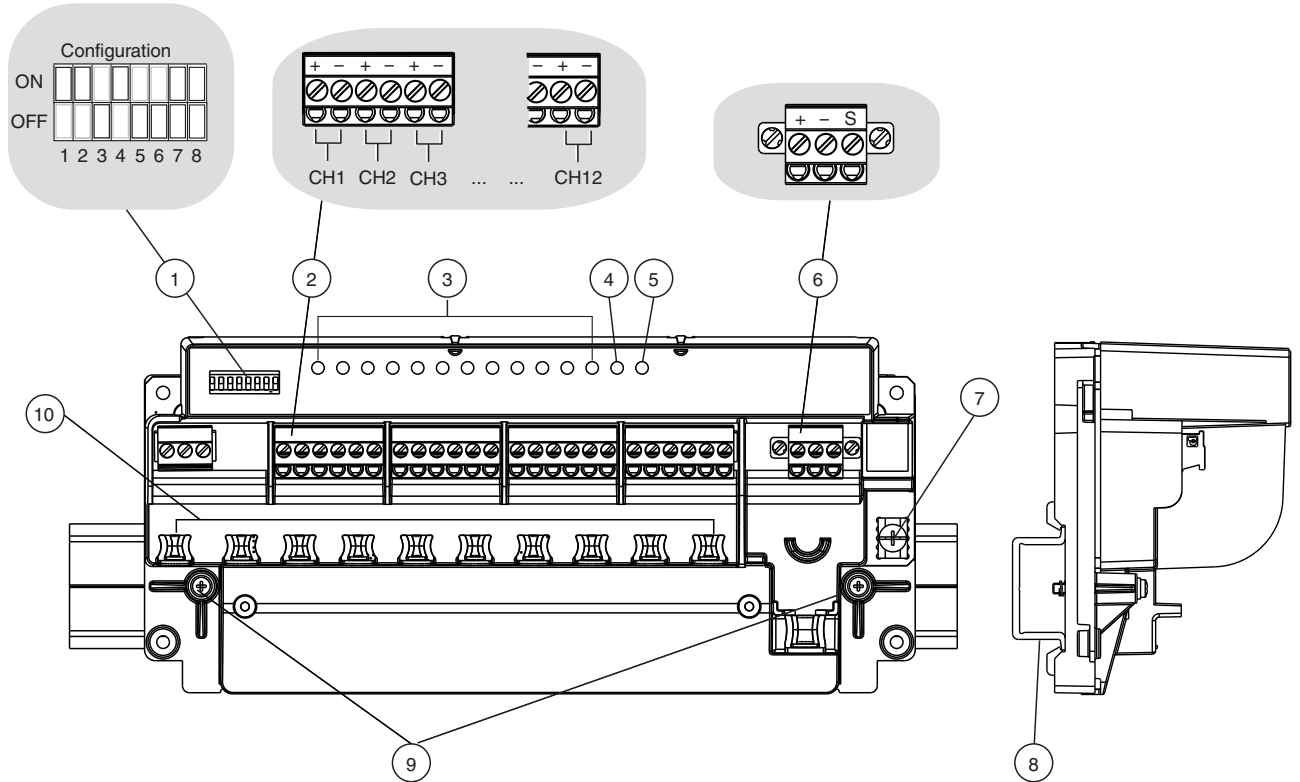


Figure 1: R8D0-MIO-Ex12.FF*

- 1 DIP switch for configuration.
 - 1 Simulation
 - 2 Hardware write protection
 - 3 ... 8 Unused switches
- 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

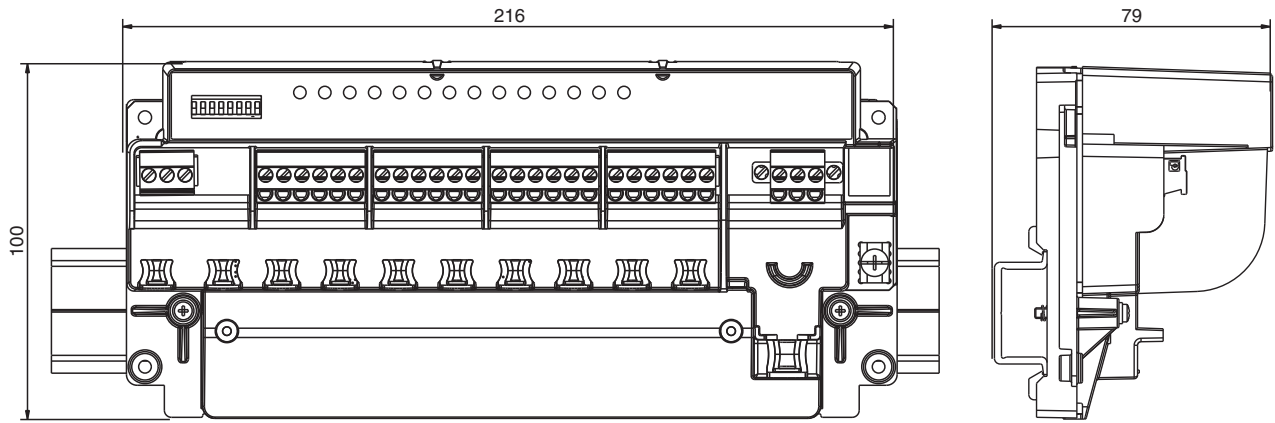


Figure 2: R8D0-MIO-Ex12.* All dimensions in mm without tolerance indication.

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