

# Device Type Manager 2600T Series Pressure Transmitters



15d\_0016x1

# Content

File .....	3
New .....	3
Open .....	3
Save .....	3
Save as .....	3
Print preview .....	3
Exit .....	3
Edit .....	4
Copy .....	4
Paste .....	4
Device .....	4
Disconnect .....	4
Load from device .....	4
Save to device .....	4
Reset to factory default .....	4
Straight EEPROM data save .....	4
Identification .....	4
Display .....	7
Bar .....	7
Digital .....	7
Trend .....	7
Diagnostics .....	8
Status / Selftest .....	8
Limit Value Infringements .....	8
Max. Values .....	8
Simulation .....	9
Configure .....	10
Differential Pressure Measurement .....	10
Static Pressure Measurement .....	16
Basic Parameters .....	16
Calibrate .....	18
Differential Pressure Measurement .....	18
Static Pressure Measurement .....	18
Current Output .....	19

# File

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## New

Creates a new data record for device pre-configuration. Option only available, if communication to device is disconnected.

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## Open

Loads a pre-configured data record from a storage medium into the user interface.

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## Save

Saves a data record to the same directory where it was loaded from.

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## Save as

Saves a data record to the data medium. Directory, file name and file extension are freely selectable.

---

## Print preview

Shows the essential data and parameters in a separate window. The data is not editable.

### File

#### Print

Prints the window content.

#### Print preview

Shows the window content in a preview window.

#### Exit

Closes the „Print preview“ window.

#### Help

Provides help information to the currently open „Print preview“ window.

---

## Exit

Closes the DTM window.

# Edit

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## Copy

MS Windows-specific function. Copies highlighted text into the MS Windows clipboard.

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## Paste

MS Windows-specific function. Pastes clipboard content into the activated text field.

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# Device

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## Disconnect

Disconnects the communication to the selected device.

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## Load from device

Allows for loading the entire data record of the selected device. The data is kept in the PC RAM.

Function is only available with existing connection to the device.

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## Save to device

Allows for saving of eventually modified data to the device. This function requires an existing connection to the device.

The parameters are firstly written to the RAM memory and then, without additional message, failsafely into the ROM memory.

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## Reset to factory default

Resets the device to the settings as specified in the order. Includes also the customer specific settings.

---

## Straight EEPROM data save

The parameters are saved to the EEPROM. An info window appears during the saving process. A further parameter modification is not possible until the saving process is finished.

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## Identification

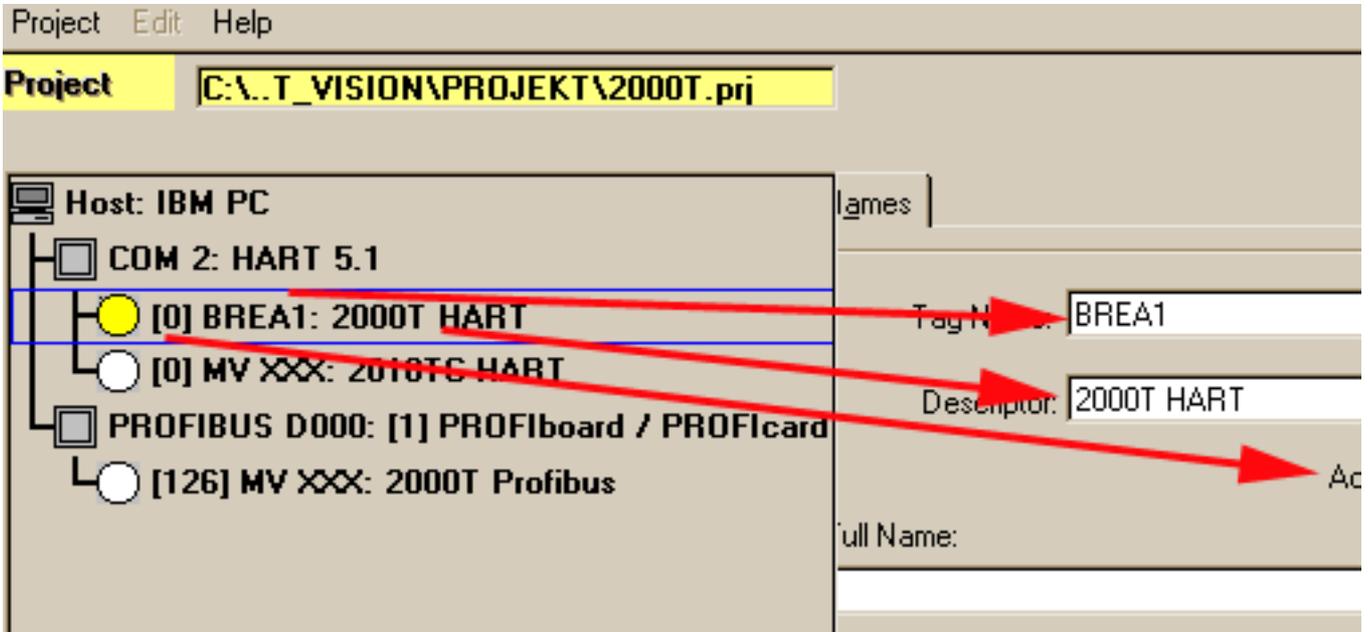
Display the data which are essential for the device and measuring point identification.

## Device

### Communication tag

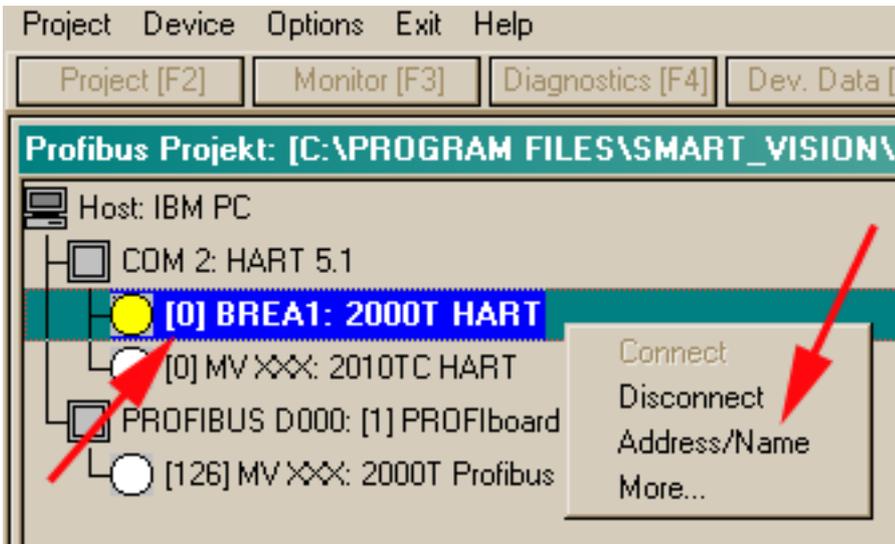
The transmitter requires a unique communication tag, if it is used in a FSK-bus mode. Use max. 8 alphanumeric characters or special characters. The communication tag is displayed in the project structure tree (PROJECT) right next to the address label (e. g. **BREA1**.)

Modifications are possible under: **Project\_Edit\_Edit\_ADDRESS/Name.**



### Address

Indicates the device address. It is displayed in the project structure tree (PROJECT) in front of the "Tag name" in angular brackets. The "address" is a numerical value.



Select an address between 1 and 25 if the transmitter is used for standard bus operation (MULTIDROP). If the buss address is higher than „0“ the transmitter provides a constant current signal of 4 mA, which does not follow the pressure signal.

In order to modify the slave address in the project structure tree, right-click onto device and select <Address/Name> in the pop-Up menu. Enter the new address in the text field of the following window and confirm with the <OK> button.

Enter a bus address for the selected transmitter. The transmitters in one bus line must use different bus addresses.

The address "0" sets the transmitter back to standard mode (4...20 mA).  
Buss system specific features concerning name, address, etc. apply for fieldbus instruments.

**Device Manufacturer**

Name of device manufacturer. Not editable.

**Device type**

Type of connected device. Not editable.

**Device Number**

Manufacturer determined serial no. Not editable.

**Description**

Enter the measuring point description. HART allows for max. 16 capital characters, numbers or special characters. Umlaut characters are not possible.  
The project structure tree displays the description right next to the tag name.

**Message**

Enter freely selectable text (max. 32 alphanumerical characters; e.g. " P-813101/10 ").

**Additional Information**

Displays

- Software version
- Hardware version
- Serial no.
- Communication type (e. g.HART)

**Further Measuring Point Description**

(Only for FIELDBUS devices!)

**Differential Pressure / Pressure Measurement**

Enter measuring point specific information (max. 32 Characters) for the differential pressure / pressure measurement. For information only.

**Output Differential Pressure/Pressure Measurement**

Enter measuring point specific information (max. 32 Characters) for the output differential pressure / pressure measurement. For information only.

**Output stat. Pressure**

Enter measuring point specific information (max. 32 Characters) for the output of stat. pressure measurement. For information only.

**Temperature Measurement**

Enter measuring point specific information (max. 32 Characters) for the temperature measurement. For information only.

**Output Temperature Measurement**

Enter measuring point specific information (max. 32 Characters) for the output temperature measurement. For information only.

**Flow Measurement**

Enter measuring point specific information (max. 32 Characters) for the flow measurement. For information only.

# Display

**Not** available in **offline** mode.

Measured values and output values are displayed either as a bar graph, digitally or in a trend diagram.

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## Bar

Colored, horizontal bar. Scaled acc. to the adjusted measuring span and the resulting percentage value.

Select in the pull-down menu either:

- Differential Pressure
  - Static Pressure
  - Sensor Temperature
  - Output Diff. Pressure
- 

## Digital

Colored digits display measuring or output values.

Select in the pull-down menu either:

- Differential Pressure
  - Static Pressure
  - Sensor Temperature
  - Output Diff. Pressure
- 

## Trend

If required, the following values can be displayed or saved as a numerical value:

- Differential Pressure
- Static Pressure
- Sensor Temperature
- Output Diff. Pressure

The time base (scan rate) is fixed (1s). Use the 4 pull-down menus to assign a colored bar graph to a measuring value. Then the highest / lowest possible values are displayed with the previously selected color assignment.

Activate the checkbox „CSV“ protocol to record the data as a numeric value. Determine file and path name in the following window. The file suffix is \*.csv.

Start the record procedure with the <Start> button. The record procedure takes approx. 20 minutes. If you do not stop the recording, the firstly recorded data is deleted; only the data of the last 20 minutes will be recorded.

# Diagnostics

Not available in **offline** mode.

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## Status / Selftest

The transmitter performs cyclically a selftest for the following parameters and components:

- Hardware electronics
- Memory check sum
- AD-converter
- Maintenance
- Configuration
- Characteristics
- Ident no.

A green check symbol indicates the „OK“ status; a red cross indicates the „Not OK“ status.

The test parameter test cycles are different. Click the <Selftest> button to check all parameters at the same time.

More detailed status messages can be displayed in the text field at the bottom of the window.

---

## Limit Value Infringements

An internal counter records where the output exceeds / falls short of the limit for the following values:

- Measuring span differential pressure
- Sensor range differential pressure
- Sensor range statical pressure
- Sensor temperature

The infringement are displayed in a non-editable text field. Each of these parameters can be reset to 0 with a <Reset> button. The infringements are not saved in a memory.

The reset is not possible with activated write protection.

---

## Max. Values

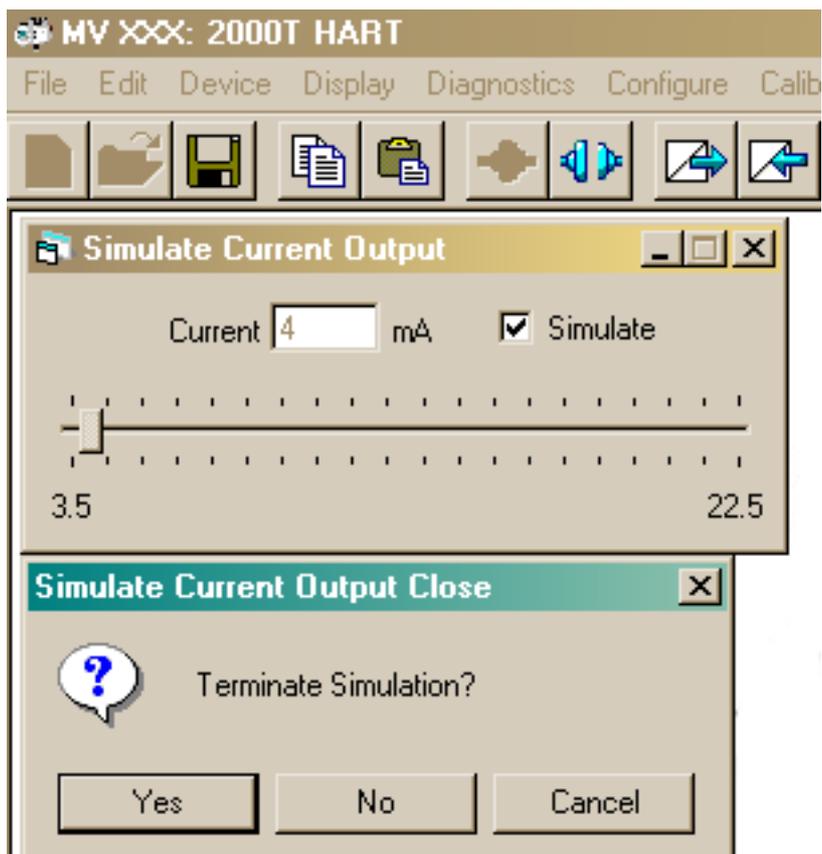
A non-editable text field displays the min. / max. values which occur during the operation (comparable to a trailer pointer):

- Differential pressure
- Statical pressure
- Sensor temperature

Each parameter can be reset to 0 via the <Reset> Button. The last min. / max. value will not be saved in case of a voltage drop.

The reset is not possible with activated write protection.

## Simulation



This function allows to set the transmitter to a constant output current; e. g. to check the connections for wire break.

Use the slider or the text field to determine the output current. The text field accepts values between 3.5 mA and 22.5 mA (one decimal place possible).

The output current is set to the pre-selected value (via slider or text field) once you activate the <Simulation> check box.

**The simulation mode can not be saved.**

A reminder message appears, if you close the simulation window or the DTM. Text field and slider are locked when the transmitter is in simulation mode.

# Configure

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## Differential Pressure Measurement

### Process variable

This tag is separated into the upper range

### Scaling

and the lower range

### Parallel shift

Select either „Value Input“ or „Process Pressure Transfer“ in the scaling range.

„Value input“ allows for the measuring range setting if you enter the upper range value and the lower range value into the appropriate text field.

„Process Pressure Transfer“ allows for the measuring range setting using the current pressure.

The setting is not possible with activated write protection.

### Value Input

#### Lower range value (pressure at 4 mA)

Enter your lower range value. Observe the transmitter minimum span. Value entry takes place in the unit shown.

If the unit is unsuitable for setting the measuring range you can alter it using "Pressure unit". Take care that the measuring values shown in the "Display" command are displayed following this unit.

Transmit the new lower measuring value via the **Device\_Save to Device** command.

If the value is out of the sensor limit, it will be set automatically to the limit value.

#### Upper Range Value (Pressure at 20 mA)

Enter the required upper range value here. Observe the transmitter minimum span. Value entry takes place in the unit shown.

If the unit is unsuitable for setting the measuring range you can alter it using "Pressure unit". Take care that the measuring values shown in the <Display> command are displayed in the following with this unit.

Transmit the new upper range value via **Device\_Save to Device**.

If the value is out of the sensor limit, it will be set automatically to the limit value.

### Unit

Select a unit for the process pressure. The unit set is also valid for all other values such as measuring range and balance points which are directly connected with the process pressure.

If the pressure dimensions are altered all associated values in the instrument data window will be converted to this dimension and displayed.

**Pressure values in other windows will not be affected by this dimension switch over.**

If the pressure dimensions are altered all associated values in the instrument data window will be converted to this dimension and displayed.

The unit is displayed on an indicator, if available.

### Process Pressure Transfer

By means of this method the output signal is calibrated. The display of the physical process pressure on the digital indicator or in SMART VISION is not influenced by this. To avoid this difference, a correction can be effected via the DTM and the command **Calibration\_Differential Pressure Measurement** and/or **Pressure Measurement\_ Input Balance**.

Check the device calibration after the correction.

The buttons <Set lower range value> and <Set upper range value> for the process pressure acceptance are only active if the DTM is connected to the device!

### Set Lower Range Value

After activating the line "Process pressure acceptance" the button <Set lower range value> will be active. "Set lower range value" allows the lower range value adjustment as a 4 mA-point via an applied pressure. This function is identical to the key 0% at the transmitter (if a control panel is available).



local control panel

The possible measuring deviation of the pressure pick-off should be at least 3 times lower than the required measuring deviation of the transmitter.

It is recommended (adjusted time constant is known!) to set the damping to zero (by means of keys plus LCD indicator or DTM).

If the applied pressure is constant, press the button. The new lower range value now is immediately taken over by the transmitter and it is stored failsafely 10sec. later.

Additionally, the new lower range value is displayed in line "Lower range value" in the field <Scaling>.

The adjusted measuring span is not affected by this, i.e. the upper range value changes by the same amount by which the lower range value has been changed, in so far as the measuring limits are not exceeded. In that case the measuring span is reduced automatically by the respective amount.

The setting is not possible with activated write protection.

### Set Upper Range Value

After activating the line "Process pressure acceptance" the button <Set upper range value> will be active. "Set upper range value" allows the upper range value adjustment as a 20 mA-point via an applied pressure. This function is identical to the key 100% at the transmitter (if a local control panel is available)..



local control panel

The possible measuring deviation of the pressure pick-off should be at least 3 times lower than the required measuring deviation of the transmitter.

It is recommended (adjusted time constant is known!) to set the damping to zero (by means of keys plus LCD indicator or DTM).

If the applied pressure is constant, press the button. The new upper range value now is immediately taken over by the transmitter and it is stored failsafely 10sec later.

Additionally, the new upper range value is displayed in line "Lower range value" in the field <Scaling>.

The adjusted measuring span is not affected by this, i.e. the lower range value changes by the same amount by which the upper range value has been changed, in so far as the measuring limits are not exceeded. In that case the measuring span is reduced automatically by the respective amount.

The setting is not possible with activated write protection.

### Parallel Shift

This function carries out a parallel shift of the characteristic curve so that it runs through a point determined by the user. This means that the output signal from several measuring instruments which measure the same process signal, can be set to the same value without carrying out a calibration with a pressure pre-set.

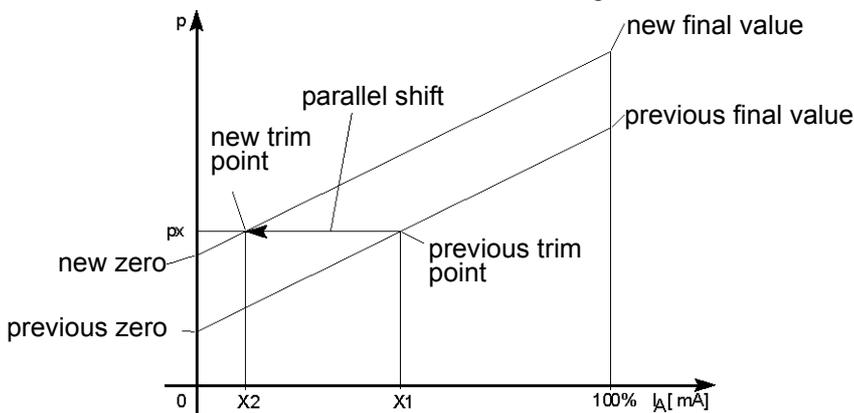
The parallel displacement function can be carried out for any point on the characteristic curve under the following conditions:

- the process signal lies within the measuring range set,
- the transmitter has a linear transmission behavior

The setting is not possible with activated write protection.

Entering a percentage value causes an offset shift of the measuring range.

The transmitter displays with applied pressure  $p_x$  the standardized output value  $x_1$  in percent. However, for the present application the value  $x_2$  should be displayed. Enter this  $x_2$  value in line "The present value corresponds to" and press the button <Execute>. The program calculates the new zero and the new final value and then accepts these new values in the lines "Lower range value" and "Upper range value" in the field "Scaling".



Select Straight EEPROM data save to save the new data failsafely to the transmitter memory.

### Oblique sensor

The function eliminates possible pressure discrepancies which can occur due to imbalances (oblique sensor) or other influences. Correction should therefore always take place in installed condition.

To carry out the correction the transmitter should be pressure-free, i.e. the process connections should be pressure-free or short-circuited.

If the present measuring value should be displayed, the window "Digital measuring value display" - display parameter "Differential pressure / pressure" has to be opened additionally - via the command **Display\_Digital**.

In some cases more than one calibration is required.

The setting is not possible with activated write protection.

The imbalance calibration should always take place before setting the zero point with the 0% button at the transmitter!

## Output

The "Output" tab is divided in an upper section "Scaling" and a lower section "Output parameter".

### Scaling

#### Unit

Select the unit for the free process variable. The selected unit does not affect the analogue output current of HART devices!

Select **Configure Basic Parameter** to configure the digital display for the free process variable.

The scaling of the output indicates the value of the output variable (OUT) assigned to the upper and lower range value. **Values of the free process variables in other windows are not affected by this unit selection.**

The digital display features max. 5 digits for the FREE PROCeSS VARIABLE.

#### **Lower limit**

Assign a freely selectable FREE PROCESS VARIABLE to the 0%- and 100%-point. Assign e. g. 5m to the 0%-point and 20 m to the 100%-point. In this example the FREE ROCESS VARIABLE indicates 12.5 m at 50%.

#### **Upper limit**

Assign a freely selectable FREE PROCESS VARIABLE to the 0%- and 100%-point. Assign e. g. 5m to the 0%-point and 20 m to the 100%-point. In this example the FREE PROCESS VARIABLE indicates 12.5 m at 50%.

### **Output Parameter**

#### **Damping**

Damp an irregular output signal of the transmitter caused by the process. Damping can be set between 0 sec. and 60 sec. in steps of 0.0001 sec.

The adjusted damping does not influence the digitally indicated measuring value in physical unit but only the derived quantities such as analog output current, free process variable, input signal for controllers, etc.

In addition you have the opportunity to set the damping on site at the transmitters via "local keys" and "LCD indicator" You will find the necessary steps in the corresponding manual.

#### **Lower Warning Limit**

Enter a value in order to generate a warning message, short before the output value falls below lower alarm limit.

#### **Upper Warning Limit**

Enter a value in order to generate a warning message, short before the output value exceeds the upper alarm limit.

#### **Lower Alarm Limit**

An alarm is generated if the measured value falls below the entered value.

#### **Upper Alarm Limit**

An alarm is generated if the measured value exceeds the entered value.

#### **Alarm Hystereses**

In case the measuring signal corresponds to the Alarm Limit Value, permanent alarm messages would occur. Enter a value > 0 in order to avoid permanent alarm messages.

### **Transfer Function**

The transfer function describes the process pressure processing in the transmitter. It affects the analog output current as well as the digitally issued percentage value and the free process variable. The digitally issued pressure value is not affected by the transfer function. It always sets the process pressure directly adjacent to the sensor.

When a configuration is completed any altered data must be loaded to the transmitter. Use the **Device\_Save to device** command.

## Characteristic Type

Use this combo box to select one of the following characteristics:

- Linearization
- Square root
- Square root to the 3rd power
- Square root to the 5th power
- Linearization curve
- Cylindric lying tank
- Spherical tank

### Linearization

The applied process pressure is converted depending on the measuring range set and issued as 4...20 mA for example. No further settings are possible here.

### Square Root

Is used for flow measurement according to differential pressure procedure. The "Square-rooted characteristic curve" can be adjusted in its lower section with a ZERO RESET and a LINEAR / SQUARE-ROOTED transition point.

The setting is not possible with activated write protection.

Selectable parameter:

- Zero adjuster
- Lin./ square root point

The measuring principle is based on the fact that a throttling device (e.g. an orifice, a nozzle or a venturi pipe) is built into a pipe in full flow. Building in the throttling device produces a static pressure difference between the intake and the throttle cross-section / outlet. The flow volume can be calculated from the measured pressure difference, the differential pressure and the measuring medium values under operating conditions. The context between flow volume and differential pressure follows a quadratic equation in this case.

### Zero Adjuster

For suppression of smaller flow volumes (e.g. run-out); the output signal is set to 0% when the measured flow is smaller than the value set.

Adjustment range: 0...15% based on the final flow value.

The zero adjuster is set to 6% of the final flow value by the factory, as long as no other instructions are received, and the lin./rad. transition point is set to 5%, i.e. the transmitter only works with the zero reset function.

### Lin./Square Root Point

Limits high gains which occur when square-rooting in the 0% area by the fact that the characteristic curve runs linearly up to the set value, and the actual square-rooting function first comes into play when the flow exceeds the set value.

Adjustment range: 5...20% based on the final flow value.

The zero adjuster is set to 6% of the final flow value by the factory, as long as no other instructions are received, and the lin./rad. transition point is set to 5%, i.e. the transmitter only works with the zero reset function.

(5%...20% flow  $\equiv$  0.25%...4%  $\Delta p \equiv$  4.8...7.2 mA)

### Square root to the 3rd power

This function is used for the flow measurement in open ducts for the application at rectangular retaining dams according to ISO 1438 or trapezoidal retaining dams and Venturi ducts according to ISA 1438. The function exponentiates the measured process pressure (height of damming h) by  $3/2$  so that the output value is proportional to the flow. This relation does not apply to other designs of Venturi ducts.

No further settings possible.

### **Square root to the 5th power**

This function is used for the flow measurement in open ducts for the application of triangular retaining dams (V cross-section) according to ISO 1438. The function exponentiates the measured process pressure (height of damming h) by 5/2 so that the output value is proportional to the flow. No further settings possible.

### **Linearization Curve**

It can be registered to a freely identifiable transfer function with a maximum of 22 base points. The first point is always the zero point, the last is always the final value. Neither of these points can be altered. A maximum of 20 points can be freely entered in between.

#### **Read**

The currently in the transmitter saved characteristic is loaded and displayed in a diagram.

#### **Write**

Saves a previously generated or modified characteristic in the device.

#### **Load**

Loads a saved characteristic from the memory (e. g. floppy or hard disk) and displays it in the user interface.

The file appendix is \*.crv.

Use the button <Write> to write the file into the transmitter.

#### **Save**

Saves a previously generated or modified characteristic in a freely selectable directory on a floppy or hard disk.

#### **New**

Loads the linear standard characteristic into the DTM. Use the <Change> button for individual configuration.

#### **Change**

It can be registered to a freely identifiable transfer function with a maximum of 22 base points. The first point is always the zero point, the last is always the final value. Neither of these points can be altered. A maximum of 20 points can be freely entered between them. Linear interpolation takes place between the individual points. The points are defined for each axis as a percentage value.

Highlight the parameter you want to delete or change and use the corresponding button. Two text fields will appear if you click onto <Change>. Enter your values. In order to avoid characteristic curve ambiguity during entry, the X axis value of the value to be entered must be equal to or larger than the previous one.

Use the <Accept> or <Cancel> button for the appropriate action.

The entered values are subject to a plausibility check in order to avoid any faulty settings.

Use the <OK> button to confirm the new characteristic and to display it in the diagram. A star symbol (\*) above the <Change> button indicates, that the new characteristic is not yet saved in the transmitter.

The setting is not possible with activated write protection.

### **Cylindrical lying tank**

This function is valid for cylindrical tanks with flat, semi-spherical, elliptic or pseudo elliptic end. The transmitter calculates the volume from the measured filling level.

### **Spherical Tank**

This function is valid for spherical tanks with. The transmitter calculates the volume from the measured filling level

## Digitalization Behaviour

This function allows the adaptation of the pressure/differential pressure input to special measuring tasks with respect to the time behaviour. Input signal fluctuations which for instance can especially occur with a high spread in the lower range of a square-rooting characteristic.

Activate the checkbox <Manual> for manual parameter setting of either:

- threshold value
- threshold value time
- integration time

### Threshold Value

For a high integration time (> 0.1s) a low threshold value can be a good compromise between high resolution and response to fast changes in the process.

An integration time of 0.1 s and a damping value of 0s ensures the fastest behaviour. Select **Device\_Save to Device** in order to save the new parameters failsafely.

### Threshold Time

Enter values between 10ms ... 200ms in steps of 10ms.

### Integration Time

The time constant (integration time constant) defines the integration time of the measuring value received from the A/D converter at the input of the transmitter electronics. It can be set between 100ms and 1.300ms.

A high integration time means that the transmitter works with full accuracy and has completely reached the final value after 1.3 sec. after a unit switchover.

For a high spread it would be sensible to select a large integration time to be sure of reaching adequate accuracy for high resolution.

The automatic setting can offer help here, as it sets the integration time sensibly depending on the spread set.

Select **Device\_Save to device** to save the new parameters failsafely to the transmitter.

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## Static Pressure Measurement

Select the unit for the static pressure. If the unit is changed, all corresponding values will be converted to this unit and displayed.

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# Basic Parameters

## General

### Write Protection

If "Device write-protected" is selected, no data can be written from the communication tool to the device.

### Local Operation

Switch on/ off completely the keyboard of the transmitter to protect the settings against inadmissible access.

### Date

Freely editable text field to enter the date for information only. Further parameters do not have access to this field.

### Display Value

The alphanumeric indicator can display the following values:

- output pressure (pressure/differential pressure in physical units)
- percent value pressure (output current in percent),
- current (output current in mA),

Values and display are subject to a plausibility check.

Apart from the measured values the indicator shows diagnosis reports, high and low alarm, a measured value overrun, as well as configuration changes. If a number value can no longer be displayed as the unit is too small, the next higher unit is displayed automatically. The changed unit is automatically reset to the adjusted unit when the value is again within the specified range.

An indicator can be mounted additionally without any problems.

### Sensor Temperature Unit

Please enter here the unit for the sensor temperature.

If the temperature dimensions are altered, all associated values will be converted to this dimension and displayed

## Current

If a serious function disturbance is detected during the internal monitoring routines, the transmitter regulates the output current as a message to a defined minimum, maximum or last value. Via this current the user can identify the error.

With "Output during fault" the control direction of the output signal can be selected in case of a failure:

- "High alarm current" means that the signal is modulated to the high alarm current.
- "Low alarm current" modulates the signal to the low alarm current.
- "Keep last current value" means that the current value during failure is still issued continuously.

The "Low alarm current" and the "High alarm current" are also set in this field.

Limits:

- Low alarm current 3.5...4 mA,
- High alarm current 20...22.5 mA.

You can find appropriate information about detection of where and what fault has occurred by using **Diagnosis\_Status / Self test**.

## Sensor

Depending on the design, the following lines can be displayed:

- Lower Sensor Limit
- Upper Sensor Limit
- Rated Pressure
- Pressure Connection
- Flange Material
- Sealing Ring Material
- Blanking Plug
- Diaphragm Material
- Filling Liquid

Data, as for example sealing ring material, which can be changed at the sensor can also be changed in the associated text fields.

Use the appropriate pulldown menu to select the currently available components if necessary, for example due to device alterations or hardware updates.

The entry "Special" in the table means that the device version has been modified due to requests on ordering, and does not match the versions described in the official sales list.

"Not available" means that this feature is not necessary for this device version or was not ordered.

All data is used for information and measuring point description only.

## Remote Seal

If the transmitter is equipped with a remote seal, this additional tab informs about:

- number of remote seals
- type
- diaphragm material
- filling liquid.

# Calibrate

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## Differential Pressure Measurement

### Adjust Input

#### Measured Values

The measured values process value and sensor temperature are refreshed cyclically.

#### Balance Points

In case of a possible drift of the sensor, the function allows an adjustment of the process pressure which is read from the sensor to the electronic unit. Apply a constant pressure (lower and upper pressure value) to the sensor. The process pressure which is read either on the digital indicator or the user interface (in the window "Measured values" - line "Process pressure") must correspond to the applied pressure.

### **Lower Balance Point**

In case of deviations a correction can be carried out. A max. accuracy is reached when the adjusted span, i.e. upper and lower range value, is adjusted. For balancing apply also the lower pressure value. Enter now the applied pressure value in the text field "**Lower balance point**" and press the button <Adjust>. The value displayed now under "Process value" in the field "Measured values" must correspond exactly to the applied pressure. If necessary, the repeat the procedure.

### **Upper Balance Point**

When completed apply the upper pressure value to adjust. Enter now the applied pressure value in the text field "**Upper balance point**" and press the button <Adjust>. The value displayed then under "Process value" in the "Measured values" field must correspond exactly to the applied pressure. If necessary, the adjust procedure has to be repeated.

The setting is not possible with activated write protection.

Select Device\_Save to Device in the menu to save the parameters into the transmitter.

### **Sensor Temperature**

An adjustment of the sensor temperature is effected by selecting the displayed temperature value. The unit cannot be changed.

For balancing press the button <Adjust>.

---

## **Static Pressure Measurement**

### **Measured Value**

The process value is cyclically refreshed.

### **Balance Points**

The function allows to correct a possible drift of the pressure sensor. For this purpose it is necessary to apply a constant pressure (lower and upper pressure) simultaneously to both process connections of the sensor. For „lower pressure“ and „upper pressure“ it is most useful to select the operating range of the static pressure. This ensures the max. accuracy.

The pressure, either read on the LCD indicator or the user interface (in the window "Measured values" - line "Process pressure"), must correspond to the applied pressure.

Correct the values case of deviations. Apply the lower pressure for balancing. Enter now the applied pressure value in the text field "Lower balance point" and press the <Adjust> button. The value displayed then under "Process value" in the field "Measured values" must correspond exactly to the applied pressure. Repeat the procedure if necessary.

When completed apply the upper pressure for balancing. Enter now the applied pressure value in the text field "Upper balance point" and press the <Adjust> button. The value displayed then under "Process value" in the "Measured values" field must correspond exactly to the applied pressure. Repeat the procedure if necessary.

The setting is not possible with activated write protection.

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## Current Output

### Adjust Output

In Standard Bus Operation (Multidrop operation) no selection and/or entries are possible.

The "Output current" is refreshed cyclically. The field "Current output" is loaded with the last current value when opening the window, if "Standard Mode" has been selected. In other cases it will be set to 4 mA when "Adjustment 4mA" is selected or to 20 mA when "Adjustment 20mA" is selected.

Compensate the deviations if the measured and in the DTM displayed current are different. Calibrate the D/A converter at 4 mA and 20 mA.

**This function requires a direct communication to the transmitter which may not be interrupted during the adjust procedure!**

Select <Adjust 4 mA> or <Adjust 20 mA>. The transmitter is set to either 4 mA or 20 mA constant current. Connect a high-accuracy ammeter to the transmitter output. The deviation between the measured and the displayed current may not exceed 3  $\mu$ A.

The setting is not possible with activated write protection.

A message will be displayed, if the constant current can not be selected due to activated write protection (e. g. high-alarm or saving procedure). De-activate the write protection or change to DIAGNOSTICS.

Select **Device\_Save to Device** to save the corrected parameters into the transmitter.

#### Adjustment 4 mA

To adjust the D/A converter at the transmitter output, the analog output current is constantly set to 4 mA when activated.

Measure the analog output current of the transmitter with a high-precision ammeter and change the program from "Standard Mode" to "Adjustment 4 mA". The transmitter will then be set to the 4 mA balance current. Enter the current value measured at the output of the transmitter in the input field "Measured current" and press the <Adjust> button. If the value displayed by the ammeter is below 3.997 mA or above 4.003 mA, press the <Adjust> button again to repeat the procedure. When a tolerance of  $\pm 3 \mu$ A around the 4 mA point is reached, the adjustment is completed.

If you select another tab or quit the window, the program switches automatically back to "Standard Mode".

#### Adjustment 20 mA

To adjust the D/A converter at the transmitter output, the analog output current is constantly set to 20 mA when activated.

Measure the analog output current of the transmitter with a high-precision ammeter and change the program from "Normal Operation" to "Adjustment 20mA". The transmitter will then be set to the 20 mA balance current. Enter the current value measured at the transmitter output in the input field "Measured current" and press the <Adjust> button. If the value displayed by the ammeter is below 19.997 mA or above 20.003 mA, press the <Adjust> button again to repeat the procedure. When a tolerance of  $\pm 3 \mu$ A around the 20 mA point is reached, the adjustment is completed.

If you select another tab or quit the window, the program switches automatically back to "Standard Mode".

Subject to technical changes.

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