

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 PROFIBUS PA
- DCS integration with FDT/DTM technology
- Monitors lead breakage and short circuits
- Valve monitoring and diagnostics integrated
- Conducts partial stroke testing
- Conforms to PROFIBUS PA profile

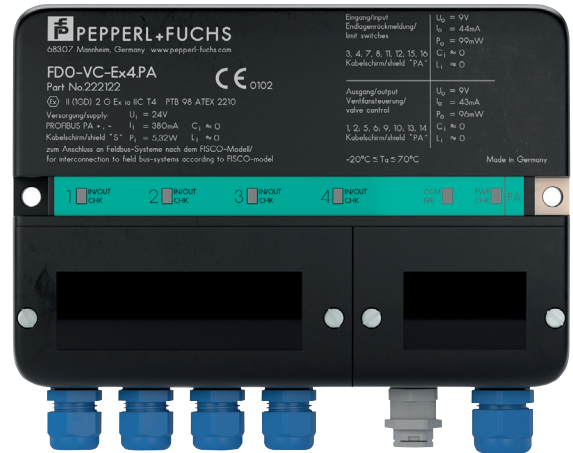
Function

The valve coupler (VC) for PROFIBUS PA 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.

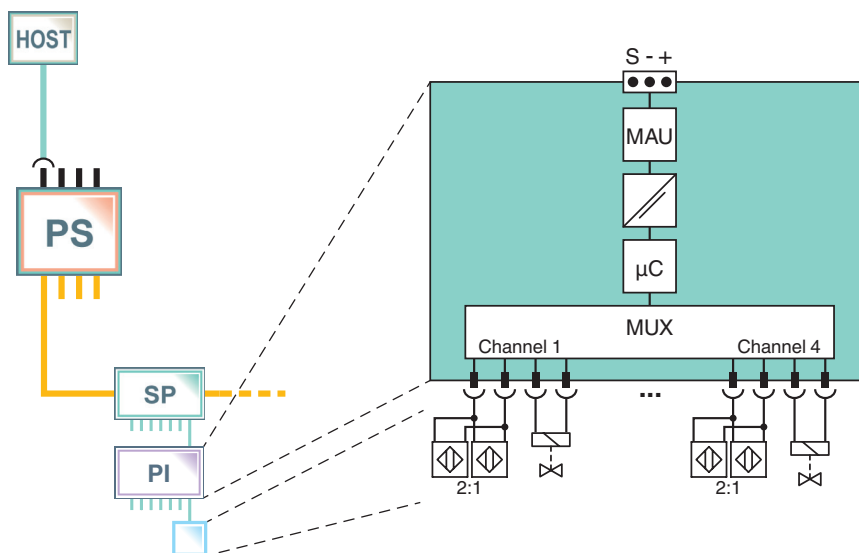
The VC communicates all data, configuration, and alarms via one fieldbus address to the DCS. It supports DCS integration through GSD file and FDT/DTM technology. Fieldbus powers the actors, sensors and the valve coupler itself, additional power or wiring is not required.

The VC supports the PROFIBUS PA profile for easy integration with 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		
PROFIBUS PA		
Connection	Connection +, -	
Rated voltage	9 ... 32 V	
Rated current	≤ 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		
PROFIBUS PA/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	IEC 61158-2	
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	
PROFIBUS PA		
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		
Directive 94/9/EC	EN 50014:1997 EN 50020:1994	
International approvals		
FM approval	3009604	
Control drawing	No. 116-0259	

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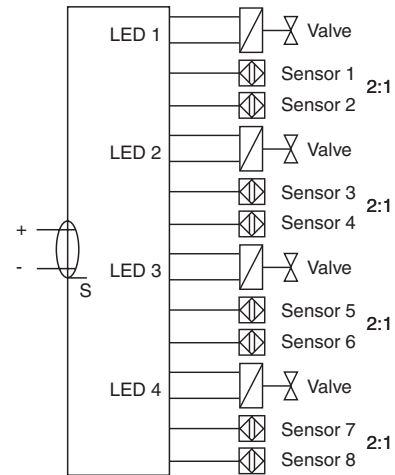
Approved for	IS Class I, Division 1, Groups A, B, C, D / Class I, Zone 0, AEx ia IIC T4
IECEX approval	IECEX TUN 04.0002
Approved for	Ex ia IIC T4
General information	
Supplementary information	EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see www.pepperl-fuchs.com .

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Accessories

Electrical connection

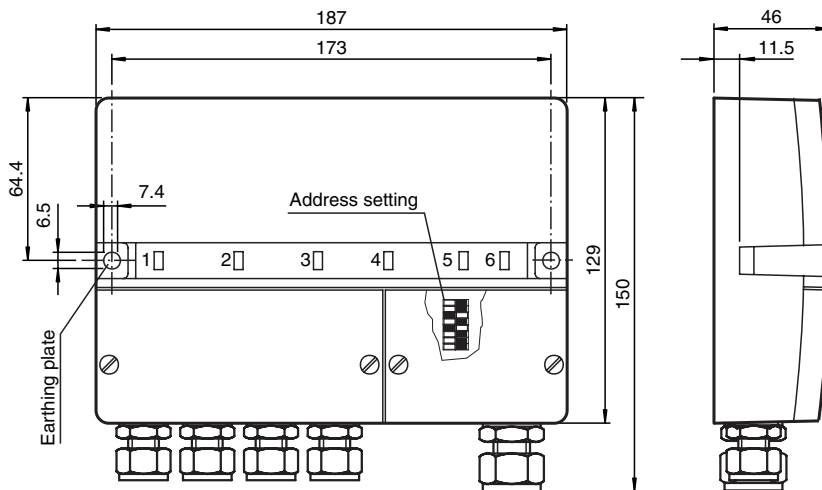
Terminal 1	Valve 1+
Terminal 2	Valve 1-
Terminal 3	Sensor 1+, Sensor 2-
Terminal 4	Sensor 1-, Sensor 2+
Terminal 5	Valve 2+
Terminal 6	Valve 2-
Terminal 7	Sensor 3+, Sensor 4-
Terminal 8	Sensor 3-, Sensor 4+
Terminal 9	Valve 3+
Terminal 10	Valve 3-
Terminal 11	Sensor 5+, Sensor 6-
Terminal 12	Sensor 5-, Sensor 6+
Terminal 13	Valve 4+
Terminal 14	Valve 4-
Terminal 15	Sensor 7+, Sensor 8-
Terminal 16	Sensor 7-, Sensor 8+
Terminal +	PROFIBUS PA+
Terminal S	Shield
Terminal -	PROFIBUS PA-



Note

The device-specific master data file (GSD) is required to be able to use this device. The file is available through the PROFIBUS User Organisation or it can be downloaded from our homepage on the Internet (<http://www.pepperl-fuchs.com>).

Dimensions



LED-Assignment

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

Example address setting

	ON	OFF	
8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	2 ⁶
7	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ⁵
6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ⁴
5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ³
4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ²
3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ¹
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2 ⁰
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Switch 8: Hardware write protection.
In setting 1 (ON) all acyclic write accesses are blocked

The address setting on delivery is 40
(= 2³ + 2⁵)

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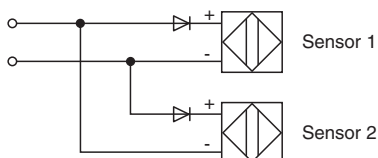
Connectable sensors (2:1 procedure)

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 valves

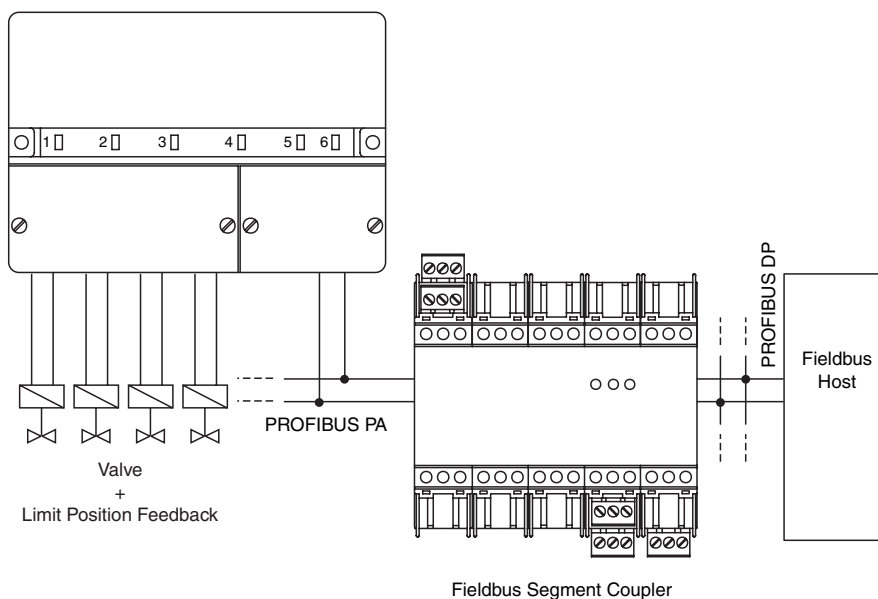
- Herion low-power valve, 6 V design, Type 2085
- ASCO/Joucomatic Piezo valve, 6 V design, No. 63000059, No. 63000060, No. 63000061, No. 63000062
- Samson Type 3776, 3701, 3775, 3962, 3963, 3766 all based on the 6-V design
- Seitz solenoid valve PV12 F73 Xio H



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



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