

Data Sheet

# KFD2-UT2-EX1



Supplied by

**247cable.com**

Call us on +44 (0)118 916 9420 | Email [info@247able.com](mailto:info@247able.com)

## Universal Temperature Converter

## KFD2-UT2-Ex1

### Features

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Thermocouple, RTD, potentiometer or voltage input
- Current output 0/4 mA ... 20 mA
- Sink or source mode
- Configurable by **PACTware**
- Line fault (LFD) and sensor burnout detection
- Up to SIL2 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 0/4 mA ... 20 mA 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.

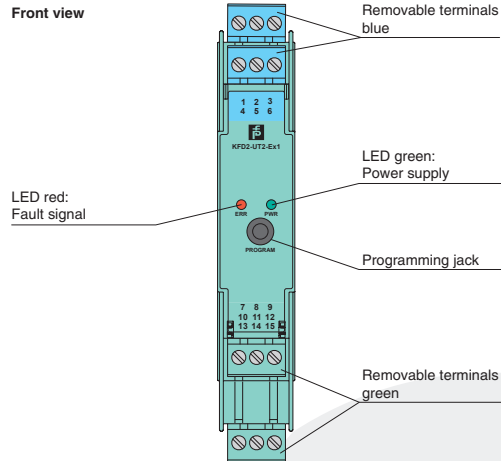
A fault is indicated by a red flashing LED per NAMUR NE44 and user-configured fault outputs.

The unit is easily programmed with the **PACTware™** 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](http://www.pepperl-fuchs.com).

### Assembly

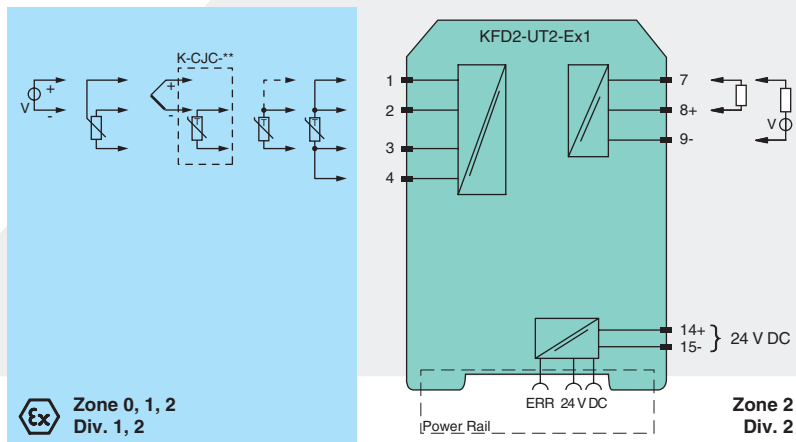


CE



SIL2

### Connection



**Technical data**

**KFD2-UT2-Ex1**

<b>General specifications</b>	
Signal type	Analog input
<b>Supply</b>	
Connection	terminals 14+, 15- or power feed module/Power Rail
Rated voltage	20 ... 30 V DC
Ripple	within the supply tolerance
Power loss/power consumption	≤ 0.98 W / 0.98 W
<b>Input</b>	
Connection	terminals 1, 2, 3, 4
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-, 4-wire connection
Lead resistance	≤ 50 Ω per lead
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
Voltage	selectable within the range -100 ... 100 mV
Potentiometer	0 ... 20 kΩ (2-wire connection), 0.8 ... 20 kΩ (3-wire connection)
Input resistance	≥ 1 MΩ (-100 ... 100 mV)
<b>Output</b>	
Connection	output I: terminal 7: source (-), sink (+), terminal 8: source (+), terminal 9: sink(-)
Output	Analog current output
Current range	0 ... 20 mA or 4 ... 20 mA
Fault signal	downscale 0 or 2 mA, upscale 21.5 mA (acc. NAMUR NE43)
Source	load 0 ... 550 Ω open-circuit voltage ≤ 18 V
Sink	Voltage across terminals 5 ... 30 V. If the current is supplied from a source > 16.5 V, series resistance of ≥ (V - 16.5)/0.0215 Ω is needed, where V is the source voltage. The maximum value of the resistance is (V - 5)/0.0215 Ω.
<b>Transfer characteristics</b>	
Deviation	
After calibration	<b>Pt100:</b> ± (0.06 % of measurement value in K + 0.1 % of span + 0.1 K (4-wire connection)) <b>thermocouple:</b> ± (0.05 % of measurement value in °C + 0.1 % of span + 1 K (1.2 K for types R and S)) this includes ± 0.8 K error of the cold junction compensation <b>mV:</b> ± (50 µV + 0.1 % of span) <b>potentiometer:</b> ± (0.05 % of full scale + 0.1 % of span, (excludes errors due to lead resistance))
Influence of ambient temperature	deviation of CJC included: <b>Pt100:</b> ± (0.0015 % of measurement value in K + 0.006 % of span)/K ΔT <sub>amb</sub> <sup>1)</sup> <b>thermocouple:</b> ± (0.02 K + 0.005 % of measurement value in °C + 0.006 % of span)/K ΔT <sub>amb</sub> <sup>1)</sup> <b>mV:</b> ± (0.01 % of measurement value + 0.006 % of span)/K ΔT <sub>amb</sub> <sup>1)</sup> <b>potentiometer:</b> ± 0.006 % of span/K ΔT <sub>amb</sub> <sup>1)</sup> <sup>1)</sup> ΔT <sub>amb</sub> = ambient temperature change referenced to 23 °C (296 K)
Influence of supply voltage	< 0.01 % of span
Influence of load	≤ 0.001 % of output value per 100 Ω
Reaction time	worst case value (sensor breakage and/or sensor short circuit detection enabled) mV: 1 s, thermocouples with CJC: 1.1 s, thermocouples with fixed reference temperature: 1.1 s, 3- or 4-wire RTD: 920 ms, 2-wire RTD: 800 ms, Potentiometer: 2.05 s
<b>Electrical isolation</b>	
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.
<b>Directive conformity</b>	
Electromagnetic compatibility	Directive 2004/108/EC
	EN 61326-1:2006
<b>Conformity</b>	
Electromagnetic compatibility	NE 21:2006
Degree of protection	IEC 60529:2001
Protection against electrical shock	UL 61010-1:2004
<b>Ambient conditions</b>	
Ambient temperature	-20 ... 60 °C (-4 ... 140 °F)
<b>Mechanical specifications</b>	
Degree of protection	IP20

## Technical data

## KFD2-UT2-Ex1

Mass		approx. 130 g
Dimensions		20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in) , housing type B2
Mounting		on 35 mm DIN mounting rail acc. to EN 60715:2001
<b>Data for application in connection with Ex-areas</b>		
EC-Type Examination Certificate		CESI 04 ATEX 143 , for additional certificates see <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a>
Group, category, type of protection		⊕ II (1)GD, I (M1), [Ex ia] IIC, [Ex iaD], [Ex ia] I (-20 °C ≤ T <sub>amb</sub> ≤ 60 °C) [circuit(s) in zone 0/1/2]
Input		Ex ia IIC
Inputs		terminals 1, 2, 3, 4
Voltage	U <sub>o</sub>	9 V
Current	I <sub>o</sub>	22 mA
Power	P <sub>o</sub>	50 mW
Analog outputs, power supply, collective error		
Maximum safe voltage	U <sub>m</sub>	250 V (Attention! This is not the rated voltage.)
Interface		
Maximum safe voltage	U <sub>m</sub>	250 V (Attention! The rated voltage is lower.), RS 232
Statement of conformity		
Group, category, type of protection, temperature class		⊕ II 3G Ex nA II T4 [device in zone 2]
Electrical isolation		
Input/Other circuits		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Directive conformity		
Directive 94/9/EC		EN 60079-0:2012 EN 60079-11:2012 EN 60079-15:2005 EN 60079-26:2007 EN 50303:2000
<b>International approvals</b>		
UL approval		
Control drawing		116-0316
CSA approval		
Control drawing		366-024CS-12 (cCSAus)
IECEx approval		
Approved for		[Zone 0] [Ex ia] IIC, [Ex iaD], [Ex ia] I
<b>General information</b>		
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 <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> .

## 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.

### PACTware™

Device-specific drivers (DTM)

### Adapter K-ADP-USB

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

### Reading Office

Cutbush Park, Danehill, Lower Earley,  
Reading, Berkshire. RG6 4UT. UK.  
Tel: +44 (0)118 9311188  
Email: [info@able.co.uk](mailto:info@able.co.uk)

### Aberdeen Office

Unit 6 Airside Business Park, Kirkhill Industrial Estate,  
Dyce, Aberdeen. AB21 0GT. UK.  
Tel: +44 (0)1224 725999  
Email: [ab@able.co.uk](mailto:ab@able.co.uk)

Internet: [www.able.co.uk](http://www.able.co.uk)  
e-procurement: [www.247able.com](http://www.247able.com)  
Registered in England No: 01851002  
VAT No: GB 417 2481 61

