

# Strain Gauge Converter

## KFD2-WAC2-1.D

- 1-channel signal conditioner
- 24 V DC supply (Power Rail)
- Strain gauge input (full or half bridge)
- Output 0 mA ... ± 20 mA or 0 V ... ± 10 V
- 2 relay contact outputs
- Programmable high/low alarm
- Configurable by PACTware or keypad
- RS-485 interface
- Line fault detection (LFD)



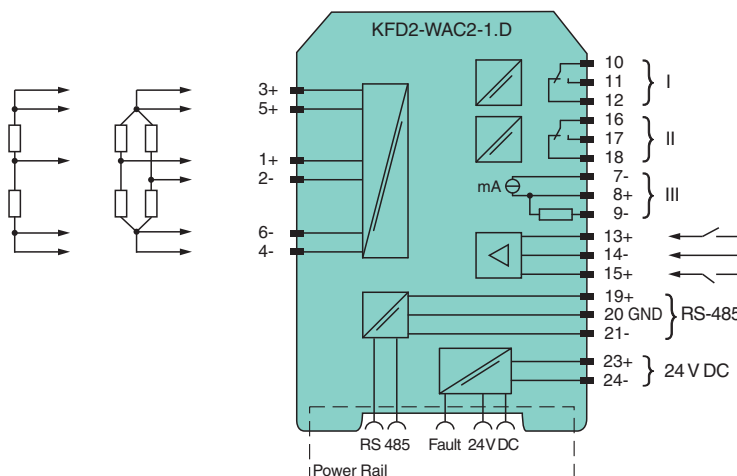
### Function

This signal conditioner provides the galvanic isolation between field circuits and control circuits. The device is used with strain gauges, load cells and resistance measuring bridges. Designed to provide 5 V excitation voltage, this barrier's high quality A/D converter allows it to be used with those devices requiring 10 V. Up to four 350 Ω strain gauges connected in parallel may be powered and evaluated. The device is easily configured by the use of keypad or with the PACTware configuration software. The current measurement for tare, zero point, and final value can be entered in this manner. A fault is signaled by LEDs and a separate collective error message output. For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

### Application

Single or parallel connection of strain gauges with resulting resistance between 116 Ω to 10 kΩ can be connected and will provide a 4 mA to 20 mA output and 2 relay outputs as well as an RS-485 interface in the non-hazardous area. The device supports the transmission of measured values via the RS-485 interface. In this mode of operation, input signal range may be transmitted with 20 bit resolution with up to 31 signal converters connected to the Power Rail UPR-05 or via terminals 19, 20 and 21. RS-485 communication may be done via the Power Rail when using power feed modules with bus access, e. g. KFD2- EB2.R4A.B or via the terminals 19, 20 and 21 of one module. The device is addressed via keypad and display or with a PC with PACTware and adapter K-ADP-USB. For additional information, refer to the manual and [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

### Connection



### Technical Data

#### General specifications

Signal type Analog input

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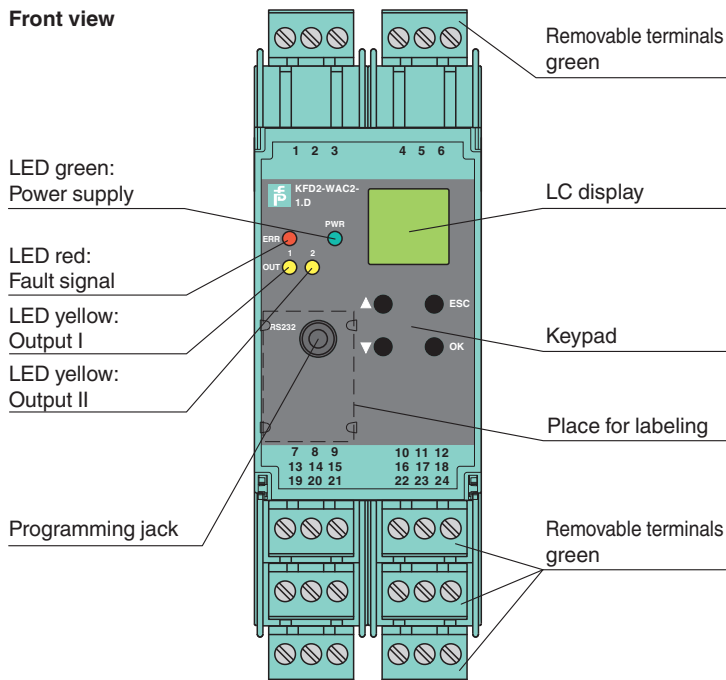
## Technical Data

<b>Supply</b>		
Connection		Power Rail or terminals 23+, 24-
Rated voltage	$U_r$	20 ... 35 V DC
Ripple		within the supply tolerance
Power consumption		max. 3 W
<b>Interface</b>		
Connection		Power Rail or terminals 19+, 20 GND, 21-
Type		RS-485
Programming interface		programming socket
<b>Field circuit</b>		
Connection		terminals 1+, 2-, 3+, 4-, 5+, 6-
Lead resistance		max. 25 $\Omega$ per line
Input I		
Connection		terminals 1+, 2-
Sensor supply		1 ... 5 V
Connection		terminals 3+, 4- (supply); 5+, 6- (signal)
Short-circuit current		50 mA
Load		$\geq 116 \Omega$ up to 5V, $\geq 85 \Omega$ up to 4V
<b>Input</b>		
Connection side		field side
Connection		Input I: terminals 1+, 2-; Input II: terminals 13+, 14-; Input III: terminals 15+, 14-
Programmable Tare		0 ... 500 % of span
Input I		Signal, analog
Input signal		-100 ... 100 mV
Input resistance		$> 1 \text{ M}\Omega$ for voltage measurement
Input II, III		tare adjustment, calibration and zero
Open circuit voltage/short-circuit current		18 V / 5 mA
Active/Passive		$I > 4 \text{ mA} / I < 1.5 \text{ mA}$
<b>Output</b>		
Connection side		control side
Connection		Output I: terminals 10, 11, 12; Output II: terminals 16, 17, 18; Output III: terminals 7-, 8+, 9-
Output I, II		Relay output
Contact loading		253 V AC/2 A/500 VA/cos $\phi$ min. 0.7; 40 V DC/2 A resistive load
Mechanical life		$2 \times 10^7$ switching cycles
Output III		Analog output
Current range		-20 ... 20 mA
Load		max. 550 $\Omega$
Analog voltage output		0 ... $\pm 10$ V; output resistance 500 $\Omega$ (bridge between terminal 7 and 9)
Analog current output		0 ... $\pm 20$ mA or 4 ... 20 mA; load 0 ... 550 $\Omega$ (terminals 7 and 8)
Line fault detection		downscale -21.5 mA (-10.75 V) or 2 mA (1 V), upscale 21.5 mA (10.75 V)
Collective error message		Power Rail
<b>Transfer characteristics</b>		
Deviation		
Resolution/accuracy		$\leq \pm 0.05$ % incl. non-linearity and hysteresis
Temperature effect		$\leq \pm 0.01$ %/K
Reaction time		300 ... 850 ms
<b>Galvanic isolation</b>		
Input I/other circuits		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Output I, II against eachother		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Output I, II/other circuits		reinforced insulation according to IEC/EN 61010-1, rated insulation voltage 300 V <sub>eff</sub>
Output III/Input II, III		not available
Output III/Programming socket		not available

**Technical Data**





Other circuits from each other	functional insulation, rated insulation voltage 50 V <sub>eff</sub>
<b>Indicators/settings</b>	
Display elements	LEDs , display
Control elements	Control panel
Configuration	via operating buttons via PACTware
Labeling	space for labeling at the front
<b>Directive conformity</b>	
Electromagnetic compatibility	
Directive 2004/108/EC	EN 61326-1:2006
Low voltage	
Directive 2006/95/EC	EN 61010-1:2010
<b>Conformity</b>	
Electromagnetic compatibility	NE 21:2006
Degree of protection	IEC 60529:2001
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Degree of protection	IP20
Connection	screw terminals
Mass	approx. 250 g
Dimensions	40 x 119 x 115 mm (1.6 x 4.7 x 4.5 inch) (W x H x D) , housing type C2
Mounting	on 35 mm DIN mounting rail acc. to EN 60715:2001
<b>International approvals</b>	
UL approval	E223772
<b>General information</b>	
Supplementary information	Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .

**Assembly**





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## Matching System Components

	<b>DTM Interface Technology</b>	Device type manager (DTM) for interface technology
	<b>PACTware 5.0</b>	FDT Framework
	<b>K-ADP-USB</b>	Programming adapter with USB interface
	<b>K-DUCT-GY</b>	Profile rail, wiring comb field side, gray

## Accessories

	<b>KF-ST-5GN</b>	Terminal block for KF modules, 3-pin screw terminal, green
	<b>KF-CP</b>	Red coding pins, packaging unit: 20 x 6