GB

Operating instructions
Analogue threshold display
DP2200

11470257 / 02 02 / 2024

Contents

1 Preliminary note

You will find instructions, technical data, approvals and further information using the QR code on the unit / packaging or at documentation.ifm.com.

1.1 Symbols used

✓	Requirement
▶	Instructions
▷	Reaction, result
[...]	Designation of keys, buttons or indications
→	Cross-reference
	Important note Non-compliance may result in malfunction or interference.
	Information Supplementary note

1.2 Warnings

Warnings indicate the possibility of personal injury and damage to property. This enables safe product handling. Warnings are graded as follows:

WARNING

Warning of serious personal injury

▷ If the warning is not observed, fatal and serious injuries are possible.

CAUTION

Warning of minor to moderate personal injury

▷ If the warning is not observed, minor to moderate injuries are possible.

ATTENTION

Warning of damage to property

▷ If the warning is not observed, damage to property is possible.

1.3 Safety symbol on the device

Safety symbol on the device:

▶ Adhere to the operating instructions for the safe operation of the unit.

2 Safety instructions

- The unit described is a subcomponent for integration into a system.
  - The system architect is responsible for the safety of the system.
  - The system architect undertakes to perform a risk assessment and to create documentation in accordance with legal and normative requirements to be provided to the operator and user of the system. This documentation must contain all necessary information and safety instructions for the operator, the user and, if applicable, for any service personnel authorised by the architect of the system.
- Read this document before setting up the product and keep it during the entire service life.
- The product must be suitable for the corresponding applications and environmental conditions without any restrictions.
- Only use the product for its intended purpose (→ Intended use).
- If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property may occur.
- The manufacturer assumes no liability or warranty for any consequences caused by tampering with the product or incorrect use by the operator.
- Installation, electrical connection, set-up, programming, configuration, operation and maintenance of the product must be carried out by personnel qualified and authorised for the respective activity.
- Protect units and cables against damage.
- Replace damaged units, otherwise the technical data and safety will be impaired.
- Observe applicable documents.

3 Intended use

The device is used for the evaluation of an analogue signal (4...20 mA) from a connected sensor or another device with analogue output (4...20 mA). The device has one analogue current input and two outputs: output 1 (digital) and optionally output 2 (analogue current output).

The unit is not suited for environments with particular requirements on mechanical stability (e.g. shock/vibration).

The unit is intended for indoor use only.

▶ Observe the operating conditions (→ Technical data at www.ifm.com).

3.1 Block diagram

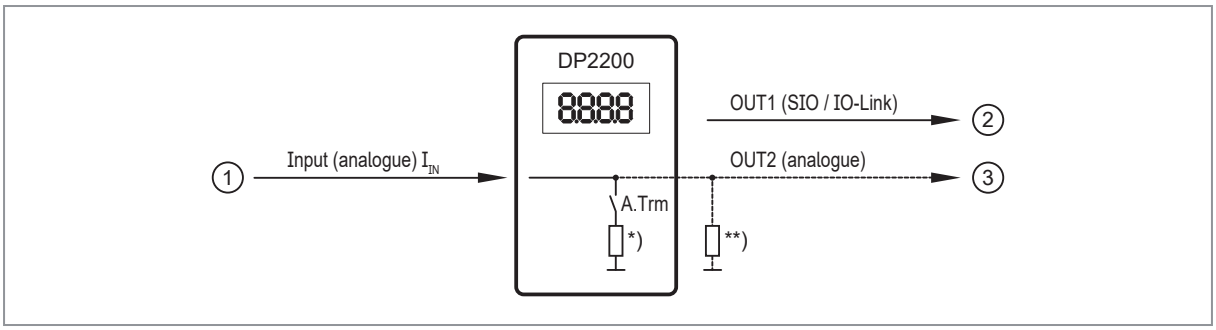


Fig. 1: Inputs/outputs of the device

1:	IN (analogue input I_{IN})	A.Trm:	analogue termination OUT2
2:	OUT1 (digital output SIO / IO-Link)	*)	switchable internal load
3:	OUT2 (analogue output $I_{OUT} = I_{IN}$)	**)	external load (optional)

Current rating: max. 50 mA for each output

The current loop of the analogue input must be terminated. Only one load may be connected, either an internal or an external load.

See:
A.Trm – analogue termination for OUT2 (→ 🗋 16)
Troubleshooting (→ 🗋 23)

4 Function

There are basically two modes in which the device can be operated:

- As stand-alone device
  The device compares the measured current value with the set parameters and switches its output according to the selected parameters. This mode is without IO-Link functionality. The parameters can, however, also be set with an IO-Link tool.
- As IO-Link device
  The device operates as an “analogue/IO-Link converter”. The evaluation of the measured current value depends on the parameters which are set with IO-Link tools or a PLC via IO-Link communication or directly on the device.

In some points parameter setting via IO-Link tools or PLC is different from parameter setting via the menu (→ Parameter setting).

4.1 Use as a stand-alone device without IO-Link

The device compares the measured current value with the set parameters and switches its output according to the selected function (→ Operation).

The measured value is shown on the alphanumeric display. The displayed value can be scaled by the user (2-point scaling).

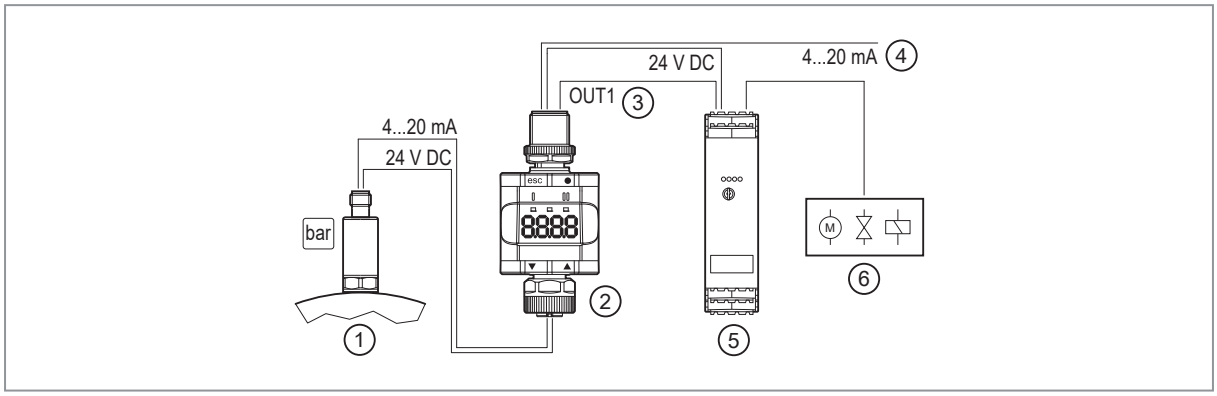


Fig. 2: Application example without IO-Link master

1: Sensor with analogue output (e.g. pressure sensor)
2: Threshold display
3: Digital output
4: Looping through an analogue input signal
5: Switching amplifier
6: Relay output for switching electric motors, valves etc.

4.2 Application as an IO-Link device

4.2.1 General information

The unit has an IO-Link communication interface which requires an IO-Link capable module (IO-Link master).

The IO-Link interface allows direct access to the process and diagnostic data and enables setting of the parameters of the unit during operation.

You will find further information about IO-Link and all the necessary information about the required IO-Link hardware and software at:
www.io-link.ifm

4.2.2 Application example

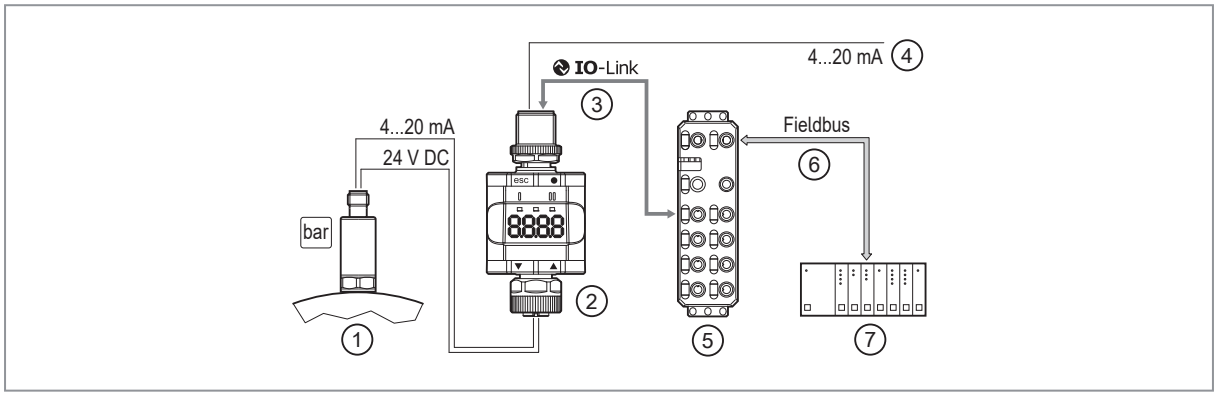


Fig. 3: Application example with IO-Link master

1: Sensor with analogue output (e.g. pressure sensor)
2: Threshold display
3: Fully bidirectional IO-Link communication
- Remote display: reading and displaying the measured current
- Remote parameter setting: reading and changing the parameter setting

4: Looping through an analogue input signal
5: IO-Link master
6: Fieldbus (e.g. Profibus, Profinet etc.)
7: PLC

4.2.3 Functionality

In the IO-Link SIO mode, the device has the same functionality as a stand-alone device. The measured value is also displayed.

Additionally, the device converts the measured current and transmits the value via IO-Link connection to the PLC.

4.2.4 IO Device Description (IODD)

You will find the IODDs required for configuration of the IO-Link device as well as detailed information about the process data structure, diagnostic information and parameter addresses at documentation.ifm.com

5 Installation

- ▶ Install the device so that the M12 connection parts and the device are protected from mechanical stress such as shock and vibration.
- ▶ If necessary, fix the device with a mounting clip. Use M4 screw or cable tie for this purpose.
- ▶ During installation, ensure that the pollution degree is 2 or better.

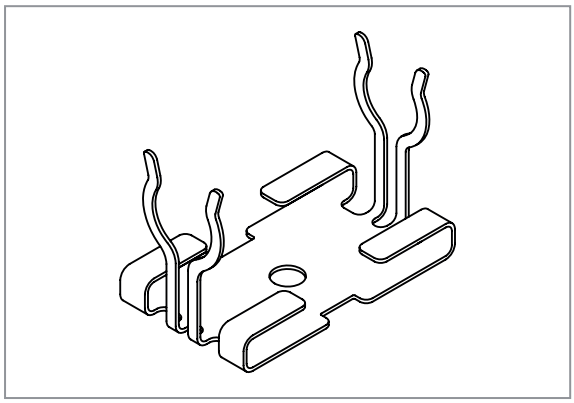


Fig. 4: Mounting clip

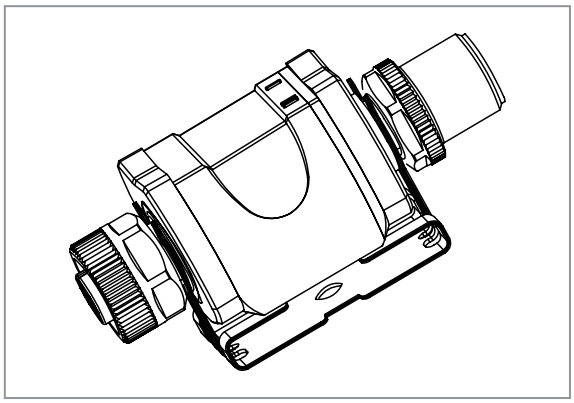


Fig. 5: Mounting clip with attached unit

The mounting clip is not supplied with the device. More information about available accessories at www.ifm.com.

The following applies to all types of mounting:

The responsibility for the compliance with the requirements concerning mounting of the device in the application with regard to shock, vibration, acceleration and weight lies with the system architect.

6 Electrical connection

The unit must be connected by a qualified electrician.

Observe the national and international regulations for the installation of electrical equipment.

Voltage supply according to SELV, PELV.

The circuit is insulated from device surfaces that could be touched with basic insulation according to IEC 61010-1 (secondary circuit with max. 32 V DC, supplied from the mains circuit up to 300 V of overvoltage category II).

The external wiring has to be carried out in a way that ensures the required separation from other circuits.

▶ External interference suppression of inductive loads is required.

6.1 Input side

Operating voltage (SELV/PELV)

CAUTION

The input current of the operating voltage is not limited.

▷ No fire protection.

▶ Protect the circuit.

▶ Protect the sensor supply via the same fuse.

Potential	M12 connector ①	Fuse
L+ / supply voltage	Pin 1	≤ 2 A

Required tripping characteristic of the fuse:

T_{fuse} ≤ 120 s at max. 6.25 A (fire protection)

▶ Alternatively supply the device via a limited energy circuit according to IEC 61010-1 or class 2 according to UL1310.

6.2 Connecting the device

▶ Disconnect power.

▶ Connect the unit as follows:

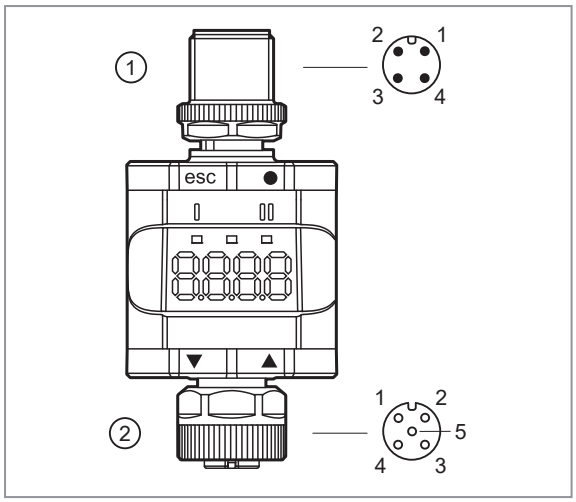


Fig. 6: Electrical connection

1: 4-pole M12 connector
- Pin 1: L+ / supply voltage
- Pin 2: OUT2 (analogue output)
- Pin 3: L- / supply voltage
- Pin 4: OUT1 (digital output SIO / IO-Link)

2: 5-pole M12 socket
- Pin 1: L+ / sensor supply
- Pin 2: Analogue input (4...20 mA)
- Pin 3: L- / sensor supply
- Pin 4: not used
- Pin 5: not used

Always use the provided connection cables to connect other devices.

2-wire sensors can also be connected to the device.

See also application examples (→ Function)

6.2.1 Mounting the connector

The threaded connections in the device correspond to the M12 standard. To ensure compliance with the specified protection rating, only cables that comply with this standard may be used. In the case of self-assembled cables, the system manufacturer is responsible for the protection rating.

▶ Use connectors with gold-plated contacts.

▶ During installation, place the connectors vertically so that the coupling nut will not damage the thread.

▶ Observe the coding of the connectors during installation.

If connector in the device:

▶ Tighten the cable sockets according to the torque specifications indicated by the cable vendor. Maximum permissible tightening torque: 1.8 Nm

If sockets in the device:

▶ Tighten the cable plug using 1.3 ± 0.1 Nm.

▶ Provide all outgoing cables with suitable strain relief after a maximum of 200 mm. Observe the minimum bending radius of the cables (→ information from the cable manufacturer).

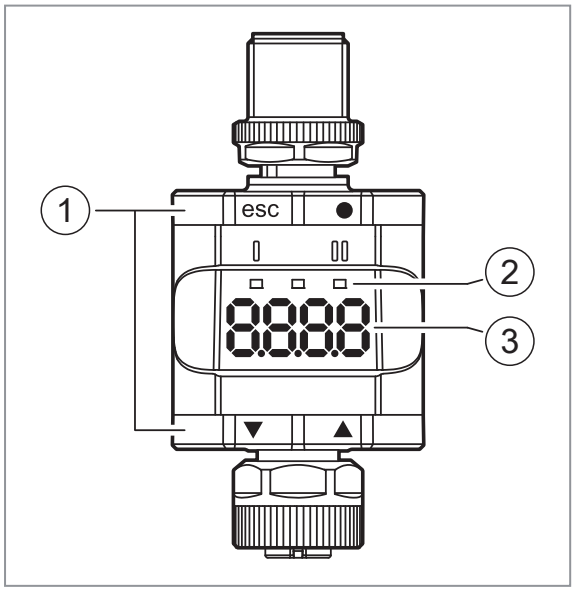
6.2.1.1 Maximum cable length

- Without IO-Link communication: 30 m on each side
- With IO-Link communication: 20 m on the master side

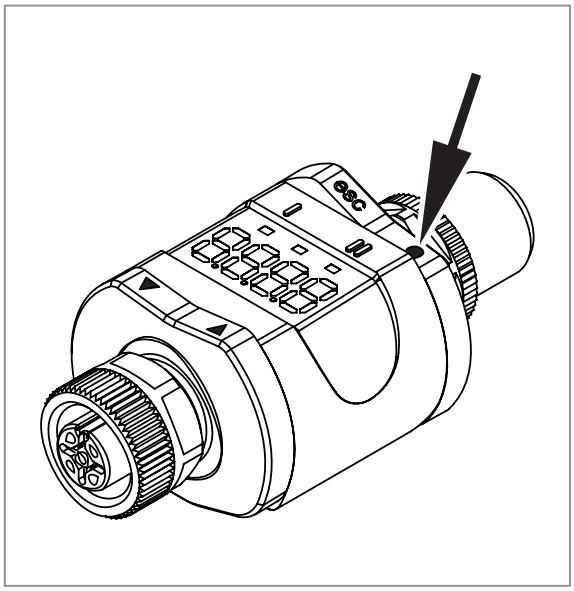
6.2.2 Removing the connector with vibration protection

▶ Press the connector against the unit and simultaneously loosen the coupling nut.

7 Operating and display elements



1: Push rings (pushbuttons)
2: LEDs
3: Display



Here, the Enter button [●] is shown pressed, as an example.

7.1 Push rings (pushbuttons)

To execute an [esc], [●], [▼] or [▲] command, press the corresponding corner of a push ring.

Button		Function
[esc]	Escape	Return to the previous menu. Exit parameter setting without saving the new value.
[●]	Enter	Open menu mode. Selection of the parameter and acknowledgement of a parameter value.
[▼]	Down	Selection of a parameter. Setting a parameter value (scrolling by holding down, incrementally by pressing repeatedly).
[▲]	Up	

To ensure correct operation of the push rings (buttons), do not install or place the unit directly on a metal surface.

For the installation use the mounting clip → Installation.

7.2 LEDs

LED		Colour	Status	Designation
I	OUT1	yellow	on	Output 1 switched.
Power		green	on	Voltage supply OK. Device in operating mode.
			off	No voltage supply. Device switched off.
II	OUT2	yellow	on	Output 2 switched.

Error signals and diagnostics: → Troubleshooting

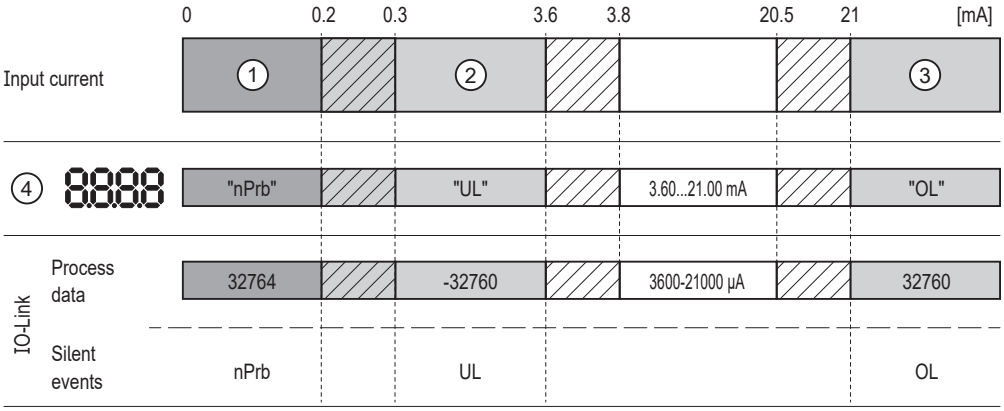
7.3 Display

Colour	Designation
Red/green	7-segment LED display, 4 digits, with colour change

Error signals and diagnostics: → Troubleshooting

In the operating mode the input current value is displayed. The scaling depends on the parameter ScAL – scaling of the displayed value (→ 🗋 16).

7.3.1 Representation of the measured current value



1: No measured data
2: Input current below the range (-)
3: Input current above the range (+)
4: Displayed message or value.
The input current is not displayed scaled here.

nPrb: No sensor
UL: Process value too low
OL: Process value too high
Hysteresis range

8 Menu

8.1 General

Irrespective of the operating mode (standard IO mode or IO-Link device) there are two options to set the parameters of the device:

- directly on the device via the menu (→ Parameter setting)
- or via an IO-Link tool

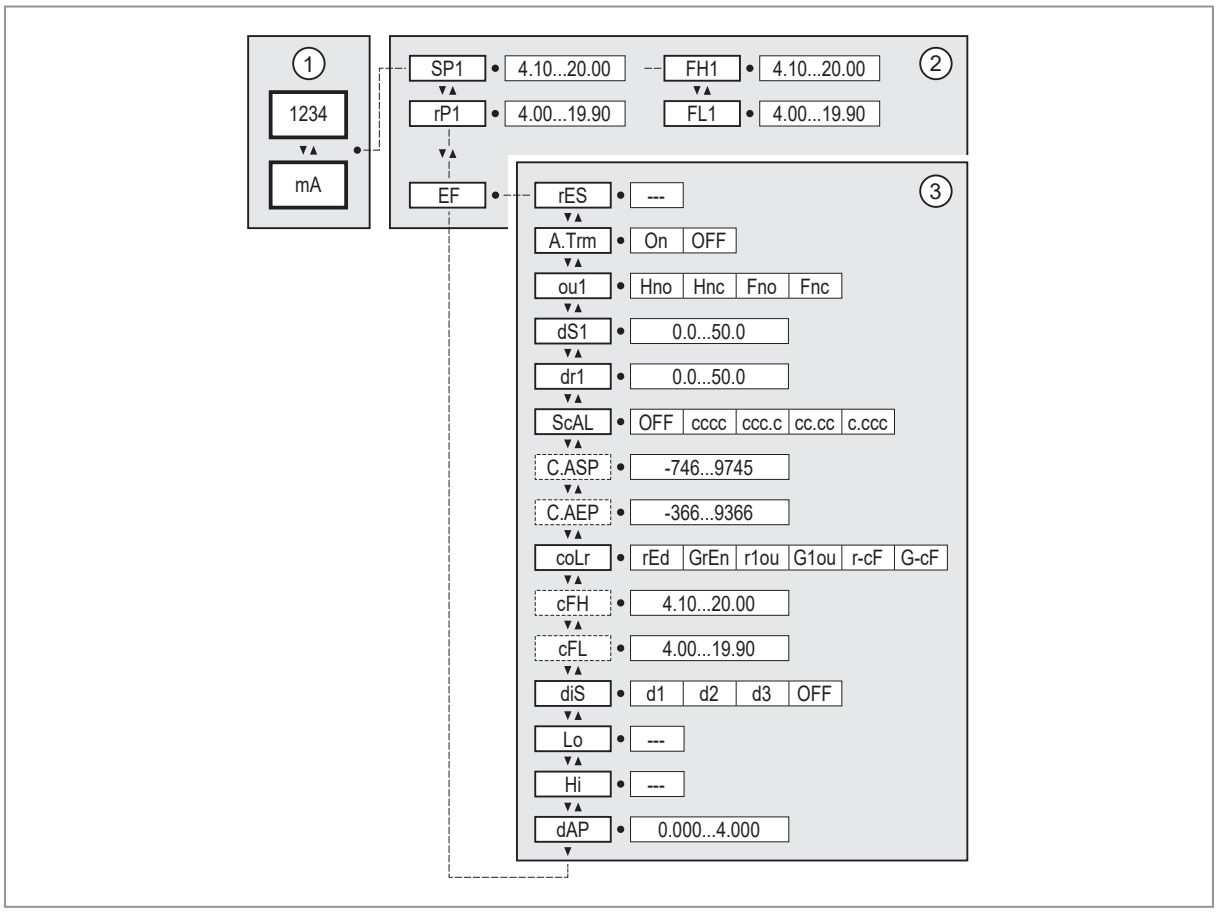
Access via an IO-Link tool has a higher priority than parameter setting via the menu.

The scaling parameter [ScAL] only influences the display and not the transferred process data or the actual switching threshold values.

Via IO-Link, the current value is always transmitted in µA → Representation of the measured current value (→ 🗋 13). The switching thresholds can be set in steps of 0.01 mA.

If a scaling is set, the menu settings of the switching thresholds (SP, rP etc.) are also scaled. Via IO-Link, however, the settings continue to be displayed and executed in steps of 0.01 mA (resolution 10 bits).

8.2 Menu structure

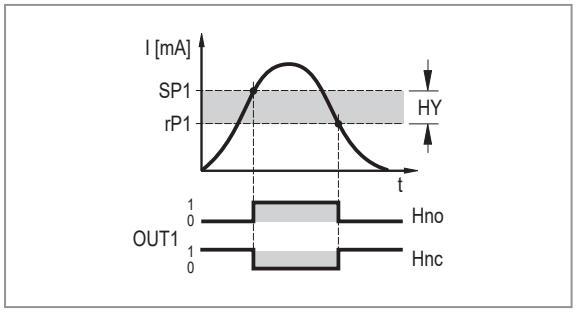


1: Operating mode: Operation (→ 🗋 22)
2: Main menu: Parameters of the main menu (→ 🗋 15)
3: Extended functions: Parameters of the extended functions (EF) (→ 🗋 16)
Factory settings (→ 🗋 25)

8.3 Parameters of the main menu

8.3.1 SP1/rP1 – set point/reset point OUT1

Upper/lower limit for measuring current at which OUT1 switches with hysteresis setting. Only displayed if the hysteresis function [Hno] or [Hnc] is set in [ou1].



SP: Switch point
rP: Reset point
HY: Hysteresis
Hno: Hysteresis function normally open
Hnc: Hysteresis function normally closed

Fig. 7: Hysteresis functions

▶ Select [SP1] and set the value at which output OUT1 switches.

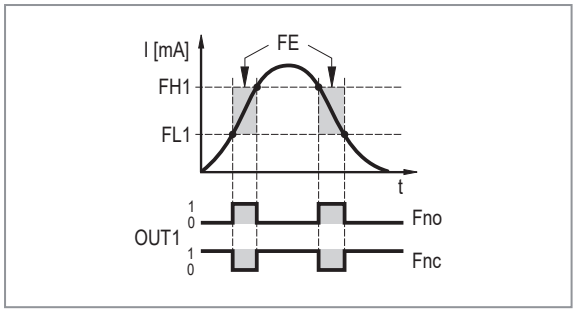
▶ Select [rP1] and set the value at which output OUT1 switches off.

[rP1] is always smaller than [SP1]. The device only accepts values which are lower than the value for [SP1].

[rP1] follows the changes of [SP1] and keeps the set hysteresis.

8.3.2 FH1/FL1 – min/max switching limits for window function

Upper/lower limit for measuring current at which OUT1 switches within the window setting. The parameters are only displayed if the window function [Fno] or [Fnc] is set in [ou1].



FH: Window upper threshold
FL: Window lower threshold
FE: Window
Fno: Window function normally open
Fnc: Window function normally closed

Fig. 8: Window functions

▶ Select [FH1] and set the upper limit.

▶ Select [FL1] and set the lower limit.

[FL1] is always smaller than [FH1]. The device only accepts values which are lower than the value for [FH1].

[FL1] follows the changes of [FH1] and keeps the set hysteresis.

8.3.3 EF – extended functions

EF – extended functions: Parameters of the extended functions (EF) (→ 🗋 16)

8.4 Parameters of the extended functions (EF)

8.4.1 rES – restore factory setting

Resets all parameters to the Factory settings.

▶ Select [rES].

▶ Press [●].

▶ Press and hold [▲] or [▼] until [----] is displayed.

▶ Briefly press [●].

8.4.2 A.Trm – analogue termination for OUT2

- [OFF] = OUT2 is externally connected, e.g. to the analogue input of another device.
- [On] = OUT2 is not connected and the current path is terminated internally.

Note the following for proper current measurement and evaluation:
If the internal analogue termination is set to [On], output OUT2 must not be connected.

8.4.3 ou1 – output function for OUT1

Switching signal for the current limits.

- [Hno] = hysteresis function / normally open
- [Hnc] = hysteresis function / normally closed
- [Fno] = window function / normally open
- [Fnc] = window function / normally closed

See also:
SP1/rP1 – set point/reset point OUT1 (→ 🗋 15)
FH1/FL1 – min/max switching limits for window function (→ 🗋 15)

8.4.4 dS1/dr1 – switching delay/switch-off delay for OUT1

Value: 0.0...50.0 s (0.0 = delay time is not active)

8.4.5 ScAL – scaling of the displayed value

The setting defines the position of the decimal point of the displayed value and acts like a multiplier for the parameters [C.ASP]/[C.AEP].

- [OFF] = measured current value is not scaled.
- [cccc] = scaling without decimal place (x 0001).
- [ccc.c] = scaling with 1 decimal place (x 000.1).
- [cc.cc] = scaling with 2 decimal places (x 00.01).
- [c.ccc] = scaling with 3 decimal places (x 0.001).

8.4.6 C.ASP/C.AEP - customer-specific analogue start/end point

Settings for scaled display values.

The parameters are only displayed if [ScAL] is set to [cccc], [ccc.c], [cc.cc] or [c.ccc].

C.ASP value: -746 ... 9745 corresponds to 4 mA.

C.AEP value: -366 ... 9366 corresponds to 20 mA.

If a scaling is set via [ScAL] *with parameter setting being done via IO-Link*, the C.ASP value and the C.AEP value also have to be selected accordingly:

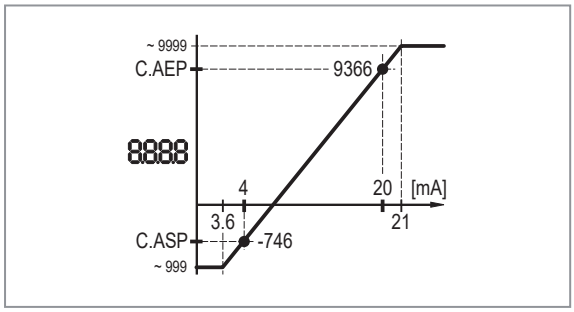
With [ScAL] = [ccc.c] → C.ASP and C.AEP value x 10

With [ScAL] = [cc.cc] → C.ASP and C.AEP value x 100

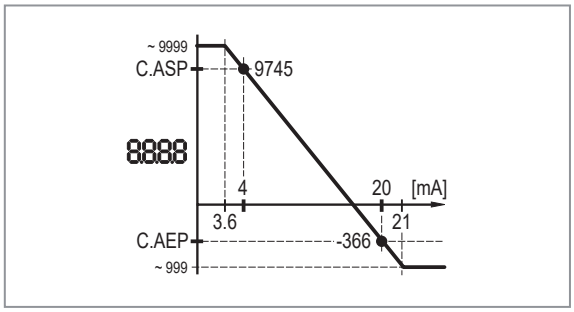
With [ScAL] = [c.ccc] → C.ASP and C.AEP value x 1000

With parameter setting being done on the device, the decimal place is displayed. The required values can be selected without having to be converted.

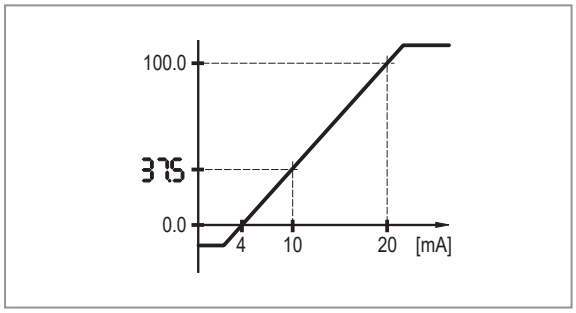
All displayed current values are interpolated based on a 2-point approximation ([SP1]+[rP1], [FH1]+[FL1], [cFH]+[cFL], [Lo]+[Hi]).
IO-Link process data and parameters are not affected by the scaling.



C.ASP = min. value
C.AEP = max. value



C.ASP = max. value
C.AEP = min. value



	Menu setting	IO-Link parameter setting
ScAL	ccc.c	ccc.c
C.ASP	0.0	0
C.AEP	100.0	1000
Input	10 mA	10 mA
Indication	37.5	37.5

Fig. 9: Example with scaled display value

8.4.7 coLr – display colours and colour changes

Assignment of the display colours "red" and "green" within the measuring range.

- [rEd] = continuously red (independent of the measured value).
- [GrEn] = continuously green (independent of the measured value).
- [r1ou] = red when OUT1 switches.
- [G1ou] = green when OUT1 switches.

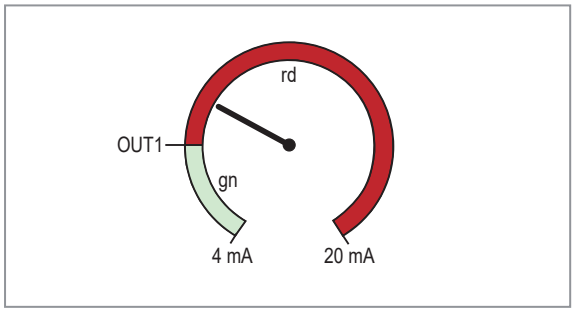


Fig. 10: Hysteresis function with [r1ou]

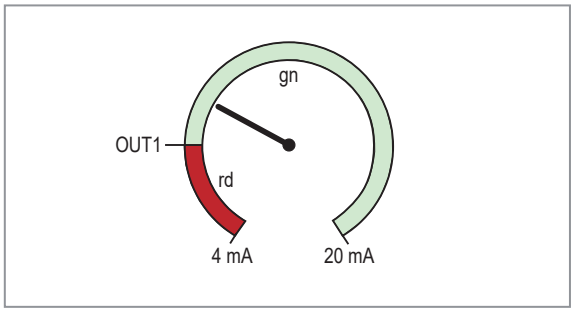


Fig. 11: Hysteresis function with [G1ou]

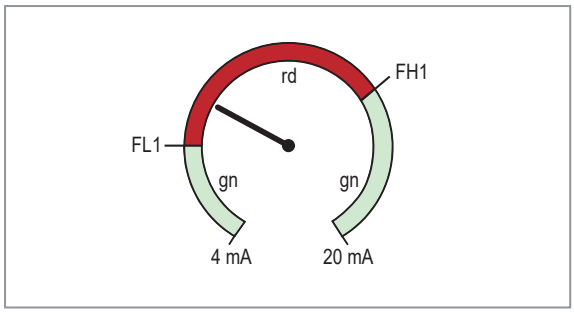


Fig. 12: Window function with [r1ou]

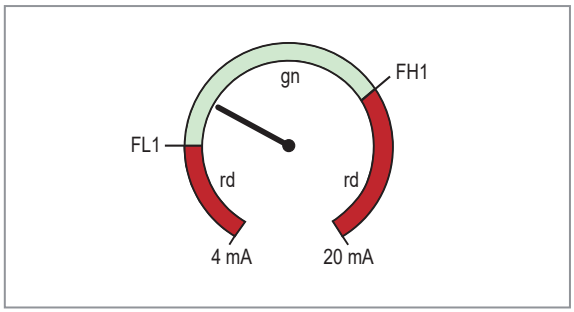


Fig. 13: Window function with [G1ou]

[r-cF] = red when the measured value is between the values [cFL] and [cFH].

[G-cF] = green when the measured value is between the values [cFL] and [cFH].

8.4.8 cFH/cFL – upper/lower value for colour change

When setting [coLr] to [r-cF] or [G-cF]:

▶ Select [cFH] and set the upper limit.
Setting range corresponds to the measured values. The lowest setting value is [cFL].

▶ Select [cFL] and set the lower limit value.
Setting range corresponds to the measured values. The highest setting value is [cFH].

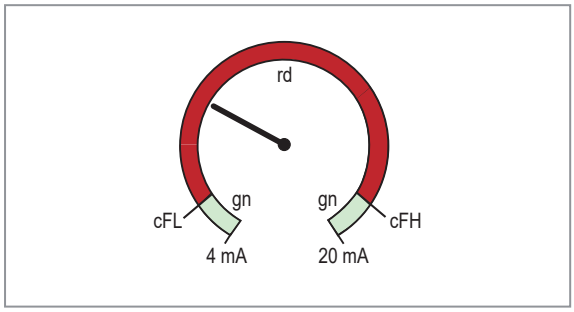


Fig. 14: Function [r-cF]

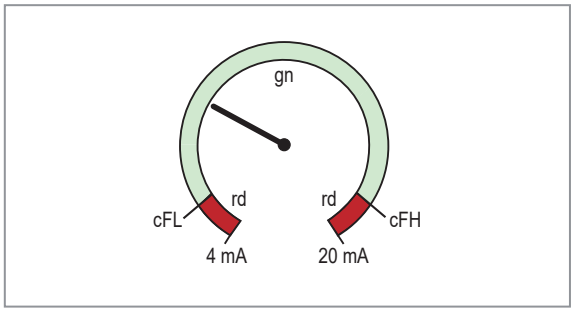


Fig. 15: Function [G-cF]

For b/w printouts: gn = green, rd = red

8.4.9 diS – refresh rate of the displayed measured value

- [OFF][= The measured value display is deactivated in the operating mode.]
- [d1] = update of the measured values every 50 ms.
- [d2] = update of the measured values every 200 ms.
- [d3] = update of the measured values every 600 ms.

Even with an unsteady input value, [d1] provides optimum readability.

8.4.10 Lo/Hi – min/max measured input values

[Lo] = lowest measured value

[Hi] = highest measured value

Delete memory:

▶ Select [Hi] or [Lo].

▶ Press and hold [▲] or [▼] until [----] is displayed.

▶ Briefly press [●].

8.4.11 dAP – damping

Damping of the measured analogue value.

Setting also influences the set point, the IO-Link process data and the display.

Value: 0.000...4.000 s (T value: 63 %).
At 0.000 damping is not active.

8.4.12 Reset [Hi] and [Lo] memory

Reset of both memories: Reset [Hi] and [Lo] memory

8.5 Parameters adjustable via IO-Link

The following functions or parameters are only available via IO-Link tools.

8.5.1 C.uni – customer-specific unit

Customer-specific unit with max. 4 characters.

8.5.2 S.Loc – software locking

Value: ON/OFF

With ON, the device is locked for local menu settings.

Unlocking only via IO-Link.

8.5.3 Application-specific tag

Customer-specific application description, max. 32 characters long.

Default value: “ *** ” / can be freely defined by the customer

9 Parameter setting

During parameter setting the unit remains in the operating mode. It continues its monitoring functions with the existing parameters until the parameter setting has been completed.

9.1 Parameter setting in general

Each parameter setting consists of 6 steps:

Step		Button
1	Change from operating mode to parameter setting mode.	[●]
2	Select the required parameter: [SP1], [dr1], …	[▲] or [▼]
3	Change to the programming mode of the parameter.	[●]
4	Select or change the parameter value.	[▲] or [▼] > 2 s
5	Acknowledge the set parameter value.	[●]
6	Return to the operating mode.	[esc]

9.2 Example [ou1] – output function for OUT1

Step		Display
1	Change from operating mode to parameter setting mode.	
	▶ Press [●] to get to the menu. ▷ The first parameter is displayed.	SP1
2	Select the requested parameter, here [ou1].	
	▶ Press [▼] until [EF] is displayed. ▶ Press [●] to get to the extended functions menu. ▷ The first parameter of the extended functions is displayed.	EF rES
	▶ Press [▼] until the requested parameter [ou1] is displayed.	ou1
3	Change to the programming mode of the parameter.	
	▶ Press [●] to change to the programming mode. ▷ The currently set parameter value is displayed.	Hno
4	Select or change the parameter value, here e.g. [Fnc].	
	▶ Press [▼] or [▲] for at least 2 s. ▷ The currently set parameter value flashes, here e.g. [Hno]. ▷ After 2 s.: - Value is changed continuously by keeping the button pressed. - Value is changed incrementally by pressing the button once. See: Numerical entries with [▼] or [▲] (→ 🗋 21)	Hno Fnc
5	Acknowledge the set parameter value.	
	▶ Briefly press [●]. ▷ The parameter is displayed again. ▷ The new setting value is saved.	ou1
	Setting of other parameters: ▶ Press [▼] or [▲] until the requested parameter is displayed.	
6	Return to the operating mode.	

Step		Display
6	▶ Press [esc]. ▶ - Press [▼] or [▲] several times until the current measured value is displayed - or wait for the timeout function (approx. 30 s). ▷ The unit has returned to the operating mode. ▷ The current value is displayed.	1234

9.3 Notes on programming

9.3.1 Locking / unlocking

The unit can be locked electronically to prevent unauthorised setting. Set parameter values and settings can be displayed but not changed.

To lock the unit:

▶ Make sure that the unit is in normal operating mode.

▶ Press [esc] + [▲] simultaneously for 10 s.

▷ [Loc] is displayed.

▷ The unit is locked.

▷ [Loc] is briefly displayed if you try to change parameter values.

To unlock the unit:

▶ Press [esc] + [▲] simultaneously for 10 s.

▷ [uLoc] is displayed.

On delivery the unit is not locked.

Customer locking

If [C.Loc] is displayed when an attempt is made to modify a parameter value, an IO-Link communication is active (temporary locking).

Software locking

If [S.Loc] is displayed, the sensor is permanently locked via software. This locking can only be removed using an IO-Link parameter setting software.

9.3.2 Timeout

If no button is pressed for 30 s during parameter setting, the unit returns to the operating mode with the unchanged value.

9.3.3 Numerical entries with [▼] or [▲]

▶ Press [▼] or [▲] for at least 2 s.

▷ After 2 s:
- value is changed continuously by keeping the button pressed.
- value is changed incrementally by pressing the button once.

Value is incrementally reduced with [▼] and increased with [▲].

10 Operation

After power on, the device is in the operating mode (SIO). It carries out its measurement and evaluation functions and provides output signals according to the set parameters (→ Menu).

10.1 Functions output 1

OUT1 (connector, pin 4):

- Digital output (SIO)
- IO-Link interface

Selectable switching functions:

- Hysteresis functions, normally open / normally closed: SP1/rP1 – set point/reset point OUT1 (→ 🗋 15)
- Window functions, normally open / normally closed: FH1/FL1 – min/max switching limits for window function (→ 🗋 15)

OUT1 changes its status if the input signal is above or below the set switching limits. First the switch point SP1 is set, then the reset point rP1: SP1/rP1 – set point/reset point OUT1 (→ 🗋 15).

The hysteresis defined remains even if [SP1] is changed again. Changing the parameter [rP1] also changes the hysteresis.

The width of the window can be set by means of the difference between FH1 and FL1.
FH1 = upper value
FL1 = lower value

10.2 Functions output 2

OUT2 (connector, pin 2):

- Analogue output (looping through the analogue input signal)

11 Troubleshooting

Display	LED			Error	Troubleshooting
	I	Power	II		
OFF	off	off	off	Supply voltage too low.	Check/correct the supply voltage: Electrical connection (→ 🗋 10)
SC1	flashes	any	any	Excessive current at switching output OUT1.	Check switching output OUT1 for short circuit or excessive current. Remove the fault.
C.Loc	any	any	any	Parameter setting via pushbuttons locked due to active IO-Link transmission.	Wait until parameter setting via IO-Link is finished.
S.Loc	any	any	any	Parameter setting via pushbuttons disabled by software.	Unlocking only possible via IO-Link interface/IO-Link parameter setting software.
Loc	any	any	any	Parameter setting via pushbuttons disabled.	Unlock pushbuttons: Locking / unlocking (→ 🗋 21)
OL	any	on	any	Process value too high (measured current > 21 mA).	Check connected sensor and current range: Representation of the measured current value (→ 🗋 13) Check the setting for internal or external analogue termination for OUT2: A.Trm – analogue termination for OUT2 (→ 🗋 16)
UL	any	on	any	Process value too low (measured current < 3.6 mA).	
nPrb	any	on	any	No sensor connected to the analogue input.	

12 Maintenance, repair and disposal

Cleaning the unit:

- ▶ Disconnect the unit from the voltage supply.
- ▶ Clean the unit from dirt using a soft, chemically untreated and dry micro-fibre cloth.

The operation of the unit is maintenance-free.

Only the manufacturer is allowed to repair the unit.

- ▶ After use dispose of the device in an environmentally friendly way in accordance with the applicable national regulations.

13 Factory settings

Parameter		Factory settings	User settings
SP1/FH1	Set point OUT1	6.00	
rP1/FL1	Reset point OUT1	5.00	
A.Trm	Analogue termination OUT2	On	• OFF • On
ou1	Output function OUT1	Hno	• Hno • Hnc • Fno • Fnc
dS1	Switching delay OUT1	0.0 s	
dr1	Switch-off delay OUT1	0.0 s	
ScAL	Scaling value	OFF	• OFF • cccc • ccc.c • cc.cc • c.ccc
C.ASP	Customised analogue start point	----	
C.AEP	Customised analogue end point	----	
C.uni *	Customer-specific unit	mA	
coLr	Display: colour setting	rEd	• rEd • grEn • r1ou • G1ou • r-cF • G-cF
cFH	Colour change: upper limit value	20.0	
cFL	Colour change: lower limit value	4.0	
diS	Display refresh rate	d2 (200 ms)	• OFF • d1 (50 ms) • d2 (200 ms) • d3 (600 ms)
Lo	Lowest measured input value	----	
Hi	Highest measured input value	----	
dAP	Damping of the measured analogue value	0.060 s (= 60 ms)	

*) can only be configured via IO-Link and parameter setting software:
Parameters adjustable via IO-Link (→ 19)