BD|SENSORS
pressure measurement

Operating manual

Programming Kit CIS 68X

CIS 685

1. General information

1.1 Information on the operating manual

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.

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– 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 **programming kits CIS 680 and CIS 681** are intended for the configuration of the pressure switch DS 4.

- With the **programming kits CIS 685 and CIS 686** the pressure switch DS 6 may be configured.

- Besides the simulating function, the Software P-Set also allows the configuration of the following parameters:
  - Contact (On / Off)
  - Switching mode (hysteresis, compare mode)
  - Switch-off delay (0 … 99990 msec.)
  - Switch-on delay (0 … 99990 msec.)
  - Lower switch point (0.0 … 99.9 % of the measuring range or as value)
  - Upper switch point (0.0 … 99.9 % of the measuring range or as value)

- For the installation of the software, a Windows® PC (95, 98, ME, 2,000, NT, XP) with serial interface (RS 232) is required.

- Use the programming kit only with the respective pressure switch DS 4 or DS 6 and with the given operating voltage.

- 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/down-load/datasheets)

☐ WARNING! – Danger through improper usage!

1.6 Package contents

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

- programming software "P-Set" on CD
- programming adapter "Adapt 3"
- required connecting cables
- for CIS 680 and CIS 685 additionally: 230 V$_{AC}$-power supply
- this operating manual

2. Safety notes

⚠ 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!

! Handle this electronic precision measuring device carefully in packed as well as in unpacked condition!

! The device must not be subject to any changes or modifications. Furthermore, opening the device may only be done with explicit permit.

! The device may not be thrown!

! Remove the packaging only directly before starting up the device!

! Do not use any force when installing the device to prevent damage of the device and the plant!

3. Installation

3.1 General notes

! Handle the programming kit carefully and properly to avoid any damages.

! Establish the electrical connection of the kit according to the following description.

! After configuration the programming kit shall be disconnected and kept in a suitable place together with this manual.

! Please handle the individual parts carefully when disconnecting the programming kit.

! Ensure that the plug-and-socket connection will not be disconnected by pulling the cable.

3.2 Connecting the programming kit with the pressure switch

- Remove the programming kit carefully from the packaging and place all parts in front of you.
- Connect the delivered connecting cables with the pressure switch, PC and Adapt 3 according to figure 1 or 2.
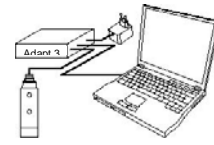- Insert the power supply into a 230 V$_{AC}$ socket.

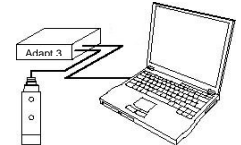*Fig. 1 connecting CIS 680/ CIS 685*

Fig. 2 connecting CIS 681/ CIS 686

3.3 Software installation

First of all, check if the configuration software „P-Set" is already installed on your PC. To do so, look under "Start" → "Programmes" → "BD SENSORS" if there is an existing entry "P-Set". If this is not the case, follow the instructions below to install the software.

- put the included software CD into the PC
- open the file "Setup P-Set" with a double click.
- install the program

The program will then guide you through the installation process.

When the installation is finished successfully, you will find a new entry called „P-Set" under "Start" → "Programmes" → "BD SENSORS" (provided that you used the standard installation directory.)

4. Operation

For starting the programme, open the file "setup P-Set". Via the menu bar the programme can be configured.

Main menu	Sub-menu	Function
File	Exit	quits the programme
General settings	Communication	allows the selection of the serial interface
General settings	Language	allows the selection of the language (German or English)
Print	-	prints the current configuration of the pressure switch with all the parameters
?	-	opens a window with important information about the programme and support address

The following table contains a brief description of the individual menu points:

Section	Button	Function
General settings	Read-out	reads out the data stored in the pressure switch (e. g. manufacturer, type, serial number etc.) and copies them into the matching fields
General settings	Simulation	switches the programme into simulation mode; the buttons required for the communication are deactivated
Simulation (Slide)	-	simulates a certain pressure value, which can be changed with the help of the slide
Contact 1	Read-out	reads out the parameters set for contact 1 and displays them in the fields
Contact 1	Write	transmits and stores the displayed parameters for contact 1 in the pressure switch
Contact 2	Read-out	reads out the parameters set for contact 2 and displays them in the fields
Contact 2	Write	transmits and stores the displayed parameters for contact 2 in the pressure switch

4.1 Reading out the settings of the pressure switch

To read the stored information out of the pressure switch, the programming kit has to be connected according to the description under "3.3" and the serial interface has to be chosen. Then click on the button "Read" in the desired rubric (Global Settings, Switching Output 1 or Switching Output 2). All the communication buttons are deactivated during the read-out process. The blue segment display shows the read-out process. The general settings are appliance-specific and can therefore not be altered. If an error occurs during the communication, this is displayed by a report and the process is stopped.
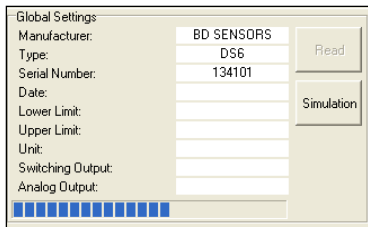
Fig. 3 reading out the general settings

4.2 Transferring the configured values to the pressure switch

All parameters of the contacts can be configured independently, transmitted to the pressure switch and stored there by using the button "Write". During the writing process, the blue segment display shows the progress again. Please notice that the programming kit has to be connected according to the description under "3.2" and the serial interface has to be chosen.

4.3 Steps of configuration

For the configuration of the contacts, move the mouse cursor across the desired field until the cursor changes into a hand. Then click the left mouse button to open an input field, which allows to configure the values.
To activate a **contact**, a tick must be visible in the white field.
The **lower switching point** (reset point) can be set in a percentage (with one decimal figure) or can be given in the adjusted unit (maximum three decimal figures).
The **upper switching point** (set point) can be set in a percentage (with one decimal figure) or can be given in the adjusted unit (maximum three decimal figures).
When setting the switching mode, four possibilities are given. To select a mode, click on the desired button. Please ensure that the tick next to "Output activated" is visible, otherwise the output has not been switched on.
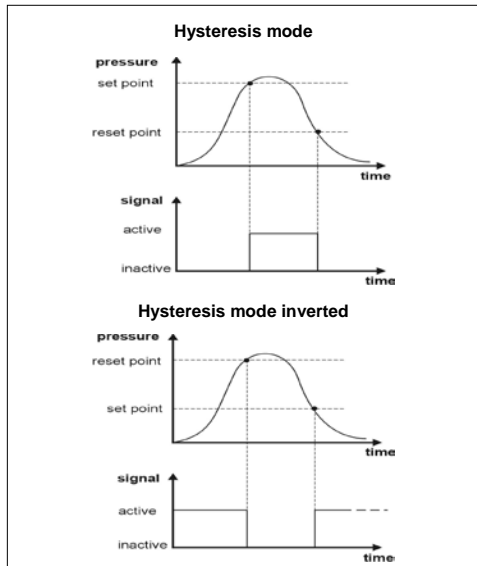The following figure shows the difference between hysteresis and compares mode as well as their inversion.
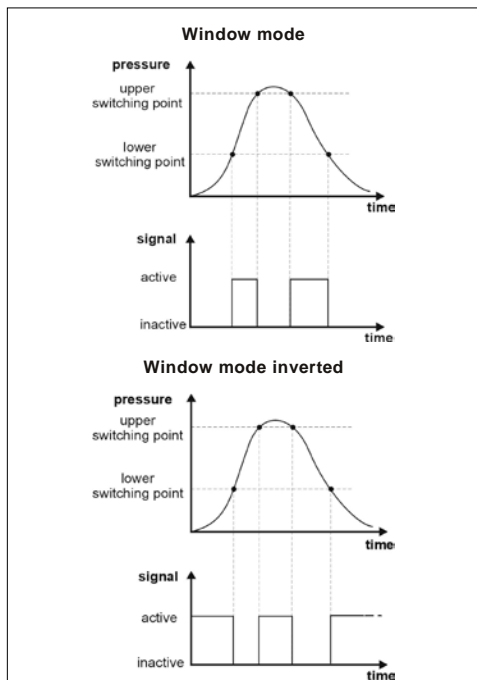

Fig. 6 hyteresis mode

Fig. 7 window mode

The **switch-on delay** can be set from 0 up to 600000 ms, in 10 msec. steps.

The **switch-off delay** can be set from 0 up to 600000 ms, in 10 msec.steps.

Fig. 8 setting switch-on delay

Fig. 9 setting switch-off delay

4.4 Simulation

The simulation mode is intended for operation without a pressure switch and is used to replicate its functions. The program can be switched into this mode by pressing the button "Simulation". All the input fields used for communication are deactivated. The fields "type" and "serial number", show "Simulation" (Fig. 8).

To run a simulation, go ahead as described:
Before the simulation may be started, all fields have to be completed correctly. Move the mouse cursor across the field in question until the cursor changes into a hand. After clicking the left mouse button, an input window for the configuration appears. Besides the possibility to configure the contacts, unit, lower and upper range for the simulation can be set. The desired **unit** may be selected through a "drop down box".
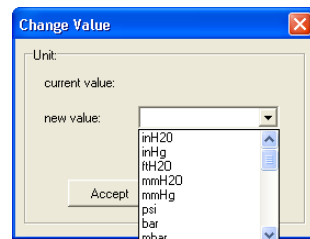

Fig. 10 setting the unit

The **lower range** may be given by value input into the white field. The permissible range is set from 0 up to 9999 and refers to the unit stipulated above. (The lower range states the initial value where the simulation starts.)

The **upper range** can be set equivalently. (The upper range states the final value where the simulation ends and gives the reference for the contacts if stated as percentages.)

4.5 Example of simulation

In the following figure, a complete configuration of the pressure switch is shown. In the top right half of the figure, you can see that a pressure value of 4.336 bar is being simulated. The green LED (left sided) signs the current condition of contact 1. The yellow LED (right sided) signs the current condition of contact 2. Now a pressure value can be simulated by the slide and the reaction of the pressure switch is given by the LEDs. The current pressure value is indicated in the right-down part of the figure.
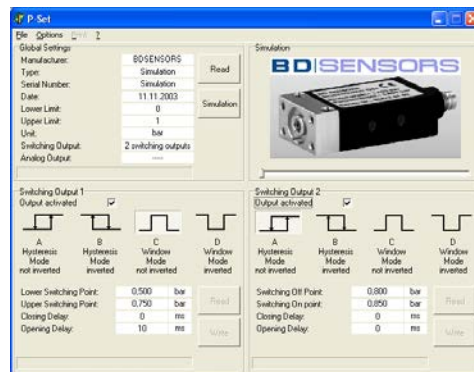

Fig. 11 example of simulation

5. Placing out of service

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

6. Maintenance

The programming kit 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.

7. Return

Before every return of your device, 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!**

8. Disposal

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

10. Error handling

If problems occur, please check whether the programming kit has been connected properly; whether you have a compatible operating system; and whether the interface has been chosen properly.

11. Technical data

General

Supply V_S	CIS 680 / CIS 685 [1]: 8.5 … 17 V_{AC} or 12 … 24 V_{DC} CIS 681 / CIS 686: via USB connecting cable
Ingress protection	IP 20

Pin configuration

Electrical Connections	plug of "Adapt 3"	connecting cable pressure switch / interface (configuration on the pressure switch)	
	M12x1 (5-pin) metal	CIS 680 / CIS 681 M8x1 (4-pin) plastic	CIS 685 / CIS 686 M12x1 (5-pin) plastic
Supply + [2]	1	1	1
Supply –	3	3	3
Contact 1 [2]	4	4	4
Contact 2	5	-	5
Analogue signal (optionally)	-	2	2

[1] If the delivered power supply cannot be used, the specified voltage ranges must be complied with. Polarity of the supply does not need to be attended, because the device has an integrated commutator.

[2] is used for data communication between programming adapter "Adapt 3" and pressure switch
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