

ensure that the cords are not turned or squeezed. Before screwing on the cap again, the o-ring and sealing surfaces of the housing have to be checked for damage and if necessary to be changed! Afterwards screw the metal cap on by hand and make sure that the field housing is firmly locked again.

8. Operation

8.1 Display- and operating modul

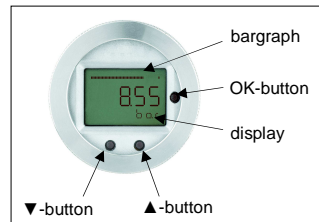


Fig. 4 touch pad

A bargraph is shown in the display, indicating the current pressure input as percentage of the specified pressure range. The indication of the measured value as well as the configuration of the individual parameters occurs through a menu via the display. The individual functions can be set with the help of three miniature push buttons located under the metal cap. For XMP is additionally the possibility given to operate via three push buttons (accessible from above). This is especially an advantage in IS-areas, caused by the fact that the device can be configured in situ without opening the operating and display module. Therefore the metal plate (on the top side of the device), has to be folded backwards after loosening the right screw. The definition of the three buttons is: ▼, OK, ▲ (starting at the left side).

The menu system is a closed system allowing you to scroll both forward and backward through the individual set-up menus to navigate to the desired setting item. All settings are permanently stored in a Flash EPROM and therefore available even after disconnecting from the supply voltage.

WARNING! It is prohibited to open and configure the devices in the presence of explosion hazards. After configuration it must be ensured that the device is completely closed again outside the explosion hazard area.

! Pay attention that no moisture can enter the device during configuration. Moreover, the seals and the sealing surfaces should not get dirty, as this may cause a reduction of the degree of protection depending on the case of application or place of installation. This can lead to a breakdown of the device or to irreparable damages on the device. Right after configuration, the metal cap has to be screwed on again.

8.2 Structure of the menu system

See arranged supplementary sheet (supplementary sheet / structure of the menu system). This supplementary sheet should only be used with this operating manual.

8.3 Menu list

- **▲-button:** with this button you move forward in the menu system or increase the displayed value; it will also lead you to the operating mode (beginning with menu item "1 DISPLAY")
- **▼-button:** with this button you move back in the menu system or decrease the displayed value; it will also lead you to the operating mode (beginning with menu item "5 SERVICE")
- **OK-button:** with this button menu items and set values have to be confirmed

execution of configuration:

- set the desired menu item by pushing the ▲- or ▼-button
- activate the set menu item by pushing the OK-button
- set the desired value or select one of the offered settings by using the ▲- or ▼-button
- store/confirm the set value/selected setting and exit the menu by pushing the OK-button.

! If a parameter is configurable by a value, each digit may be configured separately. That means after activating such a menu item (e. g. "2.3.1 OFFSET") by pushing the OK-button, the first digit of the currently set value will start to blink. Now scroll up or down to the desired digit via the ▼- or ▲-button and confirm it with the OK-button. After that, the next digit will start to blink. Configure it in the same way. In the menu items "2.3.1 OFFSET" and "2.3.2 FINALVAL", the decimal point will then start to blink and it is also possible to change its position by using the ▼- or ▲-button. By confirming the position with the OK-button, the total value will be stored if permissible. If the value is out of range, an error message (e. g. Error 03) will appear in the display and the set value will **not** be stored. If you intend to set a negative value, the first digit has to be configured with the ▼-button.

1 DISPLAY	Display
1.1 P _{MAX}	Maximum pressure display (high pressure) The maximum pressure applied during measuring is shown in the display.
1.2 P _{MIN}	Minimum pressure display (low pressure) The minimum pressure applied during measuring is shown in the display.
1.3 T _{MAX}	Maximum temperature display (high temperature) The minimum temperature during measuring is shown in the display.
1.4 T _{MIN}	Minimum pressure display (high pressure) The maximum pressure applied during measuring is shown in the display.
1.5 CLEAR	Use to clear the values 1.1-1.4 (P _{max} , P _{min} , T _{max} , T _{min})
1.6 INFO	Setting of the display meaning of the permissible numbers: "1": 1. line: measured pressure 2. line: set pressure unit "2": 1. line: output signal 2. line: mA "3": 1. line: measured temperature 2. line: °C "4": 1. line: measured pressure 2. line: changes between set pressure unit / output signal in mA "5": 1. line: measured pressure 2. line: changes between set pressure unit / measured temperature in °C "6": 1. line: measured pressure 2. line: changes between set pressure unit / output signal in mA / measured temperature in °C
2 CALIB	Calibration
2.1 ZERO	Offset correction By choosing the submenu 2.1 with the OK-button, „CONFIRM“ appears in the display. By pushing the OK-button for at least 2 seconds, the correction is carried out and „CONFIRM“ disappears in the display.
2.2 CAL REF	Calibration reference
2.2.1 OFFSET	Offset calibration After feeding and adoption of reference value, choose the submenu 2.2.1 with the OK-button, „CONFIRM“ appears in the display. By pushing the OK-button for at least 2 seconds, the calibration is carried out and „CONFIRM“ disappears in the display.
2.2.2 FINALVAL	Final value calibration After feeding and adoption of reference value, choose the submenu 2.2.2 with the OK-button, „CONFIRM“ appears in the display. By pushing the OK-button for at least 2 seconds, the calibration is carried out and „CONFIRM“ disappears in the display.
2.3 ADJUST	Adjust
2.3.1 OFFSET	Setting of the initial value of the measuring range With button ▲ and ▼ you can set a initial value of measuring range. The value of new range is max. 100:1 (or 30:1, depending on the range).
2.3.2 FINALVAL	Setting of the terminal value of the measuring range With button ▲ and ▼ you can a terminal value of measuring range. The value of new range is max. 100:1 (or 30:1, depending on the range).
2.3.3 Z-CORR	Resetting the offset By choosing the submenu 2.3.3 with the OK-button, „CONFIRM“ appears in the display. By pushing the OK-button for at least 2 seconds, the resetting is carried out and „CONFIRM“ disappears in the display.
3 SIGNAL	Signal
3.1 FUNKTION	Function selection e.g. "LINEAR" (linear function)
3.2 DENSITY	Input the density [kg/m ³]. The unit will be changed to [mFs]
3.3 DAMP	Setting of the damping permissible range: from 0 up to 100 sec
3.4 SIMULAT	Free input of output signal [mA] for simulation of plant conditions (from 3.8 ... 21.6 mA)
4 SETTINGS	Settings
4.1 DISPLAY	Extension of display
4.1.1 UNIT P	Setting of the pressure unit permissible units: bar, mbar, g/cm ² , kg/cm ² , Pa, kPa, Torr, atm, mmWS (mm H2O), mmHg, PSI, FIH ₂ O FIH ₂ O- feat H ₂ O 20°C ! a conversation of all pressure related parameters is carried out automatically
4.1.2 UNIT T	Setting of the temperature unit Switching between the unit [°C], [°F] and [K]
4.2 HART-ID	HART-ID (only for HART®- devices with multidrop-mode to adjust) HART-ID (only with HART® - to put to devices in the multi drop mode) Put the desired ID No. (between "0 and 15") and confirm this with the OK-button. A configuration of this number is only necessary if you liked to pursue the device in the multi drop mode (connection of several HART® devices). If the ID No. on "0" is put, the multi drop mode is deactivated and the pressure transmitter works in the analogous mode.
4.3 USER-L	Configuration of the access protection For security reasons, it is necessary to enter the password before configuring the access protection. Confirm it with the OK-button. The default setting for the password is "0000". meaning of the permissible numbers: "0": the complete menu system is unlocked "1": following menus are unlocked: 1 DISPLAY, 3 SIGNAL, 4.3 USER-L "2": following menus are unlocked: 1 DISPLAY, 4.3 USER-L
4.4 PASSW	Configuration of the password For security reasons, it is necessary to enter the current password before the configuration of the new one. Confirm with the OK-button. The default setting for the password is "0000". Then set the new password and confirm with the OK-button.
4.5 LANGUAGE	Choosing of user language [DE] or [EN]
5 SERVICE	Service
5.1 FACTORY	To restore to factory settings
5.2 ERR DURR	Error current limits Setting of the error current limit value: 21,6 mA or 3,8 mA
5.3 TYPE	Displaying of the type of device
5.4 SER-NO	Displaying of the serial number
5.5 VERB	Displaying of the program version

9. Error handling

9.1 Error messages

PASSED PARAMETER TOO SMALL	passed parameter value is too small
PASSED PARAMETER TOO LARGE	passed parameter value is too large
LOOP CURRENT NOT ACTIVE	loop current is not active (HART ID > 0, device work in mode Multidrop)
APPLIED PROCESS TOO LOW	applied process is too low
APPLIED PROCESS TOO HIGH	applied process is too high
LOWER RANGE VALUE TOO HIGH	lower range value (OFFSET) is too high
LOWER RANGE VALUE TOO LOW	lower range value (OFFSET) is too low
UPPER RANGE VALUE TOO HIGH	upper range value (FINALVAL) is too high
UPPER RANGE VALUE TOO LOW	upper range value (FINALVAL) is too low
SPAN TOO SMALL	span too small

9.2. More errors and possible corrections

Malfunction	Possible cause	Error detection / corrective
display does not work	falsely connected	inspect the connections
	line break	inspect all connecting lines of the device (including the connector plugs)
	defective energy supply	inspect the power supply and the applied supply voltage at the transmitter
no output signal	wrong connected	inspect the connection
	line break	inspect all line connections necessary to supply the device (including the connector plugs)
analogue output signal too low	defective amperemeter (signal input)	inspect the amperemeter (fine-wire fuse) or the analogue input of the PLC
	load resistance too high	verify the value of the load resistance
	supply voltage too low	verify the output voltage of the power supply
small shift of output signal	defective energy supply	inspect the power supply and the applied supply voltage at the device
	diaphragm is highly contaminated	careful cleaning with non-aggressive cleaning solution and a soft brush or sponge; incorrect cleaning can cause irreparable damages on diaphragm or seals
large shift of output signal	diaphragm is calcified or coated with deposit	if possible it is recommended to send the device to BD SENSORS for decalcification or cleaning
	diaphragm is damaged (caused by overpressure or manually)	check the diaphragm; if it is damaged, please send the device to BD SENSORS for repair
measured value (display and analogue output) deviates from the nominal value	high pressure / pressure peaks	a recalibrated or replaced of the pressure port by BD SENSORS is necessary
	mechanical damage to diaphragm	
constant output signal at 4 mA	wrong ID-number	ensure in the menu item "ID" that the set value for the ID-number is "0000"

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

DANGER! Working on supplied (active) parts, except for intrinsically safe circuits, is principally prohibited during an explosion hazard. Additionally, the operator is obligated to observe the information concerning operation and maintenance work on the warning signs possibly affixed to the device.

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

10. Placing out of service

! **WARNING!** Disassemble the device only in current and pressure less condition! Check before disassembly, if it is necessary to drained off the media before dismantling!

! **WARNING!** Depending on the medium, it may cause danger for the user. Comply therefore with adequate precautions for purification.

11. Maintenance

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

Depending on the measuring medium, however, the diaphragm may be polluted or coated with deposit. If the medium is known for such tendencies, the user has to set appropriate cleaning intervals. After placing the device out of service correctly, the diaphragm can usually be cleaned carefully with a non-aggressive cleaning solution and a soft brush or sponge. If the diaphragm is calcified, it is recommended to send the device to BD SENSORS for decalcification. Please read therefore the chapter "Repair" below.

! An incorrect cleaning can cause irreparable damages on the diaphragm. Never use spiky objects or pressured air for cleaning the diaphragm.

12. Service/Repair

12.1 Recalibration

During the life-time of a transmitter, the value of offset and span may shift. As a consequence, a deviating signal value in reference to the nominal pressure range starting point or end point may be transmitted. If one of these two phenomena occurs after prolonged use, a recalibration is recommended to ensure furthermore high accuracy.

12.2 Return

Before every return of your device, whether for recalibration, decalcification, modifications or repair, it is necessary to contact us to ensure a fast handling of your request. Please inform us by sending an email to: sale@bdsensors.cz. Include the number of devices sent and request a RMA. Then clean the device and pack it shatterproof before send it to BD SENSORS indicating the RMA.

13. Disposal

The device must be disposed according to the European Directives 2002/96/EC and 2003/108/EC (on waste electrical and electronic equipment). Waste of electrical and electronic equipment may not be disposed by domestic refuse!

! **WARNING!** Depending on the measuring medium, deposit on the device may cause danger for the user and the environment. Comply with adequate precautions for purification and dispose of it properly.

14. 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 of or damages to the device, we do not accept warranty claims. Damaged diaphragms will also not be accepted. Furthermore, defects due to normal wear are not subject to warranty services.

15. Declaration of conformity / CE

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