



SMART Transmitter Power Supply HiD2030SK

- 2-channel isolated barrier
- 24 V DC supply (bus powered)
- 2-wire SMART transmitters or current sources
- Usable as signal splitter (1 input and 2 outputs)
- Dual output 4 mA ... 20 mA, current sink
- Line fault detection (LFD)
- SIL 2 (SC 3) acc. to IEC/EN 61508



Function

This isolated barrier is used for intrinsic safety applications. It provides a fully floating supply to power 2-wire SMART transmitters in the hazardous area, and repeats the current to drive a safe area load. It is also used with 2-wire current sources. It is designed to provide a sink mode output on the safe area terminals.

Digital signals may be superimposed on the analog values in the hazardous or safe area, which are transferred bidirectionally.

A separate fault output on the bus is signaled if the input signal is outside the range 0.2 mA ... 24 mA. The fault conditions can be monitored via a Fault Indication Board.

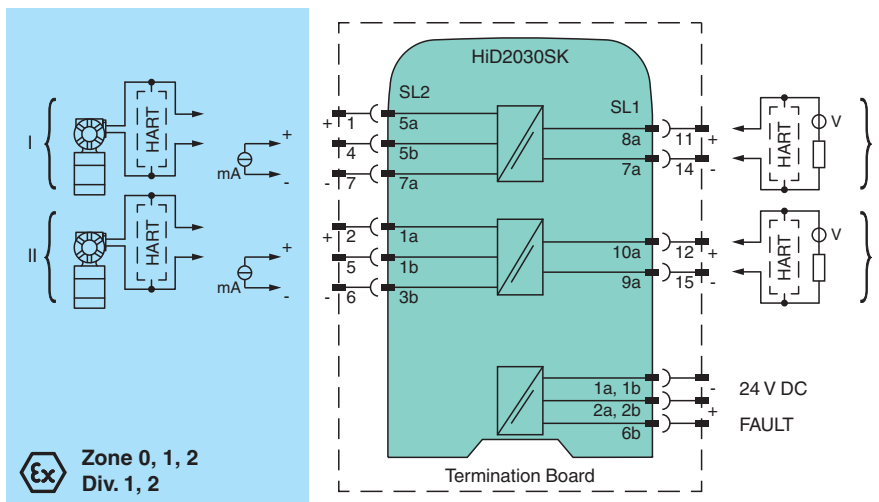
This module mounts on a HiD Termination Board.

Application

The device supports the following SMART protocols:

- HART
- BRAIN

Connection



Technical Data

General specifications

Signal type	Analog input
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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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Technical Data

Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
Systematic capability (SC)		SC 3
Supply		
Connection		SL1: 1a(-), 1b(-); 2a(+), 2b(+)
Rated voltage	U_r	19 ... 30 V DC bus powered via Termination Board
Rated current	I_r	14 mA at 24 V, 250 Ω load, 20 mA output (per channel)
Power dissipation		350 mW at 24 V, 250 Ω load, 20 mA output (per channel)
Input		
Connection side		field side
Connection		SL2: 5a(+), 5b, 7a(-); 1a(+), 1b, 3b(-)
Input current		4 ... 20 mA , current limit approx. 26 mA typ.
Input resistance		< 40 Ω , for current source
Ripple		10 mV _{eff}
Voltage		min. 15.5 V at 20 mA
Communication		pass-through of HART signal to safe area The current sink terminals 4, 7 and 5, 6 do not pass HART signal to safe area.
Output		
Connection side		control side
Connection		SL1: 8a(+), 7a(-); 10a(+), 9a(-)
Output		sink mode from external supply
Output signal		4 ... 20 mA
Voltage		working voltage 7 ... 30 V
Response time		70 ms , 10 ... 90 % step change
Signal level		no fault: 1 mA ... 23.5 mA input current fault detection: < 0.2 mA or > 24 mA input current
Fault indication output		
Connection		SL1: 6b
Output type		open collector transistor (common to both channels) fault bus signal, collective error message
Transfer characteristics		
Deviation		at 20 °C (68 °F), 0/4 ... 20 mA $\leq 20 \mu\text{A}$ incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
Influence of ambient temperature		$\leq 2 \mu\text{A/K}$
Frequency range		field side into the control side: bandwidth with 0.5 V _{pp} signal 0 ... 3 kHz (-3 dB) control side into the field side: bandwidth with 0.5 V _{pp} signal 0 ... 3 kHz (-3 dB)
Galvanic isolation		
Input/Output		basic insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Input/power supply		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Output/power supply		basic insulation according to IEC/EN 61010-1, rated insulation voltage 300 V _{eff}
Output/Output		functional insulation, rated insulation voltage 50 V AC
Indicators/settings		
Display elements		LEDs
Labeling		space for labeling at the front
Directive conformity		
Electromagnetic compatibility		
Directive 2014/30/EU		EN 61326-1:2013 (industrial locations)
Conformity		
Electromagnetic compatibility		NE 21:2017 EN 61326-3-2:2018
Degree of protection		IEC 60529:2001
Protection against electrical shock		UL 61010-1:2012
Ambient conditions		
Ambient temperature		-40 ... 60 °C (-40 ... 140 °F)
Relative humidity		5 ... 90 % , non-condensing up to 35 °C (95 °F)

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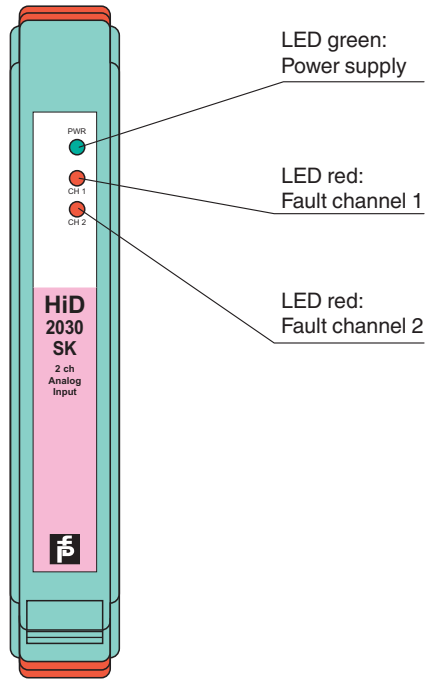
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Technical Data

Mechanical specifications		
Degree of protection		IP20
Mass		140 g
Dimensions		18 x 114 x 130 mm (0.7 x 4.5 x 5.1 inch) (W x H x D)
Mounting		on termination board
Coding		pin 1 and 3 trimmed For further information see system description.
Data for application in connection with hazardous areas		
EU-type examination certificate		CSANe 21 ATEX 2149 X
Marking		Ⓜ II (1)G [Ex ia Ga] IIC Ⓜ II (1)D [Ex ia Da] IIIC Ⓜ I (M1) [Ex ia Ma] I
Input		Ex ia, Ex iaD
Voltage	U _o	26 V
Current	I _o	93 mA
Power	P _o	605 mW
Supply		
Maximum safe voltage	U _m	250 V AC (Attention! U _m is no rated voltage.)
Galvanic isolation		
Input/input		safe electrical isolation acc. to EN 60079-11:2007, voltage peak value 60 V
Input/Output		safe electrical isolation acc. to IEC 60079-11:2007, voltage peak value 375 V
Input/power supply		safe electrical isolation acc. to IEC 60079-11:2007, voltage peak value 375 V
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2018 , EN 60079-11:2012
International approvals		
CSA approval		CoC 80072560 (cCSAus)
Control drawing		116-0486
IECEx approval		
IECEx certificate		IECEx CSAE 21.0010X
IECEx marking		[Ex ia Ga] IIC , [Ex ia Da] IIIC , [Ex ia Ma] I
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com .

Assembly

Front view



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Configuration

No user configuration available for this device.

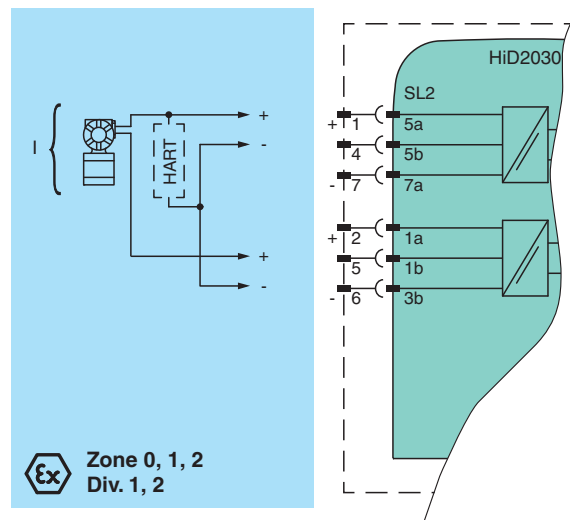
Safety Information



The pins for this device are trimmed to polarize it according to its safety parameter. Do not change!
For further information see system description.

Application

Connection for signal splitter function: 1 input → 2 outputs



Note:

- Communication for SMART transmitter is provided only on output channel 1.
- Minimum supply voltage available for field transmitters is 14.7 V at 20 mA.
- Safety parameters are now:
 - $U_o = 27.2 \text{ V}$
 - $I_o = 93 \text{ mA}$
 - $P_o = 633 \text{ mW}$
- See operating instructions for other connection options and for more details.