SMART Transmitter Power Supply

KFD2-STC5-1

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Input 2-wire and 3-wire SMART transmitters and 2-wire SMART current sources
- Output 4 mA ... 20 mA current sink/current source
- Terminals with test points
- Up to SIL 2 (SC 3) acc. to IEC/EN 61508

CE SIL 2

Function

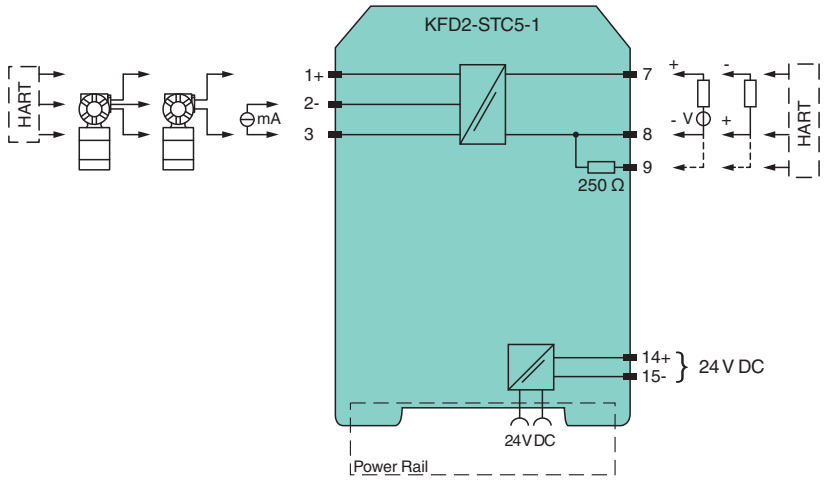
This signal conditioner provides the galvanic isolation between field circuits and control circuits.
The device supplies 2-wire and 3-wire SMART transmitters, and can also be used with 2-wire SMART current sources.
It transfers the analog input signal as an isolated current value.
Digital signals may be superimposed on the input signal on the field side or on the control side and are transferred bi-directionally.
The device provides a sink mode or a source mode output on the control side terminals.
The device has an internal resistor. Use this resistor if the HART communication resistance in the control circuit is too low.
Test sockets for the connection of HART communicators are integrated into the terminals of the device.

Application

The device supports the following SMART protocols:

- HART
- BRAIN
- Foxboro

Connection



Technical Data

General specifications		
Signal type		Analog input
Functional safety related parameters		
Safety Integrity Level (SIL)		SIL 2
Systematic capability (SC)		SC 3

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Technical Data

Supply		
Connection		Power Rail or terminals 14+, 15-
Rated voltage	U_r	18 ... 30 V DC
Ripple		within the supply tolerance
Power dissipation		≤ 1 W at maximum load
Power consumption		≤ 1.6 W at maximum load
Input		
Connection side		field side
Connection		terminals 1+, 2-, 3
Input signal		4 ... 20 mA
Open circuit voltage/short-circuit current		terminals 1+, 3: 23 V / 25 mA
Input resistance		max. 265 Ω terminals 2-, 3 , max. 330 Ω terminals 1+, 3
Available voltage		≥ 16 V at 20 mA ; ≥ 20 V at 4 mA , terminals 1+, 3
Output		
Connection side		control side
Connection		terminals 7+, 8-, 9- (sink) terminals 7-, 8+, 9+ (source) see additional information
Load		0 ... 800 Ω
Output signal		4 ... 20 mA (overload > 25 mA)
Ripple		max. 50 µA $_{eff}$
External supply (loop)		2 ... 30 V DC If the external voltage is > 19 V, a load ≥ ((V - 19) / 0.02) Ω is required. V represents the value of the external voltage. The internal 250 Ω resistor at terminal 9 can be used as a load.
Transfer characteristics		
Deviation		at 20 °C (68 °F), 4 ... 20 mA ≤ 10 µA incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
Influence of ambient temperature		≤ 0.25 µA/K
Frequency range		input to output: bandwidth with 0.5 V_{pp} signal 0 ... 7.5 kHz (-3 dB) output to input: bandwidth with 0.5 V_{pp} signal 0.3 ... 7.5 kHz (-3 dB)
Settling time		200 µs
Rise time/fall time		100 µs
Galvanic isolation		
Input/Output		basic insulation according to IEC 61010-1, rated insulation voltage 300 V_{eff}
Input/power supply		basic insulation according to IEC 61010-1, rated insulation voltage 300 V_{eff}
Output/power supply		functional insulation, rated insulation voltage 50 V AC
Indicators/settings		
Display elements		LED
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 21:2012 EN 61326-3-2:2008
Degree of protection		IEC 60529:2001
Protection against electrical shock		UL 61010-1:2012
Ambient conditions		
Ambient temperature		-20 ... 70 °C (-4 ... 158 °F)
Mechanical specifications		
Degree of protection		IP20
Connection		screw terminals
Mass		approx. 200 g
Dimensions		20 x 124 x 115 mm (0.8 x 4.9 x 4.5 inch) (W x H x D) , housing type B2
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001

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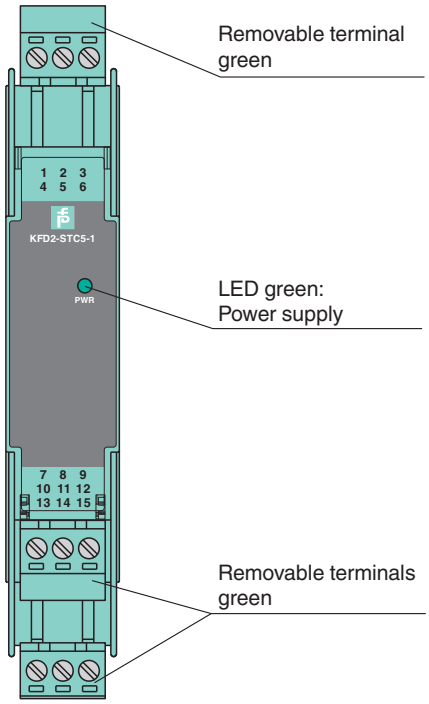
Technical Data

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



Matching System Components

	**KFD2-EB2**	Power Feed Module
	**UPR-03**	Universal Power Rail with end caps and cover, 3 conductors, length: 2 m
	**UPR-03-M**	Universal Power Rail with end caps and cover, 3 conductors, length: 1,6 m
	**UPR-03-S**	Universal Power Rail with end caps and cover, 3 conductors, length: 0.8 m
	**K-DUCT-GY**	Profile rail, wiring comb field side, gray
	**K-DUCT-GY-UPR-03**	Profile rail with UPR-03-* insert, 3 conductors, wiring comb field side, gray

Accessories

	**K-250R**	Measuring resistor
	**K-500R0%1**	Measuring resistor

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Accessories

	**KF-ST-5GN**	Terminal block for KF modules, 3-pin screw terminal, green
	**KF-STP-5GN**	Terminal block for KF modules, 3-pin screw terminal, with test sockets, green
	**KF-CP**	Red coding pins, packaging unit: 20 x 6

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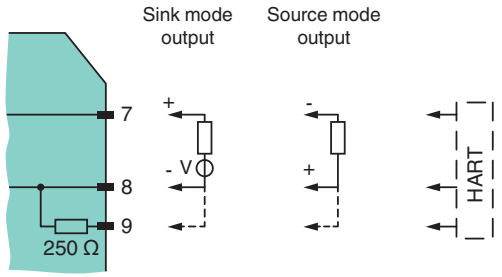
Connection

The device provides an output on the control side terminals. This output can be operated in the current sink operating mode or current source operating mode. Please refer to the following diagram for connection.



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