



- 1-channel
- Output EEx ia IIC
- Device installation permissible in zone 2
- Lead breakage (LB) monitoring and short-circuit (SC) monitoring
- Conductive for HART communication (galvanically isolated)
- Accuracy 0.1 %
- EMC acc. to NAMUR NE 21

Function

A 4 mA ... 20 mA current is transferred from the safe area to the hazardous area.

Digital signals can be superimposed on the analogue values in either the hazardous area or the safe area. A bidirectional communication between a SMART-(HART) device in the field and the corresponding SMART-communicator in the safe area is possible.

When the current source has a low AC impedance, it may be important to connect it to terminals 7- and 9+ in order to obtain a fault free HART transmission.

In order to facilitate the connection of a hand held terminal to the circuit, the KFD2-SCD-Ex1.LK is usually delivered with KFD-STP-GN or KFD-STP-BU device connectors. The applicable test jacks are integrated into these connectors.

Lead monitoring, input characteristics

Normal operation:

100 Ohm ... 700 Ohm field current

Lead short circuit:

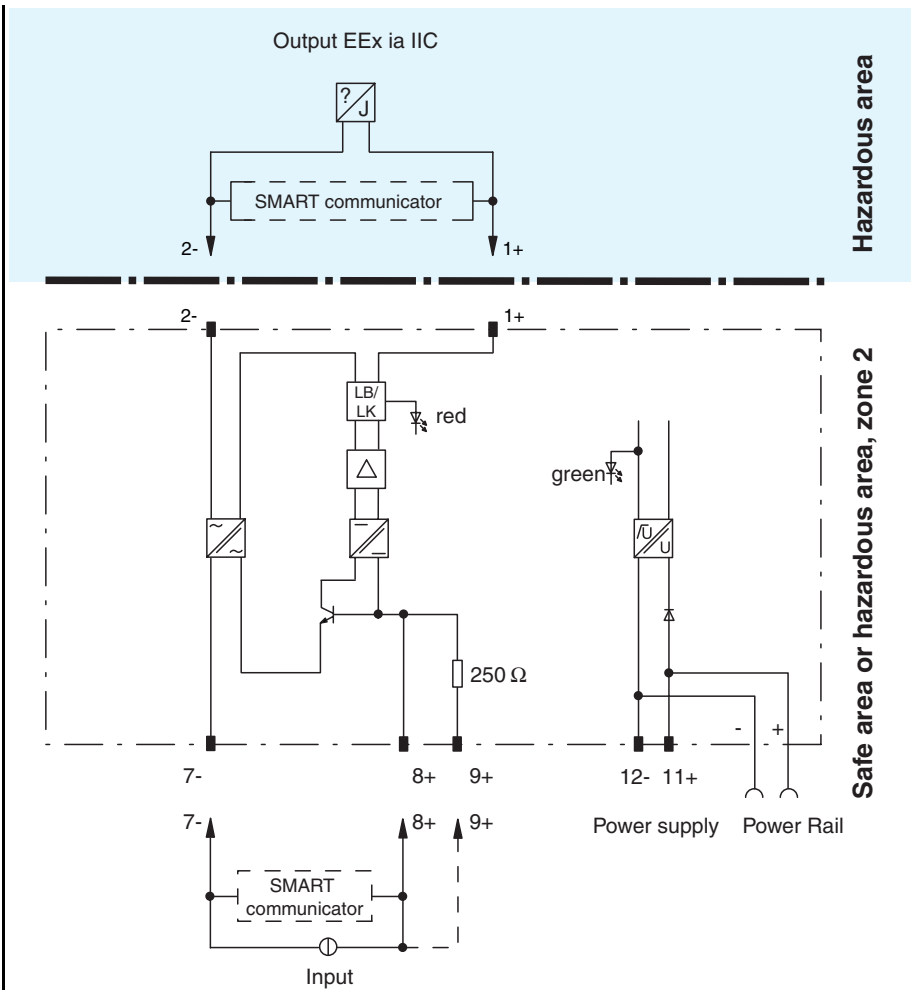
up to < 50 Ohm load

Lead breakage:

up to > 2 kOhm load when $I_{ON} = 20 \text{ mA}$

The range above a load of 700 Ohm is not designated for transferring signals. In case of short circuit or lead breakage in the field circuit the input resistance is increased to > 100 kOhm. The field current decreases to < 1 mA, and the red LED flashes.

During normal operation the DC input voltage is lower than 4 V (200 Ohm at 20 mA respectively). The AC input impedance corresponds to the output impedance of the unit.



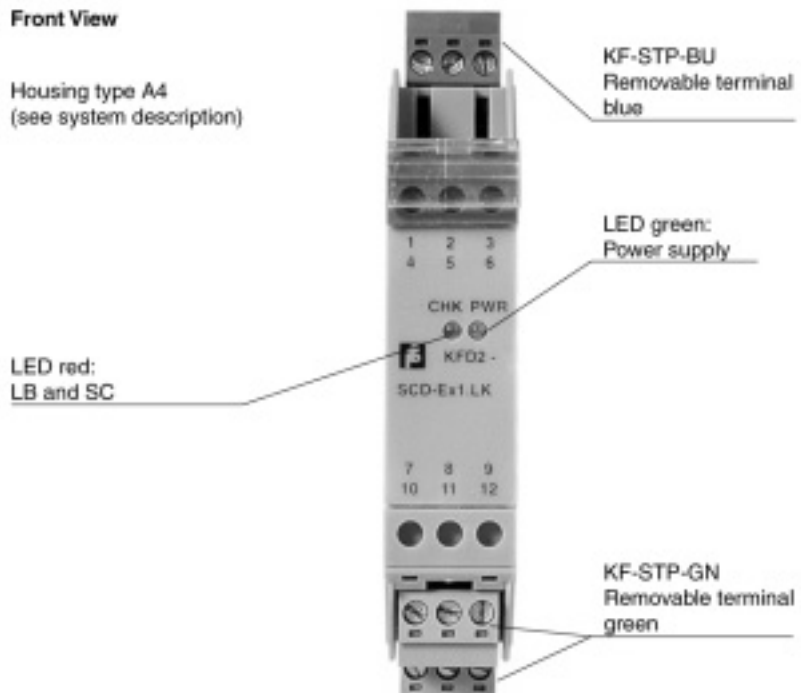
Hazardous area

Safe area or hazardous area, zone 2

Composition

Front View

Housing type A4 (see system description)



Supply	
Connection	Power Rail or terminals 11+, 12-
Rated voltage	20 ... 35 V DC
Ripple	within the supply tolerance
Power loss	1,3 W
Power consumption	1,3 W
Input	
Connection	terminals 7-, 8+
Voltage drop U_d	approx. 4 V or internal resistance 200 Ohm at 20 mA
Input resistance	> 100 kOhm, when wiring resistance in the field < 50 Ohm or > 800 Ohm at 20 mA
Safety maximum voltage U_m	250 V rms
Current	4 ... 20 mA limited to approx. 25 mA
Output	
Connection	terminals 1+, 2-
Current	4 ... 20 mA
Voltage	≥ 14 V at 20 mA
Load	100 ... 700 Ω
Highest value in accordance with certificate of conformity or prototype test certificate	
Certification number	BAS 00 ATEX 7215
Group, category, type of protection	⊕ II (1) G D [EEx ia] IIC (-20 °C ≤ T _a ≤ 60 °C)
Equipment	
Voltage U_o	25,2 V
Current I_o	93 mA
Power P_o	0,58 W
Internal capacitance C_i	0 μF
Internal inductance L_i	0 μH
Permissible connection values [EEx ia]	
Explosion group	IIA IIB IIC
External capacitance	2,9 μF 0,82 μF 0,107 μF
External inductance	36,02 mH 17,72 mH 4,3 mH
Transfer characteristics	
Deviation	
After calibration	at 293 K (20 °C): ≤ ± 0.1 % incl. non-linearity and hysteresis
Temperature	≤ ± 20 p.p.m/K
Rise time	< 100 μs (bounce from 10 ... 90 %)
Electrical isolation	
Input/Output	safe electrical isolation acc. to EN 50020, voltage peak value 375 V
Input/Power supply	basic insulation acc. to DIN EN 50178, rated insulation voltage of AC 50 V
Output/Power supply	safe electrical isolation acc. to EN 50020, voltage peak value 375 V
Standard conformity	
Coordination of insulation	acc. to DIN EN 50178
Electrical isolation	acc. to DIN EN 50178
Electromagnetic compatibility	acc. to EN 50081-2 / EN 50082-2, NAMUR NE 21
Climatic conditions	acc. to DIN IEC 721
Directive conformity	
Electromagnetic compatibility	standards
Directive 89/336/EG	on request
Ambient conditions	
Ambient temperature	-20 ... 60 °C (253 ... 333 K)
Mechanical specifications	
Protection degree	IP20
Mass	approx. 100 g
Data for application in conjunction with hazardous areas	
Statement of conformity	TÜV 99 ATEX 1499 X (observe statement of conformity)
Group, category, type of protection, Temperature classification	⊕ II 3 G EEx nA II T4
Supply	
Safety maximum voltage U_m	250 V rms
Electrical isolation	
Input/Output	safe electrical isolation acc. to EN 50020, voltage peak value 375 V
Output/Power supply	safe electrical isolation acc. to EN 50020, voltage peak value 375 V
Directive conformity	standards
Directive 94/9 EU	on request

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Entity parameter			
Certification number	4Z6A5.AX		
FM control drawing	No. 116-0129		
Suitable for installation in division 2	yes		
Connection	terminals 2, 1		
Input I			
Voltage V_{OC}	25,9 V		
Current I_t	94,5 mA		
Explosion group	A&B	C&E	D, F&G
Max. external capacitance C_a	0,17 μ F	0,52 μ F	1,38 μ F
Max. external inductance L_a	4,04 mH	16,3 mH	33,1 mH
Safety parameter			
CSA control drawing	LR 65756-13		
Control drawing	No. 116-0132		
Connection	terminals 2, 1		
Input I			
Safety parameter	25,2 V / 280 Ohm		
Voltage V_{OC}	25,2 V		
Current I_{SC}	93 mA		
Explosion group	A&B	C&E	D, F&G
Max. external capacitance C_a	0,19 μ F	0,57 μ F	1,52 μ F
Max. external inductance L_a	3,1 mH	16,7 mH	34 mH

Accessories

PR-03 Power Rail

UPR-03 Power Rail

KFD2-EB2 power feed module

The devices are supplied with 24 V DC through the KFD2-EB2 power feed module and the PR-03 or the UPR-03 Power Rail. Each power feed module monitors and provides protection for groups of as many as 100 individual devices. The PR-03 Power Rail is an insert component for the DIN rail. The UPR-03 Power Rail is a complete unit consisting of an electrical insert and an aluminium DIN rail measuring 35 mm x 15 mm x 2000 mm. The devices are simply snapped in place to make electrical contact.

If a Power Rail is not being used, power can be supplied to the devices directly through the device terminals.