Operating Manual

Programming device P6

Important notes:

- ☞ Please read this operating manual carefully before connection and operation of the programming device.
- ☞ This operating manual must be kept at an accessible location for further use.

⚠ The device may only be installed and used by persons who are familiar with this operating manual as well as with the applicable regulations on occupational safety and accident prevention.

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1. General information

1.1 Information on the intended use

The programming device P 6 has been developed especially for configuration of our pressure switches in situ without laptop. The programming device has to be connected between supply and pressure switch only. It can be used with pressure switches of series DS 4 and DS 6. When designing the programming device P 6 user-friendliness was emphasized. The individual functions can be set using a closed menu system via two miniature push buttons on the front. All settings are permanently stored in a EEPROM and can be transfered to other pressure switches. Additional existing reference pressure in the pressure switch can be “taught” as switch-on or switch-off points.

1.2 Target group

This operating manual is intended for qualified technical personnel.

1.3 Symbols used

⚠ : Caution ☞ : Note

1.4 Safety notes

The following notes must be observed to avoid hazards for the operator and his environment:

⚠ The device may only be installed, used and serviced by persons who are familiar with this operating manual!

⚠ Applicable regulations regarding occupational safety, accident prevention and national installation standards must be complied with!

⚠ The product must only be used within the specifications! (compare the technical data in the current data sheet)

1.5 Contents of packaging

Please check the contents of packaging. Ensure that all parts listed are contained therein:

- programming device P6 with integrated cable
- operating manual

2. Inisation

2.1 General notes

- Please note that this device is a sensitive programming kit.
- Handle the device carefully so that there is no damage to the plastic surface and housing parts.
- The display is equipped with a rotational limiter. Please do not try with force to turn the display further than it should go.

2.2 Steps of installation

1. Remove the programming device carefully from the packaging.
2. Separate the fitted pressure switch from the supply.
3. Plug the supply on the connector on the top of the programming device and connect the female connector M12x1 from the programming device with the pressure switch.
4. If everything was done correctly, the LED-display starts showing the program. (e. g. P002)
5. Now you can start programming the pressure switch.

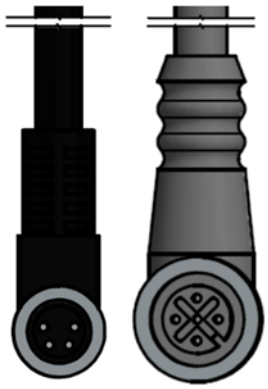
Please note: The programming device needs an external power supply, so ensure that the power is not switched off.

3. Electical connections and pin configuration

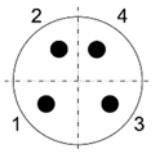
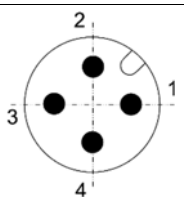
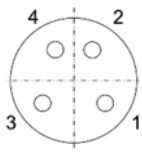
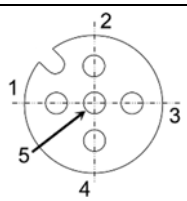
on top of the device

M8x1 and M12x1 (4-pin)
male connector

on the end of the cable

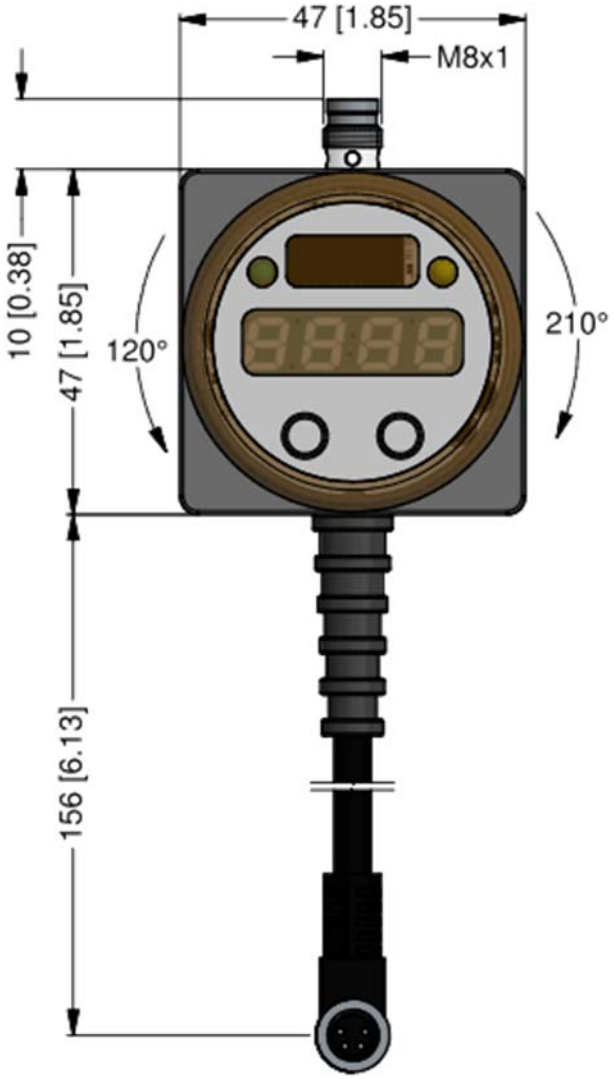


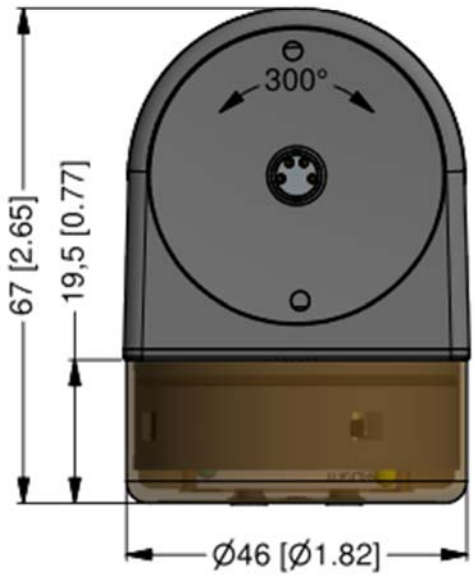
M8x1 and M12x1 (4/5-pin)
female connector

Electrical connection [1]	Male plug on the programming device		Female plug on end of cable	
	for DS 4 / DS 6: M8x1 (4-pin), plastic / metal	for DS 6: M12x1 (4-pin), plastic / metal	for DS 4: M8x1 (4-pin), plastic / metal	for DS 6: M12x1 (5-pin), plastic / metal
Supply +	1	1	1	1
Supply –	3	3	3	3
Contact 1	-	-	4	4
Contact 2	-	-	2	2
Execution				

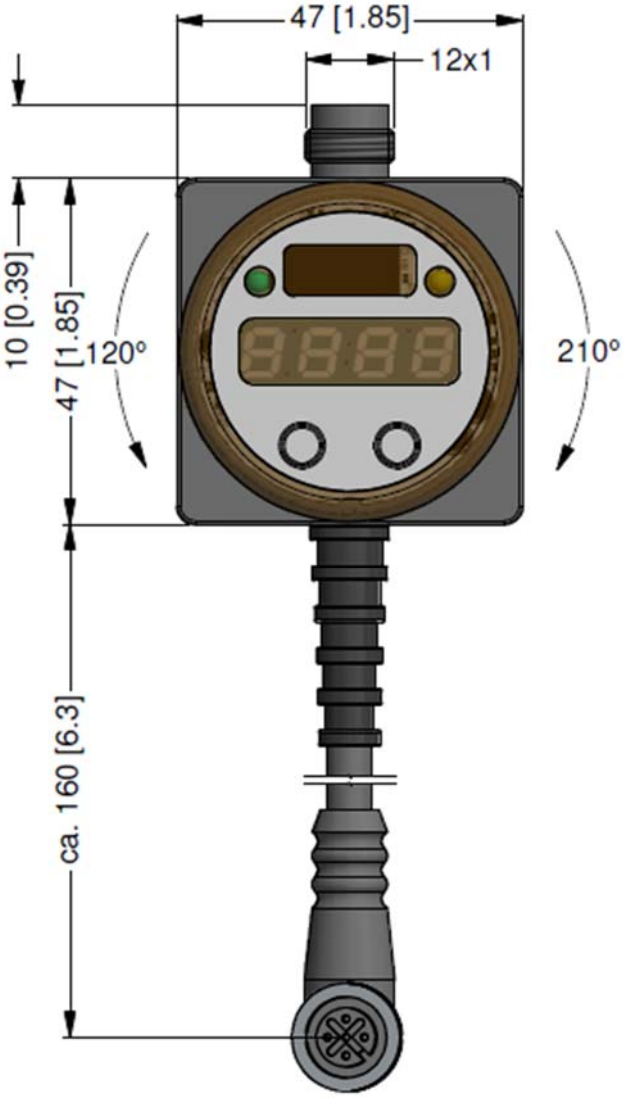
[1] The device P 6 is only suitable for pressure switch DS 4 without analogue output.
A special version of the device for DS 4 with analogue output and older DS 6 version are available on request.

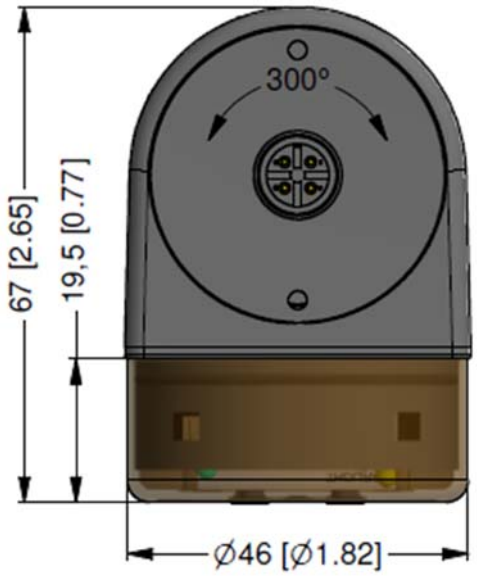
4. Dimensions





with male / female plug M8x1

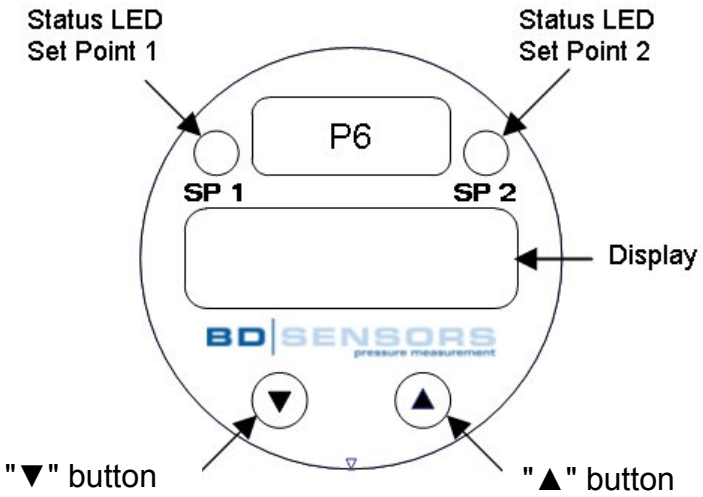




with male / female plug M12x1

5. Programming

5.1 Operating and display elements



The device has a green LED for displaying the active contact of set point 1 and a yellow LED for displaying the active contact of set point 2. The LEDs will light up when the respective set point has been reached and the contact is active. The LED for set point 1 also shows that there is a communication between pressure switch and programming device.

The display of the measured value as well as the configuration of the individual parameters occurs through a menu via a 4-digit seven-segment display. The individual functions can be set with the help of two miniature push buttons located in the front.

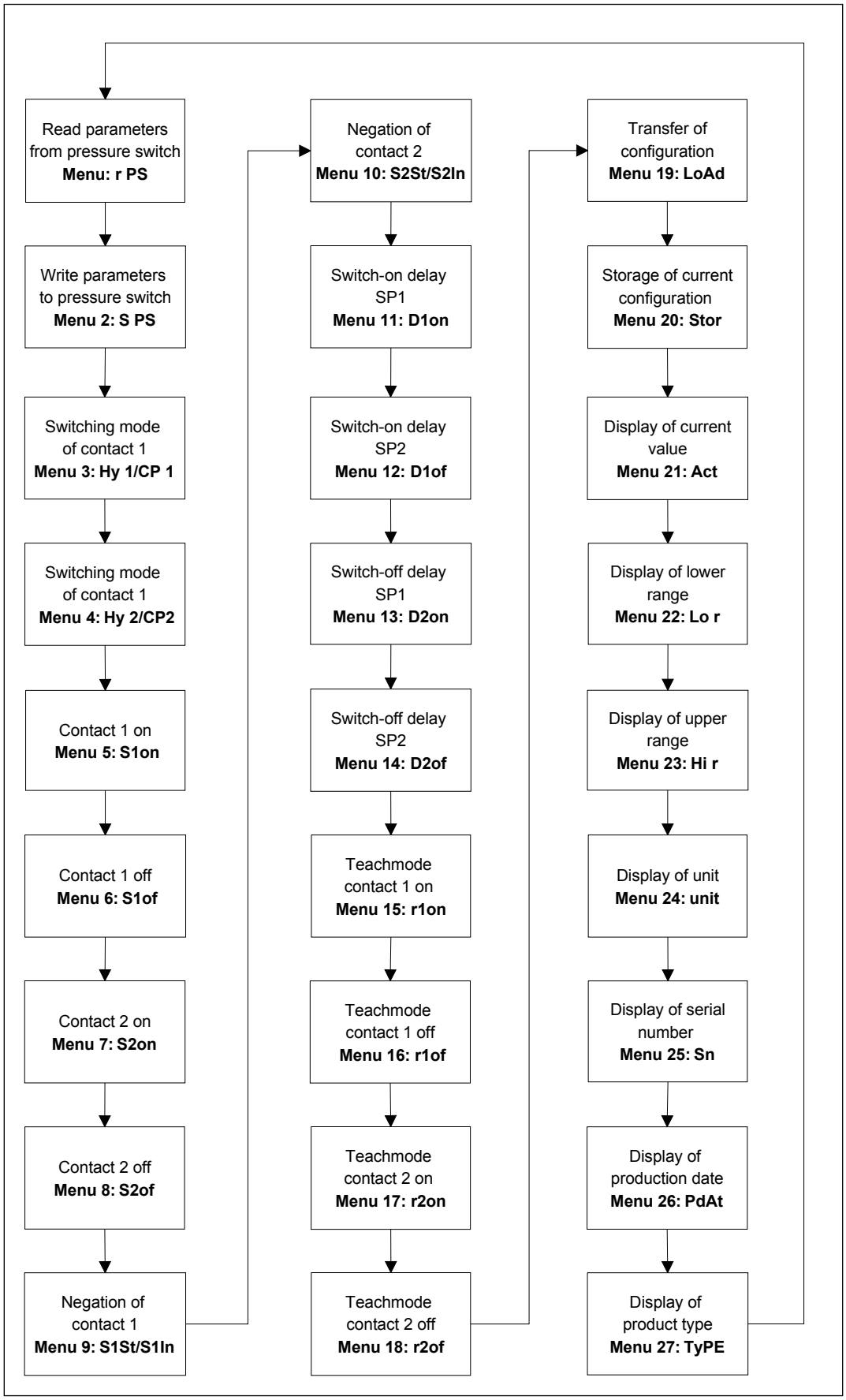
- **"▲" button:** with this button you move forward in the menu system or increase the displayed value
- **"▼" button:** with this button you move back in the menu system or decrease the displayed value
- **both buttons simultaneously:** if both buttons are pushed simultaneously, the device changes between display and configuration mode; you can also confirm the menu items and set values with them

☞ When setting the values, you can increase the counting speed by keeping the respective button ("▲" or "▼") pushed for more than 5 seconds.4.2 Configuration

5.2 Configuration

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 an EEPROM and therefore available again even after disconnecting from the supply voltage. The menu system and the menu items have been designed as simply as possible. Below, each individual menu item is described in detail allowing a straightforward and quick configuration of your device.

5.3 Structure of the menu system



5.4 Menu list

Menu 1 – Read all

Via the menu "Read All" all parameters are transferred from the pressure switch into the programming device. This function must be carried out after connection power supply. After switching on the power supply it is only possibly to execute this function and the function "Load". To execute the „Read All“-function it is required to press both buttons simultaneously. The display of the programming device will be out of function until all parameters are transferred form the pressure switch into programming device. During the data transfer the green LED indicates the data stream from the pressure switch.

Menu 2 – Store all

Via the menu "Store All" all parameters are transferred from the programming device into the pressure switch. To execute the „Store All“ function it is required to press both buttons simultaneously. During the data transfer the display will be out of function and the green LED indicates the data stream from the pressure switch.

Menu 3 – Mode SP 1

Via the menu “Mode SP 1” it is possible to select the switching mode of set point 1 of the pressure switch. It is possible to select between Hysteresismode (HY 1), Windowmode (CP 1), and off (off1). By pressing both buttons simultaneously setup mode is entered. To select the desired function it is necessary to press one of both buttons until the desired function is displayed. To finish the configuration and to store the selection it is required to press both buttons simultaneously.

Menu 4 – Mode SP 2

Via the menu “Mode SP 2” it is possible to select the switching mode of set point 2 of the pressure switch. It is possible to select between Hysteresismode (HY 2), Windowmode (CP 2), and off (off2). By pressing both buttons simultaneously setup mode is entered. To select the desired function it is necessary to press one of both buttons until the desired function is displayed. To finish the configuration and to store the selection it is required to press both buttons simultaneously.

Menu 5 – Switch-on point / lowest set point SP 1

Via the menu “Switch-on point / lowest set point” it is possible to define the switch-on point of the pressure switch (contact 1). Setup mode is entered by pressing both buttons simultaneously. You can set the required value by using the buttons “▲“ or “▼“. To complete the setting push the two buttons simultaneously.

Menu 6 – Switch-off point / highest set point SP 1

Via the menu “Switch-off point / highest set point” it is possible to define the switch-off point of the pressure switch (contact 1). Setup mode is entered by pressing both buttons simultaneously. You can set the required value by using the buttons “▲“ or “▼“. To complete the setting push the two buttons simultaneously.

Menu 7 – Switch-on point / lowest set point SP 2

Via the menu “Switch-on point / lowest set point” it is possible to define the switch-on point of the pressure switch (contact 2). Setup mode is entered by pressing both buttons simultaneously. You can set the required value by using the buttons “▲“ or “▼“. To complete the setting push the two buttons simultaneously.

Menu 8 – Switch-off point / highest set point SP 2

Via the menu “Switch-off point / highest set point” it is possible to define the switch-off point of the pressure switch (contact 2). Setup mode is entered by pressing both buttons simultaneously. You can set the required value by using the buttons “▲“ or “▼“. To complete the setting push the two buttons simultaneously.

Menu 9 – Set point negation SP 1

Via the menu “Set point negation“ it is possible to invert the output signal of set point 1. Setup mode is entered by pressing both buttons simultaneously. To select between standard (not inverted) signal (S1St) and inverted signal (S1In) it is necessary to press one of both buttons until the desired function is displayed. To finish the configuration and to store the selection it is required to press both buttons simultaneously.

Menu 10 – Set point negation SP 2

Via the menu “Set point negation“ it is possible to invert the output signal of set point 2. Setup mode is entered by pressing both buttons simultaneously. To select between standard (not inverted) signal (S2St) and inverted signal (S2In) it is necessary to press one of both buttons until the desired function is displayed. To finish the configuration and to store the selection it is required to press both buttons simultaneously.

Menu 11 – Switch on delay SP 1

Via the menu “Switch-on delay“ it is possible to set the delay time of set point 1. Setup mode is entered by pressing both buttons simultaneously. You can set the required value by using the buttons “▲“ or “▼“. The delay time can be set between 0.01 and 90 seconds. To complete the setting push the two buttons simultaneously.

Menu 12 – Switch off delay SP 1

Via the menu “Switch-off delay“ it is possible to set the delay time of set point 1. Setup mode is entered by pressing both buttons simultaneously. You can set the required value by using the buttons “▲“ or “▼“.The delay time can be set between 0.01 and 90 seconds. To complete the setting push the two buttons simultaneously.

Menu 13 – Switch on delay SP 2

Via the menu “Switch-on delay“ it is possible to set the delay time of set point 2. Setup mode is entered by pressing both buttons simultaneously. You can set the required value by using the buttons “▲“ or “▼“.The delay time can be set between 0.01 and 90 seconds. To complete the setting push the two buttons simultaneously.

Menu 14 – Switch off delay SP 2

Via the menu “Switch-off delay” it is possible to set the delay time of set point 2. Setup mode is entered by pressing both buttons simultaneously. You can set the required value by using the buttons “▲“ or “▼“.The delay time can be set between 0.01 and 90 seconds. To complete the setting push the two buttons simultaneously.

Menu 15 – Teach – Switch-on point SP 1

Via the menu “Teach switch-on point” the currently existing reference pressure in the pressure switch can be “taught” as switch-on point 1. For the teaching-operation you have to push both buttons simultaneously. Then “ref” will appear in the display and you have to connect the reference pressure on the pressure port of the switch. Is the reference value correct, accept it by pushing the two buttons simultaneously and the value will be stored in the pressure switch.

Menu 16 – Teach – Switch-off point SP 1

Via the menu “Teach switch-off point” the currently existing reference pressure in the pressure switch can be “taught” as switch-on point 1. For the teaching-operation you have to push both buttons simultaneously. Then “ref” will appear in the display and you have to connect the reference pressure on the pressure port of the switch. Is the reference value correct, accept it by pushing the two buttons simultaneously and the value will be stored in the pressure switch.

Menu 17 – Teach - Switch-on point SP 2

Via the menu “Teach switch-on point” the currently existing reference pressure in the pressure switch can be “taught” as switch-on point 2. For the teaching-operation you have to push both buttons simultaneously. Then “ref” will appear in the display and you have to connect the reference pressure on the pressure port of the switch. Is the reference value correct, accept it by pushing the two buttons simultaneously and the value will be stored in the pressure switch.

Menu 18 – Teach - Switch-off point SP 2

Via the menu “Teach switch-off point” the currently existing reference pressure in the pressure switch can be “taught” as switch-on point 2. For the teaching-operation you have to push both buttons simultaneously. Then “ref” will appear in the display and you have to connect the reference pressure on the pressure port of the switch. Is the reference value correct, accept it by pushing the two buttons simultaneously and the value will be stored in the pressure switch.

Menu 19 – Loading of stored configurations

Via the menu “Load“ it is possible to transfer up to five in P6 stored configurations into the pressure switch. During the transmitting the programming device checks whether the pressure switch matches with the configuration data. This approach shall make sure that the configuration data can be processed by the pressure switch. To start transfer of the desired configuration first both keys must be pressed simultaneously. Afterwards it is necessary to select one of the five configuration memories by pressing one of the keys until the desired memory (Loa1 till Loa5) is displayed. After the selection of the desired memory location the take-over of the data is started by pressing both buttons simultaneously. During the data transfer the display will be out of function and the green LED will indicate the data stream from the pressure switch.

Menu 20 – Storage of current configurations

Via the menu “Stor” you can store maximally 5 different configurations in the programming device. To file the data on the desired storage space you have to push both buttons simultaneously to select the required storage space. After activating the storage mode in the display appears “St n” - n stands for the required storage space. To store the configuration, you have to press the buttons simultaneously, again.

Menu 21 – Showing the current pressure value

When the menu “Act” is active it is possible to display the current pressure value. The current value is displayed for two seconds after both buttons were pressed simultaneously. It is possible to repeat this process after “Act” is on the display again.

Menu 22 – Showing the low limit of the measuring range

When the menu “Lo r” is active it is possible to display the low limit of the measuring range of the pressure switch. The low limit is displayed for two seconds after both buttons were pressed simultaneously. It is possible to repeat this process after “Lo r” is on the display again.

Menu 23 – Showing the high limit of the measuring range

When the menu “Hi r” is active it is possible to display the high limit of the measuring range of the pressure switch. The high limit is displayed for two seconds after both buttons were pressed simultaneously. It is possible to repeat this process after “Hi r” is on the display again.

Menu 24 – Showing the unit

When the menu “unit” is active it is possible to display the unit of the pressure value with which the pressure switch works. The unit is displayed for two seconds after both buttons were pressed simultaneously. It is possible to repeat this process after “unit” is on the display again.

Menu 25 – Showing the set serial number

After pressing both buttons simultaneously the serial number of the pressure switch will be displayed. The serial number is seven-digit and requires a sequential illustration. At first the digits 7 till 5 are displayed and about two seconds later the digits 4 till 1 are displayed. For example: for the serial number 0178432 at first 0017 is displayed and two seconds later 8432.

Menu 26 – Showing the date of production

After pressing both buttons simultaneously the date of production of the pressure switch will be displayed. The display shows the date of production in order day / month / year.

Menu 27- Showing the type of the device

By the menu “tyPE” it is possible to display the „index number“ of the pressure switch.

6. Service

The device requires no maintenance.

On contamination of programming device clean it by using a non-aggressive cleaning solution.

7. Return

Before you return 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**. 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.

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

Our service address:
BD SENSORS GmbH, Serviceabteilung, BD-Sensors-Str. 1, 95199 Thierstein, Germany

8. 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.

⚠ **Special consideration is required for the disposal if the device has been in contact with hazardous substances!**

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 of or damages to the device, we do not accept warranty claims. Furthermore, defects due to normal wear are not subject to warranty services.

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