OPERATING AND INSTALLATION INFORMATION

FOR PIEZORESISTIVE PRESSURE TRANSMITTERS & LEVEL PROBES

KELLER

➢ December 2013

1 General

Please read through this information in detail before installing and commissioning your device. If you still require any information that is necessary for your application, please visit our website: www.keller-druck.com, where you will find detailed datasheets as well as the addresses where you can contact us directly.

2 Function

The presence of the pressure for measurement causes elastic deformation of the silicon diaphragm of the integrated sensor chip. When auxiliary electrical energy is supplied, this deformation is converted proportionally into an electrical signal which can subsequently be evaluated. This information (pressure range/output signal) is shown on the nameplate of the pressure transmitter.

3 Maintenance

KELLER pressure transmitters and level probes are maintenance-free, and they operate without errors provided that they are used within the specifications. The recalibration cycle depends on the conditions of use. The recommended cycle is 1 year.

4 Important information

In order to commission the device, you must have the required knowledge of measurement and control technology, and you must also be familiar with the basics of electrical engineering (power circuits). When carrying out assembly and installation work, please comply with the relevant national guidelines, directives and safety regulations. Install the pressure transmitter only on systems which are in the unpressurized state. Always operate the device within the permitted measuring range and/or within the maximum overload. Also in this regard, please pay attention to the relevant operating parameters as stated on the nameplate or in the datasheet. Protect the metal diaphragm against damage. Pay particular attention to this aspect on devices with a flush diaphragm. If the device is not built in, protect the metal diaphragm with the protective cap that is supplied with it.
In respect of pressure transmitters for use in explosive atmospheres, we also refer to the corresponding operating instructions (see 23/25 (S) Ei/26 Ei, 33/35 X Ei / 36 XW Ei, PD-39 X Ei, 41 X Ei and 46 X Ei).

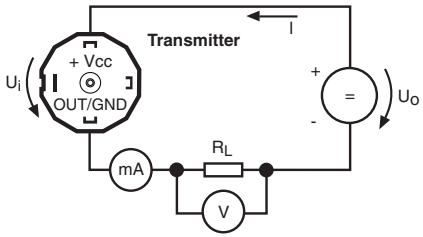
5 Installing the mechanical connection

During the installation process, ensure that the sealing surfaces on the device and the measuring point are clean and free of damage. Only use the appropriate tool to screw the device in and to unscrew it. For available threads, please consult the relevant datasheets at: www.keller-druck.com.

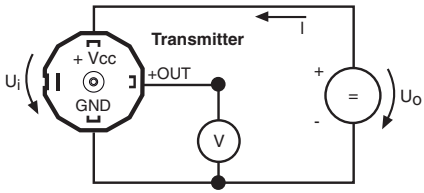
The device should be earthed via the pressure connection. If this is impossible, ensure that adequate earthing is provided via the plug or the cable shield.
Make sure that no moisture can penetrate via the leads. The types of protection stated on the datasheet are valid only for plugs while they are plugged in.

The following illustrations use the example of a device with DIN cubic plug to show the basic connection method for the most commonly used electrical output signals.

2-CONDUCTOR / 4…20 mA



3-CONDUCTOR / 0…10 V / 0,5…4,5 V



The pin or cable assignments are imprinted on the device‘s nameplate in each case. You can also find these data on the relevant datasheet at: www.keller-druck.com.

		2-conductor	3-conductor
Power (voltage) supply	U_i	8…28 VDC	13…32 VDC
Output signal	OUT	4…20 mA	0…10 VDC / 0,5…4,5 V
Load resistance	R_L	$R_L < (U_i\text{-}8) / 0{,}025$ A	$R_L > 5$ kΩ
Power consumption (also see the relevant datasheet)	I	max. 25 mA	max. 10 mA

Lead cross-section: A lead cross-section of 0,25 mm² is entirely adequate for most applications. However, if very long supply leads are required, a power output should be given preference over the voltage signal. This is especially important for high-precision measurements (0,1 %FS) because long connections with voltage outputs produce measuring errors due to the voltage drop over the line resistance. For devices with a voltage output, we therefore recommend that the “ground” (earth) for the measurement should be connected separately (by installing a fourth line) in order to eliminate this measuring error. If this is impossible, a suitably larger cable cross-section should be selected (min. 1 mm² for a cable length of approx. 100 m) in order to reduce the voltage drop over the lines.

For Level Probes: Take care to not injure the cable jacket. The cable is not internally sealing. If the cable jacket is leaky humidity will ingress into the probe (which will lead to failure and damage of the probe).

For series-specific data, please consult the relevant datasheet at: www.keller-druck.com.

7 Errors / faults

The following list should assist you with the most frequent faults.

FAULT	POSSIBLE CAUSE	ACTION
No output signal	• No voltage supply • Transmitter polarity reversed • Line break	• Check voltage supply • Connect correctly • Check continuity
Divergent zero point signal	• Diaphragm is damaged • Operating temperatures are too high/too low	• Contact the manufacturer; replace the device if necessary • Keep to the permitted temperatures shown on the datasheet
Constant output signal with changing pressure	• Mechanical overload due to overpressure • Electrical fault	Replace the device; in case of repeated failure, consult the manufacturer
Fluctuating signal span	• There may be a source of EMC interference in the surrounding area (e.g. a frequency converter)	Remove the source of interference
Signal span drops / is too small	• Damage to the diaphragm, e.g. due to impacts, abrasive / aggressive medium; corrosion on the diaphragm / pressure connection; transmission medium not present.	Contact the manufacturer and replace the device

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