

Description of Device Parameters

F2058HRTD

4 to 20 mA RTD transmitter

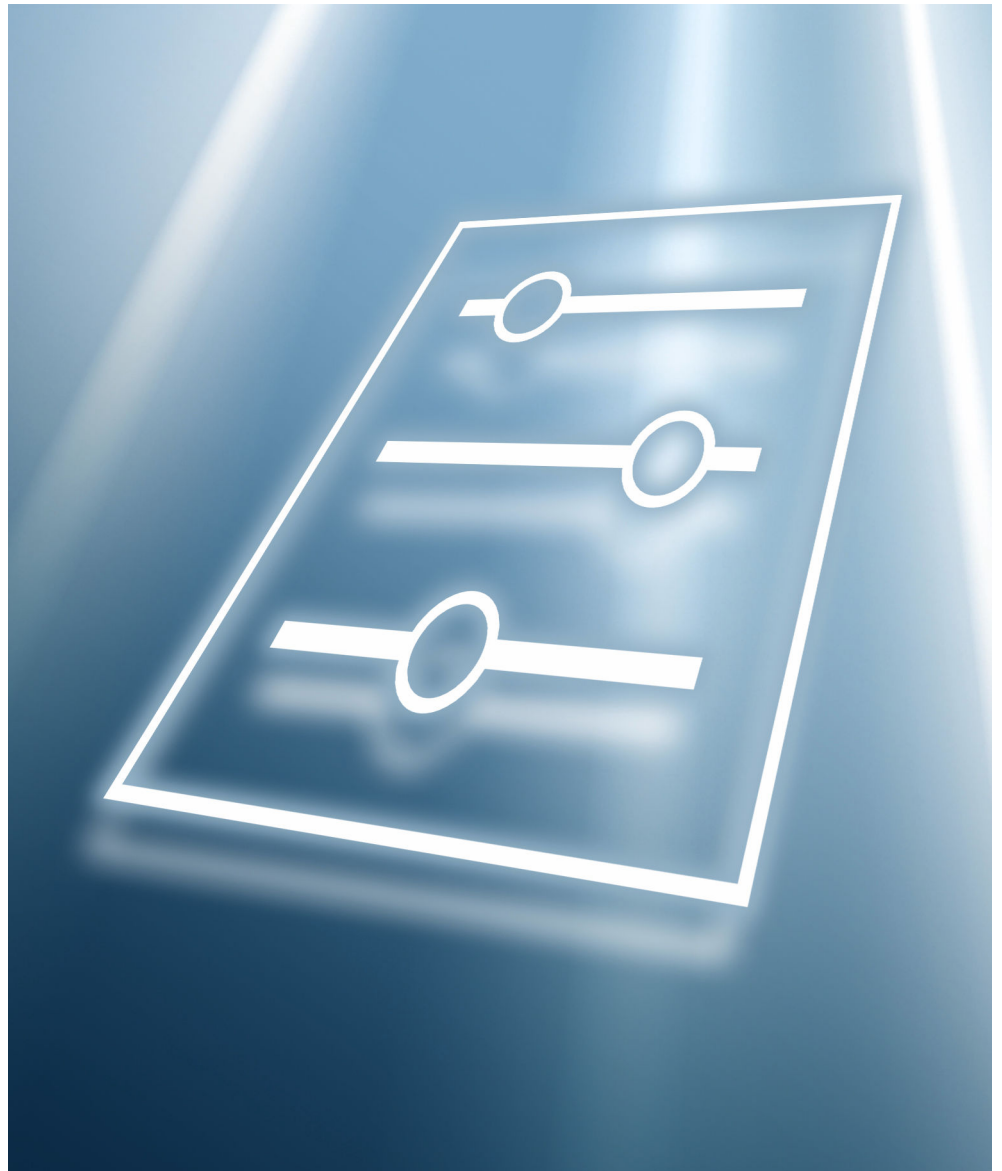


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1 About this document

1.1 Document function

The document is part of the Operating Instructions and serves as a reference for parameters, providing a detailed explanation of each individual parameter of the operating menus.

It is used to perform tasks that require detailed knowledge of the function of the device:








- Optimal adaptation of the measurement to difficult conditions
- Detailed configuration of the communication interface
- Error diagnostics in difficult cases

1.2 Target group

The document is aimed at specialists who work with the device over the entire life cycle and perform specific configurations.

1.3 Using this document

1.3.1 Symbols for certain types of information

Symbol	Meaning
	Tip Indicates additional information.
	Reference to documentation
	Reference to page
	Reference to graphic
 A0028662	Operation via local display
 A0028663	Operation via operating tool
 A0028665	Write-protected parameter




1.3.2 Information on the document structure

The parameters of all the operating menus are described in this document.

Standard mode, which guides the user through all the device parameters that are needed for basic commissioning and contains all the current measured values and parameters for the unique identification of the device:




- Basic setup
- Device information

Expert mode, which guides the user automatically through all the device parameters that are needed for complete commissioning:

- **Diagnostics** menu (→  14)
- **Application** menu (→  16)
- **System** menu (→  24)


1.3.3 Structure of a parameter description

The individual parts of a parameter description are described in the following section:

Complete parameter name	Write-protected parameter = 
Navigation	 Navigation path to the parameter via the operating tool  The names of the menus, submenus and parameters are abbreviated to the form in which they appear on the display and in the operating tool.
Prerequisite	The parameter is only available under these specific conditions
Description	Description of the parameter function
Selection	List of the individual options for the parameter <ul style="list-style-type: none"> ■ Option 1 ■ Option 2
User entry	Input range for the parameter
User interface	Display value/data for the parameter
Factory setting	Default setting ex works (if not explicitly selected)
Additional information	Additional explanations (e.g. in examples): <ul style="list-style-type: none"> ■ For individual options ■ For display values/data ■ For the input range ■ For the factory setting ■ For the parameter function

1.4 Documentation

The Description of Device Parameters is part of the following documentation:

 Measuring device F2058HRTD_OTMT31: **BA022220**















2 Overview of the operating menu

The following table provides an overview of the menu structure of the operating menu and its parameters. The page reference indicates where the associated description of the submenu or parameter can be found.

Basic setup	→ 7
Device information	→ 12
Expert	→ 14

3 "Basic setup" menu

Navigation  Basic setup

Basic setup	
Device tag	→  7
Unit	→  8
Sensor type	→  8
Connection type	→  8
2-wire compensation	→  9
Lower range value output	→  9
Upper range value output	→  9
Failure mode	→  9
Call./v. Dusen coeff. R0	→  10
Call./v. Dusen coeff. A	→  10
Call./v. Dusen coeff. B	→  10
Call./v. Dusen coeff. C	→  11
Sensor lower limit	→  11
Sensor upper limit	→  11


Device tag

Navigation  Basic setup → Device tag


Description Displays the name for the measuring point.

User entry Character string comprising numbers, letters and special characters (32)


Unit

Navigation	 Basic setup → Unit
Description	Selection of the unit for all measured values.
Selection	<i>SI units</i> <ul style="list-style-type: none"> ■ °C ■ K <i>Custom-specific units</i> <ul style="list-style-type: none"> °F


Sensor type

Navigation	 Basic setup → Sensor type
Description	<p>Use this function to select the sensor type for the sensor input.</p> <p>Info:</p> <p>Please observe the terminal assignment when connecting the sensor.</p>
Selection	<ul style="list-style-type: none"> ■ Pt100 IEC60751, a=0.00385 (1) ■ Pt1000 IEC60751, a=0.00385 (4) ■ Pt100 JIS C1604, a=0.003916 (5) ■ Pt100 GOST 6651-94, a=0.00391 (9) ■ RTD Platinum (Callendar/van Dusen)
Factory setting	Pt100 IEC60751, a=0.00385 (1)


Connection type

Navigation	 Basic setup → Connection type
Description	Use this function to select the connection type for the sensor.
Selection	<ul style="list-style-type: none"> ■ 2- wire ■ 3- wire ■ 4- wire
Factory setting	4- wire


2-wire compensation

Navigation	 Basic setup → 2-wire compensation
Description	Use this function to specify the resistance value for two-wire compensation in RTDs.
User entry	0.0 to 30.0 Ohm
Factory setting	0 Ohm


Lower range value output

Navigation	 Basic setup → Lower range value output
Description	Use this function to assign a measured value to the current value 4 mA. Info: The set point that can be set depends on the sensor type used in the Sensor type parameter.
User entry	-50 000.0 to 50 000.0
Factory setting	0.0

Upper range value output

Navigation	 Basic setup → Upper range value output
Description	Use this function to assign a measured value to the current value 20 mA. Info: The set point that can be set depends on the sensor type used in the Sensor type parameter.
User entry	-50 000.0 to 50 000.0
Factory setting	100

Failure mode

Navigation	 Basic setup → Failure mode
Description	Use this function to select the signal on alarm level of the current output in the event of an error.

Selection ■ Max.
 ■ Min.

Factory setting Min.

Call./v. Dusen coeff. R0

Navigation  Basic setup → Call./v. Dusen coeff. R0

Description Use this function to set the R0 value for sensor linearization with the Callendar/Van Dusen polynomial.

User entry 10.0 to 4 000.0 Ohm

Factory setting 100 Ohm

Call./v. Dusen coeff. A

Navigation  Basic setup → Call./v. Dusen coeff. A

Description Use this function to set the coefficients for sensor linearization with the Callendar/Van Dusen polynomial.

User entry 3.0E-03 to 4.0E-03

Factory setting 3.9083E-03

Call./v. Dusen coeff. B


Navigation  Basic setup → Call./v. Dusen coeff. B

Description Use this function to set the coefficients for sensor linearization with the Callendar/Van Dusen polynomial.


User entry -2.0E-06 to 2.0E-06

Factory setting -5.775E-07


Call./v. Dusen coeff. C

Navigation	 Basic setup → Call./v. Dusen coeff. C
Description	Use this function to set the coefficients for sensor linearization with the Callendar/Van Dusen polynomial.
User entry	-1.0E-09 to 1.0E-09
Factory setting	-4.183E-12

Sensor lower limit







Navigation	 Basic setup → Sensor lower limit
Prerequisite	The RTD platinum (Callendar/Van Dusen) option is enabled in the Sensor type parameter
Description	Use this function to set the lower calculation limit for special sensor linearization.
User entry	Depends on the sensor type selected
Factory setting	Depends on the sensor type selected

Sensor upper limit

Navigation	 Basic setup → Sensor upper limit
Prerequisite	The RTD platinum (Callendar/Van Dusen) option is enabled in the Sensor type parameter
Description	Use this function to set the upper calculation limit for special sensor linearization.
User entry	Depends on the sensor type selected
Factory setting	Depends on the sensor type selected

4 "Device information" menu

Navigation  Device information

Device information	
Serial number	→  12
Firmware version	→  12
Output current	→  13
Percent of range	→  13
Sensor value	→  13
Device temperature	→  13

Serial number

Navigation  Device information → Serial number

Description Displays the serial number of the measuring device. The serial number can be used to identify the measuring device and to retrieve further information on the measuring device, such as the related documentation, via the Device Viewer or Operations app.

Additional information:

The serial number can also be found on the nameplate of the sensor and transmitter.

User interface Character string comprising numbers, letters and special characters


Firmware version

Navigation  Device information → Firmware version


Description Use this function to view the device firmware version installed.

User interface Character string comprising numbers, letters and special characters


Output current

Navigation	 Device information → Output current
Description	Use this function to view the calculated output current in mA.
User interface	3.58 to 23.0 mA


Percent of range

Navigation	 Device information → Percent of range
Description	Use this function to display the measured value in % of the span.
User interface	Signed floating-point number

Sensor value




Navigation	 Device information → Sensor value
Description	Use this function to display the current measured value at the sensor input.
User interface	Signed floating-point number

Device temperature

Navigation	 Device information → Device temperature
Description	Use this function to display the current electronics temperature.
User interface	Signed floating-point number

5 "Expert" menu







Navigation  Expert

Expert	
▶ Diagnostics	→  14
▶ Application	→  16
▶ System	→  24


5.1 "Diagnostics" submenu



Settings and information concerning diagnostics as well as help for troubleshooting

Navigation  Expert → Diagnostics


▶ Diagnostics	
▶ Active diagnostics	→  14
Actual diagnostics	→  15
Previous diagnostics	→  15
▶ Simulation	→  15
Current output simulation	→  15
Current output value	→  16

5.1.1 "Active diagnostics" submenu


Navigation  Expert → Diagnostics → Active diagnostics

▶ Active diagnostics	
Actual diagnostics	→  15
Previous diagnostics	→  15

Actual diagnostics

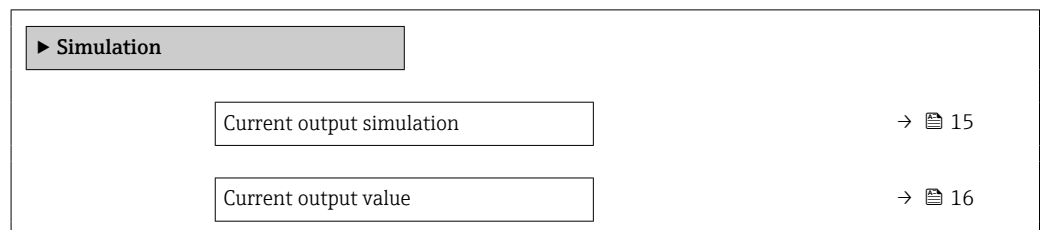
Navigation	 Expert → Diagnostics → Active diagnostics → Actual diagnostics
Description	Displays the currently active diagnostic message. If there is more than one pending diagnostic event, the message for the diagnostic event with the highest priority is displayed.
User interface	Symbol for diagnostic behavior, diagnostic code and short message.

Previous diagnostics


Navigation	 Expert → Diagnostics → Active diagnostics → Previous diagnostics
Description	Displays the diagnostic message for the last diagnostic event that has ended.
User interface	Symbol for diagnostic behavior, diagnostic code and short message.

5.1.2 "Simulation" submenu

Navigation  Expert → Diagnostics → Simulation



Current output simulation

Navigation	 Expert → Diagnostics → Simulation → Current output simulation
Description	Use this function to switch simulation of the current output on and off. While simulation is in progress the display a diagnostics message of the "function check" category (C).
Selection	<ul style="list-style-type: none"> ■ Off ■ On
Factory setting	Off

Current output value

Navigation	Expert → Diagnostics → Simulation → Current output value
Description	Use this function to set a current value for the simulation. In this way, users can verify the correct adjustment of the current output and the correct function of downstream switching units.
User entry	3.58 to 23.0 mA
Factory setting	3.58 mA

5.2 "Application" submenu


Functions for detailed process adaptation to integrate the device optimally into your application

Navigation Expert → Application

▶ Application																											
<table border="0" style="width: 100%;"> <tr> <td colspan="2" style="background-color: #e0e0e0; padding: 5px;">▶ Measured values</td> </tr> <tr> <td style="padding: 5px;">Sensor value</td> <td style="text-align: right; padding: 5px;">→ ⓘ 17</td> </tr> <tr> <td style="padding: 5px;">Output current</td> <td style="text-align: right; padding: 5px;">→ ⓘ 18</td> </tr> <tr> <td style="padding: 5px;">Percent of range</td> <td style="text-align: right; padding: 5px;">→ ⓘ 18</td> </tr> <tr> <td style="padding: 5px;">Device temperature</td> <td style="text-align: right; padding: 5px;">→ ⓘ 18</td> </tr> <tr> <td colspan="2" style="background-color: #e0e0e0; padding: 5px;">▶ Sensor</td> </tr> <tr> <td style="padding: 5px;">Unit</td> <td style="text-align: right; padding: 5px;">→ ⓘ 19</td> </tr> <tr> <td style="padding: 5px;">Sensor type</td> <td style="text-align: right; padding: 5px;">→ ⓘ 19</td> </tr> <tr> <td style="padding: 5px;">Connection type</td> <td style="text-align: right; padding: 5px;">→ ⓘ 20</td> </tr> <tr> <td style="padding: 5px;">2-wire compensation</td> <td style="text-align: right; padding: 5px;">→ ⓘ 20</td> </tr> <tr> <td style="padding: 5px;">Sensor offset</td> <td style="text-align: right; padding: 5px;">→ ⓘ 20</td> </tr> <tr> <td style="padding: 5px;">Damping</td> <td style="text-align: right; padding: 5px;">→ ⓘ 20</td> </tr> <tr> <td style="padding: 5px;">Call./v. Dusen coeff. R0</td> <td style="text-align: right; padding: 5px;">→ ⓘ 21</td> </tr> </table>	▶ Measured values		Sensor value	→ ⓘ 17	Output current	→ ⓘ 18	Percent of range	→ ⓘ 18	Device temperature	→ ⓘ 18	▶ Sensor		Unit	→ ⓘ 19	Sensor type	→ ⓘ 19	Connection type	→ ⓘ 20	2-wire compensation	→ ⓘ 20	Sensor offset	→ ⓘ 20	Damping	→ ⓘ 20	Call./v. Dusen coeff. R0	→ ⓘ 21	
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2-wire compensation	→ ⓘ 20																										
Sensor offset	→ ⓘ 20																										
Damping	→ ⓘ 20																										
Call./v. Dusen coeff. R0	→ ⓘ 21																										


Call./v. Dusen coeff. A	→ 📄 21
Call./v. Dusen coeff. B	→ 📄 21
Call./v. Dusen coeff. C	→ 📄 21
Sensor lower limit	→ 📄 22
Sensor upper limit	→ 📄 22
▶ Current output	→ 📄 22
Lower range value output	→ 📄 23
Upper range value output	→ 📄 23
Failure mode	→ 📄 23
Current trimming 4 mA	→ 📄 24
Current trimming 20 mA	→ 📄 24

5.2.1 "Measured values" submenu

Navigation  Expert → Application → Measured values

▶ Measured values	
Sensor value	→ 📄 17
Output current	→ 📄 18
Percent of range	→ 📄 18
Device temperature	→ 📄 18


Sensor value

Navigation  Expert → Application → Measured values → Sensor value


Description Use this function to display the current measured value at the sensor input.

User interface Signed floating-point number


Output current

Navigation	 Expert → Application → Measured values → Output current
Description	Use this function to view the calculated output current in mA.
User interface	3.58 to 23.0 mA

Percent of range







Navigation	 Expert → Application → Measured values → Percent of range
Description	Use this function to display the measured value in % of the span.
User interface	Signed floating-point number

Device temperature

Navigation	 Expert → Application → Measured values → Device temperature
Description	Use this function to display the current electronics temperature.
User interface	Signed floating-point number

5.2.2 "Sensor" submenu

Navigation  Expert → Application → Sensor

▶ Sensor	
Unit	→  19
Sensor type	→  19
Connection type	→  20
2-wire compensation	→  20
Sensor offset	→  20
Damping	→  20

Call./v. Dusen coeff. R0	→ 📄 21
Call./v. Dusen coeff. A	→ 📄 21
Call./v. Dusen coeff. B	→ 📄 21
Call./v. Dusen coeff. C	→ 📄 21
Sensor lower limit	→ 📄 22
Sensor upper limit	→ 📄 22


Unit

Navigation	📄 Expert → Application → Sensor → Unit
Description	Selection of the unit for all measured values.
Selection	<i>SI units</i> <ul style="list-style-type: none"> ■ °C ■ K <i>Custom-specific units</i> <ul style="list-style-type: none"> °F


Sensor type

Navigation	📄 Expert → Application → Sensor → Sensor type
Description	<p>Use this function to select the sensor type for the sensor input.</p> <p>Info:</p> <p>Please observe the terminal assignment when connecting the sensor.</p>
Selection	<ul style="list-style-type: none"> ■ Pt100 IEC60751, a=0.00385 (1) ■ Pt1000 IEC60751, a=0.00385 (4) ■ Pt100 JIS C1604, a=0.003916 (5) ■ Pt100 GOST 6651-94, a=0.00391 (9) ■ RTD Platinum (Callendar/van Dusen)
Factory setting	Pt100 IEC60751, a=0.00385 (1)


Connection type

Navigation	 Expert → Application → Sensor → Connection type
Description	Use this function to select the connection type for the sensor.
Selection	<ul style="list-style-type: none"> ■ 2- wire ■ 3- wire ■ 4- wire
Factory setting	4- wire


2-wire compensation

Navigation	 Expert → Application → Sensor → 2-wire compensation
Description	Use this function to specify the resistance value for two-wire compensation in RTDs.
User entry	0.0 to 30.0 Ohm
Factory setting	0 Ohm


Sensor offset

Navigation	 Expert → Application → Sensor → Sensor offset
Description	Use this function to set the zero point correction (offset) of the sensor measured value. The value indicated is added to the measured value.
User entry	-10.0 to 10.0
Factory setting	0


Damping

Navigation	 Expert → Application → Sensor → Damping
Description	Use this function to set the time constant for the damping of the measured value.
User entry	0 to 120 s
Factory setting	0 s


Call./v. Dusen coeff. R0

Navigation	 Expert → Application → Sensor → Call./v. Dusen coeff. R0
Description	Use this function to set the R0 value for sensor linearization with the Callendar/Van Dusen polynomial.
User entry	10.0 to 4 000.0 Ohm
Factory setting	100 Ohm


Call./v. Dusen coeff. A

Navigation	 Expert → Application → Sensor → Call./v. Dusen coeff. A
Description	Use this function to set the coefficients for sensor linearization with the Callendar/Van Dusen polynomial.
User entry	3.0E-03 to 4.0E-03
Factory setting	3.9083E-03


Call./v. Dusen coeff. B

Navigation	 Expert → Application → Sensor → Call./v. Dusen coeff. B
Description	Use this function to set the coefficients for sensor linearization with the Callendar/Van Dusen polynomial.
User entry	-2.0E-06 to 2.0E-06
Factory setting	-5.775E-07


Call./v. Dusen coeff. C

Navigation	 Expert → Application → Sensor → Call./v. Dusen coeff. C
Description	Use this function to set the coefficients for sensor linearization with the Callendar/Van Dusen polynomial.
User entry	-1.0E-09 to 1.0E-09
Factory setting	-4.183E-12


Sensor lower limit






Navigation	 Expert → Application → Sensor → Sensor lower limit
Prerequisite	The RTD platinum (Callendar/Van Dusen) option is enabled in the Sensor type parameter
Description	Use this function to set the lower calculation limit for special sensor linearization.
User entry	Depends on the sensor type selected
Factory setting	Depends on the sensor type selected

Sensor upper limit


Navigation	 Expert → Application → Sensor → Sensor upper limit
Prerequisite	The RTD platinum (Callendar/Van Dusen) option is enabled in the Sensor type parameter
Description	Use this function to set the upper calculation limit for special sensor linearization.
User entry	Depends on the sensor type selected
Factory setting	Depends on the sensor type selected

5.2.3 "Current output" submenu


Navigation  Expert → Application → Current output

► Current output	
Lower range value output	→  23
Upper range value output	→  23
Failure mode	→  23
Current trimming 4 mA	→  24
Current trimming 20 mA	→  24


Lower range value output

Navigation	 Expert → Application → Current output → Lower range value output
Description	Use this function to assign a measured value to the current value 4 mA. Info: The set point that can be set depends on the sensor type used in the Sensor type parameter.
User entry	-50 000.0 to 50 000.0
Factory setting	0.0


Upper range value output

Navigation	 Expert → Application → Current output → Upper range value output
Description	Use this function to assign a measured value to the current value 20 mA. Info: The set point that can be set depends on the sensor type used in the Sensor type parameter.
User entry	-50 000.0 to 50 000.0
Factory setting	100


Failure mode

Navigation	 Expert → Application → Current output → Failure mode
Description	Use this function to select the signal on alarm level of the current output in the event of an error.
Selection	<ul style="list-style-type: none"> ■ Max. ■ Min.
Factory setting	Min.

Current trimming 4 mA

Navigation	 Expert → Application → Current output → Current trimming 4 mA
Description	Use this function to set the correction value for the current output at the start of the measuring range at 4 mA.
User entry	3.85 to 4.15 mA
Factory setting	4 mA






Current trimming 20 mA

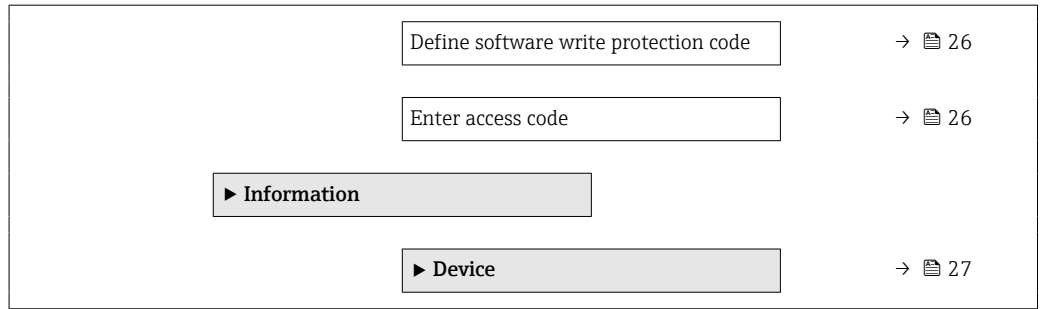
Navigation	 Expert → Application → Current output → Current trimming 20 mA
Description	Use this function to set the correction value for the current output at the end of the measuring range at 20 mA.
User entry	19.85 to 20.15 mA
Factory setting	20 mA

5.3 "System" submenu


System settings concerning device management, user administration or safety

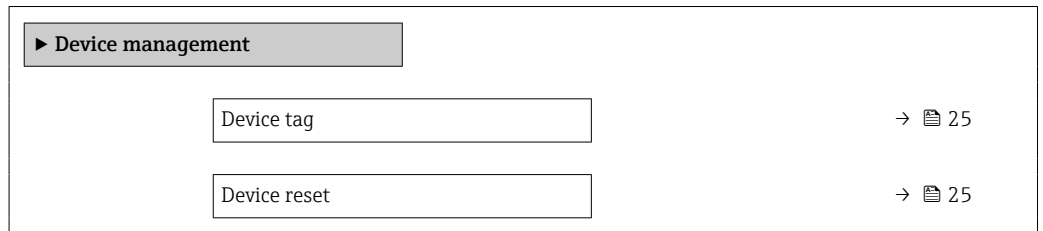
Navigation  Expert → System

▶ System	
▶ Device management	→  25
Device tag	→  25
Device reset	→  25
▶ User management	→  26
Access status	→  26




5.3.1 "Device management" submenu

Navigation  Expert → System → Device management




Device tag

Navigation  Expert → System → Device management → Device tag

Description Displays the name for the measuring point.

User entry Character string comprising numbers, letters and special characters (32)

Device reset

Navigation  Expert → System → Device management → Device reset

Description Use this function to reset the device configuration to a defined state.

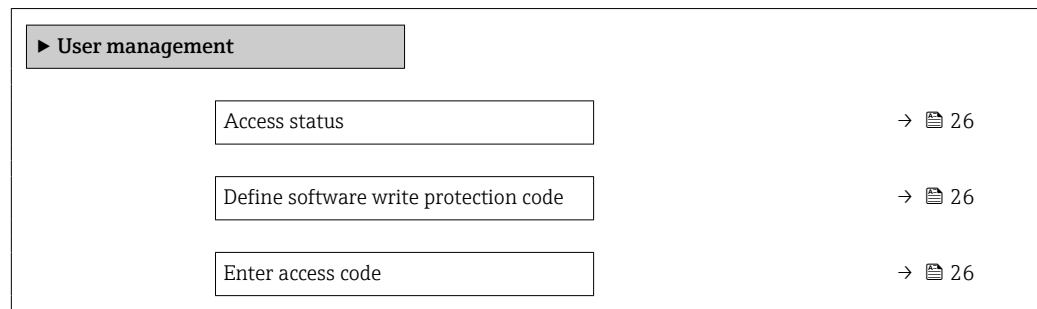
Selection

- Not active
- Restart device
- To factory defaults


Factory setting Not active

5.3.2 "User management" submenu


Navigation  Expert → System → User management




Access status

Navigation	 Expert → System → User management → Access status
Description	Shows the access authorization to the parameters via the operating tool
User interface	<ul style="list-style-type: none"> ■ Operator ■ Maintenance
Factory setting	Maintenance


Define software write protection code

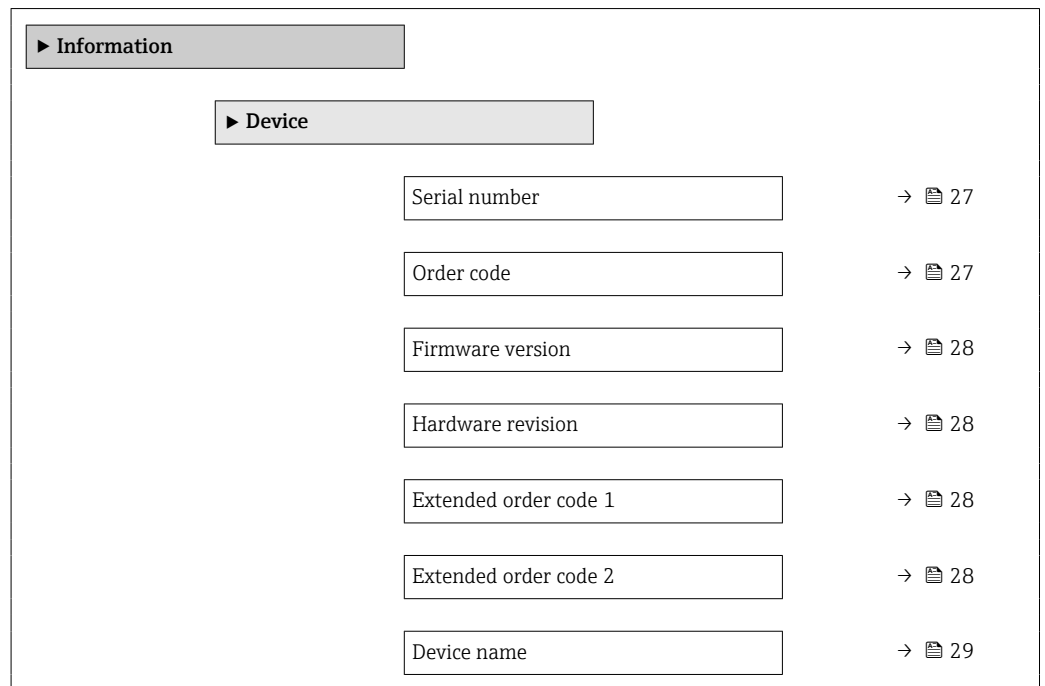
Navigation	 Expert → System → User management → Define software write protection code
Description	Enter the code to protect the device from unauthorized access
User entry	0 to 9 999
Factory setting	0

Enter access code


Navigation	 Expert → System → User management → Enter access code
Description	Entering the defined code to cancel the device protection
User entry	0 to 9 999
Factory setting	0

5.3.3 "Device" submenu

Navigation  Expert → System → Information → Device



Serial number

Navigation  Expert → System → Information → Device → Serial number


Description Displays the serial number of the measuring device. The serial number can be used to identify the measuring device and to retrieve further information on the measuring device, such as the related documentation, via the Device Viewer or Operations app.

Additional information:

The serial number can also be found on the nameplate of the sensor and transmitter.

User interface Character string comprising numbers, letters and special characters

Order code

Navigation  Expert → System → Information → Device → Order code


Description Displays the device order code.

Additional information:


The order code can be used for instance to order a replacement or spare device or to verify that the device features specified on the order form match the shipping note.

User interface Character string comprising numbers, letters and special characters


Firmware version

Navigation	 Expert → System → Information → Device → Firmware version
Description	Use this function to view the device firmware version installed.
User interface	Character string comprising numbers, letters and special characters


Hardware revision

Navigation	 Expert → System → Information → Device → Hardware revision
Description	Use this function to display the hardware revision of the device.
User interface	Character string comprising numbers, letters and special characters


Extended order code 1

Navigation	 Expert → System → Information → Device → Extended order code 1
Description	<p>Displays the first, second and/or third part of the extended order code. Due to character length restrictions, the extended order code is split into a maximum of 3 parameters. The extended order code indicates for each feature in the product structure the selected option, thereby uniquely identifying the device model.</p> <p>Additional information: The extended order code can also be found on the nameplate.</p>
User interface	Character string comprising numbers, letters and special characters

Extended order code 2

Navigation	 Expert → System → Information → Device → Extended order code 2
Description	<p>Displays the first, second and/or third part of the extended order code. Due to character length restrictions, the extended order code is split into a maximum of 3 parameters. The extended order code indicates for each feature in the product structure the selected option, thereby uniquely identifying the device model.</p> <p>Additional information: The extended order code can also be found on the nameplate.</p>
User interface	Character string comprising numbers, letters and special characters

Device name

Navigation Expert → System → Information → Device → Device name**Description**

Displays the name of the transmitter.

Additional information:

The name can also be found on the transmitter's nameplate.

User interface

Character string comprising numbers, letters and special characters



71550983