

Features

- For four intrinsically safe valves with position sensors
- Installation in Zone 1...2/Div. 2, intrinsically safe
- Valves in Zone 0/Div. 1
- Connection to fieldbus acc. to FISCO or Entity
- For FOUNDATION Fieldbus H1
- DCS integration via device description and function blocks
- Monitors lead breakage and short circuits
- Valve monitoring and diagnostics integrated
- Conducts partial stroke testing

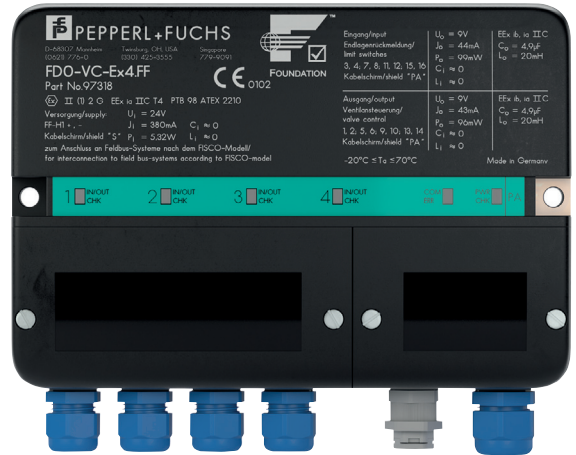
Function

The valve coupler (VC) for FOUNDATION fieldbus H1 connects up to four intrinsically safe low-power valves to the DCS via fieldbus. It is installed pre-wired in a field enclosure or directly outside close to the valves in the hazardous area. The VC drives four low-power auxiliary valves and gathers positioning information via pairs of inductive proximity switches.

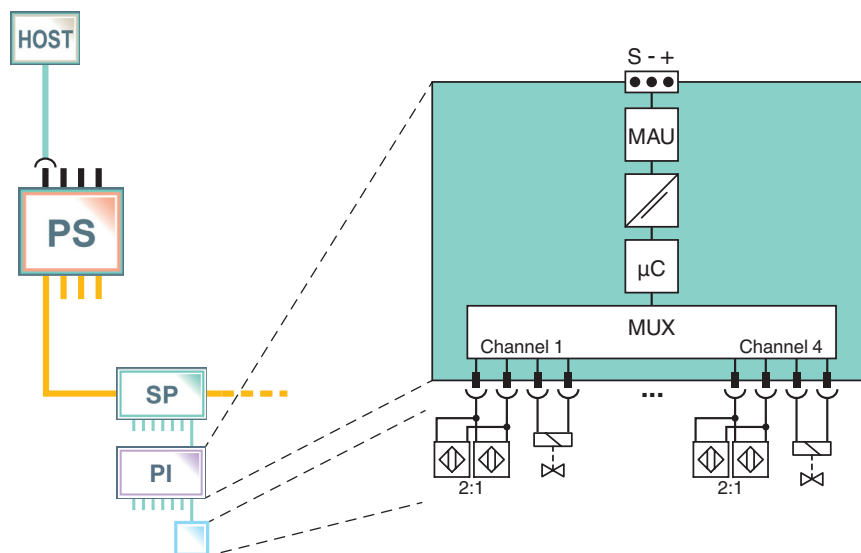
The VC communicates all data, configuration, and alarms via one fieldbus address to the DCS. It supports function blocks via device description. Fieldbus powers the actors, sensors and the valve coupler itself, additional power or wiring is not required.

The VC supports summary diagnostics according to NAMUR recommendations. It detects lead breakage and short circuit conditions. It monitors and reports runtime and breakaway time during each operation and can conduct partial stroke tests.

Assembly




Connection



Zone 1

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Fieldbus interface		
FOUNDATION Fieldbus		
Connection	Connection +, -	
Rated voltage	9 ... 32 V	
Rated current	max. 23 mA	
Baud rate	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 grounding	
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	
Time delay before availability	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 galvanic isolation acc. to EN 50020, voltage peak value 60 V	
Directive conformity		
Electromagnetic compatibility		
Directive 2004/108/EC	EN 61326-1:2006	
Standard conformity		
Electrical isolation	EN 50178	
Electromagnetic compatibility	NE 21:2006	
Protection degree	IEC/EN 60529	
Fieldbus standard	EN 50170/2	
Ambient conditions		
Ambient temperature	-20 ... 70 °C (-4 ... 158 °F)	
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)	
Corrosion resistance	acc. to ISA-S71.04-1985, severity level G3	
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 connection with Ex-areas		
EC-Type Examination Certificate		
Group, category, type of protection, temperature class	PTB 98 ATEX 2210  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 grounding	
Grounding plate	only for the connection of the potential compensation	
Directive conformity		

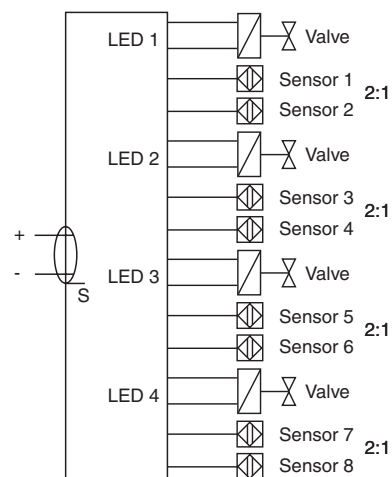
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Directive 94/9/EC	EN 50014:1997 EN 50020:1994
International approvals	
FM approval	3009604
Control drawing	No. 116-0259
Approved for	IS Class I, Division 1, Groups A, B, C, D / Class I, Zone 0, AEx ia IIC T4
IECEX approval	IECEX TUN 04.0002
Approved for	Ex ia IIC T4
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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Electrical connection

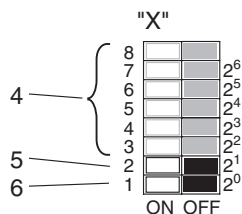
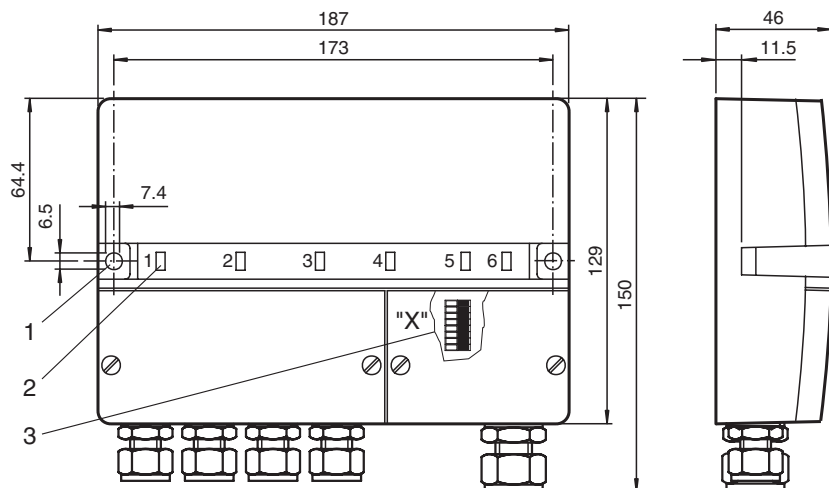
terminal 1	Valve 1+
terminal 2	Valve 1-
terminal 3	Sensor 1+, Sensor 2-
terminal 4	Sensor 1-, Sensor 2+
terminal 5	Valve 2+
terminal 6	Valve 2-
terminal 7	Sensor 3+, Sensor 4-
terminal 8	Sensor 3-, Sensor 4+
terminal 9	Valve 3+
terminal 10	Valve 3-
terminal 11	Sensor 5+, Sensor 6-
terminal 12	Sensor 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

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Installation notes

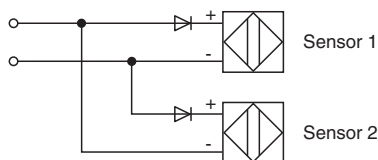
Connectable sensors (2:1 procedure)

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

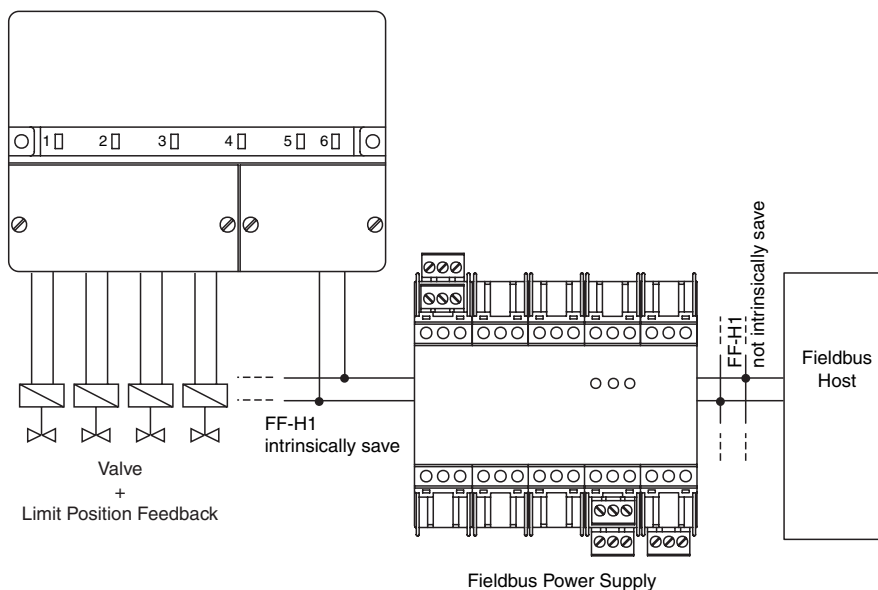
Herion	Low-power valve, 6 V version, type 2085
ASCO/Joucomatic	Piezo valve, 6 V version, No. 63000059, No. 63000060, No. 63000061, No. 63000062
Samson	Type 3776, 3701, 3775, 3962, 3963, 3766 all based on the 6 V version
Seitz	Solenoid valve PV12 F73 Xio H



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.

Attention

Application example



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