Connection and Configuration

General Information

This document contains information required to connect and configure your product.

This document does not substitute the instruction manual.

For full information on the product, refer to the instruction manual and further documentation on the Internet at www.pepperl-fuchs.com.

For specific device information such as the year of construction, scan the QR code on the device. As an alternative, enter the serial number in the serial number search at www.pepperl-fuchs.com.

Note

Further information is available on the product detail page of the device on the Internet at www.pepperl-fuchs.com. Enter the order designation in the search field → Select the appropriate device → Open the product detail page → Open the **Product Documentation** tab.

Intended Use

The device is only approved for appropriate and intended use. Ignoring these instructions will void any warranty and absolve the manufacturer from any liability.

Only use the device in the industrial location.

The device transfers the voltage signal from the following sensors to the non explosion-hazardous area:

- Vibration sensors
- Displacement probes
- Accelerometers
- Magnetic pick-up sensors [1]
- Seismic sensors [1]

The device is designed to provide the power supply to the sensors. Depending on configuration the device provides:

- a current of 3.6 mA, 5.3 mA, or 8.9 mA for 2-wire sensors
- a voltage of 18 V at 20 mA for 3-wire sensors

Use the device only within the specified ambient and operating conditions.

Improper Use

Protection of personnel and the plant is not ensured if the device is not used according to its intended use.

Connection and Configuration Options

Depending on the connected sensor, several operating modes are possible.

Note

See corresponding datasheets for further information.

2-Wire Sensor with Excitation Current

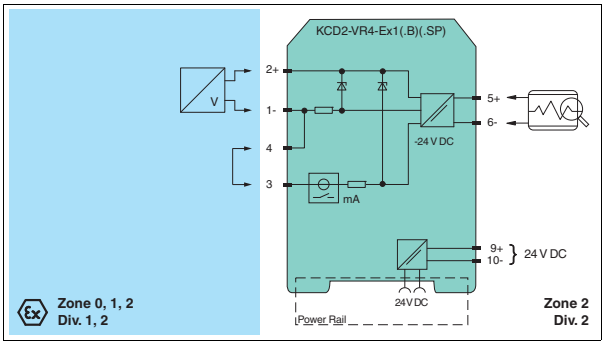


Figure 1

Use this connection option to connect vibration sensors or acceleration sensors to the voltage repeater. These 2-wire sensors are supplied with a fixed current: 3.6 mA, 5.3 mA, or 8.9 mA. The sensors indicate what they are detecting by varying their own voltage: often by ±5 V at a quiescent level of approx. 10 V.

Example

A sensor has the following characteristics: sensitivity 100 mV/g, measuring range ±50 g, bias voltage 10 V.

The sensor generates a voltage of 10 V DC with a superimposed AC signal of ±5 V peak, ranging from 15 V (indicating +50 g) to 5 V (indicating -50 g).

Connection

Connect the sensor to terminals 1-, 2+.
Connect an external jumper (supplied with the device on delivery) between terminals 3 and 4.

Configuration

The circuit of terminal 3 is a three-stage programmable constant current source. Use switches S1 and S2 to set an approximate compliance voltage (no load) of up to -21.5 V. Use switch S3 to lower the compliance voltage by 2.5 V. This results in an open circuit condition of approx. -19 V.

[1] This connection option is not supported by the KCD2-VR4-Ex1.B(.SP) version.

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3-Wire Sensor with Voltage Supply

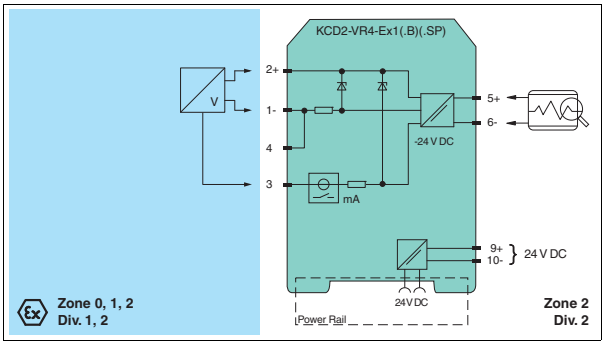


Figure 2

Use this connection option to connect displacement probes or proximity sensors to the voltage repeater. These 3-wire sensors are used to indicate shaft position and can detect motion due to vibration, which they output as a varying voltage level on the 3rd wire.

Example

A sensor has the following characteristics: sensitivity -8 mV/µm, measuring range 2 mm, gap -10 V.

The sensor generates a voltage, ranging from -2 V (indicating -1 mm) to -18 V (indicating +1 mm).

Connection

Connect the sensor to terminals 1-, 2+ and 3.
Connect the power supply to terminals 2+ and 3.
Connect the signal to terminal 1-.

Configuration

Set switch 4 to position I to connect the internal 24 V power supply to terminal 3 via a barrier resistor.

The available supply voltage at terminal 3 is up to -18 V at a consumption of 20 mA or approx. -21 V at 10 mA, with respect to the common terminal 2+.

2-Wire Sensor without Voltage Supply

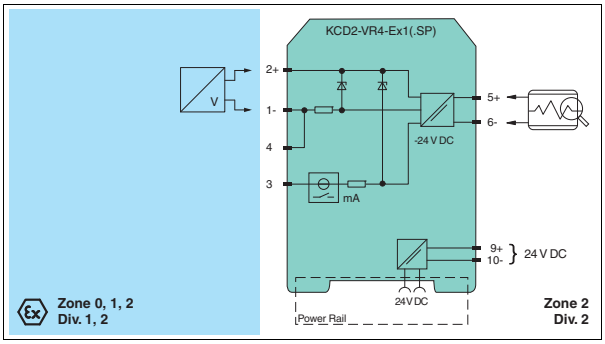


Figure 3

Use this connection option to connect magnetic pick-up sensors or seismic sensors to the voltage repeater.

These 2-wire sensors do not require a power supply [1].

Connection

Connect the sensor to terminals 1-, 2+.

The AC voltage at the terminals is transferred to the output side in the range of +5 to -20 V without loss. Voltages higher than +5 V or lower than -20 V are limited to approximately these values.

Support for Excitation Current on the Output Side

The output side to the control system supports excitation currents up to 10 mA.

This support is necessary when the control system is designed to provide excitation current for 2-wire sensors.

The voltage repeater power supply diverts this current without affecting operation. The current on the output side has no effect on the supply current to the sensor. The sensor is set independently via the DIP switches.

BIAS LED Indication

The yellow BIAS LED indicates when the output signal is between -8 V and -13.5 V DC.

This indication is enabled in all operating modes and has 2 use cases:

- If a 3-wire sensor is used, the LED indicates a roughly correct mechanical alignment of the sensor, which is normally -10 V.
- If a 2-wire sensor is used, the LED indicates that the sensor is preset within the common range of -8 to -13.5 V.

The output terminals are provided with test plug sockets. You can connect a digital multimeter to measure the output signals.

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