



Valve coupler

- Fieldbus Foundation™ recorded device
- Fieldbus Foundation™ Fieldbus (FF-H1)
- 4 channels with each 1 valve control signal and 2 end position feedback signals
- Lead breakage (LB) monitoring and short-circuit (SC) monitoring of the inputs and outputs
- Inputs and outputs are galvanically separated from the FF-H1 bus
- Installation in the hazardous area for protection class intrinsically safety
- Connection acc. to FISCO or Entity
- Communication corresponds to FF specification 1.4
- Functional blocks: 4 DO and 1 DI

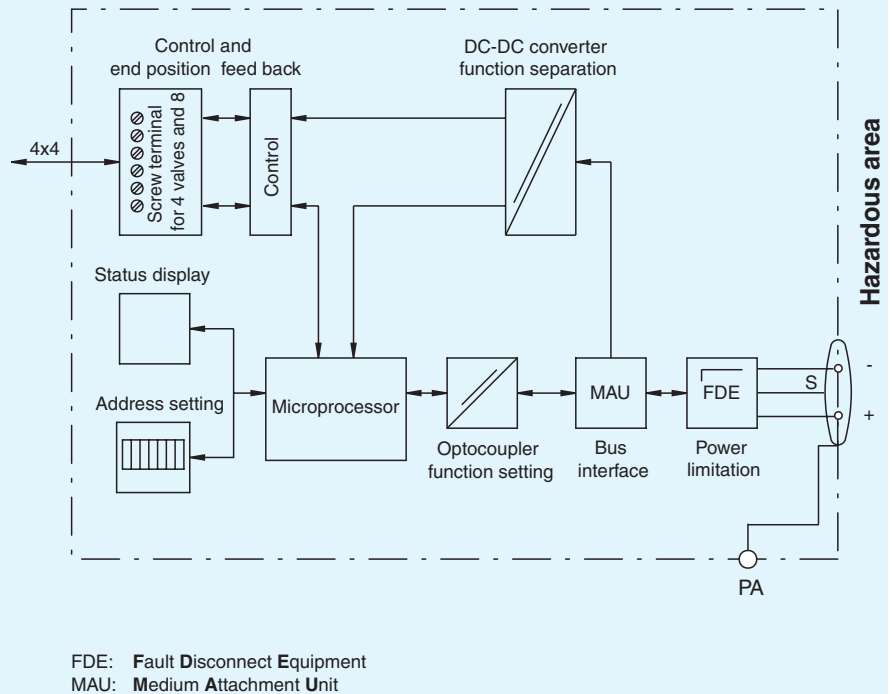
Function

The FD0-VC-Ex4.FF valve coupler can be used to connect four low-power auxiliary valves with conventional, intrinsically safe and binary control circuits to the FF-H1 fieldbus. The valve coupler is mounted close to the valves in the area subject to the danger of explosion (Zone 1).

The two valve end positions are recorded by means of inductive proximity switches. The 2:1 procedure is used for wiring the limit position transducer (see description of the 2:1 procedure and list of sensors that can be used).

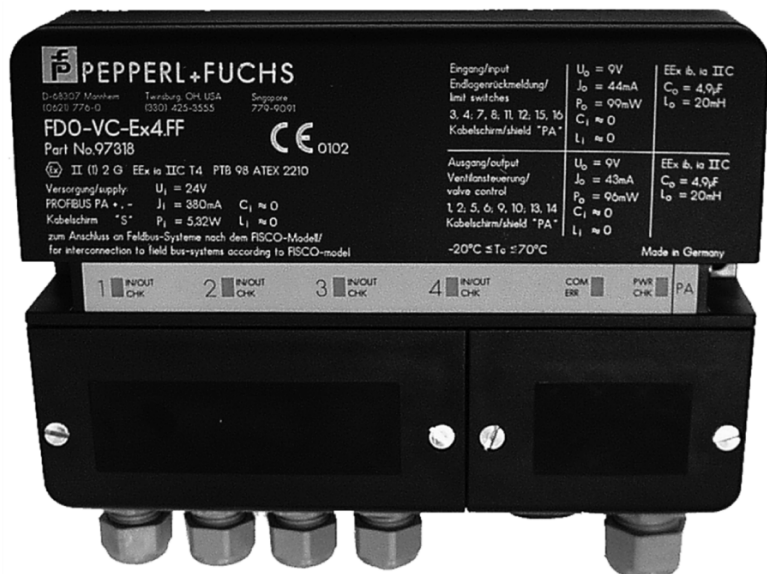
Power is supplied to the device through the FF-H1, which is also used for data exchange, all parameter assignment, alarms and return messages. No additional devices or wiring are needed. In accordance with the Fieldbus Foundation philosophy, monitoring and diagnostic measures are included in the field device. The valve coupler automatically monitors the runtime and breakaway time of the valve, records line breaks or line short circuits on the input and output side, automatically conducts position-dependant function tests and generates alarm messages.

Connection



Composition

Front View



Fieldbus interface	
FOUNDATION Fieldbus	
Connection	Connection +, -
Rated voltage	9 ... 32 V
Rated current	max. 23 mA
Baudrate	31.25 kBit/s
Protocol	IEC 61158-2
Terminal "S"	only for the connection of the cable screen (BUS) and/or the potential compensation
Terminal "PA"	only for the connection of the cable screen (sensor interface) and/or earthing
Grounding plate	only for the connection of the potential compensation
Field circuit	
Inputs	
Connection	8, for binary sensors: terminals 3, 4, 7, 8, 11, 12, 15, 16
Sensor supply voltage	5 V
Sensor supply current	5 mA
Settling time	2 ms
Max. cycle time	≤ 160 ms
Outputs	
Connection	terminals 1+, 2-; 5+, 6-; 9+, 10-; 13+, 14-
Output voltage	6.4 ... 7.9 V
Output rated operating current	1.5 mA
Holding current	1 mA
Electrical isolation	
Foundation Fieldbus/Field circuit	safe electrical isolation acc. to EN 50020, voltage peak value 60 V
Directive conformity	
Electromagnetic compatibility	
Directive 89/336/EC	EN 61326, EN 50081-2
Standard conformity	
Electrical isolation	EN 50178
Electromagnetic compatibility	NAMUR NE 21
Protection degree	IEC/EN 60529
Fieldbus standard	EN 50170/2
Ambient conditions	
Ambient temperature	-20 ... 70 °C (253 ... 343 K)
Storage temperature	-40 ... 85 °C (233 ... 358 K)
Mechanical specifications	
Core cross-section	Bus cable: Ø 5 mm ... 10 mm cable sensors/valve: Ø 4 mm ... 8 mm
Housing	187 mm x 129 mm x 46 mm
Protection degree	IP65
Installation position	Cable glands downwards
Mass	approx. 290 g
Mounting	panel mounting
Data for application in conjunction with hazardous areas	
EC-Type Examination Certificate	PTB 98 ATEX 2210
Group, category, type of protection, temperature classification	Ⓔ II (1)2G EEx ia IIC T4
Field-side	
Voltage U_o	9 V
Current I_o	44 mA
Power P_o	99 mW
FOUNDATION Fieldbus	
Voltage U_i	24 V
Current I_i	380 mA
Power P_i	5.32 W
Rated voltage	9 ... 32 V
Rated current	23 mA
FDE (Fault Disconnect Equipment)	6.7 mA
Terminal "S"	only for the connection of the cable screen (BUS) and/or the potential compensation
Terminal "PA"	only for the connection of the cable screen (sensor interface) and/or earthing
Grounding plate	only for the connection of the potential compensation
Directive conformity	standards
Directive 94/9 EC	EN 50014, EN 50020
International approvals	

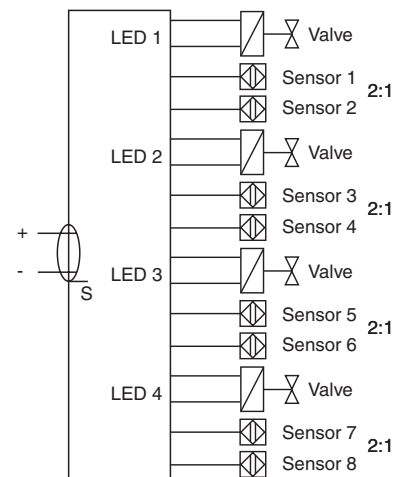
FM approval	3009604
Control drawing	116-0259
Approved for	IS Class I, Division 1, Groups A, B, C, D / Class I, Zone 0, AEx ia IIC T4
IEC approval	IECEX TUN 04.0002
Approved for	Ex ia IIC T4

Supplementary information

EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity and instructions have to be observed. For information see www.pepperl-fuchs.com.

Electrical connection

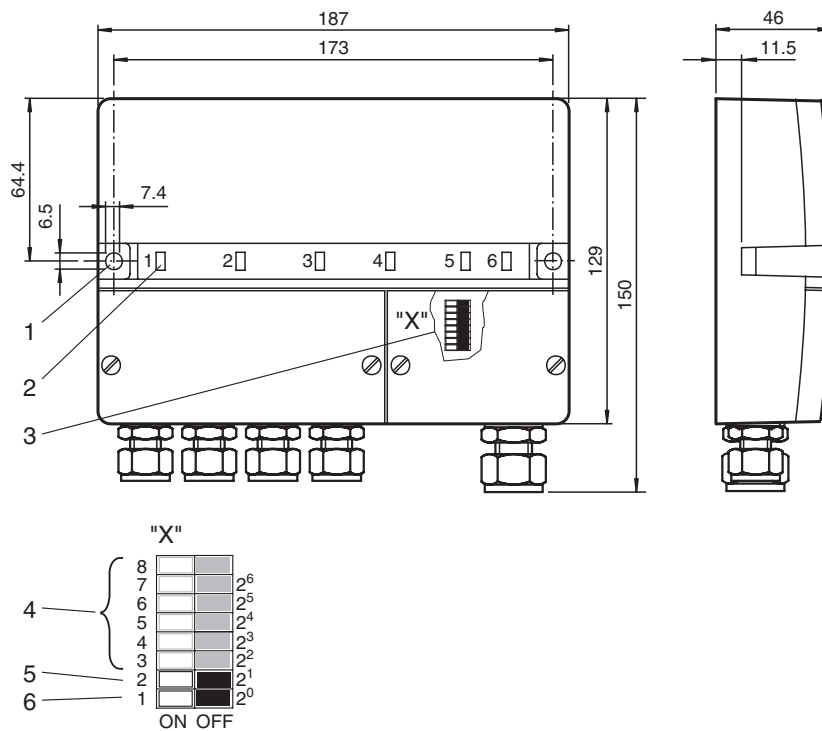
terminal 1	Valve 1+
terminal 2	Valve 1-
terminal 3	Sensor 1+, Sensor 2-
terminal 4	Sensor 1-, Sensor 2+
terminal 5	Valve 2+
terminal 6	Valve 2-
terminal 7	Sensor 3+, Sensor 4-
terminal 8	Sensor 3-, Sensor 4+
terminal 9	Valve 3+
terminal 10	Valve 3-
terminal 11	Sensor 5+, Sensor 6-
terminal 12	Sensor 5-, Sensor 6+
terminal 13	Valve 4+
terminal 14	Valve 4-
terminal 15	Sensor 7+, Sensor 8-
terminal 16	Sensor 7-, Sensor 8+
terminal +	FOUNDATION Fieldbus H1+
terminal S	Screen
terminal -	FOUNDATION Fieldbus H1-



Note

To use this device you require the device-specific Device Description (EDD). The file can be downloaded via the homepage in the internet (<http://www.pepperl-fuchs.com>).

Dimensions



Description:

- 1 Earthing plate
- 2 LEDs
- 3 Address setting

Address setting:

- 4 Not used addresses
- 5 Hardware write protection
- 6 Simulation

LED assignment:

- 1 IN/OUT CHK
- 2 IN/OUT CHK
- 3 IN/OUT CHK
- 4 IN/OUT CHK
- 5 COM/ERR
- 6 PWR/CHK

Installation notes

Connectable sensors (2:1 procedure)

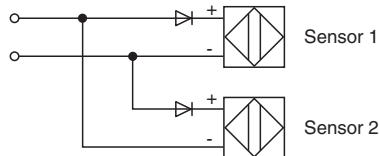
The 2:1 procedure allows to transfer two independent binary signals on a single wire pair without a bus system. To do this, the two sensors (or mechanical switches) are controlled and evaluated antiparallel in time multiplex mode.

Due to the condition of time multiplex mode, not all NAMUR proximity switches can be operated using the 2:1 procedure.

For information regarding connectable sensor types please contact Pepperl+Fuchs.

Some sensor types can be connected by means of additional external Polarity Reversal Protection.

Polarity Reversal Protection



Connectable low-power Ex-i valves

Herion	Low-power valve, 6 V version, type 2085
ASCO/Joucomatic	Piezo valve, 6 V version, No. 63000059, No. 63000060, No. 63000061, No. 63000062
Samson	Type 3776, 3701, 3775, 3962, 3963, 3766 all based on the 6 V version
Seitz	Solenoid valve PV12 F73 Xio H

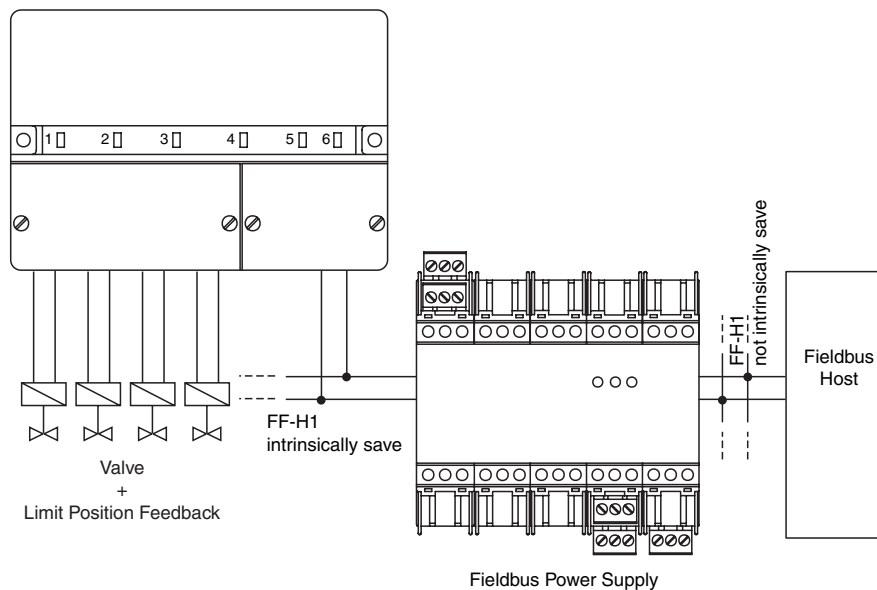


Attention

Do not connect any additional current consumers to the valve circuit (e. g. LEDs).

If additional consumers are connected to the valve circuit, successful operation of the valve coupler cannot be ensured.

Application example



Accessories

Claw clamp for tube mounting, suitable for tubes up to $\varnothing$ 300 mm, not included in delivery package, No. 104930