Features

- 2-channel isolated barrier
- 24 V DC supply (Power Rail)
- Thermocouple, RTD, potentiometer or voltage input
- Voltage output 0/1 V ... 5 V
- Configurable by **PACTware**
- Line fault (LFD) and sensor burnout detection
- Up to SIL 2 acc. to IEC 61508/IEC 61511

Function

This isolated barrier is used for intrinsic safety applications. It is designed to connect RTDs, thermocouples, or potentiometers in the hazardous area, and provide a proportional 0/1 V ... 5 V signal to the safe area.

The barrier offers 3-port isolation between input, output, and power supply.

A removable terminal block K-CJC-** is available for thermocouples when internal cold junction compensation is desired.
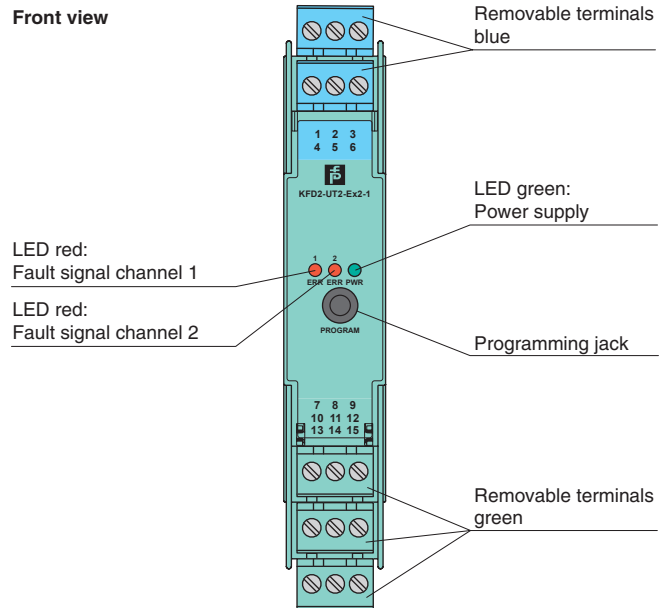
A fault is indicated by a red flashing LED per NAMUR NE44 and user-configured fault outputs.

The unit is easily programmed with the **PACT**ware**™** configuration software.

A collective error messaging feature is available when used with the Power Rail system.

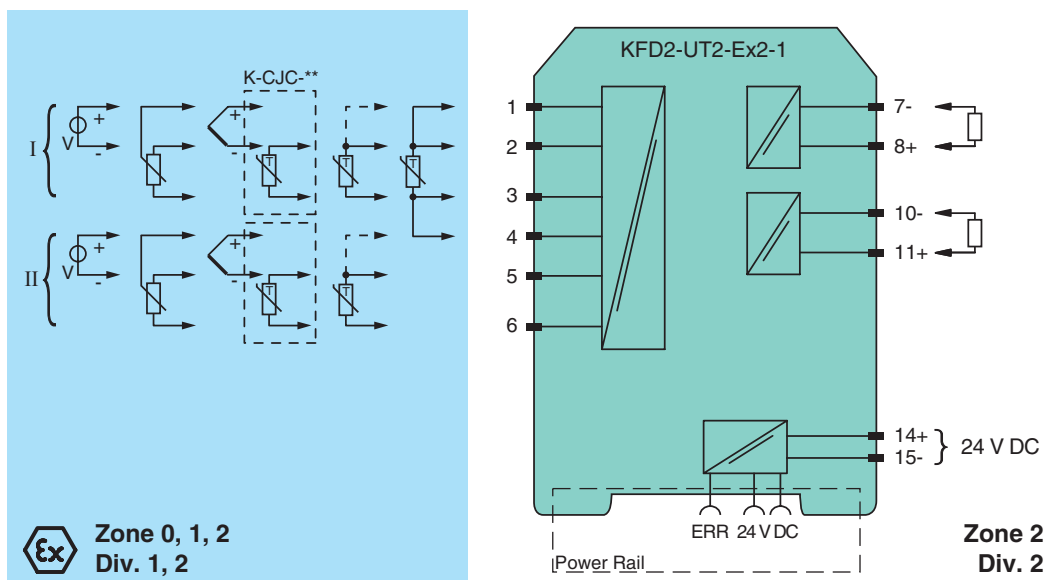For additional information, refer to the manual and www.pepperl-fuchs.com.

Assembly

Connection

Zone 0, 1, 2
Div. 1, 2

Zone 2
Div. 2

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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General specifications	
Signal type	Analog input
Supply	
Connection	terminals 14+, 15- or power feed module/Power Rail
Rated voltage U_r	20 ... 30 V DC
Ripple	within the supply tolerance
Power dissipation/power consumption	≤ 0.8 W / 0.8 W
Input	
Connection	terminals 1, 2, 3; 4, 5, 6
RTD	type Pt10, Pt50, Pt100, Pt500, Pt1000 (EN 60751: 1995) type Pt10GOST, Pt50GOST, Pt100GOST, Pt500GOST, Pt1000GOST (6651-94) type Cu10, Cu50, Cu100 (P50353-92) type Ni100 (DIN 43760)
Measuring current	approx. 200 μA with RTD
Types of measuring	2-, 3-wire connection
Lead resistance	≤ 50 Ω per line
Measuring circuit monitoring	sensor breakage, sensor short-circuit
Thermocouples	type B, E, J, K, N, R, S, T (IEC 584-1: 1995) type L (DIN 43710: 1985) type TXK, TXKH, TXA (P8.585-2001)
Cold junction compensation	external and internal
Measuring circuit monitoring	sensor breakage
Potentiometer	0 ... 20 kΩ (2-wire connection), 0.8 ... 20 kΩ (3-wire connection)
Voltage	selectable within the range -100 ... 100 mV
Input resistance	≥ 1 MΩ (-100 ... 100 mV)
Output	
Voltage output	0 ... 5 V or 1 ... 5 V ; output resistance: ≤ 5 Ω ; load: ≥ 10 kΩ
Connection	output I: terminals 7-, 8+ output II: terminals 10-, 11+
Fault signal	downscale 0 V or 0.5 V, upscale 5.375 V
Transfer characteristics	
Deviation	
After calibration	<u>Pt100:</u> ± (0.06 % of measurement value in K + 0.1 K (4-wire connection)) <u>thermocouple:</u> ± (0.05 % of measurement value in °C + 1 K (1.2 K for types R and S)) this includes ± 0.8 K error of the cold junction compensation <u>mV:</u> ± 50 μV <u>potentiometer:</u> ± 0.05 % of full scale, (excludes errors due to lead resistance) <u>output:</u> 1 to 5 V output: ± 4 mV from 0 to 103.1 % of span; 0 to 5 V output: ± 4 mV from 0.3 to 102.5 % of span
Influence of ambient temperature	deviation of CJC included: <u>Pt100:</u> ± (0.0015 % of measurement value in K + 0.0075 % of span)/K ΔT_{amb}[*] <u>thermocouple:</u> ± (0.02 K + 0.005 % of measurement value in °C + 0.0075 % of span)/K ΔT_{amb}[*] <u>mV:</u> ± (0.01 % of measurement value + 0.0075 % of span)/K ΔT_{amb}[*] <u>potentiometer:</u> ± 0.0075 % of span/K ΔT_{amb}[*] [*] ΔT_{amb} = ambient temperature change referenced to 23 °C (296 K)
Influence of supply voltage	< 0.01 % of span
Reaction time	worst case value (sensor breakage and/or sensor short circuit detection enabled) mV: 1.2 s, thermocouples with CJC: 1.4 s, thermocouples with fixed ref. temp: 1.4 s, 3- or 4-wire RTD: 1.1 s, 2-wire RTD: 920 ms, Potentiometer: 3-wire connection 2.8 s, 2-wire connection 2.25 s
Galvanic isolation	
Output/supply, programming input	functional insulation, rated insulation voltage 50 V AC There is no electrical isolation between the programming input and the supply. The programming cable provides galvanic isolation so that ground loops are avoided.
Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013 (industrial locations)
Conformity	
Electromagnetic compatibility	NE 21:2006
Degree of protection	IEC 60529:2001
Protection against electrical shock	UL 61010-1:2004
Ambient conditions	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications	
Degree of protection	IP20
Mass	approx. 130 g
Dimensions	20 x 119 x 115 mm (0.8 x 4.7 x 4.5 inch) , housing type B2
Mounting	on 35 mm DIN mounting rail acc. to EN 60715:2001
Data for application in connection with hazardous areas	

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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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EU-Type Examination Certificate		CESI 04 ATEX 143
Marking		⟨Ex⟩ II (1)G [Ex ia Ga] IIC ⟨Ex⟩ II (1)D [Ex ia Da] IIIC ⟨Ex⟩ I (M1) [Ex ia Ma] I
Input		Ex ia
Inputs		terminals 1, 2, 3, 4, 5, 6 (for passive equipment)
Voltage	U_o	9 V
Current	I_o	22 mA
Power	P_o	50 mW
Analog outputs, power supply, collective error		
Maximum safe voltage	U_m	250 V (Attention! This is not the rated voltage.)
Interface		
Maximum safe voltage	U_m	250 V (Attention! The rated voltage is lower.), RS 232
Certificate		TÜV 02 ATEX 1797 X
Marking		⟨Ex⟩ II 3G Ex nA II T4
Galvanic isolation		
Input/Other circuits		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Directive conformity		
Directive 2014/34/EU		EN 60079-0:2012+A11:2013 , EN 60079-11:2012 , EN 60079-15:2010 , EN 50303:2000
International approvals		
UL approval		
Control drawing		116-0316
CSA approval		
Control drawing		366-024CS-12 (cCSAus)
IECEx approval		
IECEx certificate		IECEx TUN 07.0003 IECEx CML 16.0126X
IECEx marking		[Ex ia Ga] IIC [Ex ia Da] IIIC [Ex ia Ma] I Ex nA IIC T4 Gc
General information		
Supplementary information		Observe the certificates, declarations of conformity, instruction manuals, and manuals where applicable. For information see www.pepperl-fuchs.com.

Accessories

Power feed module KFD2-EB2

The power feed module is used to supply the devices with 24 V DC via the Power Rail. The fuse-protected power feed module can supply up to 150 individual devices depending on the power consumption of the devices. A galvanically isolated mechanical contact uses the Power Rail to transmit collective error messages.

Power Rail UPR-03

The Power Rail UPR-03 is a complete unit consisting of the electrical inset and an aluminium profile rail 35 mm x 15 mm. To make electrical contact, the devices are simply engaged.

Profile Rail K-DUCT with Power Rail

The profile rail K-DUCT is an aluminum profile rail with Power Rail insert and two integral cable ducts for system and field cables. Due to this assembly no additional cable guides are necessary.

⚠️ *Power Rail and Profile Rail must not be fed via the device terminals of the individual devices!*

K-CJC-**

This removable terminal block with integrated temperature measurement sensor is needed for internal cold junction compensation for thermocouples. One K-CJC-** is needed for each channel.

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Device-specific drivers (DTM)

Adapter K-ADP-USB

Programming adapter for parameterisation via the serial USB interface of a PC/Notebook

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