

Terminal Box

KL 1, KL 2



KL 1

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**1. General information****1.1 Information on the operating manual**

This operating manual contains important information on proper usage of the device. Read this operating manual carefully before installing and starting up the pressure measuring device.

Adhere to the safety notes and operating instructions which are given in the operating manual. Additionally applicable regulations regarding occupational safety, accident prevention as well as national installation standards and engineering rules must be complied with!

This operating manual is part of the device, must be kept nearest its location, always accessible to all employees.

This operating manual is copyrighted. The contents of this operating manual reflect the version available at the time of printing. It has been issued to our best knowledge. BD SENSORS is not liable for any incorrect statements and their effects.

– Technical modifications reserved –

**1.2 Symbols used**

- ⚠ DANGER! – dangerous situation, which may result in death or serious injuries
- ⚠ WARNING! – potentially dangerous situation, which may result in death or serious injuries
- ⚠ CAUTION! – potentially dangerous situation, which may result in minor injuries
- ! CAUTION! – potentially dangerous situation, which may result in physical damage
- 🔧 NOTE – tips and information to ensure a failure-free operation

**1.3 Target group**

- ⚠ WARNING! To avoid operator hazards and damages of the device, the following instructions have to be worked out by qualified technical personnel.

**1.4 Limitation of liability**

By non-observance of the operating manual, inappropriate use, modification or damage, no liability is assumed and warranty claims will be excluded.

**1.5 Intended use**

- The terminal boxes KL 1 and KL 2 are intended for the electrical connection of 2-wire transmitters. It offers integrated atmospheric pressure compensation so a cable without ventilation tube can be used on the supply side.
- It is the operator's responsibility to check and verify the suitability of the device for the intended application. If any doubts remain, please contact our sales department in order to ensure proper usage. BD SENSORS is not liable for any incorrect selections and their effects!
- The technical data listed in the current data sheet are engaging and must be complied with. If the data sheet is not available, please order or download it from our homepage. (<http://www.bdsensors.com/products/download/datasheets>)

⚠ WARNING! Danger through improper usage!

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**1.6 Package contents**

Please verify that all listed parts are undamaged included in the delivery and check for consistency specified in your order:

- terminal box
- mounting instructions

**2. Product identification**

The device can be identified by its manufacturing label. It provides the most important data. By the ordering code the product can be clearly identified.

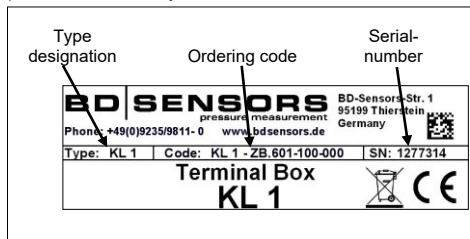


Fig. 1 manufacturing label

- ! The manufacturing label must not be removed from the device!

**3. Installation****3.1 Mounting and safety instructions**

- ⚠ WARNING! Install the device only when currentless!
- ⚠ WARNING! This device may only be installed by qualified technical personnel who has read and understood the operating manual!
- ! There are no modifications/changes to be made on the device.
- ! Do not throw the package/device!
- ! Handle the terminal box carefully and properly to avoid any damages.
- ! Do not use any force when installing the device to prevent damage of the device and the plant!

**3.2 General installation steps**

- Carefully remove the terminal box from the package.
- Mount the terminal box stationary on a suitable fixing location via two appropriate fastening screws.

**3.3 Lead in the transmitter cable**

- Lead in the connecting cable of the transmitter through the cable gland on the left side. The cable length inside the terminal box has to be long enough for connecting the cords with the terminal clamps on the left (transmitter).
- Then tighten the cable gland by hand. Take care that the cable is strain-relieved.
- Pay attention that the PTFE-filter on the gauge reference of BD SENSORS-transmitters may not be damaged or removed.

**3.4 Lead in the supply line**

- Lead the supply line through the cable gland on the right side. The cable length inside the terminal box has to be long enough for connecting the cords with the terminal clamps on the right (supply).
- Then tighten the cable gland by hand. Take care that the cable is strain-relieved.

**3.5 Electrical installation**

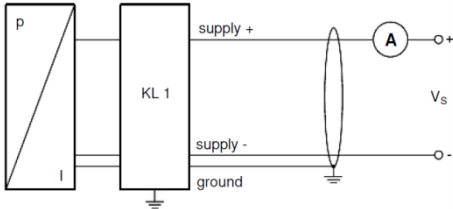
Open the top cover; establish the electrical connection of the device according to the following table and the wiring diagram. Screw the top cover onto the box again.

Pin configuration:

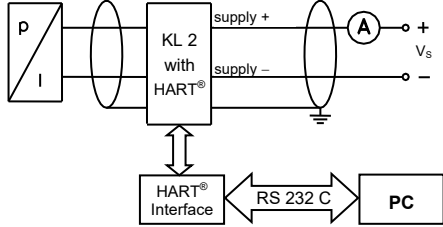
De-signation	Terminal block	Electrical connection (cable colours of BD SENSORS transmitters)	Has to be connected with
<b>KL 1</b>			
GND	SENSOR	ground clamp (gn/ye, green / yellow)	cable shield of transmitter
VS-	SENSOR	supply - (bn, brown)	negative connecting cable of transmitter
VS+	SENSOR	supply + (wh, white)	positive connecting cable of transmitter
GND	SUPPLY	ground clamp	cable shield of supply line
VS+	SUPPLY	supply +	positive signal line for pressure signal
VS-	SUPPLY	supply -	negative signal line for pressure signal
<b>KL 2</b>			
GND	trans-mitter	ground clamp (gn/ye, green / yellow)	cable shield of transmitter
IN+	trans-mitter	supply + (wh, white)	positive connecting cable of transmitter
IN-	trans-mitter	supply - (bn, brown)	negative connecting cable of transmitter
GND	supply	ground clamp	cable shield of supply line and solid wire (with overvoltage protection)
IN+	supply	supply +	positive signal line for pressure signal
IN-	supply	supply -	negative signal line for pressure signal
HART	HART (optional)	-	HART <sup>®</sup> modem

**Wiring diagram:**

**KL 1**



**KL 2**



For the electrical connection a shielded and twisted multicore cable is recommended.

The ground wires of all components have to be connected when installing!

The supply  $V_s$  has to be chosen according to needs of the used transmitter.

**3.6 Option overvoltage protection**

- With an optional overvoltage protection (KL 1 standard), a solid conductor has additionally to be connected with the ground clamp GND (minimal cross section for KL 1: 4 mm<sup>2</sup>; for KL 2: 2.5 mm<sup>2</sup>).
- It also has to be connected with a suitable grounding (earth bus bar; equipotential bonding).

**4. Initial start-up**

- WARNING!** Before start-up, the user has to check for proper installation and for any visible defects.
- WARNING!** The device can be started and operated by authorized personnel only, who have read and understood the operating manual!
- WARNING!** The device has to be used within the technical specifications, only (compare the data in the data sheet)!

**5. Placing out of service**

- WARNING!** When dismantling the device, it must always be done in the currentless condition!

**6. Maintenance**

In principle, this device is maintenance-free. If desired, the housing of the device can be cleaned using a damp cloth and non-aggressive cleaning solutions.

**7. Return**

Before every return of your device, whether for recalibration, decalcification, modifications or repair, it has to be cleaned carefully and packed shatter-proofed. You have to enclose a notice of return with detailed defect description when sending the device. If your device came in contact with harmful substances, a declaration of decontamination is additionally required. Appropriate forms can be downloaded from our homepage [www.bdsensors.com](http://www.bdsensors.com). Should you dispatch a device without a declaration of decontamination and if there are any doubts in our service department regarding the used medium, repair will not be started until an acceptable declaration is sent.

- WARNING!** If the device came in contact with hazardous substances, certain precautions have to be complied with for purification!

**8. Disposal**

The device must be disposed of according to the 2012/19/EU and 16/2022 coll. (waste electrical and electronic equipment). It is prohibited to place electrical and electronic equipment in domestic refuse!



**9. Warranty conditions**

The warranty conditions are subject to the legal warranty period of 24 months from the date of delivery. In case of improper use, modifications or damages to the device, we do not accept warranty claims. Furthermore, defects due to normal wear are not subject to warranty services.

**10. Declaration of conformity / CE**

The delivered device fulfils all legal requirements. The applied directives, harmonised standards and documents are listed in the EC declaration of conformity, which is available online at: <http://www.bdsensors.com>. Additionally, the operational safety is confirmed by the CE sign on the manufacturing label.

**11. Error handling**

Malfunction	Possible cause	Error detection / corrective
changing measuring value with varying air pressure and constant filling level (gauge measurement)	pressure balance item is contaminated, clogged or damaged	Check the pressure balance item. If the described error cause is correct, the device should be placed out of service according to the regulations; the pressure balance item has to be replaced. It can be ordered from BD SENSORS as replacement.
broken signal current (pressure or temperature) or signal current not identifiable	activation of overvoltage protection and its destruction (by overloading the overvoltage protection, further components may also be destroyed)	Please send the device to BD-SENSORS for repair.
	released signal wire	tighten the signal wire again
	defective transmitter	replace the transmitter

If you detect an error, please try to eliminate it by using this table or send the device to our service address for repair.

- !** Improper action and opening can damage the device. Therefore repairs on the device may only be executed by the manufacturer!