SMART transmitter power supplies

KFD2-STC1-Ex1

Connection

Composition

1-channel
Input EEx ia IIC; \( U_0 = 28V \)
24 V DC nominal supply voltage
SMART capable up to 12 kHz (-1 dB)
EMC acc. to NAMUR NE 21

Output 4 mA ... 20 mA
KFD2-STC1-Ex1

Application

- The supply of power to SMART transmitters and the transfer of the measurement current to the output
- suited for the following SMART systems:
  - ABB
  - Eckhardt-Foxboro
  - Emerson
  - Honeywell
  - Yokogawa
  - Chessel
  - Endress+Hauser
  - Fuji
  - Smar
  - Siemens

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# Technical data

## Supply
- **Connection**: Power Rail or terminals 7+, 8-
- **Rated voltage**: 20 ... 35 V DC
- **Ripple**: within the supply tolerance
- **Power loss**: 0.8 W
- **Power consumption**: ≤ 1.2 W

## Input
- **Connection**: terminals 1+, 3-
- **Input signal**: 4 ... 20 mA
- **Available voltage**: at 20 mA: approx. 16.5 V at 200 Ohm output load
- **Dependent on output load**: \( U = 19.65 - (16.5 \times 10^{-3} \times R_B) \); with \( R_B \) = output load in Ohm

## Output
- **Connection**: terminals 8-, 9+, 10-, 11+
- **Output signal**: 4 ... 20 mA, max. load 500 Ohm, with HART ≥ 230 Ohm
- **Ripple**: ≤ 75 \( \mu \)Ass

## Transfer characteristics
- **Deviation**: ≤ 20 \( \mu \)A incl. calibration, linearity, hysteresis, loads and fluctuations of supply voltage
- **Influence of ambient temperature**: ≤ 20 p.p.m / K
- **Frequency range**:
  - Hazardous area to safe area: bandwidth with 1 mA\textsubscript{SS} signal 0 ... 12 kHz (-1 dB); 0 ... 30 kHz (-6 dB)
  - Safe area to hazardous area: bandwidth with 1 V\textsubscript{ss}-signal 1 ... 12 kHz (-1 dB); 1 ... 30 kHz (-6 dB)
- **Rise time**: 40 \( \mu \)s
- **De-energised delay**: 40 \( \mu \)s

## Electrical isolation
- **Input/Output**: safe electrical isolation acc. to EN 50020, voltage peak value 375 V
- **Input/power supply**: safe electrical isolation acc. to EN 50020, voltage peak value 375 V
- **Output/power supply**: not isolated

## Directive conformity
- **Electromagnetic compatibility**
  - Directive 89/336/EC on request

## Standard conformity
- **Insulation coordination**: 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
- **Ambient temperature**: -20 ... 60 °C (253 ... 333 K)

## Mechanical specifications
- **Protection degree**: IP20
- **Mass**: approx. 150 g

## Data for application in conjunction with hazardous areas
- **EC-Type Examination Certificate**: BAS 00 ATEX 7127 ; for additional certificates refer to the approval list
- **Group, category, type of protection**:
  - [EEx ia] IIC (\( T_{\text{amb}} = 60 \) °C)
- **Voltage \( U_0 \)**: 25.2 V DC
- **Current \( I_0 \)**: 93 mA
- **Power \( P_0 \)**: 586 mW
- **Type of protection [EEx ia]**
  - **Explosion group**: IIA IIB IIIC
  - **External capacitance**: 2.87 \( \mu \)F 0.79 \( \mu \)F 0.082 \( \mu \)F
  - **External inductance**: 35 mH 17 mH 4.3 mH

## Directive conformity
- **Electrical isolation**
  - Input/Output: safe electrical isolation acc. to EN 50020, voltage peak value 375 V
- **Directive conformity**
  - standards
- **Directive 94/9 EC**: on request

## Entity parameter
- **Certification number**: 4Z6A5.AX
- **FM control drawing**: No. 116-0129
- **Suitable for installation in division 2**: yes
- **Connection**: terminals 1, 3

## Input 1
- **Voltage \( V_{\text{oc}} \)**: 25.2 V
- **Current \( I_1 \)**: 93 mA
- **Explosion group**: A&B C&E D, F&G
- **Max. external capacitance \( C_a \)**: 0.082 \( \mu \)F 0.79 \( \mu \)F 2.87 \( \mu \)F
- **Max. external inductance \( L_a \)**: 4.3 mH 17 mH 35 mH
Technical data

### KFD2-STC1-Ex1

<table>
<thead>
<tr>
<th>Safety parameter</th>
<th>Value</th>
</tr>
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<tbody>
<tr>
<td>UL control drawing</td>
<td>E 106378</td>
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<tr>
<td>CSA control drawing</td>
<td>LR 65756-13</td>
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<td>Control drawing</td>
<td>No. 116-0132</td>
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<tr>
<td>Connection</td>
<td>terminals 1, 3</td>
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<table>
<thead>
<tr>
<th>Input 1</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Safety parameter</td>
<td>25.2 V / 270 Ohm</td>
</tr>
<tr>
<td>Voltage V&lt;sub&gt;DC&lt;/sub&gt;</td>
<td>25.2 V</td>
</tr>
<tr>
<td>Current I&lt;sub&gt;SC&lt;/sub&gt;</td>
<td>93 mA</td>
</tr>
<tr>
<td>Explosion group</td>
<td>A&amp;B C&amp;E D, F&amp;G</td>
</tr>
<tr>
<td>Max. external capacitance C&lt;sub&gt;a&lt;/sub&gt;</td>
<td>0.082 µF 0.79 µF 2.87 µF</td>
</tr>
<tr>
<td>Max. external inductance L&lt;sub&gt;a&lt;/sub&gt;</td>
<td>4.3 mH 17 mH 35 mH</td>
</tr>
</tbody>
</table>

### Function

SMART transmitter power supplies provide SMART transmitters with power in hazardous areas and transfer the 4 mA ... 20 mA analogue values to output terminals 9+ and 10-.

The output signal for the KFD2-STC1-Ex1 is 4 mA ... 20 mA and the KFD2-STV1-Ex1-1 delivers 1 V ... 5 V. Digital signals may be superimposed on the analogue values in the hazardous or safe area, which may be transferred bidirectionally. Handheld terminals should be connected as shown in the block diagram. A series circuit, i.e. for the Bailey STT01, is also possible.

SMART transmitter power supplies are delivered standard with terminals KF-STP-BU and KF-STP-GN. Jacks are integrated in these terminals for the connection of the handheld units.

### Notes

Terminal 12 is placed across an internally applied capacitance. Active input cards such as Foxboro FMB 18, can be operated with this.