PRESSURIX A/AD

**Features**
- Modular pressure transmitter
  - Output signal:
    - 4...20 mA
    - HART® protocol
- Function modules
  - Multifunctional display with 5-segment digital display and bar graph
  - Switching module with 2 floating channels, maximum 0.5 A switching current, electrically isolated at all sides, without additional auxiliary power
- Function module replacement on site without recalibration "plug and measure"
- Watchdog for electronics modules and measuring cell
- Classification per SIL 2
- Accuracy: ≤ 0.15%
- Turndown 5:1
- Degree of protection IP 66
- Piezoresistive measuring cell directly aerated, fully welded, without inside gasket

**Basic modules**
- 4...20 mA

**Function modules**
- HART® module
- Display module

Various modules can easily be added to PRESSURIX A (see table page 7).

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General

These operating instructions refer to installation, commissioning, servicing and adjustment. Statutory regulations, valid standards, additional technical details in the relevant data sheet, details of the type plate and any additional certificates are to be observed along with these operating instructions.

Safety instructions

- Installation, operation and maintenance of the instrument may be executed by authorized personnel, only, using suitable equipment.
- Warning: If the instrument is used incorrectly it is possible that serious injuries or damage can occur!
- Prior to the disassembly of the pressure transmitter the impulse ducts between the measuring transmitter and the process have to be locked and relieved from pressure.
- The standard nominal pressure rating and the permissible operating temperature of the gasket should be observed for all process connections. Operation outside the allowed nominal pressure rating, especially with clamp connections, is only possible with suitable clamps. In this case, note DIN 32676 for stipulations on heat resistance.
- Pressure transmitters that are mechanically defective can cause injuries or give rise to process faults. Suitable precautions should be taken to avoid this.

CE marking

The CE marking on the instruments certifies compliance with valid EU directives for bringing products to market within the European Union.

Connection to Zone 0

The pressure transmitter is suitable for Zone 0-connection. Zone 0 is allowed with pressure from 0.8 to 1.1 bar and temperatures from –20 °C to +60 °C.

Mounting and operating

- Before mounting the instrument ensure that pressure range, overpressure resistance, media compatibility, thermostability and pressure port are suitable for the process at hand.
- Conduct process installation before electrical installation.
- Measuring instruments that should not have any oil or grease residues in the pressure port are marked “Free of oil and grease”.
- Gaskets must be chosen that are suited to the process connection and resistant to the measured medium.
- Check for pressure tightness when commissioning the transmitter.
- Do not insulate the temperature decoupler, as this would reduce the decoupling effect. Follow DIN 32676.
- Wire up the instrument with power switched off.
- The housing in protection class IP66 consists of a two chamber system in which the measuring cell is aerated directly in relation to the environment by means of a PTFE filter system.

- The instrument can only be protected against electromagnetic interference (EMC) when the conditions for screening, earthing, wiring and potential isolation are met during installation.
- The mounting position should be taken into consideration when checking the zero output. Standard transmitters are adjusted at the factory for vertical mounting. Changes to the mounting position can cause zero shifts at pressure ranges ≤ 2 bar. These drifts can be corrected by adjustment on site.

- When the instrument is opened any contact with the electrical connections can affect the signals. This situation can be avoided by switching off the supply voltage or by disconnecting the signal circuit.
- The types of protection IP66 are only achieved, when the threaded ring has been screwed tight after electrical connection/parameterization.
- The instrument requires no maintenance.

Instructions for the operation with diaphragm seal

- To avoid soiling and damage remove protective cap or wrapping in front of the separating diaphragm before mounting.
- Do not touch the flush mounted separating diaphragm, as there is a danger of deformation at measuring ranges to 10 bar / 150 psi. Instrument zero point and measuring characteristics could also be affected.
- Measuring instrument and diaphragm seal are a closed system and should not be separated.
- Avoid overtightening the process screw joints as this can result in zero displacements at the pressure transmitter (fixing error).
- When using systems with capillary for vacuum measurements always mount the pressure transmitter underneath the diaphragm seal. The instruments are set at the factory with pressure transmitter and diaphragm seal at the same height. Correct any differences in height between diaphragm seal and pressure transmitter arising from conditions on site on the pressure transmitter when placing the instrument into operation (see “Setting the measuring range”). When correcting for elevation be aware of the adjustment limits.
- Be sure to install and securely fasten the capillary to avoid vibrations. Roll up overlengths with a minimum radius of 50 cm. Shock and changes in temperature can impact on measurements.
- Process and ambient temperatures can cause zero displacements at the pressure transmitter with some system designs. We can supply you with an error analysis.

HART® protocol

The HART® module enables the use of the HART protocol. Use only power supply amplifiers and isolation amplifiers that are suitable for operation with HART® HART Version V6.0, user interface compatible with Siemens PDM and Emerson AMS.

Functional safety

as per IEC 61508 SIL 2
Connection diagram

Basic module 4...20 mA

Internal terminals with cable gland design

1 + ∙ 12...30 V
2 ∙ OV
3 ∙ 4-20 mA

Modules may only be exchanged/added when the power supply has been switched off!

Cable gland design: remove switching module to connect basic module

circular connector

color code as Binder series 763

black (±)
blue (-)
brown (+)
**Operation of pressure transmitter PRESSURIX A/AD with display module SW Rev. 3.0**

The standard ex-works setting for the display module can be found in the table on page 7.

- **Overpressure display**: If the pressure applying to the MU exceeds the sensor limits, then the measurement display begins to flash and an upward-pointing arrow appears on the display.

- **Mode**
  - C = Change (input mode when changing a parameter)
  - I = Info (the ACTUAL value specified by the user)
  - W = Warnings (Warning of critical states)
  - E = Error (error messages)

- **Module mounting**: When mounting the modules, the screws should not be over-tightened. Modules may only be exchanged/ replaced when the power supply has been switched off!

- **Switching display**: Two switch symbols show the status of the switching contacts.
  - Example: Switch contact 1 opened
  - Switch contact 2 closed

- **Meas. value display**: Display of the current measuring value (see page 7)
  - Shows the physical unit or displays a text field

- **Unit/ text field**: The bar graph shows the current pressure in all menus, based on the set measuring range.
  - If the level drops below the set measuring range, the zero point of the bar graph shifts to the right end of the scale and the progression of numbers moves to the left.
  - After the set measuring range is exceeded, no further changes are made.

- **Bar graph**: The key function depends on the length of time the key is pressed
  - “Short” function: approx. 1 sec.
  - “Long” function: approx. 10 sec.

Special key functions (irrespective of the position in the menu):
- Left key => allows you to switch from the current operating menu to the Next operating menu
- **Left and middle key “short”** => Return to measuring value display (also takes place if the keys are not pressed after 5 minutes)
- **Left and right key “long”** => Activate/ deactivate write protection (input locked / input active)
The transmitter is configured by means of an input menu with the following structure:

- **Measuring value display (see p. 6)**
  - **Operating menus x)**
    - Zero Point/Measuring Span P. 9
    - Damping P. 10
    - Min-Max Values
    - Curve P. 13
    - Pressure Unit P. 14
    - Measuring Circuit Test
    - Alarm State
    - Current Trimming P. 17
    - Pressure Trimming
    - Table Function P. 20
    - System Info P. 22
    - Factory Data Reset
    - Sw. points, Hyst., Sw. funct.
    - HART, address Current

- **Submenus**
  - ZERO
  - DAMP
  - P-MIN
  - FUNC
  - UNT
  - SET
  - ALARM
  - 4 mA
  - AUTO
  - PTS
  - ChCnt
  - RESET
  - SwCh1
  - Adres

x) the left button allows you to switch from the current operating menu to the next operating menu.
1. Measuring value display

Pressure display
Numerical display: Current pressure
Text field: mbar (selected physical unit)
Bar graph: Pressure (display in the set range)

Temperature display (°C)
Numerical display: Temperature at the pressure sensor
Text field: °C (degrees Celsius)
Bar graph: Pressure (display in the set range)
Note: The temperature indicator shows the temperature at the sensor; the process temperature can vary from this.

Temperature display (°F)
Numerical display: Temperature at the pressure sensor
Text field: °F (degrees Fahrenheit)
Bar graph: Pressure (display in the set range)
Note: The temperature indicator shows the temperature at the sensor; the process temperature can vary from this.

Percentage display
Numerical display: Current pressure based on the measuring range
Text field: % (percentage of the set range)
Bar graph: Pressure (display in the set range)

Initial current display
Numerical display: Initial current in mA, based on the set range
Text field: mA
Bar graph: Pressure (display in the set range)

Selecting Measuring value display as standard display

One of these displays can be selected as the standard display.

1. Select with the middle button
2. Confirm with the right button
Note: The left button takes you to the operating menu level (see following pages).
2. Operating menus

Operating menus and parameterizing

Description of further function modules

Please check the following table for further information concerning the operating menu of the display module and switching module (grey marked).

Various function modules can easily be added to PRESSURIX A/AD (see table). These modules can be exchanged or extended with ease on site without having to recalibrate or remove the device from the process ("plug and measure"). Automatic module detection renders programming redundant. Note: Modules may only be exchanged/added when the power supply has been switched off!

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<td>RANGE / Zero</td>
<td>variability</td>
<td>standard</td>
<td>4...20 mA</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>display module</td>
<td>HART% module</td>
</tr>
<tr>
<td>measuring span</td>
<td>RANGE / Span</td>
<td>see instrument ranges</td>
<td>nominal range</td>
<td>x</td>
</tr>
<tr>
<td>damping</td>
<td>DAMP</td>
<td>0.0...120.0 sec.</td>
<td>0.0 sec</td>
<td>w</td>
</tr>
<tr>
<td>min-max-values</td>
<td>HI / LO</td>
<td>pressure and temperature</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>characteristic</td>
<td>FUNC</td>
<td>linear, table</td>
<td>w</td>
<td>x</td>
</tr>
<tr>
<td>pressure unit</td>
<td>UNIT</td>
<td>bar, mbar, kPa, MPa, mmH₂O, mH₂O, kg/cm², psi</td>
<td>w</td>
<td>x</td>
</tr>
<tr>
<td>measuring circuit test</td>
<td>LOOP</td>
<td>3.55...22 mA</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>alarm state</td>
<td>ALARM</td>
<td>&lt; 3.6 mA, &gt; 21.0 mA</td>
<td>&lt; 3.6 mA</td>
<td>w</td>
</tr>
<tr>
<td>current trimming</td>
<td>I-CAL</td>
<td>-2 %...+ 5 %</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>pressure trimming</td>
<td>P-CAL</td>
<td>zero point -50...+50% o.n.range</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>table function</td>
<td>TABLE</td>
<td>2...31 points in table</td>
<td>0 % = 4 mA</td>
<td>x</td>
</tr>
<tr>
<td>system info</td>
<td>INFO</td>
<td>software, serial number</td>
<td>—</td>
<td>—</td>
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<tr>
<td>factory data reset</td>
<td>RESET</td>
<td>revision level</td>
<td>—</td>
<td>x</td>
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<tr>
<td>switch points</td>
<td>SWCH1(2)</td>
<td>0.0...100.0 % of nominal range</td>
<td>50 %</td>
<td>—</td>
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<tr>
<td>hysteresis</td>
<td>SWCH1(2)/Hyst.</td>
<td>0.0...100.0 % of nominal range</td>
<td>0.1 % hyst.falling</td>
<td>—</td>
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<tr>
<td>HART Address</td>
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<td>HART Current</td>
<td>HART/Curr</td>
<td>Fixed/Float</td>
<td>FLOAT</td>
<td>x</td>
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<td>—</td>
<td>ON, OFF</td>
<td>OFF</td>
<td>x</td>
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x = configurable
w = factory setting

Error code description

System Errors

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<tr>
<td>FLASH ERROR</td>
<td>Device parameters invalid.</td>
</tr>
<tr>
<td>BrdGE ERROR</td>
<td>Bridge is faulty.</td>
</tr>
<tr>
<td>SnSr nmb2</td>
<td>Error in sensor module or this basic module cannot access the sensor.</td>
</tr>
<tr>
<td>bASE ChkEr</td>
<td>The sensor module has been replaced or there is an error in the basic module.</td>
</tr>
<tr>
<td>SnSr ChkEr</td>
<td>Error in sensor module (compensation table/ set-up data)</td>
</tr>
</tbody>
</table>
Error code description

Four-Digit Error Code Display

0 0 0 0

Fourth Digit in Error Code in PRESSURIX A/AD Display Module

0  No error.
1  Pressure outside nominal measuring range.
2  Temperature outside specified range.
3  Pressure outside nominal measuring range and temperature outside specified range.
4  Analog output limited to current value.
5  Pressure outside nominal measuring range and analog output limited to current value.
6  Temperature outside specified range and analog output limited to current value.
7  Pressure outside nominal measuring range; temperature outside specified range; and analog output limited to current value.

Third Digit in Error Code in PRESSURIX A/AD Display Module

0  No error.
8  General device error (always shown with other errors)

Second Digit in Error Code in PRESSURIX A/AD Display Module

0  No error.
2  A memory cell in the microprocessor is faulty.

First Digit in Error Code in PRESSURIX A/AD Display Module

0  No error.
1  Data in sensor module invalid.
2  Data in basic module invalid.
3  Data in sensor and basic module invalid or do not match.
4  Connected sensor not detected by basic module.
8  Measuring bridge / pressure sensor faulty.

Digits on a gray background indicate errors that can only be remedied by the manufacturer. All other issues can be remedied by the customer.
2.1 Setting the measuring range (operating menu: Zero Point/Measuring Span)

Notes:
- Changing the zero point and/or span value affects the bar graph, output signal and signal display as a percentage of the measuring range.
- Changes to the zero point (Zero) are also reflected in the span value, i.e. the actual measuring span remains unchanged. For example: Zero=0mbar, Span=600mbar; changing zero to 100mbar yields a span of 700mbar
- If the pressure transmitter is set outside the permitted measuring range limits (nominal range ±5 %, smallest measuring span), then the values are not applied.
- Negative values are entered by setting the minus character at the point marked during position selection.
- An inverse characteristic curve can be obtained by entering the upper pressure as zero and the lower pressure as the span value (e.g. 0 mbar => 20 mA, 600 mbar => 4 mA)

Operating menu Zero Point/Measuring Span
Numerical display : None
Bar graph : Pressure (display in set measuring range)
(the next operating menu is reached with )

Display lower range value (submenu ZERO)
Numerical display : Lower range value, unit as per operating menu
Text field : Switches between ZERO and set unit, e.g. mbar
Bar graph : Pressure (display in set measuring range)

Change lower range value (see notes above)
Display : Lower range value
Text field : Switches between ZERO and set unit, e.g. mbar
Mode display : C
Change : Select point to be changed with middle button . Change the number with left button .
Back : Go to the ZERO submenu with the right button , so that the set value is applied.

Display upper range value (submenu SPAN)
Numerical display : Span value, unit as per operating menu
Text field : Switches between SPAN and set unit, e.g. mbar
Bar graph : Pressure (display in set measuring range)

Change upper range value (see notes above)
Display : Upper range value
Text field : Switches between SPAN and set unit, e.g. mbar
Mode display : C
Change : Select point to be changed with middle button . Change the number with left button .
Confirm and back : Go to the ZERO submenu with the right button , so that the set value is applied.

Skip back to the measuring value display: Press the left and middle buttons briefly
2.2 Setting damping (operating menu: Damping)

Notes:
- Changing the damping affects the bar graph, output signal and signal display as a percentage of the measuring range.
- Possible values for damping lie between 0 and 120 sec, if the input is >120 then the value 120 is applied.
- To ensure the immediate following of display and output signal during adjustment, the damping must be set to 0 seconds during these settings.

Operating menu Damping
- Numerical display: None
- Bar graph: Pressure (display in set measuring range)
  (the next operating menu is reached with left button.)

Display damping (submenu DAMP)
- Numerical display: Current value for the damping in seconds
- Text field: Switches between DAMP and SEC
- Bar graph: Pressure (display in set measuring range)
- Back: Go to the operating menu Damping with the middle button

Change damping (see notes above)
- Display: Current value for the damping in seconds
- Text field: Switches between DAMP and SEC
- Mode display: C
- Change: Select point to be changed with middle button
  Change the number with left button.
- Confirm and back: Go to the DAMP submenu with the right button, so that the set value is applied.

Skip back to the measuring value display: Press the left and middle buttons briefly.
### 2.3 Reading out / resetting Min-Max values (operating menu: Min-Max Values)

The minimum and maximum pressure values (in the set unit, in this case mbar) and sensor temperature (in °C) can be read out and/or reset at this point.

#### Operating menu Min-Max values
- **Numerical display**: None
- **Bar graph**: Pressure (display in set measuring range)
  - (the next operating menu is reached with left button)
- **Next**: to display of minimum pressure value with the middle button

#### Display of min-value (P-MIN submenu)
- **The minimum-value measured after last reset is displayed.**
- **Numerical display**: Minimum value pressure in set unit, in this case mbar
- **Text field**: Switches between P-MIN and mbar
- **Bar graph**: Pressure (display in set measuring range)
- **Next**: to display of maximum pressure value with the middle button

#### Delete the stored minimum value
- **Display**: flashing writing CLEAR
- **Text field**: P-MIN
- **Modus display**: C
- **Deleting**: Delete value with right button (Ok) and return to P-MIN submenu.
- **Back**: Go to P-MIN submenu without deleting the value with the left button (V).

When saved value is deleted each current pressure value is registered in the memory.

#### Display maximum value (P-MAX submenu)
- **The maximum-value measured after last reset is displayed.**
- **Numerical display**: Maximum value pressure in set unit, in this case mbar
- **Text field**: P-MAX
- **Bar graph**: Pressure (display in set measuring range)
- **Next**: to display of minimum temperature value with the middle button

#### Delete the stored maximum value
- **Display**: flashing writing CLEAR
- **Text field**: P-MAX
- **Modus display**: C
- **Delete**: Delete value with right button (Ok) and return to P-MAX submenu.
- **Back**: Go to P-MAX submenu without deleting the value with the left button (V).

When stored value is deleted each current pressure value is registered in the memory.

*Continued on next page*
Reading out / resetting Min-Max values (operating menu: Min-Max Values) continued

Display min-value (T-MIN submenu)
The minimum-value measured after last reset is displayed.
Numerical display : Minimum value temperature in °C
Text field : Switches between T-MIN and °C
Bar graph : Pressure (Display in set measuring range)
Next: to display of maximum temperature value with the middle button
Delete the stored minimum value
Display : Flashing writing CLEAR
Text field : T-MIN
Mode display : C
Delete : Delete value with the right button and return to T-MIN submenu.
Back : Go to T-MIN submenu without deleting the value with the left button.
When stored value is deleted each current temperature value is registered in the memory.

Display of maximum value (T-MAX submenu)
The maximum-value measured after last reset is displayed.
Numerical display : Maximum value temperature in °C
Text field : T-MAX
Bar graph : Pressure (display in set measuring range)
Back : Go to the operating menu Min-Max Values with the middle button
Delete the stored maximum value
Display : Flashing writing CLEAR
Text field : T-MAX
Mode display : C
Delete : Delete value with right button and return to T-MAX submenu.
Back : Go to T-MAX submenu without deleting the value with the left button.
When stored value is deleted each current temperature value is registered in the memory.

Skip back to the measuring value display: Press the left and middle buttons briefly.
2.4 Selecting the transmission function (operating menu: Characteristic Curve)

Notes:
- The assignment of the output signal to the pressure range (set range) can be defined here.
- Possible settings:  
  - LIN  linear assignment
  - TAb assignment via table with 2 to 31 points (see operating menu “Table Function”)
- The setting tab should only be selected if the required table has been entered in full under the Table Function operating menu.

Operating menu Characteristic curve

Numerical display : None
Bargraph : Pressure (display in set measuring range)
(Next operating menu is reached with left button)
Next : Go to display of transmission function with the middle button.

Display of present transmission function (FUNC submenu)

Numerical display : e.g. LIN (current setting)
Text field : FUNC
Bar graph : Pressure (display in set measuring range)
Back : Go to the operating menu Characteristic Curve with the middle button.

Change of transmission function (see notes above)

Display : Flashing display of current setting
Text field : FUNC
Mode display : C
Change : Select function with the left button.
Confirm and back : Application of set function and back to FUNC submenu with the right button.

Skip back to the measuring value display: Press the left and middle buttons briefly
2.5 Selecting the physical unit (operating menu: Pressure Unit)

Notes:
- The following physical units are available for display:
  - mmH2O, psi, bar, mbar, kg/cm², KPa, MPa, mH2O
- The following menus use the set unit:
  - Measuring value display
  - Range, Min/Max values [HI/LO], pressure adjustment [P-CAL]

Operating menu Physical unit
Numerical display : None
Bar graph : Pressure (display in set measuring range)
       (the next operating menu is reached with left button)
Next : Go to display of set unit
       with the middle button

Display of set unit (UNIT submenu)
Numerical display : UNIT
Text field : mbar or as set last time
Bar graph : Pressure (display in set measuring range)
Back : Go to the operating menu physical unit
       with the middle button

Change of physical unit (see notes above)
Display : UNIT
Text field : Flashing display mbar or as set last time
Mode display : C
Change : Select unit with the left button
Confirm and back : Application of set function and back to UNIT
                   submenu with the right button

Skip back to the measuring value display: Press the left and middle buttons briefly
2.6 Setting a fixed current signal (operating menu: Measuring Circuit Test)

Notes:
- A fixed value for the current signal can be set in the Measuring Circuit Test operating menu, so that a simple device test can be carried out on the following devices. The setting range is 3.6 to 22.0 mA.
- Values of less than 3.6 mA are corrected to 3.6 mA at transfer.
- Values of over 22.0 mA are corrected to 22.0 mA at transfer.
- The current signal does not affect the switching channels. In order to test the switching points, appropriate pressure must be applied to the transmitter.
- The FIXED operating state does not end after five minutes but remains active until it is ended using the right hand button.
- This operation menu is not displayed when the HART-address is not 0 and the current mode is fixed.

Operating menu Measuring circuit test
Numerical display: None
Text field: LOOP
Bar graph: Pressure (display in set measuring range)
Next: To Preselection of current signal with the middle button (the next operating menu is reached with left button ).

Preselection of current signal (see notes above)
Numerical display: Last current pressure proportional current signal
Text field: Switches between SET-I and mA
Mode display: C
Change: Select point to be changed with middle button. Change the number with left button.
Confirm and next: Application of set value and go on with the right button.

Display of set current signal
Numerical display: Set current value
Text field: switches between FIXED and mA
Mode display: I
Back: Go to operating menu Measuring circuit test with the right button , so that the actual pressure proportional current is applied.
2.7 Setting the current value for the alarm status (operating menu: Alarm State)

Notes:
- The following errors trigger alarms: Under/overtemperature/under/overpressure, faulty sensor, data storage error, program sequence error, error in the parameter data.
- The alarm status is to be selected in the Alarm State operating menu, i.e.,:
  - Alarm HI = Current in error/alarm status greater than 21.0 mA
  - Alarm LO = Current in error/alarm status less than 3.6 mA

Operating menu Alarm state
- Numerical display: None
- Text field: ALARM
- Bar graph: Pressure (display in set measuring range)
- Next: Go to ALARM submenu with the middle button (the next operating menu is reached with left button (down)).

Display of set alarm state (ALARM submenu)
- Numerical display: LO or HI depending on last setting
- Text field: ALARM
- Next: Got to Change alarm state with the right button
- Back: Go to ALARM submenu with the middle button

Change of alarm state (see notes above)
- Display: Flashing display LO or HI
- Text field: ALARM
- Mode display: C
- Change: Select kind of alarm with the left button
- Confirm and back: Application of selected kind of alarm and back to operating menu Alarm state with the right button.

Skip back to the measuring value display: Press the left and middle buttons briefly.
2.8 Adjusting the current output (operating menu: Current Trimming)

Notes:
- Adjustment of the output current circuit
- The value read from a measuring device contained in the circuit is used as the input value.
- The correction to the current signal is derived from this value and the set value (4 or 20 mA).

Example: The current signal in the zero point is to be adjusted. If the 4.000 FIXED submenu is reached, the current signal is set to a value that should be 4 mA. For example you might read 4.023 mA on the measuring device. This value is entered in the "Change 4mA current signal" submenu. The transmitter then changes its signal by the differential amount so that when the 4.000 FIXED submenu is reached, 4.000 mA can be read on the measuring device. A corresponding change is also made in the range value, so that this must also be checked and corrected as follows.

Display of current signal 4 mA (4.000 FIXED submenu)
Numerical display: 4.000 (lower current value)
Text field: Switches between FIXED and mA
Mode display: I
Change: Select point to be changed with middle button
Confirm and back: Go to 4.000 FIXED submenu with the right button

Display of current signal 20 mA (20.000 FIXED submenu)
Numerical display: 20.000 (upper current value)
Text field: Switches between FIXED and mA
Mode display: I
Back: Go to operating menu Current trimming with the middle button
Next: Go to Change of current signal with the right button

Change of current signal 4 mA (see notes above)
Display:
Text field: Switches between READ and mA
Mode display: C
Change: Select point to be changed with middle button
Confirm and back: Go to 4.000 FIXED submenu with the right button, so that current output is corrected.

Change of current signal 20 mA (see notes above)
Display:
Text field: Switches between READ and mA
Mode display: C
Change: Select point to be changed with middle button
Confirm and back: Go to 20.000 FIXED submenu with the right button, so that current output is corrected.

It might be necessary to repeat the procedure in order to achieve the required accuracy.
2.9 Adjusting the measuring range limits (operating menu: Pressure Trimming)

Notes:
The lower range value and the upper range value can be adjusted in this operating menu. In addition, it is also possible to correct errors caused by the installation position.

Notes:
The damping for this setting is always 0 sec. (damping delayed display)
Negative values are entered by setting the minus character at the point indicated by
Return to measuring value display: Press both buttons briefly at the same time

In the case of absolute measuring ranges, the AUTO ZERO submenu is not available.

The AUTO ZERO submenu is used to correct errors caused by the installation position.
Requirement: Ambient pressure at the pressure transmitter.

Continued on next page
Adjusting the measuring range limits (operating menu: Pressure Trimming)
continued

Notes:
The beginning and end of measurement do not have to be adjusted at the lower range value or upper range value. Pressure specifications near these points can be approached and adjusted (example: containers that cannot be completely emptied).
The suggested values for ZERO and SPAN are set values in the Zero Point/Measuring Span operating menu; these can be changed to the actual pressure applied.

Adjusting the lower range value (ZERO submenu)
Numerical display : Currently set lower range value (see notes above)
Text field : Switches between ZERO and selected unit
Next: Go to SPAN submenu with the middle button
Next: Go to Change of adjusting with the right button

Change of adjusting the lower range value
Numerical display : Entering section, given value is the currently set lower range value (see notes above).
Text field : Switches between current pressure value display and selected unit
Mode display : /Change
Application and back : Go to ZERO submenu with the right button, so that the value from the entering section is applied (display of the current pressure value).

Adjusting the upper range value (SPAN submenu)
Numerical display : Currently set upper range value (see notes above)
Text field : Switches between SPAN and selected unit
Zurück : Go to operating menu Pressure Trimming with the middle button
Next: Go to Change of adjusting with the right button

Change of adjusting the upper range value
Numerical display : Entering section, given value is the currently set upper range value (see notes above)
Text field : Switches between current pressure value display and selected unit
Mode display : /
Change
Confirm and back : To SPAN submenu with the right button, so that the value from the entering section is applied (display of the current pressure value).

Skip back to the measuring value display: Press the left and middle buttons briefly.
2.10 Entering/changing the characteristic curve table (operating menu: Table Function)

Notes:
- It is possible to assign pressure and output signals via a table function in the “Characteristic Curve” operating menu. The associated table must be defined here.
- Tables with 2 to 31 support points are possible; if larger values are entered, the value is set to 31.
- The assignments are to be made in ascending order; at \( n \) table points, \( n \) entries are expected for % and mA value.
- A number between 0 and 105 is expected as the % entry. Larger values are set to 105 %.
- A number between 3.8 and 20.8 is expected as the mA entry. Smaller values are set to 3.8 mA, while larger values are set to 20.8 mA.
- First the complete table is to be entered and the switched to the table function in the “FUNC” menu, as otherwise unexpected skips in the output signal can occur.

Operating menu Table function
- Numerical display : None
- Text field : TABLE
- Bar graph : Pressure (display in set measuring range)
- Next : Go to display number of table points (PTS submenu) with the middle button

(Display operating menu is reached with left button)

Display number of table points (PTS submenu)
- Numerical display : e.g. 3 (number of table points)
- Text field : PTS
- Next : Go to display first table point with the middle button
- Next : Go to change number of table points with the right button

Change number of table points (see notes above)
- Display : 3
- Text field : PTS
- Mode display : C
- Change : Select point to be changed with middle button
- Change the number with left button
- Back : Go to PTS submenu with the right button, so that the set value is applied.

Display first table point (PT01 submenu)
- Numerical display : 0.0 (1st table point in %)
- Text field : Switches between PT01 and %
- Next : Go to display power value of first table point with the middle button
- Next : Go to change percent value with the right button

Change percent value of first table point (see notes above)
- Display : 0.0
- Text field : Switches between PT01 and %
- Mode display : C
- Change : Select point to be changed with middle button
- Change the number with the left button
- Confirm and back : Got to PT01 submenu with the right button, so that the set value is applied.

Continued next page
Entering/changing the characteristic curve table (operating menu: Table Function)

- A number between 0 and 105 is expected as the % entry. Larger values are set to 105%.
- The assignments are to be made in ascending order; first the complete table is to be entered and switched to the table function in the "FUNC" menu, as otherwise it is possible to assign pressure and output signals via a table function in the "Characteristic Curve" operating menu. The associated table must be defined here.
- A number between 3.8 and 20.8 is expected as the mA entry. Smaller values are set to 3.8 mA, while larger values are set to 20.8 mA.

Display current value of first table point

Numerical display: 4.000 (1st table point in mA)
Text field: Switches between PTØ1 and mA
Next: Display 2nd table point with the middle button
Next: Change percent value of first table point with the right button

Change current value of 1st table point (see notes above)

Display: 4.000
Text field: Switches between PTØ1 and mA
Mode display: C
Change: Select point to be changed with middle button
Change: Change the number with left button
Confirm and back: with the right button, so that the set value is applied.

Display n (here: 3rd) table point

Numerical display: 100.0 (3rd table point in %)
Text field: Switches between PTØ3 and %
Next: Go to display current value of third table point with the middle button
Next: Go to change percent value of third table point with the right button

Change percent value of third table point (see notes above)

Display: 100.0
Text field: Switches between PTØ3 and %
Mode display: C
Change: Select point to be changed with middle button
Change: Change the number with left button
Confirm and back: Go to display third table point with the right button, so that the set value is applied.

Display current value of n table point

Numerical display: 20.000 (3rd table point in mA)
Text field: Switches between PTØ3 and mA
Back: Go to operating menu Table function with the middle button
Next: Go to Change current value of third table point with the right button

Change current value of third table point (see notes above)

Display: 20.000
Text field: Switches between PTØ3 and mA
Mode display: C
Change: Select point to be changed with middle button
Change: Change the number with left button
Confirm and back: Go to display current value of third table point with the right button, so that the set value is applied.

Skip back to the measuring value display: Press the left and middle buttons briefly.
2.11 Testing module compatibility (operating menu: System Info)

Notes:
This menu can be used to test the hardware and software compatibility of the modules used.
In addition, it entails an option for checking whether changes have been made on the basis of the parameter change number. Submenus are only displayed if the relevant module has been found.

- **ChCnt**: Total number of parameter changes
- **SnBAS**: Serial number of the basic module
- **SnLCD**: Serial number of the display module
- **SnSw**: Serial number of the switching module
- **SnHRT**: Serial number for HART mode
- **“-O-K-”**: Modules can work with each other
- **“ERROR”**: Module has been found but is incompatible
- **“HwRev”**: Hardware version of the corresponding module
- **“SwRev”**: Software version of the corresponding module
- **SnSEN**: Serial number of the sensor module

### Operating menu System-Info
- **Numeric display**: None
- **Text field**: INFO
- **Bar graph**: Pressure (display in set measuring range)
- **Next**: Go to number of all parameter changes (ChCnt submenu) with the middle button

(the next operating menu is reached with left button)

### Number of all parameter changes (ChCnt submenu)
- **Numeric display**: 35 (example)
- **Text field**: ChCnt
- **Next**: Go to display serial number of basic module (SnBAS submenu) display with the middle button

### Serial number of basic module (SnBAS submenu)
- **Numeric display**: e.g. 357 serial number basic module
- **Text field**: Switches between SnBAS and -O-K-
- **Next**: Go to display software version of the basic module with the left button

### Display of software version of Basic module
- **Display**: Version-No. of the software of the Basic module
- **Text field**: Switches between SwRev and -O-K-
- **Next**: Go to display serial number of the sensor module (SnSEN submenu) with the middle button

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<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial number of sensor module</td>
<td>SnSEN submenu</td>
<td>Numeric display: e.g. 10016 serial number of sensor module</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Text field: Switches between SnSEN and -O-K-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Next: Go to display serial number switching module (SnLCD submenu) with the middle button</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Next: Go to display hardware version of sensor module with the left button</td>
</tr>
<tr>
<td></td>
<td>Display</td>
<td>Version-No. of hardware of sensor module</td>
</tr>
<tr>
<td></td>
<td>Text field</td>
<td>Switches between HwRev and -O-K-</td>
</tr>
<tr>
<td></td>
<td>Next</td>
<td>Go to display serial number of the switching module with the left button</td>
</tr>
</tbody>
</table>

| Serial number of switching module | Sn-Sw submenu                                                              | Numeric display: e.g. 874 serial number of switching module            |
|                                  |                                                                             | Text field: Switches between SnSw and -O-K-                            |
|                                  |                                                                             | Next: go to serial number of display module (SnHrt submenu) with the middle button |
|                                  |                                                                             | Next: go to display hardware version of switching module with the left button |

| Hardware version of sensor module |                                                                               | Display: Version-No. of hardware of sensor module                        |
|                                  |                                                                             | Text field: Switches between HwRev and -O-K-                            |
|                                  |                                                                             | Next: go to display serial number of the switching module with the left button |

| Serial number of the HART module | Sn-Hrt submenu                                                              | Numeric display: e.g. 22 serial number of the HART module              |
|                                  |                                                                             | Text field: Switches between SnHrt and -O-K-                            |
|                                  |                                                                             | Next: go to serial number of display module (SnHrt submenu) with the middle button |
|                                  |                                                                             | Next: go to display hardware version of HART module with the left button |

| Hardware version of the HART module |                                                                               | Display: Versions-No. of hardware HART module                            |
|                                    |                                                                             | Text field: Switches between HwRev und -O-K-                            |
|                                    |                                                                             | Next: go to serial number of display module (SnLCD submenu) with the middle button |

| Serial number of the display module |                                                                               | Numeric display: e.g. 345 serial number display module                  |
|                                    |                                                                             | Text field: Switches between SnLCD and -O-K-                            |
|                                    |                                                                             | Back: Go to operating menu System-info with the middle button          |
|                                    |                                                                             | Next: Go to display hardware version of display module with the left button |

| Hardware version of the display module |                                                                                   | Display: Version-No. hardware display module                            |
|                                       |                                                                                   | Text field: Switches between HwRev und -O-K-                            |
|                                       |                                                                                   | Back: Go to operating menu System-info with the middle button          |

Testing module compatibility (operating menu: System Info) continued

Skip back to the measuring value display: Press the left and middle buttons briefly
2.12 Restoring the settings according to data sheet (operating menu: Factory Data Reset)

Notes:
In the case of the factory data RESET all entered parameters are reset to the specification sheet data. The adjustment of the transmitter is reset to the factory setting. The transmitter executes a warmstart after the factory data has been restored, i.e. it is in Measuring value display mode.

Attention:
In case of factory data RESET the HART-address and the currentmode will be kept.

Operating menu Factory data RESET
Numeric display : None
Text field : RESET
Bar graph : Pressure (display in set measuring range)
Next : Got to Safety inquiry (RESET submenu) with the middle button

(Safety inquiry (RESET submenu)
Numeric display : ALL
Text field : RESET
Next : Go to Execution factory data RESET with the right button
Back : Go to Operating menu Factory data RESET with the left button

Execution factory data RESET
Numeric display : RUN
Text field : RESET
Bar graph : Running / reset progress indication (abt. 10 sec.)

Measuring value display (see page 8)
Numeric display : Pressure in mbar
Text field : Selected physical unit
Bar graph : Pressure (display in set measuring range)
2.13 Parameter setting for switching channel 1 (operating menu: Switching points / Hysteresis / Switching function [1])

Notes:
- These settings apply to switching channel 1 only
- The switching points may not be within the measuring range (4...20 mA), but can be in nominal range +5%.
- Set parameters are preserved even when the switching module is removed.
- The switching contacts are opened if the transmitter detects an error.

Operating menu Switching points / Hysteresis / Switching function (1)
Numerical display : None
Text field : SwCh1
Bar graph : Pressure (display in set measuring range)
Next : Go to Display switching point 1 (LEVEL submenu) with the middle button

Display switching point 1 (LEVEL submenu)
Numerical display : Limiting value in set unit, in this case mbar
Text field : Switches between LEVEL and mbar
Bar graph : Pressure (display in set measuring range)
Next : Go to Display hysteresis channel 1 (HYST submenu) with middle button
Next : Go to Change switching point channel 1 with right button

Change switching point channel 1
Display : Limiting value in set unit, in this case mbar
Text field : Switches between LEVEL and mbar
Mode display : C
Change : Select point to be changed with middle button
Change the number with left button
Back : Go to the LEVEL submenu with the right button, so that the set value is applied.

Display hysteresis channel 1 (HYST submenu)
Numerical display : Hysteresis in set unit, in this case mbar
Text field : Switches between HYST and mbar
Bar graph : Pressure (display in set measuring range)
Next : Go to Display hysteresis type channel 1 (HYST submenu) with middle button
Next : Go to Change hysteresis 1 with right button

Change hysteresis channel 1
Display : Hysteresis in set unit, in this case mbar
Text field : Switches between HYST and mbar
Mode display : C
Change : Select point to be changed with middle button
Change the number with left button
Confirm and back : Go to the HYST submenu with the right button, so that the set value is applied

Continued on next page
Parameter setting for switching channel 1 (operating menu: Switching points / Hysteresis / Switching function [1] ) continued

Display hysteresis type channel 1 (submenu HYST)
Numerical display: Hysteresis type, in this case: LO
Text field: HYST
Bar graph: Pressure (display in set measuring range)
Next: Go to Display switching type channel 1 (SwTyp submenu) with the middle button
Next: Go to Change hysteresis type channel 1 with right button

Change hysteresis type channel 1
Display: Flashing display of current setting
Text field: HYST
Mode display: C
Change: Use the left button to change the setting.
Confirm and back: Go to HYST submenu with the right button, so that the set value is applied.

Display switching type channel 1 (submenu SwTyp)
Numerical display: Switching type, in this case: OPEN
Text field: SwTyp
Bar graph: Pressure (display in set measuring range)
Next: Go to operating menu Switching points / Hysteresis / Switching function [1] with middle button
Next: Go to Change switching type channel 1 with right button

Change switching type channel 1
Display: Flashing display showing current setting
Text field: SwTyp
Mode display: C
Change: Use the left button to change the setting.
Confirm and back: Go to SwTyp submenu with the right button, so that the set value is applied.

Skip back to the measuring value display: Press the left and middle buttons briefly
2.13 Parameter setting for switching channel 2 (operating menu: Switching points / Hysteresis / Switching function [2])

Notes:
- These settings apply to switching channel 2 only
- The switching points may not be within the measuring range (4...20 mA), but can be in nominal range +5%.
- Set parameters are preserved even when the switching module is removed.
- The switching contacts are opened if the transmitter detects an error.

Operating menu Switching points / Hysteresis / Switching function (2)
Numerical display : None
Text field : SwCh2
Bar graph : Pressure (display in set measuring range)
Next : Go to Display switching point 2 (LEVEL submenu) with the middle button (the next operating menu is reached with)
Display switching point 2 (LEVEL submenu)
Numerical display : Limiting value in set unit, in this case mbar
Text field : Switches between LEVEL and mbar
Bar graph : Pressure (display in set measuring range)
Next : Go to Display hysteresis channel 2 (HYST submenu) with middle button
Next : Go to Change switching point channel 2 with right button OK
Change switching point channel 2
Display : Limiting value in set unit, in this case mbar
Text field : Switches between LEVEL and mbar
Mode display : C
Change : Select point to be changed with middle button Change the number with left button
Back : Go to the LEVEL submenu with the right button OK, so that the set value is applied.

Display hysteresis channel 2 (HYST submenu)
Numerical display : Hysteresis in set unit, in this case mbar
Text field : Switches between HYST and mbar
Bar graph : Pressure (display in set measuring range)
Next : Go to Display hysteresis type channel 2 (HYST submenu) with middle button
Next : Go to Change hysteresis 2 with right button OK
Change hysteresis channel 2
Display : Hysteresis in set unit, in this case mbar
Text field : Switches between HYST and mbar
Mode display : C
Change : Select point to be changed with middle button Change the number with left button
Confirm and back : Go to the HYST submenu with the right button OK, so that the set value is applied

Continued on next page
Parameter setting for switching channel 2 (operating menu: Switching points / Hysteresis / Switching function [2]) continued

Display hysteresis type channel 2 (submenu HYST)
- Numerical display: Hysteresis type, in this case: LO
- Text field: HYST
- Bar graph: Pressure (display in set measuring range)
- Next: Go to Display switching type channel 2 (SwTyp submenu) with the middle button.
- Next: Go to Change hysteresis type channel 2 with right button.

Change hysteresis type channel 2
- Display: Flashing display of current setting
- Text field: HYST
- Mode display: C
- Change: Use the left button to change the setting.
- Confirm and back: Go to HYST submenu with the right button, so that the set value is applied.

Display switching type channel 2 (submenu SwTyp)
- Numerical display: Switching type, in this case: OPEN
- Text field: SwTyp
- Bar graph: Pressure (display in set measuring range)
- Back: Go to operating menu Switching points / Hysteresis / Switching function (2) with middle button.
- Next: Go to Change switching type channel 2 with right button.

Change switching type channel 2
- Display: Flashing display showing current setting
- Text field: SwTyp
- Mode display: C
- Change: Use the left button to change the setting.
- Confirm and back: Go to SwTyp submenu with the right button, so that the set value is applied.

Skip back to the measuring value display: Press the left and middle buttons briefly.
2.14 Parameter setting für die HART-Schnittstelle (operating menu: HART / Adres / Currentmode)

Notes:
- This device complies with the HART 6.5 standard
- The HART addresses are valid in the 0-63 address range.
- No parameter settings are lost when the HART module is disassembled.
- The current output can be programmed in the current mode. The current mode defines whether the current output is fixed at the 4.00-mA current, or whether it tracks the pressure signal proportionally, when the HART address is non-zero.
- If the HART address is non-zero and the current mode is fixed, then the loop test is disabled.
- The HART-address and the current mode are not influenced by the factory data RESET.

Operating menu HART / Adres / Currentmode
Numerical display: None
Text field: HART
Bar graph: Pressure (display in set measuring range)
Next: Go to HART-Adres (Adres submenu) with the middle button
(the next measuring value display is reached with )
Display HART Adres (Adres submenu)
Numerical display: current setting Adres, in this case Adres 0
Text field: Adres
Bar graph: Pressure (display in set measuring range)
Next: Go to display Current mode (CUrr submenu) with the middle button
Next: Go to change Adres with the right button
Change HART Adres
Display: current setting Adres, in this case Adres 0
Text field: Adres
Mode display: C
Change: Select point to be changed with middle button
Change the number with left button
Back: Go to Adres submenu with the the right button, so that the set Adres is applied.
Display Current mode (Untermenü CUrr submenu)
Numerical display: CUrr
Text field: set Current mode, in this case FLOAT
Bar graph: Pressure (display in set measuring range)
Next: Go to operating menu HART/Adres/Currentmode with the middle button
Next: to change Current mode with the right button
Change Current mode
Display: CUrr
Text field: shows the selected current mode, in this case FLOAT
Mode display: C
Change: Use the left button to change the mode
Confirm and back: Go to change CUrr with the right button so that the set Current mode is applied.

Skip back to the measuring value display: Press the left and middle buttons briefly.
EU-Konformitätserklärung
EU Declaration UE de Conformité
Déclaration UE de Conformité

FAFNIR GmbH
Schnackenburgallee 149 c
22525 Hamburg / Germany

erklärt als Hersteller in alleiniger Verantwortung, dass das Produkt
decares as manufacturer under sole responsibility that the product
déclare sous sa seule responsabilité en qualité de fabricant que le produit

Druckmessumformer
Pressure Transmitter
Transmetteur de pression

PRESSURIX ...

den Vorschriften der europäischen Richtlinien
complies with the regulations of the European directives
est conforme aux réglementations des directives européennes suivantes

| 2011/65/EU | Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten | RoHS |
| 2011/65/EU | Restriction of the use of certain hazardous substances in electrical and electronic equipment | RoHS |
| 2011/65/UE | Limitation de l'utilisation de certaines substances dangereuses dans les équipements électriques et électroniques | RoHS |
| 2014/30/EU | Elektromagnetische Vortraglichkeit | EMV |
| 2014/30/EU | Electromagnetic compatibility | EMC |
| 2014/30/UE | Compatibilité électromagnétique | CEM |
| 2014/34/EU | Geräte und Betriebsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen | ATEX |
| 2014/34/EU | Equipment and protective systems intended for use in potentially explosive atmospheres | ATEX |
| 2014/34/UE | Appareils et systèmes de protection destinés à être utilisés en atmosphères explosibles | ATEX |
| 2014/68/EU | Bereitstellung von Druckgeräten auf dem Markt | DGRIL |
| 2014/68/EU | Making available on the market of pressure equipment | PED |
| 2014/68/UE | Mise à disposition sur le marché des équipements sous pression | DESP |

durch die Anwendung folgender harmonisierter Normen entspricht
by applying the harmonised standards
par l'application des normes
RoHS / RoHS / RoHS
EMV / EMC / CEM
ATEX / ATEX / ATEX
EN 50581-2012
EN 61326-1:2013
EN 60079-0:2012
EN 60079-11:2012
EN 60079-26:2007

Das Produkt entspricht den EMV-Anforderungen
The product complies with the EMC requirements
Le produit est conforme aux exigences CEM

Störaussendung / Emission / Émission
Störfestigkeit / Immunity / D'immunité

Die notizierte Stelle TÜV NORD CERT GmbH, 0044 hat eine EG-Baumusterprüfung durchgeführt und folgende Bescheinigung ausgestellt
The notified body TÜV NORD CERT GmbH, 0044 performed a EC-type examination and issued the certificate
L'organisme notifié TÜV NORD CERT GmbH, 0044 has effectué examen CE de type et a établi l’attestation

PRESSURIX ... Ex ...
TÜV 13 ATEX118658 X

Das druckhaltende Ausrüstungsstück entspricht dem DGRL-Konformitätsbewertungsverfahren
The pressure accessory complies with the PED conformity assessment procedure
L'accessoire sous pression est conforme avec la procédure d'évaluation DESP de la conformité

PRESSURIX ...

Ort, Datum / Place, Date / Lieu, Date

Geschäftsführer / Managing Director / Gérant: René Albrecht

Seite / Page / Page 1/1
Translation

(1) **EC-Type Examination Certificate**

(2) Equipment and protective systems intended for use in potentially explosive atmospheres, Directive 94/9/EC

(3) **Certificate Number**
   TÜV 13 ATEX 118658 X

(4) for the equipment:
   Pressure transmitter type PRESSURIX ... Ex ...

(5) of the manufacturer:
   FAFNIR GmbH

(6) **Address:**
   Bahrenfelder Straße 19
   22765 Hamburg
   Germany

   Order number:
   8000419392

   Date of issue:
   2013-06-26

(7) This equipment or protective system and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The TÜV NORD CERT GmbH, notified body No. 0044 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive. The examination and test results are recorded in the confidential report No. 13 203 118658.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type examination certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment or protective system must include the following:

   \[\text{Ex}\]  II 2 D  Ex ia IIIC T60 °C / T80 °C / T100 °C / T105 °C Db  resp.
   \[\text{II}\]  II 2 D  Ex ia IIIC T65 °C / T85 °C / T105 °C / T110 °C Db

   TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, notified by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

   The head of the notified body

\[\text{Signature}\]

Peters

*Hanover office, Am TÜV 1, 30519 Hannover, Fon +49 (0)511 986 1455, Fax +49 (0)511 986 1590*

This certificate may only be reproduced without any change, schedule included. Excerpts or changes shall be allowed by the TÜV NORD CERT GmbH
(13) **SCHEDULE**

(14) **EC-Type Examination Certificate No. TÜV 13 ATEX 118658 X**

(15) Description of equipment

The pressure transmitters PRESSURIX ... Ex ... are used for the pressure measurement of gases, vapours, and liquids in vessels and pipes. The housing may be mounted in explosion hazardous areas that require apparatus of the category 2G. The pressure port may be mounted in explosion hazardous areas that require apparatus of the category 1G.

The pressure transmitters PRESSURIX ... Ex ... may also be erected in explosion hazardous areas, which require apparatus of category 2D.

**Electrical data**

**Type PRESSURIX ... Ex ...**

Supply and signal circuit .............. in type of protection "Intrinsic Safety" Ex ia IIC resp. Ex ia IIIC

(Terminals

1[+], 2[-], 3[PE] resp.

Maximum values:

Terminals at the plug connector

1[+], 3[-], 4[PE])

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>U_i</td>
<td>30 V</td>
</tr>
<tr>
<td>I_i</td>
<td>150 mA</td>
</tr>
<tr>
<td>P_i</td>
<td>1 W</td>
</tr>
<tr>
<td>L_i</td>
<td>20 μH</td>
</tr>
<tr>
<td>C_i</td>
<td>4.8 nF</td>
</tr>
</tbody>
</table>

**Type PRESSURIX ... Ex PA ... (PROFIBUS)**

Supply and signal circuit .............. in type of protection "Intrinsic Safety" Ex ia IIC resp. Ex ia IIIC

(Terminals at the plug connector

1[+], 3[-], 4[screen])

only for the connection to a certified intrinsically safe circuit according to EN 60079-11 (FISCO)

Maximum values:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>U_i</td>
<td>17.5 V</td>
</tr>
<tr>
<td>I_i</td>
<td>380 mA</td>
</tr>
<tr>
<td>P_i</td>
<td>5.32 W</td>
</tr>
<tr>
<td>L_i</td>
<td>10 μH</td>
</tr>
<tr>
<td>C_i</td>
<td>negligibly small</td>
</tr>
</tbody>
</table>
Schedule EC-Type Examination Certificate No. TÜV 13 ATEX 118658 X

**Temperatures**

The permissible temperature ranges, the temperature classes respectively the maximum surface temperatures for pressure transmitters have to be taken from the following tables:

**Table 1: Pressure transmitters type PRESSURIX ... Ex ... of category 1/2 G**

<table>
<thead>
<tr>
<th>Temperature class</th>
<th>Ambient temperature range</th>
<th>Medium temperature range</th>
</tr>
</thead>
<tbody>
<tr>
<td>T6</td>
<td>-20 °C to +60 °C</td>
<td>-20 °C to +60 °C</td>
</tr>
<tr>
<td>T5</td>
<td>-20 °C to +80 °C</td>
<td>-20 °C to +60 °C</td>
</tr>
<tr>
<td>T4</td>
<td>-20 °C to +85 °C</td>
<td>-20 °C to +60 °C</td>
</tr>
</tbody>
</table>

**Table 2: Pressure transmitters type PRESSURIX ... Ex ... of category 2 G**

<table>
<thead>
<tr>
<th>Temperature class</th>
<th>Ambient and medium temperature range</th>
</tr>
</thead>
<tbody>
<tr>
<td>T6</td>
<td>-20 °C to +60 °C</td>
</tr>
<tr>
<td>T5</td>
<td>-20 °C to +80 °C</td>
</tr>
<tr>
<td>T4</td>
<td>-20 °C to +85 °C</td>
</tr>
</tbody>
</table>

**Table 3: Pressure transmitters type PRESSURIX ... Ex ... of category 2 D**

<table>
<thead>
<tr>
<th>Max. surface temperature</th>
<th>Ambient and medium temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>+60 °C</td>
<td>+40 °C</td>
</tr>
<tr>
<td>+80 °C</td>
<td>+60 °C</td>
</tr>
<tr>
<td>+100 °C</td>
<td>+80 °C</td>
</tr>
<tr>
<td>+105 °C</td>
<td>+85 °C</td>
</tr>
</tbody>
</table>

**Table 4: Pressure transmitters type PRESSURIX ... Ex PA ... of category 1/2 G (PROFIBUS)**

<table>
<thead>
<tr>
<th>Temperature class</th>
<th>Ambient temperature range</th>
<th>Medium temperature range</th>
</tr>
</thead>
<tbody>
<tr>
<td>T6</td>
<td>-20 °C to +60 °C</td>
<td>-20 °C to +55 °C</td>
</tr>
<tr>
<td>T5</td>
<td>-20 °C to +80 °C</td>
<td>-20 °C to +60 °C</td>
</tr>
<tr>
<td>T4</td>
<td>-20 °C to +85 °C</td>
<td>-20 °C to +60 °C</td>
</tr>
</tbody>
</table>

**Table 5: Pressure transmitters type PRESSURIX ... Ex PA ... of category 2 G (PROFIBUS)**

<table>
<thead>
<tr>
<th>Temperature class</th>
<th>Ambient and medium temperature range</th>
</tr>
</thead>
<tbody>
<tr>
<td>T6</td>
<td>-20 °C to +55 °C</td>
</tr>
<tr>
<td>T5</td>
<td>-20 °C to +80 °C</td>
</tr>
<tr>
<td>T4</td>
<td>-20 °C to +85 °C</td>
</tr>
</tbody>
</table>

**Table 6: Pressure transmitters type PRESSURIX ... Ex PA ... of category 2 D (PROFIBUS)**

<table>
<thead>
<tr>
<th>Max. surface temperature</th>
<th>Ambient and medium temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>+65 °C</td>
<td>+40 °C</td>
</tr>
<tr>
<td>+85 °C</td>
<td>+60 °C</td>
</tr>
<tr>
<td>+105 °C</td>
<td>+80 °C</td>
</tr>
<tr>
<td>+110 °C</td>
<td>+85 °C</td>
</tr>
</tbody>
</table>
Schedule EC-Type Examination Certificate No. TÜV 13 ATEX 118658 X

(16) Test documents are listed in the test report No. 13 203 118658.

(17) Special conditions for safe use

1. The pressure port of the pressure transmitter PRESSURIX ... Ex ... is allowed to be operated in an explosion hazardous atmosphere, which requires apparatus of the category 1, only if atmospheric conditions exist (temperature from -20 °C to +60 °C, pressure from 0.8 bar to 1.1 bar). If the explosion hazardous atmosphere on the pressure port requires apparatus of category 1, the maximum permissible medium temperatures are valid according to table 1 resp. table 4. The permissible operating pressures have to be taken from the regarding data of the manufacturer (technical documentation), if no explosion hazardous gas mixtures exist.

2. Since the intrinsically safe circuits are connected with the earth potential for safety reasons, potential equalization has to exist in the complete course of the erection of the intrinsically safe circuit (not valid for the PROFIBUS version).

3. The maximum surface temperature regarding dust explosion protection was determined without dust layer. Additional information has to be taken from EN 60079-14.

(18) Essential Health and Safety Requirements

no additional ones
Operating instructions

Pressure transmitter PRESSURIX … Ex …

I  Range of application

The PRESSURIX … Ex … pressure transmitters are suitable for absolute and relative pressure measurement of gases, vapours and liquids in a potentially explosive atmospheres.

II  Standards

The pressure transmitters are designed in accordance with the following European standards

- EN 60079-0:2009  Equipment - General requirements
- EN 60079-11:2012  Equipment protection by intrinsic safety "i"
- EN 60079-26:2007  Equipment with equipment protection level (EPL) Ga

III  Instructions for safe …

III.a  … use

The pressure transmitters are designed as intrinsically safe equipment and are suitable for use in a potentially explosive atmospheres. They are suitable for fitting in zone 0 and can be used for all gas groups (IIA, IIB and IIC). They may also be installed in zone 21 and used for all dust groups (IIIA, IIB and IIC).

The pressure transmitters are suitable for use in a FISCO system in accordance with EN 60079-25.

Measurement equipment which does not have oil or grease residues in the pressure connector are labelled as "oil and grease free".

The approval applies to equipment types:

PRESSURIX … Ex …

III.b  … Assembly or disassembly

Assembly and disassembly must be carried out with the power off!

In order to avoid soiling or damage, do not remove the protective cover or sleeve in front of the separating diaphragm until immediately before the assembly commences. Do not touch the front-flush diaphragm. In the case of measuring ranges up to 10 bar / 150 psi, there is a risk it could be deformed. This could affect the zero point and measurement characteristics of the equipment.

Pressure transmitters and diaphragm seals form a sealed system and must not be separated.

The housing in protection class IP66 consists of a two-chamber system in which the measuring cell is vented to the environment via a PTFE filter system directly. Protection class IP66 is only achieved if the screw cap is carefully screwed back down and hand-tightened after connection work or programming is complete.
III.c  … Installation
All wiring operations must solely be carried out with the power disconnected. Special EN rules and regulations, including EN 60079-14 and local installation regulations, must be observed.

Before commencing installation work, it is essential to ensure that the process for which the equipment will be used is suitable as regards the pressure range, overpressure resistance, substance compatibility, temperature resistance and the pressure connection. Seals must be suitable for the process fitting and must be resistant to the measurement material.

Fit the equipment to the process before carrying out electrical installation work.

Over-tightening of the process screws could result in a change in the zero point on the pressure transmitter (tightening fault).

General information (see also EN 60079-26, clause 4.6):
If the pressure transmitter is installed in the boundary wall between zone 0 and zone 1, it is essential to ensure that a minimum standard of IP67 is achieved after installation.

When the pressure transmitter is wired to the control unit (preferably blue-coloured cable), the approved inductance and capacitance must not be exceeded.

Wiring schematic:

The pressure transmitters must be integrated into the potential equalization.

III.d  … Calibration
To operate the equipment, security settings are not necessary.

III.e  … Commissioning
Before commissioning, all equipment must be checked to ensure it is properly connected and fitted. The power supply, as well as connected equipment, must be checked.

During commissioning, check the transmitter for pressure tightness.

III.f  … Maintenance, servicing and repairs
In general, the equipment is maintenance free. If there is a defect, it must be sent back to the manufacturer, FAFNIR, or one of its representatives.

The equipment does not comply with the dielectric strength requirements as set out in EN 60079-11, clause 6.3.13.

IV  Equipment labelling

1  Manufacturer:  PRESSURIX … Ex …
2  Type designation:  Ser. N°: …
3  Serial Number:  TÜV 13 ATEX 118658 X
4  Certificate Number:  TÜV 13 ATEX 118658 X
5  Ex marking:  II 1/2 G Ex ia IIC T4/T5/T6 Ga/Gb
                  II 2 G Ex ia IIC T4/T5/T6 Gb
                  II 2 D Ex ia IIIC Txx°C Db
6  CE marking:  CEE 0044
7  Technical data:  For data, see instruction manual
8  FISCO marking*:  FISCO field device

* Marking is valid for PROFIBUS version (PRESSURIX … Ex PA …)
V Technical data

The following safety-related values are defined with:

Input voltage: \( U_i \leq 30 \text{ V} \) \((17.5 \text{ V})\)*
Input current: \( I_i \leq 150 \text{ mA} \) \((380 \text{ mA})\)*
Input power: \( P_i \leq 1 \text{ W} \) \((5.32 \text{ W})\)*

The effective, externally effective capacitance and inductance are:

Internal capacitance: \( C_i \leq 4.8 \text{ nF} \) \((\text{negligibly small})\)*
Internal inductance: \( L_i \leq 20 \mu\text{H} \) \((10 \mu\text{H})\)*

When using the equipment in a potentially hazardous atmosphere, please consult the table below for the approved temperature ranges. These depend on the temperature class or surface temperature, and the category.

<table>
<thead>
<tr>
<th>Temperature class or max. surface temperature</th>
<th>Temperature range or max. ambient temperature</th>
<th>Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1/2G or equipment protection level Ga/Gb (pressure transmitter installed in the boundary wall)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T6</td>
<td>-20 °C ... +60 °C (+55 °C)*</td>
<td></td>
</tr>
<tr>
<td>T5</td>
<td>-20 °C ... +80 °C</td>
<td></td>
</tr>
<tr>
<td>T4, T3, T2, T1</td>
<td>-20 °C ... +85 °C</td>
<td></td>
</tr>
<tr>
<td>Category 2G or equipment protection level Gb (pressure transmitter completely installed in zone 1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T6</td>
<td>-20 °C ... +60 °C (+55 °C)*</td>
<td></td>
</tr>
<tr>
<td>T5</td>
<td>-20 °C ... +80 °C</td>
<td></td>
</tr>
<tr>
<td>T4, T3, T2, T1</td>
<td>-20 °C ... +85 °C</td>
<td></td>
</tr>
<tr>
<td>Category 2D or equipment protection level Db (pressure transmitter completely installed in zone 21)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>+60 °C (+65 °C)*</td>
<td>+40 °C</td>
<td></td>
</tr>
<tr>
<td>+80 °C (+85 °C)*</td>
<td>+60 °C</td>
<td></td>
</tr>
<tr>
<td>+100 °C (+105 °C)*</td>
<td>+80 °C</td>
<td></td>
</tr>
<tr>
<td>+105 °C (+110 °C)*</td>
<td>+85 °C</td>
<td></td>
</tr>
</tbody>
</table>

Table: Operating temperatures

For use in category 1/2G, the following applies:

The process pressure for the media must be between 0.8 bar and 1.1 bar where explosive vapour-air mixtures are present. If no explosive mixtures are present, the equipment may also be operated outside this range in accordance with the manufacturer’s specifications for it.

General information (see also EN 60079-0, clause 1):

Zone 0 is only specified under atmospheric conditions:

- Temperature range: -20 °C ... +60 °C
- Pressure range: 0.8 bar ... 1.1 bar
- Oxidants: Air (oxygen content approx. 21 %)

The pressure transmitters achieve a casing protection rating of:

Protection Class: IP66

* Values in parentheses are valid for PROFIBUS version (PRESSURIX ... Ex PA ...)

Page 3/4
VI Specific conditions

1. The pressure port of the pressure transmitter PRESSURIX ... Ex ... is allowed to be operated in an explosion hazardous atmosphere, which requires apparatus of the category 1, only if atmospheric conditions exist (temperature from -20 °C to +60 °C, pressure from 0.8 bar to 1.1 bar).
   If the explosion hazardous atmosphere on the pressure port requires apparatus of category 1, the maximum permissible medium temperatures are valid according to table 1 resp. table 4.
   The permissible operating pressures have to be taken from the regarding data of the manufacturer (technical documentation), if no explosion hazardous gas mixtures exist.

2. Since the intrinsically safe circuits are connected with the earth potential for safety reasons, potential equalization has to exist in the complete course of the erection of the intrinsically safe circuit (not valid for the PROFIBUS version).

3. The maximum surface temperature regarding dust explosion protection was determined without dust layer. Additional information has to be taken from EN 60079-14.