

# Type 8025 UNIVERSAL

Flow transmitter  
Durchfluss-Transmitter  
Transmetteur de débit



## Operating Instructions

Bedienungsanleitung  
Manuel d'utilisation

We reserve the right to make technical changes without notice.  
Technische Änderungen vorbehalten.  
Sous réserve de modifications techniques.

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Operating Instructions 2311/05\_EU-ML 00555851 / Original EN

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# 1 ABOUT THE OPERATING INSTRUCTIONS

The Operating Instructions describe the entire life cycle of the device. Please keep the Operating Instructions in a safe place, accessible to all users and any new owners.

**The Operating Instructions contain important safety information.**

Failure to comply with these instructions can lead to hazardous situations. Pay attention in particular to the chapters "[3 Basic safety information](#)" and "[2 Intended use](#)".

► Whatever the version of the device, the Operating Instructions must be read and understood.

## 1.1 Symbols used



### **DANGER**

Warns against an imminent danger.

► Failure to observe this warning results in death or in serious injury.



### **WARNING**

Warns against a potentially dangerous situation.

► Failure to observe this warning can result in serious injury or even death.



### **CAUTION**

Warns against a possible risk.

► Failure to observe this warning can result in substantial or minor injuries.

### **NOTICE**

Warns against material damage.



Indicates additional information, advice or important recommendations.



Refers to information contained in these Operating Instructions or in other documents.

► Indicates an instruction to be carried out to avoid a danger, a warning or a possible risk.

→ Indicates a procedure to be carried out.

## 1.2 Definition of the word "device"

The word "device" used within these Operating Instructions refers to the transmitter type 8025 UNIVERSAL with serial numbers higher or equal to 20 000.

## 2 INTENDED USE

Use of the device that does not comply with the instructions could present risks to people, nearby installations and the environment.

The transmitter type 8025 UNIVERSAL has been designed to process a frequency signal, received from a flow sensor connected to the transmitter.

- ▶ Use the device in compliance with the characteristics and commissioning and use conditions specified in the contractual documents and in the Operating Instructions.
- ▶ Never use the device for security applications.
- ▶ Use the device only in combination with foreign devices or foreign components recommended or approved by Bürkert.
- ▶ Protect the device against electromagnetic interference, ultraviolet rays and, when installed outdoors, the effects of climatic conditions.
- ▶ Only operate a device in perfect working order.
- ▶ Store, transport, install and operate the device properly.
- ▶ Only use the device as intended.

### 3 BASIC SAFETY INFORMATION

This safety information does not take into account any contingencies or occurrences that may arise during installation, use and maintenance of the device.

The operating company is responsible for the respect of the local safety regulations including for the staff safety.



#### **Danger due to electrical voltage.**

- ▶ If a 12...36 V DC energized version is installed either in a wet environment or outdoors, all the electrical voltages must be of max. 35 V DC.
- ▶ Before carrying out work on the system, disconnect the electrical power for all the conductors and isolate it.
- ▶ All equipment connected to the device must be double insulated with respect to the mains according to the standard IEC 61010-1:2010.
- ▶ Observe all applicable accident protection and safety regulations for electrical equipment.



#### **Various dangerous situations**

To avoid injury:

- ▶ Do not use the device in explosive atmospheres.
- ▶ Do not use the device in an environment incompatible with the materials it is made of.
- ▶ Do not subject the device to mechanical stress.
- ▶ Do not make any modifications to the device.
- ▶ Prevent any unintentional power supply switch-on.
- ▶ Only qualified and skilled staff can carry out the installation and maintenance work.
- ▶ Guarantee a defined or controlled restarting of the process, after a power supply interruption.
- ▶ Observe the general technical rules.

#### **NOTICE**

##### **Elements / Components sensitive to electrostatic discharges**

The device contains electronic components sensitive to electrostatic discharges. They may be damaged if they are touched by an electrostatically charged person or object. In the worst case scenario, these components are instantly destroyed or go out of order as soon as they are activated.

- ▶ To minimise or even avoid all damage due to an electrostatic discharge, take all the precautions described in standard EN 61340-5-1.
- ▶ Also ensure that you do not touch any of the live electrical components.



## 4 GENERAL INFORMATION

### 4.1 Manufacturer's address and international contacts

To contact the manufacturer of the device, use following address:

Bürkert SAS

Rue du Giessen

BP 21

F-67220 TRIEMBACH-AU-VAL

You may also contact your local Bürkert sales office.

The addresses of our international sales offices are available on the internet at: [country.burkert.com](https://country.burkert.com)

### 4.2 Warranty conditions

The condition governing the legal warranty is the conforming use of the device in observance of the operating conditions specified in these Operating Instructions.

### 4.3 Information on the Internet

You can find the Operating Instructions and technical data sheets regarding the type 8025 UNIVERSAL at: [country.burkert.com](https://country.burkert.com)

## 5 DESCRIPTION

### 5.1 General description

The 8025 UNIVERSAL is a flow transmitter with display, available in wall-mounted and panel versions:

- The panel version is made up of an electronics integrated in an open housing with display.
- The wall-mounted version is made up of an electronics integrated in a housing with cover, display and 3 cable glands.

The device is equipped with a 4...20 mA current output (analogue output, called AO1), a transistor output (configured as a pulse output by default, called DO1) and two totalizers.

Some versions are also fitted with two relay outputs (called DO2 and DO3).

The device operates on a 3 wire system and needs a 12...36 V DC or a 115/230 V AC power supply.

The electrical connection is carried out on the terminal blocks of the electronic board.

### 5.2 Description of the type label

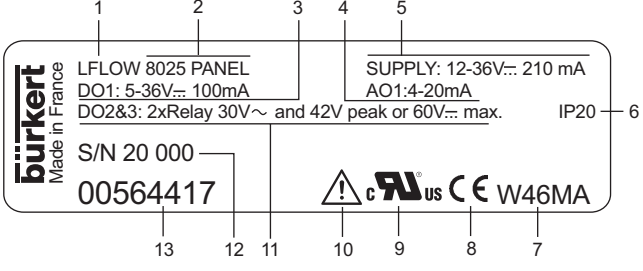




 <p>The image shows a rectangular type label for a Bürkert device. It contains the following information:         <ul style="list-style-type: none"> <li>Top left: 'bürkert Made in France' logo.</li> <li>Top center: 'LFLOW 8025 PANEL'.</li> <li>Top right: 'SUPPLY: 12-36V... 210 mA'.</li> <li>Below 'LFLOW 8025 PANEL': 'DO1: 5-36V... 100mA'.</li> <li>Below 'DO1': 'AO1: 4-20mA'.</li> <li>Below 'AO1': 'DO2&amp;3: 2xRelay 30V~ and 42V peak or 60V... max.'.</li> <li>Bottom left: 'S/N 20 000' and '00564417'.</li> <li>Bottom center: A warning triangle with an exclamation mark, followed by 'c' and 'us'.</li> <li>Bottom right: 'CE' and 'W46MA'.</li> <li>Far right: 'IP20'.</li> </ul> </p>	<ol style="list-style-type: none"> <li>1. Measured value</li> <li>2. Type of the device, housing</li> <li>3. Specifications of the digital output DO1 (transistor)</li> <li>4. Specifications of the analogue output AO1</li> <li>5. Supply voltage and max. current consumption</li> </ol>
<ol style="list-style-type: none"> <li>6. Protection class of the device</li> <li>7. Manufacturing code</li> <li>8. Conformity marking</li> <li>9. Certification</li> <li>10. Warning: Before using the device, take into account the technical specifications described in these Operating Instructions.</li> <li>11. Specifications of the relay outputs DO2 and DO3</li> <li>12. Serial number</li> <li>13. Article number</li> </ol>	

Figure 1: Type label of the device (example)

## 5.3 Symbols on the device

Symbol	Description
	Direct current
	Alternating current
	Earth terminal
	Protective conductor terminal

## 6 TECHNICAL DATA

### 6.1 Conditions of use

Ambient temperature	–10...+60 °C
Air humidity	< 80 %, non condensated
Height above sea level	≤ 2000 m
Operating conditions	Continuous operation
Equipment mobility	Fixed device
Use	Indoor and outdoor (Protect the device against electromagnetic interference, ultraviolet rays and, when installed outdoors, against the effects of climatic conditions)
Installation category	Category I according to UL 61010-1 (UL device) Category II according to EN 61010-1 (non UL device)
Degree of pollution	Degree 2 according to UL/EN 61010-1
Protection rating according to IEC/EN 60529	
• Wall-mounted version	• IP65 <sup>1)</sup> , device wired, cable glands tightened, cover lid screwed tight and entry item nuts of the cable glands tightened at a screwing torque of 1.5 Nm (1.1 lbf-ft).
• Panel version	• Front side IP65 <sup>1)</sup> , rear side IP20 <sup>1)</sup>

<sup>1)</sup> not evaluated by UL

## 6.2 Standards and directives



The device complies with the relevant EU harmonisation legislation. In addition, the device also complies with the requirements of the laws of the United Kingdom.

The harmonised standards that have been applied for the conformity assessment procedure are listed in the current version of the EU Declaration of Conformity/UK Declaration of Conformity.

### 6.2.1 UL certification

Devices with variable key PU01 or PU02 are UL-certified devices and comply also with the following standards:

- UL 61010-1
- CAN/CSA-C22.2 n°61010-1

Identification on the device	Certification	Variable key
	UL-recognized	PU01
 Measuring Equipment EXXXXXX	UL-listed	PU02

## 6.3 Mechanical data

Part	Material
Housing with cover, wall-mounted version	ABS
Cable glands, wall-mounted version	PA
Open housing, panel version	PC
Foil	polyester
4 screws	Stainless steel
Cable clips	PA

## 6.4 Dimensions

→ Please refer to the technical data sheets related to the device at: [country.burkert.com](https://country.burkert.com)

## 6.5 Electrical data

Power supply 12...36 V DC	<ul style="list-style-type: none"> <li>• Filtered and regulated</li> <li>• Max. tolerance 12 V DC: -5 % or +10 %</li> <li>• Max. tolerance 36 V DC: ±10 %</li> <li>• The device must be connected permanently to a Safety Extra-Low Voltage circuit (SELV circuit) or Protective Extra Low Voltage (PELV circuit).</li> </ul>
Power source (not supplied)	Energize the device through a Limited Power Source (LPS) according to standards UL/EN 62368-1 or through a limited-energy circuit according to standards UL/EN 61010-1, Paragraph 9.4.
<b>Power supply 115/230 V AC</b> <ul style="list-style-type: none"> <li>• Admissible voltage fluctuation</li> <li>• Frequency</li> <li>• Supplied voltage</li> <li>• Current</li> <li>• Integrated protection</li> <li>• Power</li> </ul>	<ul style="list-style-type: none"> <li>• ±10 %</li> <li>• 50/60 Hz</li> <li>• 27 V DC, regulated</li> <li>• Max. 250 mA</li> <li>• 250 mA time delay fuse</li> <li>• 6 VA</li> </ul>
<b>Current consumption</b> (without the consumption of the 4...20 mA output) <ul style="list-style-type: none"> <li>• version without relays, energized with 12...36 V DC</li> <li>• version with relays, energized with 12...36 V DC</li> <li>• version without relays, energized with 115/230 V AC</li> <li>• version with relays, energized with 115/230 V AC</li> </ul>	<ul style="list-style-type: none"> <li>• 50 mA (at 12 V DC) and 30 mA (at 36 V DC)</li> <li>• 70 mA (at 12 V DC) and 45 mA (at 36 V DC)</li> <li>• 35 mA</li> <li>• 50 mA</li> </ul>
<b>Digital output DO1 (transistor)</b> <ul style="list-style-type: none"> <li>• Type</li> <li>• Function</li> <li>• Frequency (f)</li> <li>• Electrical data</li> <li>• Duty cycle if <math>0.6 &lt; f &lt; 300</math> Hz</li> <li>• Duty cycle if <math>300 &lt; f &lt; 1500</math> Hz</li> <li>• Duty cycle if <math>1500 &lt; f &lt; 2200</math> Hz</li> <li>• Protection</li> </ul>	Polarized, potential-free <ul style="list-style-type: none"> <li>• NPN / PNP (wiring dependent), open collector</li> <li>• Pulse output (by default), user configurable</li> <li>• 0.6...2200 Hz</li> <li>• 5...36 V DC, 100 mA max., voltage drop 2.7 V DC at 100 mA</li> <li>• &gt; 0.45</li> <li>• &gt; 0.4</li> <li>• &lt; 0.4</li> <li>• Galvanically isolated, and protected against over-voltages, polarity reversals and short-circuits</li> </ul>

<b>Digital outputs DO2 and DO3 (relays)</b> <ul style="list-style-type: none"> <li>• Operating</li> <li>• Electrical data of the load (non UL devices)</li> <li>• Electrical data of the load (UL devices)</li> <li>• Max. breaking capacity</li> <li>• Life span</li> </ul>	<ul style="list-style-type: none"> <li>• Hysteresis (by default), user configurable, normally open</li> <li>• 230 V AC / 3 A or 40 V DC / 3 A</li> <li>• Max. 30 V AC and 42 V<sub>peak</sub>, 3 A or max. 60 V DC, 1 A</li> </ul> <p>To use the relay outputs in a wet location, observe the following DANGER safety instruction.</p> <ul style="list-style-type: none"> <li>• 750 VA (resistive load)</li> <li>• Min. 100000 cycles</li> </ul>
<b>Current output AO1</b> <ul style="list-style-type: none"> <li>• Specification</li> <li>• Max. loop impedance</li> </ul>	<ul style="list-style-type: none"> <li>• 4...20 mA, sink or source (wiring dependent), 22 mA to indicate a fault (can be activated)</li> <li>• 1300 Ω at 36 V DC, 1000 Ω at 30 V DC, 750 Ω at 24 V DC, 300 Ω at 15 V DC, 200 Ω at 12 V DC</li> <li>• 900 Ω if the device is energized with 115/230 V AC</li> </ul>



## DANGER

**Danger due to the operation of the relay outputs of a UL device in a wet location.**

► If a UL device is used in a wet location:

- energize the relay outputs with an alternating voltage of max. 16 V<sub>rms</sub> and 22.6 V<sub>peak</sub>.
- or energize the relay outputs with a direct voltage of max. 35 V DC.

## 6.6 Specifications of the connected flow sensor

<b>Signal originating from the remote sensor</b> <ul style="list-style-type: none"> <li>• Type</li> <li>• Frequency</li> <li>• Max. voltage</li> </ul>	<ul style="list-style-type: none"> <li>• Pulse, sine-wave (typical sensitivity 50 mV peak-to-peak at 250 Hz), "on/off", or standard voltage 0...5 V DC</li> <li>• 0.6 Hz...2.2 kHz, can be adjusted</li> <li>• 36 V DC</li> </ul>
<b>Input impedance</b>	Depends on the position of selector "LOAD" on the electronic board of the 8025 UNIVERSAL. See chapter <a href="#">7.4.11</a>
<b>Power supply</b>	Supplied by the transmitter depending on the position of selector "SENSOR SUPPLY" of the 8025 UNIVERSAL, either: <ul style="list-style-type: none"> <li>• 5 V DC, 30 mA max.</li> <li>• (L+)-12V: supply voltage (L+) of the transmitter minus 12 V DC (minus 12.5 V DC max.), 80 mA max.</li> <li>• L+: supply voltage (L+) of the transmitter (minus 1.5 V DC max.), 140 mA max. (if the device is energized with 12...36 V DC), 80 mA max. (if the device is energized with 115/230 V AC)</li> </ul>

## 7 INSTALLATION AND WIRING

### 7.1 Safety instructions



#### **DANGER**

**Risk of injury due to electrical voltage.**

- ▶ If a 12...36 V DC energized version is installed either in a wet environment or outdoors, all the electrical voltages must be of max. 35 V DC.
- ▶ Disconnect the electrical power for all the conductors and isolate it before carrying out work on the system.
- ▶ All equipment connected to the wall-mounted or panel version of the flow transmitter 8025 UNIVERSAL must be double insulated in relation to the mains in accordance with IEC standard 61010-1:2010.
- ▶ Observe all applicable accident protection and safety regulations for electrical equipment.



#### **WARNING**

**Risk of injury due to non-conforming installation.**

- ▶ The electrical installation can only be carried out by qualified and skilled staff with the appropriate tools.
- ▶ Fit a circuit breaker or a switch to the electrical installation in which the device is installed.
- ▶ Install the circuit breaker or switch in a place which is easy to reach.
- ▶ Identify the circuit breaker or switch as the electrical power cut-off system for the device.
- ▶ Install appropriate overload safety devices. For a version energized by 115/230 V AC, insert overcurrent protective devices in the live conductor and in the neutral conductor.
- ▶ Do not energize a device, version 12...36 V DC, with an alternating voltage or with a direct voltage higher than 36 V DC.
- ▶ Observe the standard NF C 15-100 / IEC 60364.



#### **WARNING**

**Risk of injury due to unintentional switch on of power supply or uncontrolled restarting of the installation.**

- ▶ Take appropriate measures to avoid unintentional activation of the installation.
- ▶ Guarantee a set or controlled restarting of the process subsequent to any intervention on the device.

#### **NOTICE**

**Risk of damage to the device if the incorrect supply voltage is applied.**

- ▶ Energize the device with a supply voltage in accordance with the position of the selector. See [Figure 11](#), chapter [7.4.5](#).



Protect this device against electromagnetic interference, ultraviolet rays and, when installed outdoors, the effects of the climatic conditions.



## 7.2 Installation of a panel version



Install the panel version of the device in a cabinet with a protection class at least IP54 to ensure a degree of pollution 2 inside the cabinet.

→ To cut the opening in the cabinet door, use the supplied drilling jig, respecting the dimensions indicated in [Figure 2](#).

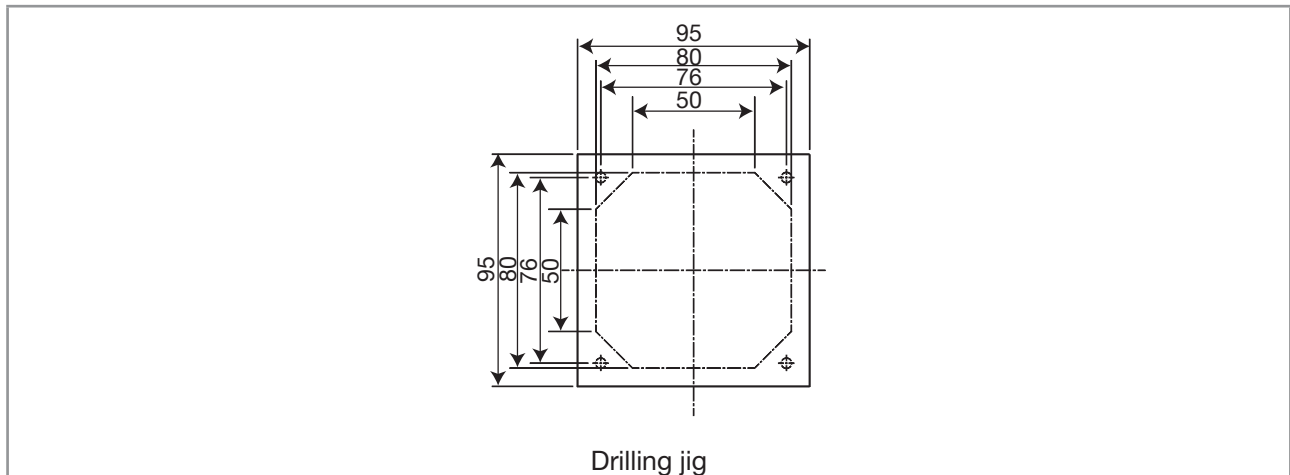


Figure 2: Dimensions of the drilling jig [mm]

- Insert the 4 screws in the housing (from the front).
- Insert the seal on the external threads of the 4 screws (rear of the housing).
- Put the assembly on the cutout, electronics turned to the inside of the cabinet.
- Put the 4 washers on the 4 screws.
- Put a nut on each of the 4 screws and tighten the nuts to secure the device to the cabinet.

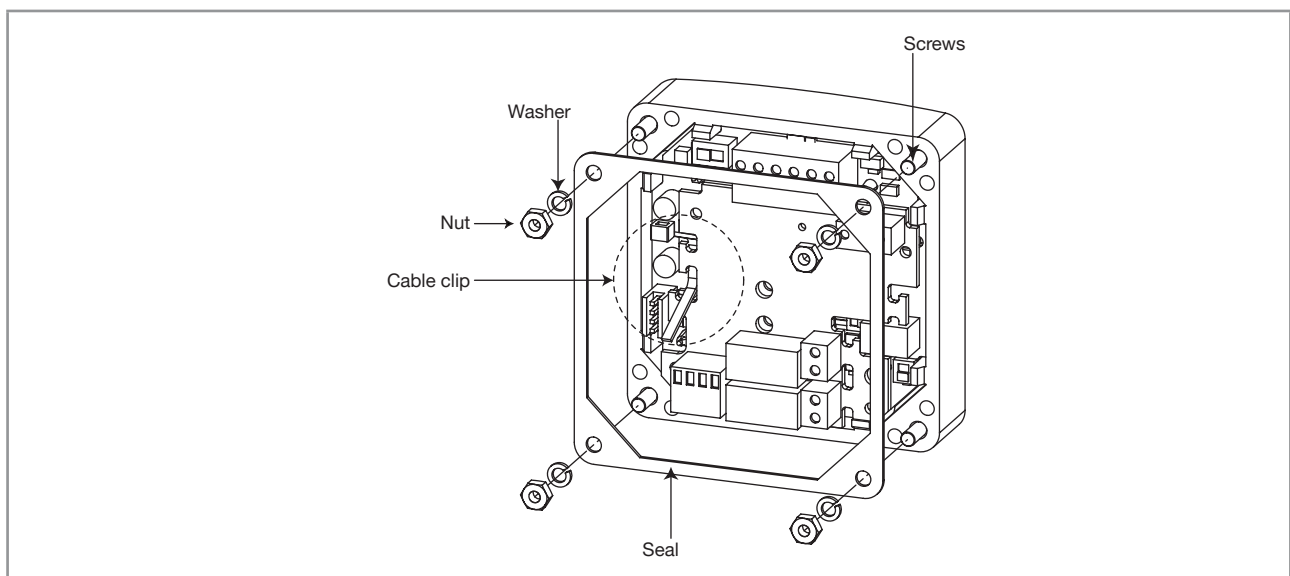


Figure 3: Installation of a 8025 UNIVERSAL, panel version

## 7.3 Installation of a wall-mounted version

### NOTICE

**Risk of material damage if the cable glands are not tightly screwed on the housing**

- Before installing the wall-mounted housing on its support, tighten the nuts of the entry item of the cables glands at a torque of 1.5 Nm (1.1 lbf-ft).

The flow transmitter in a wall-mounted version has 4 holes in the bottom of the housing.

→ Remove the covering strips covering the screws.

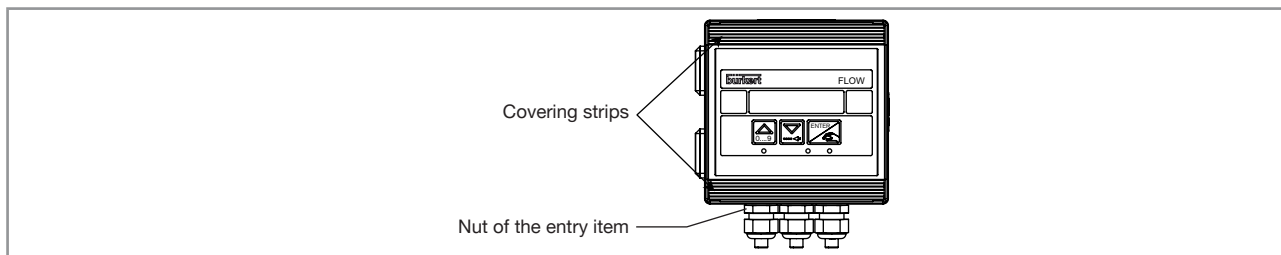


Figure 4: Location of the fastening nuts and the covering strips

→ Loosen the 4 screws and open the cover to get access to the holes [1].

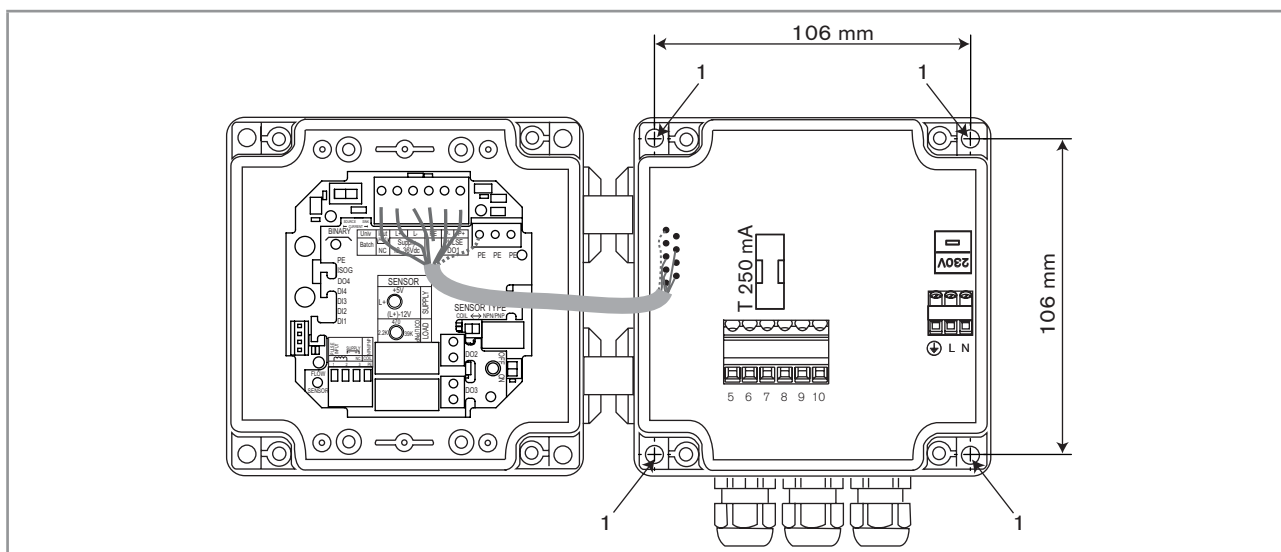


Figure 5: Installation of a wall-mounted version

→ Secure the housing to the support respecting the dimensions indicated in [Figure 5](#).

→ Wire acc. to instructions in chapter [7.4](#).

→ Close the housing and tighten the 4 screws of the cover.

## 7.4 Wiring



### DANGER

Risk of injury due to electrical voltage.

- ▶ If a 12...36 V DC energized version is installed either in a wet environment or outdoors, all the electrical voltages must be of max. 35 V DC.
- ▶ Disconnect the electrical power for all the conductors and isolate it before carrying out work on the system.
- ▶ All equipment connected to the device must be double insulated in relation to the mains in accordance with IEC standard 61010-1:2010.
- ▶ Observe all applicable accident protection and safety regulations for electrical equipment.



### DANGER

Danger due to the operation of the relay outputs of a UL device in a wet location.

- ▶ If a UL device is used in a wet location:
  - energize the relay outputs with an alternating voltage of max. 16 Vrms and 22.6 Vpeak.
  - or energize the relay outputs with a direct voltage of max. 35 V DC.

### NOTICE

Risk of damage to the device if the incorrect supply voltage is applied.

- ▶ Energize the device with a supply voltage in accordance with the position of the selector. See [Figure 11](#), chapter [7.4.5](#).



The device can be damaged if it is not tight.

- Insert the supplied stopper gaskets into the unused cable glands to ensure the tightness of the device.



Only move the selectors when the power supply is off.



Protect this device against electromagnetic interference, ultraviolet rays and, when installed outdoors, the effects of the climatic conditions.



For a correct operation of the device, respect the following recommendations during the electrical installation:

- Make sure the installation is equipotential. See chapter [7.4.2](#).
- Do not install the cables near high voltage or high frequency cables; if a combined installation cannot be avoided, a minimum clearance of 30 cm should be respected.



For a device fed at 12...36 V DC, respect the following recommendations for the electrical installation:

- Use a filtered and regulated 12...36 V DC power supply. The circuit has to be safety extra low voltage (SELV) or Protective Extra Low Voltage (PELV circuit), with a safe energy level.



The power supply of the device can be damaged if it is not protected.

- Protect the device power supply by means of a 300 mA fuse and a switch.



The power supply of a transistor output can be damaged if it is not protected.

- Protect the power supply of each transistor output by means of a 125 mA fuse.



The relays can be damaged if not protected.

- Protect the relays by means of a max. 3 A fuse and a circuit breaker (depending on the process).
- Do not apply both a dangerous voltage and a safety extra-low voltage to the relays.

## 7.4.1 Specifications of the connection cables

Table 1: Specifications of the cables and wires for the direct wiring to the terminal blocks of a panel-mounted version

Specification of the cables and the conductors (not supplied)	Recommended value
Shielded cable	yes
Length of the cable	max. 50 m
Operating temperature, UL device	min. 90 °C
Operating temperature, non UL device	min. 80 °C
Cross section of the conductors	0.2...1.5 mm <sup>2</sup>

Table 2: Specifications of the cables and wires for the wiring through the M16x1.5 cable glands

Specification of the cables and the conductors (not supplied)	Recommended value
Shielded cable	yes
Length of the cable	max. 50 m
External diameter of the cable, if 1 cable per cable gland	4...8 mm
Operating temperature, UL device	min. 90 °C
Operating temperature, non UL device	min. 80 °C
Cross section of the conductors	0.2...1.5 mm <sup>2</sup>

## 7.4.2 Equipotentiality of the installation

To ensure the equipotentiality of the installation (power supply – device – fluid):

- Connect together the various earth spots in the installation to eliminate the potential differences that may occur between different earthes.
- Observe faultless earthing of the shield of the power supply cable, at both ends.
- Connect the negative power supply terminal to the earth to suppress the effects of common mode currents. If this connection cannot be made directly, a 100 nF / 50 V capacitor can be fitted between the negative power supply terminal and the earth.
- Special attention has to be paid if the device is installed on plastic pipes because there is no direct earthing possible. Proper earthing is performed by earthing together the metallic instruments such as pumps or valves, that are as close as possible to the device. If no such instrument is near the device, insert metallic earthing rings inside the plastic pipes upstream and downstream the device and connect these parts to the same earth. The earth rings must be in contact with the fluid.

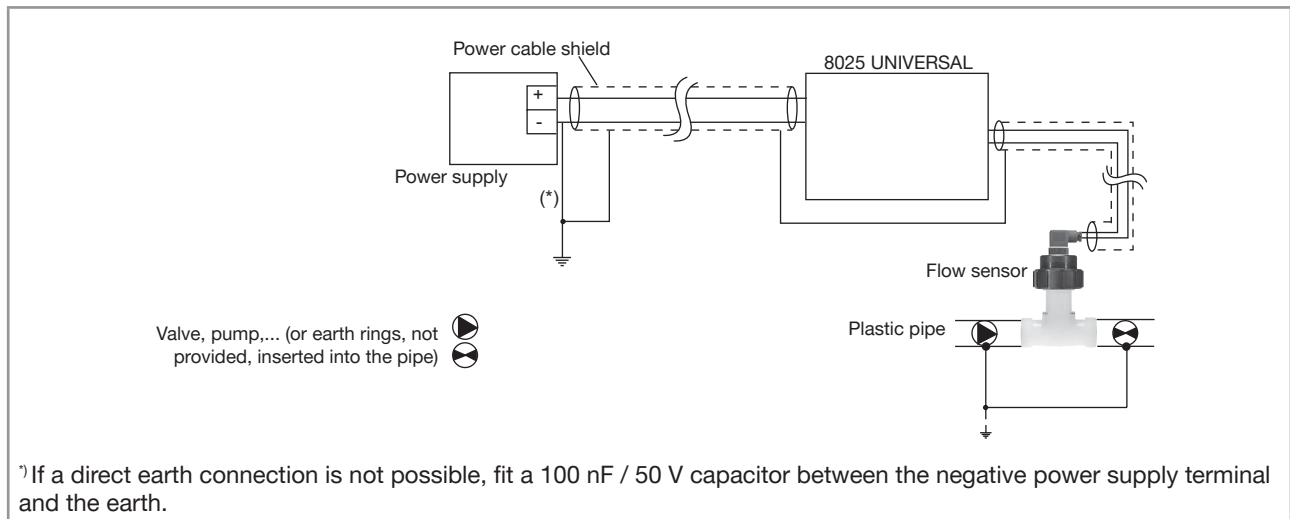


Figure 6: Equipotentiality skeleton diagram with pipes in plastic

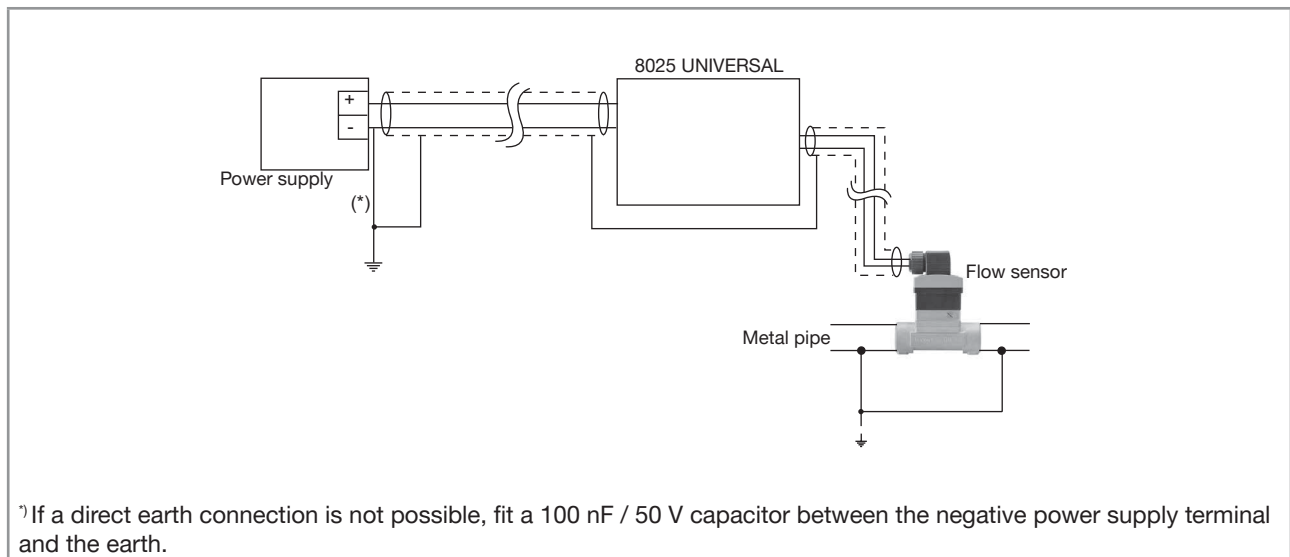


Figure 7: Equipotentiality skeleton diagram with pipes in metal

### 7.4.3 Terminal assignment and use of the selectors

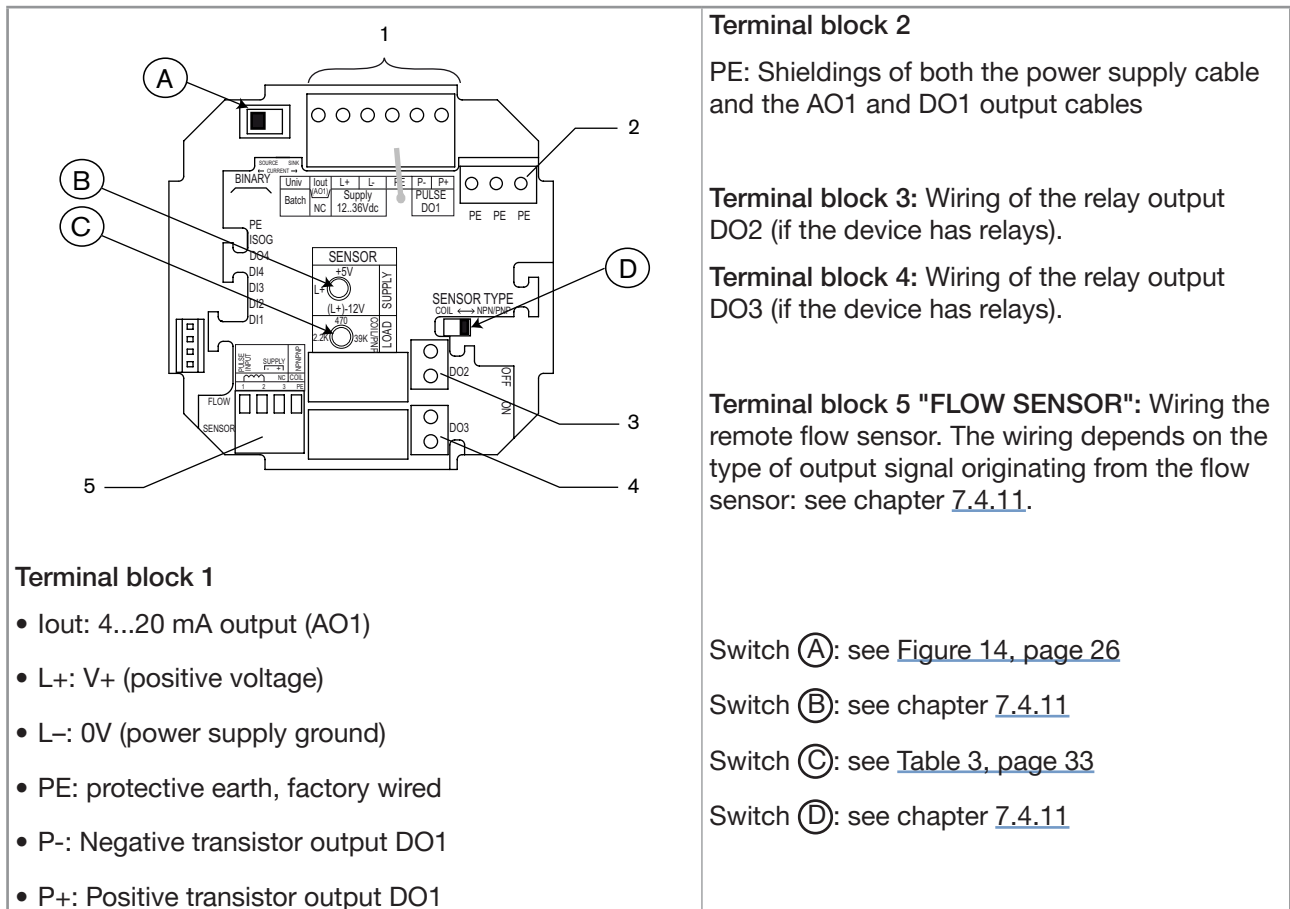


Figure 8: Terminal assignment of a panel version or a wall-mounted version, 12...36 V DC

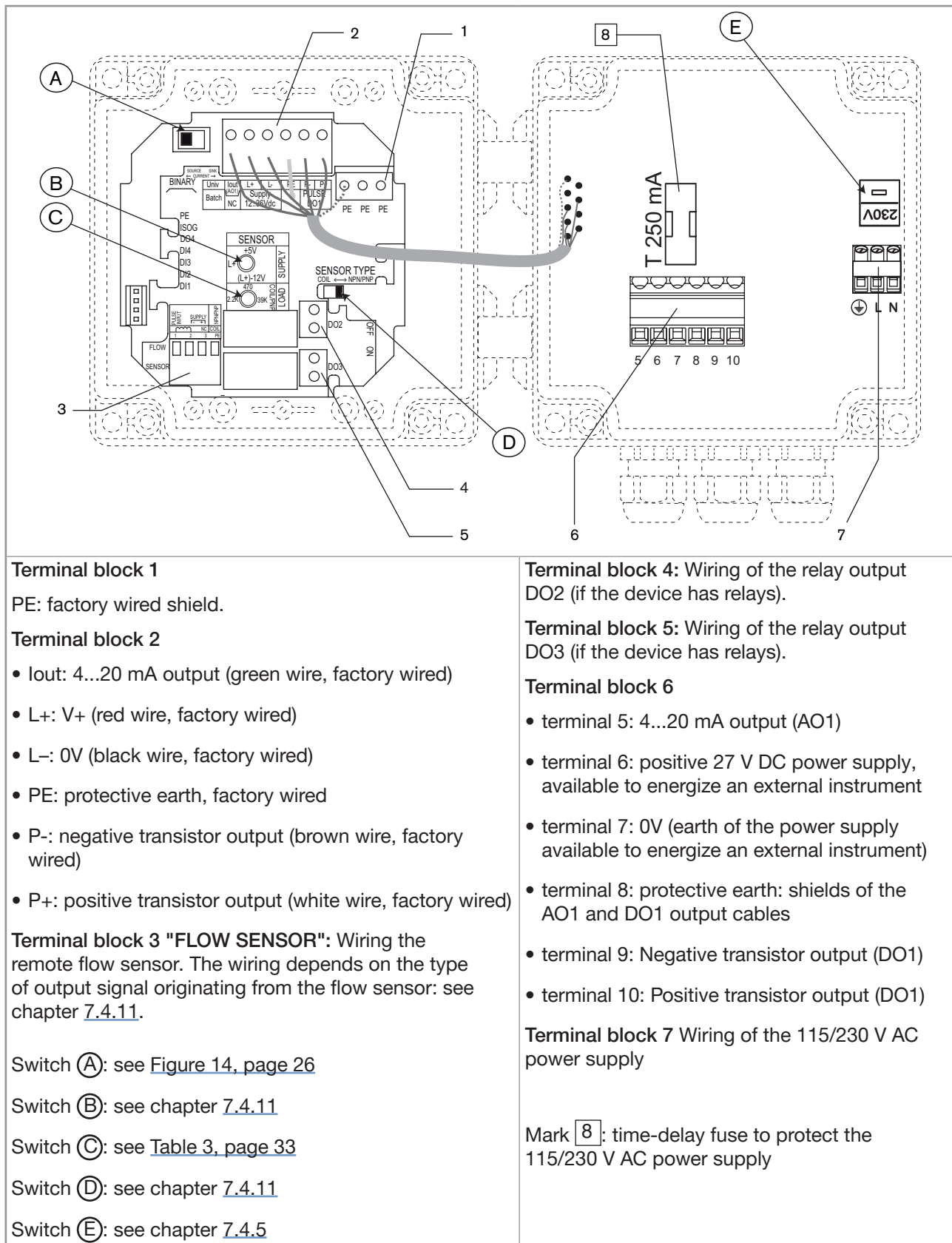


Figure 9: Terminal assignment of a wall-mounted version, 115/230 V AC

## 7.4.4 Wiring a panel version

**!** Only move the selectors when the power supply is off.

- Install the device as described in chapter 7.2.
- Set the selectors "SENSOR TYPE", "SENSOR SUPPLY" and "LOAD": see chapter 7.4.11.

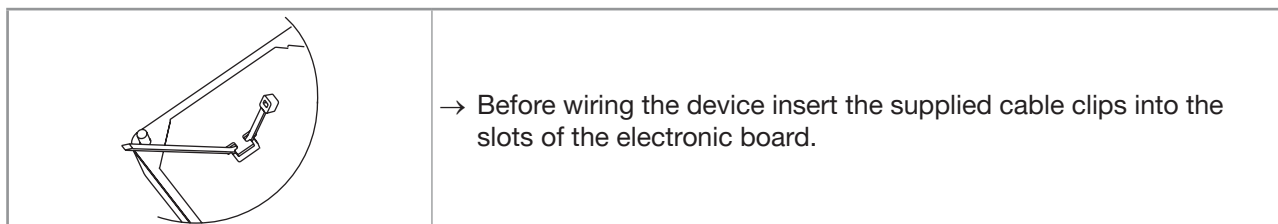


Figure 10: Inserting the cable clips

- Wire acc. to chapters 7.4.6, 7.4.7, 7.4.10 and 7.4.11.
- Secure the power supply cable, the flow sensor connection cable and, depending on the version, the relay connection cables, with the cable clips.

## 7.4.5 Wiring a wall-mounted version

**!** Only move the selectors when the power supply is off.

**!** Insert the supplied stopper gaskets into the unused cable glands to ensure the tightness of the device.

- Unscrew the unused cable gland.
- Remove the transparent disk.
- Insert the supplied stopper gasket.
- Screw the nut of the cable gland.

- Install the device as described in chapter 7.3.
- Set the selectors "SENSOR TYPE", "SENSOR SUPPLY" and "LOAD": see chapter 7.4.11.
- If the wall-mounted version is energized with a 115/230 V AC power supply, set selector **E** as shown in Figure 11.

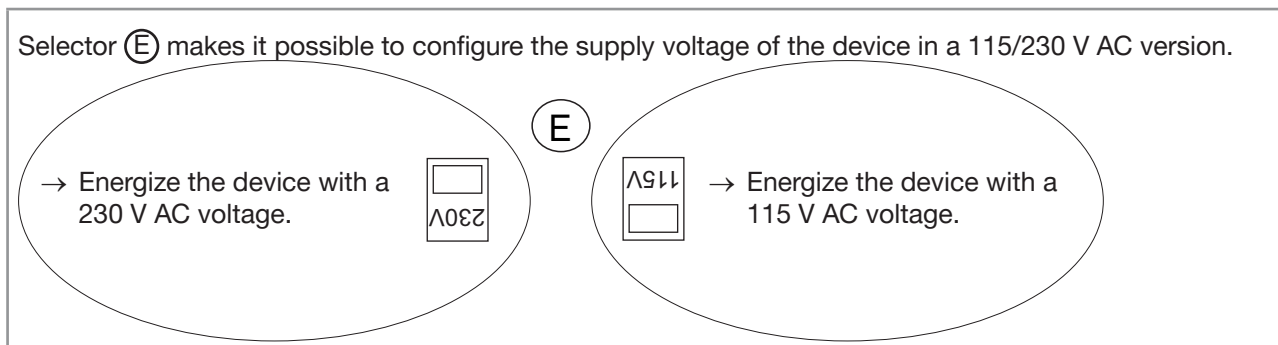


Figure 11: Selector of the supply voltage on a 115/230 V AC version



- Loosen the nuts of the cable glands.
- Insert each cable through a nut than through the cable gland, using the cable glands as shown in [Figure 12](#).

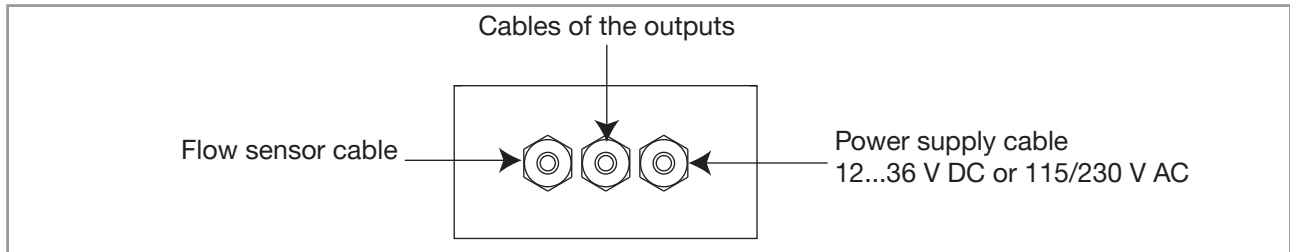


Figure 12: Using the cable glands

- Remove the two terminal blocks (marked 6 and 7 in [Figure 9](#)) from the housing.

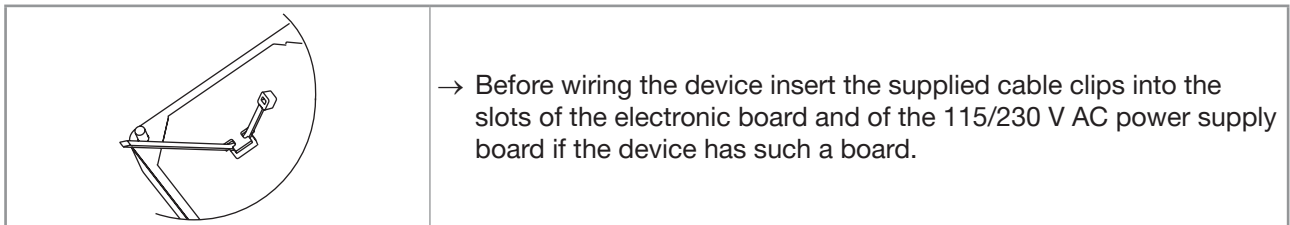


Figure 13: Inserting the cable clips

- Depending on the operating voltage of the device, wire according to chapters [7.4.6](#) to [7.4.11](#).
- Insert the two terminal blocks (marked 6 and 7 in [Figure 9](#)) into their original position.
- Letting the housing stay completely open, secure the power supply cable, the flow sensor connection cable and, depending on the version, the relay connection cables, with the cable clips.
- Tighten the cable glands making sure the cable in the housing is long enough to allow complete opening of the housing.
- Close the cover.
- Fully screw the 4 screws.
- Put the covering strips on the housing.

## 7.4.6 Wiring the AO1 current output of a panel version or a wall-mounted version, 12...36 V DC

**!** Only move the selectors when the power supply is off.

The 4...20 mA output can be wired in either sourcing or sinking mode.

Use switch **(A)** to configure the wiring of the 4...20 mA current output in sinking or sourcing mode.

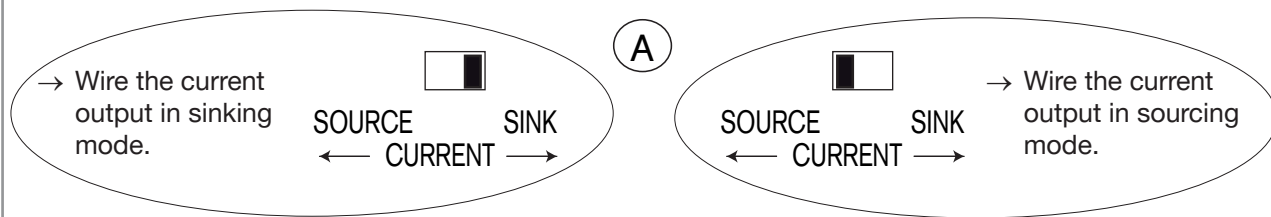
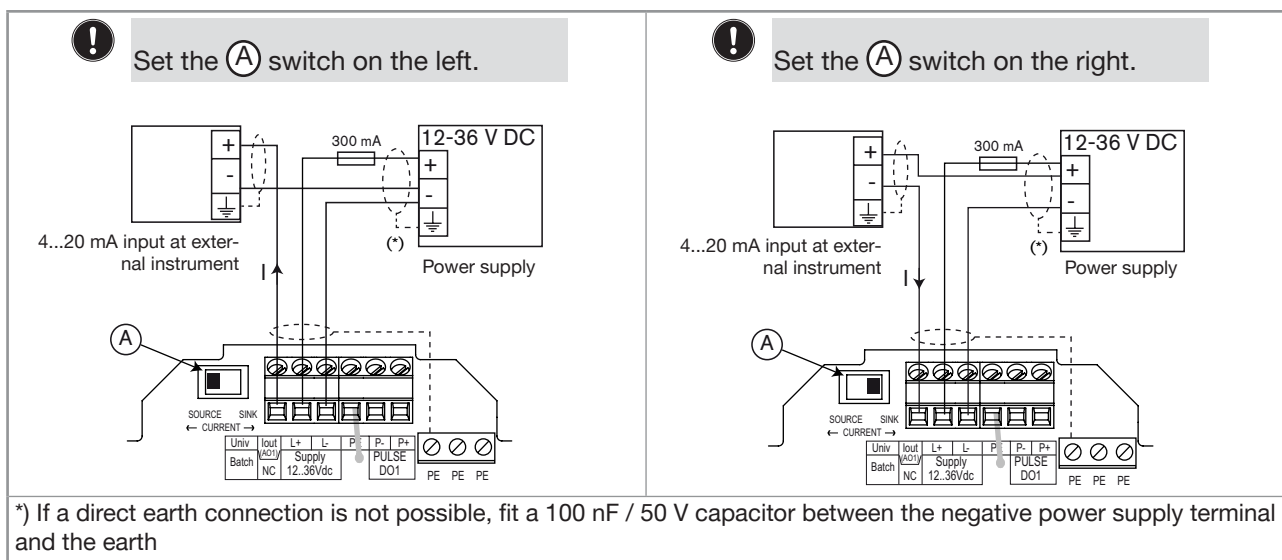


Figure 14: Using the sink/source switch



\*) If a direct earth connection is not possible, fit a 100 nF / 50 V capacitor between the negative power supply terminal and the earth

Figure 15: Wiring of the 4...20 mA output (AO1) in sourcing mode

Figure 16: Wiring of the 4...20 mA output (AO1) in sinking mode

## 7.4.7 Wiring the digital output DO1 (transistor) of a panel version or a wall-mounted version, 12...36 V DC

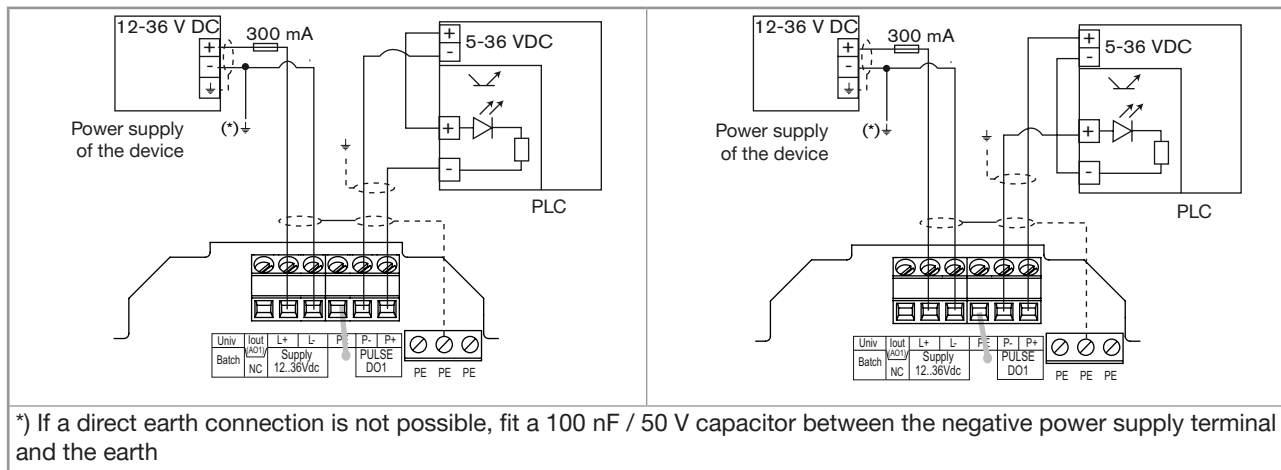


Figure 17: NPN wiring of the digital output DO1 (transistor)

Figure 18: PNP wiring of the digital output DO1 (transistor)

## 7.4.8 Wiring the AO1 current output of a wall-mounted version, 115/230 V AC

**!** Only move the selectors when the power supply is off.

The 4...20 mA output can be wired in either sourcing or sinking mode.

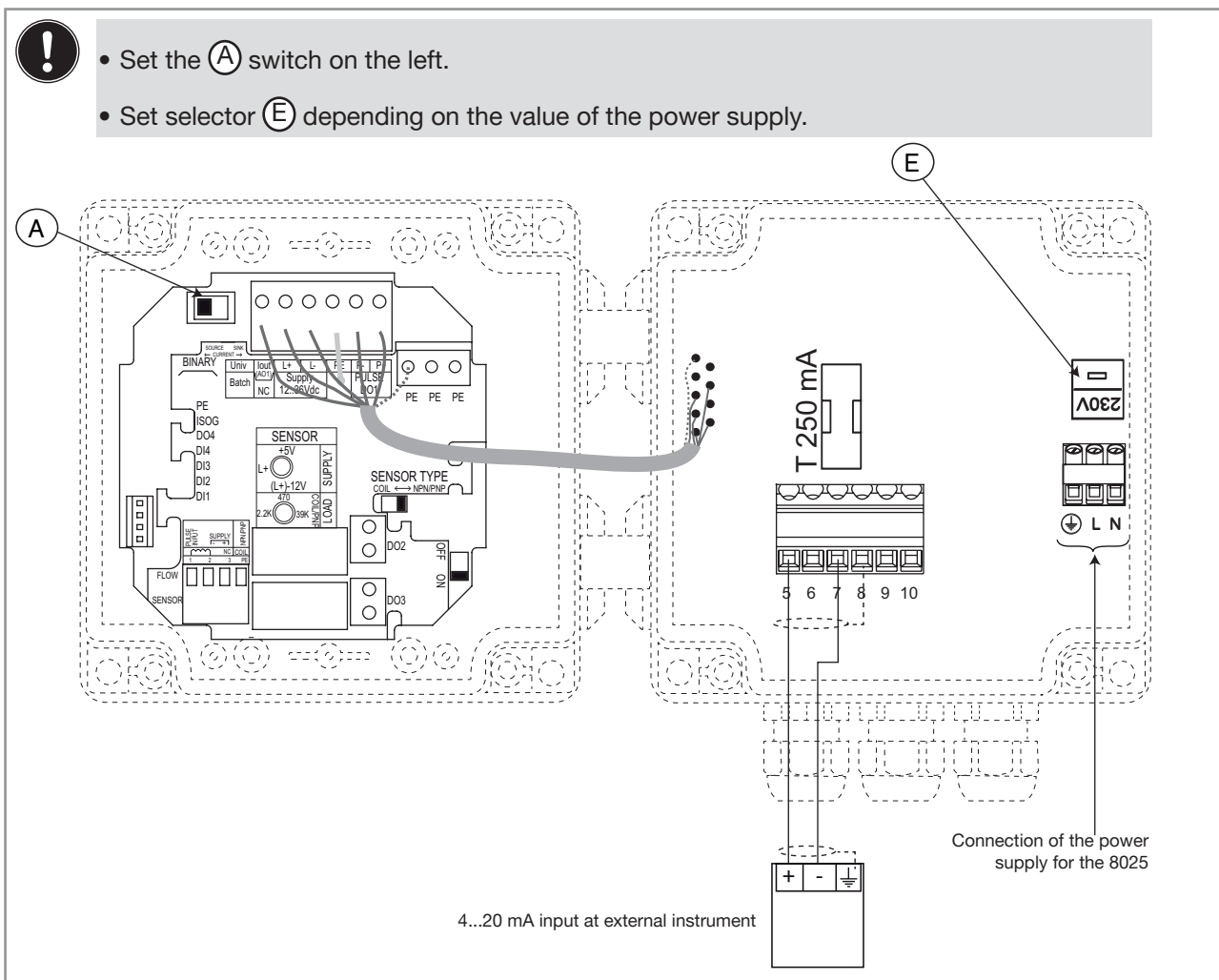


Figure 19: Wiring of the 4...20 mA output (AO1) of a wall-mounted version, 115/230 V AC, in sourcing mode

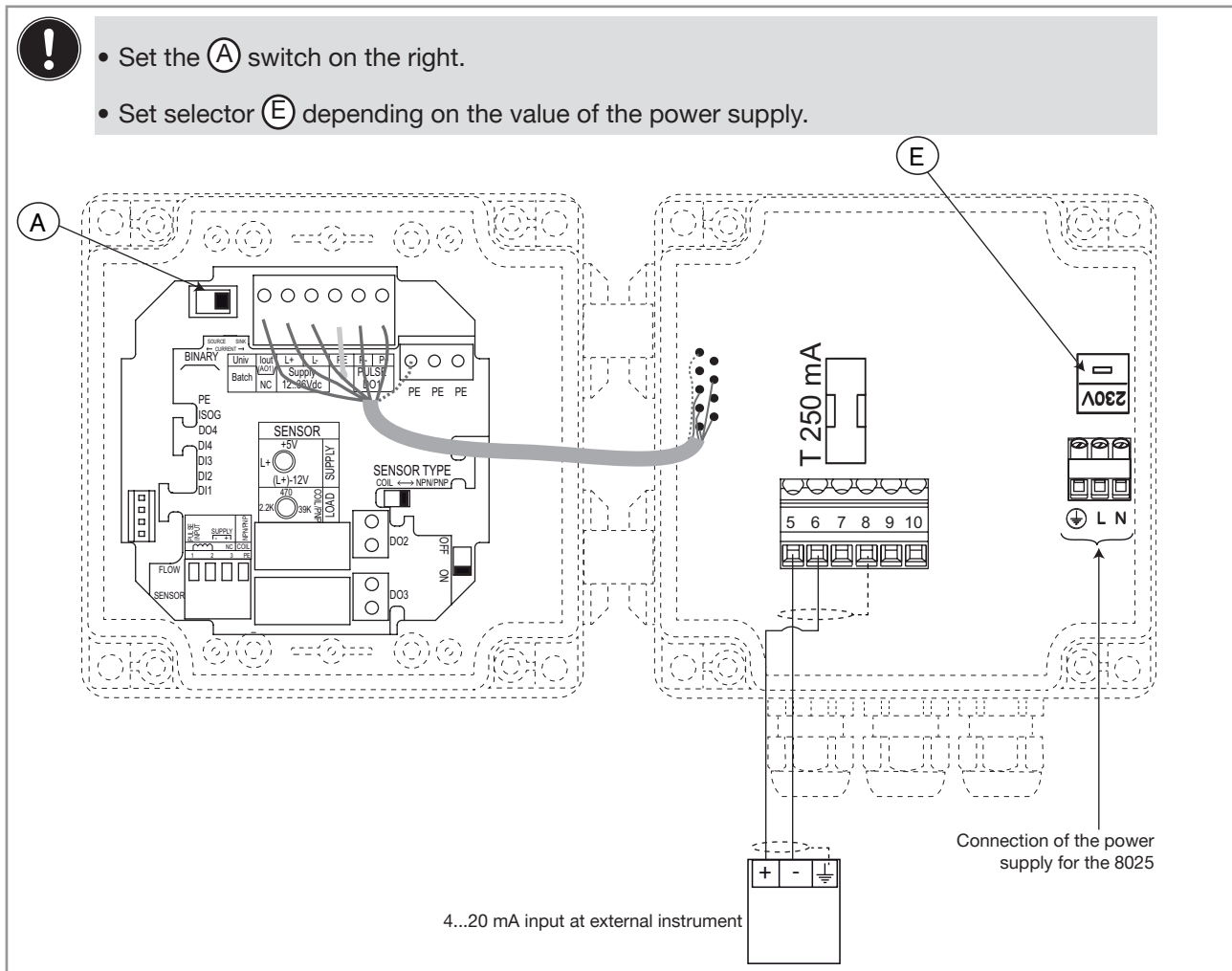


Figure 20: Wiring of the 4...20 mA output (AO1) of a wall-mounted version, 115/230 V AC, in sinking mode

## 7.4.9 Wiring the digital output DO1 (transistor) of a wall-mounted version, 115/230 V AC

**!** Only move the selectors when the power supply is off.

**!** Set of selector **E** depending on the value of the power supply.

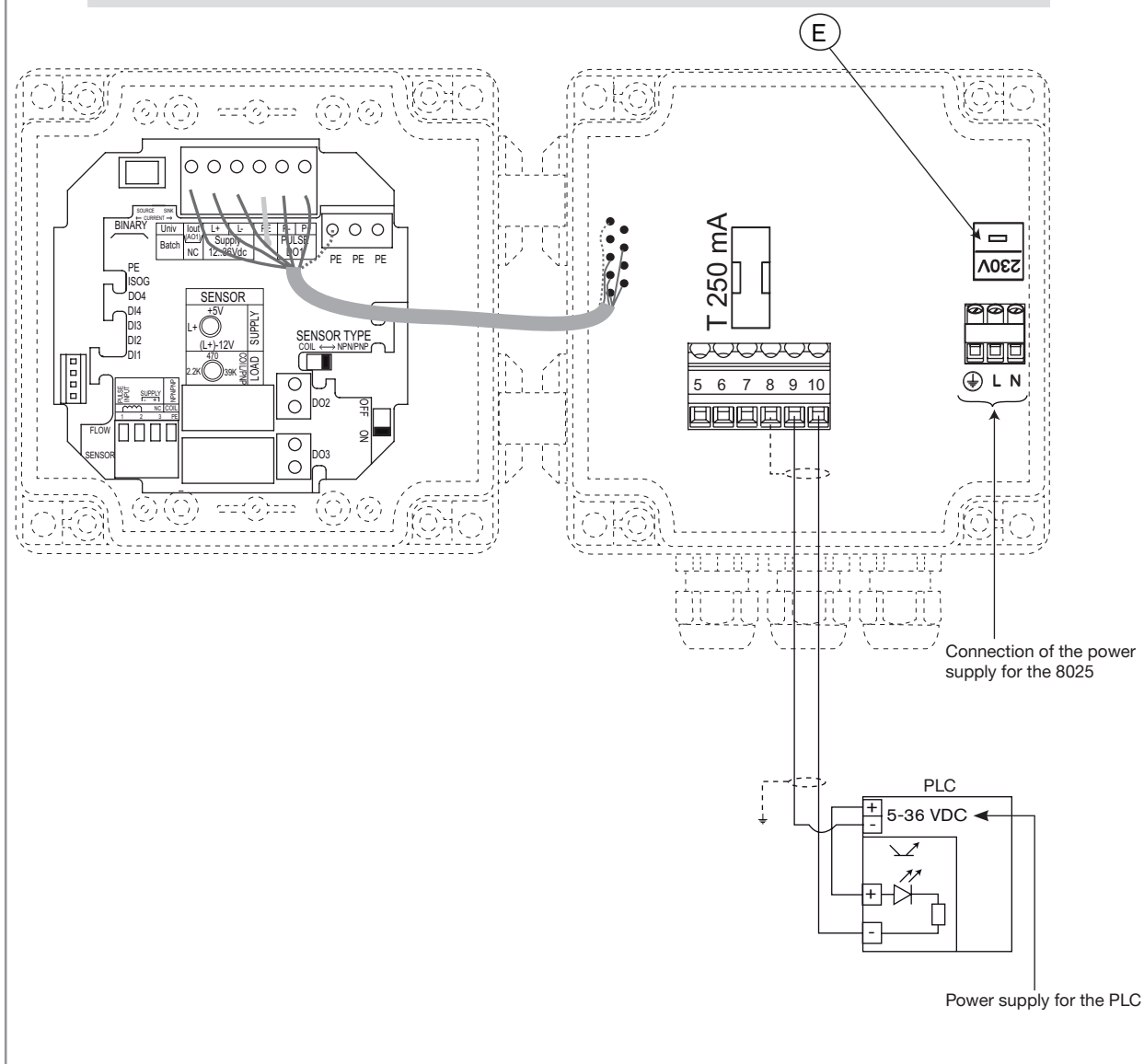


Figure 21: NPN wiring of the digital output DO1 (transistor) of a wall-mounted version, 115/230 V AC



Set of selector (E) depending on the value of the power supply.

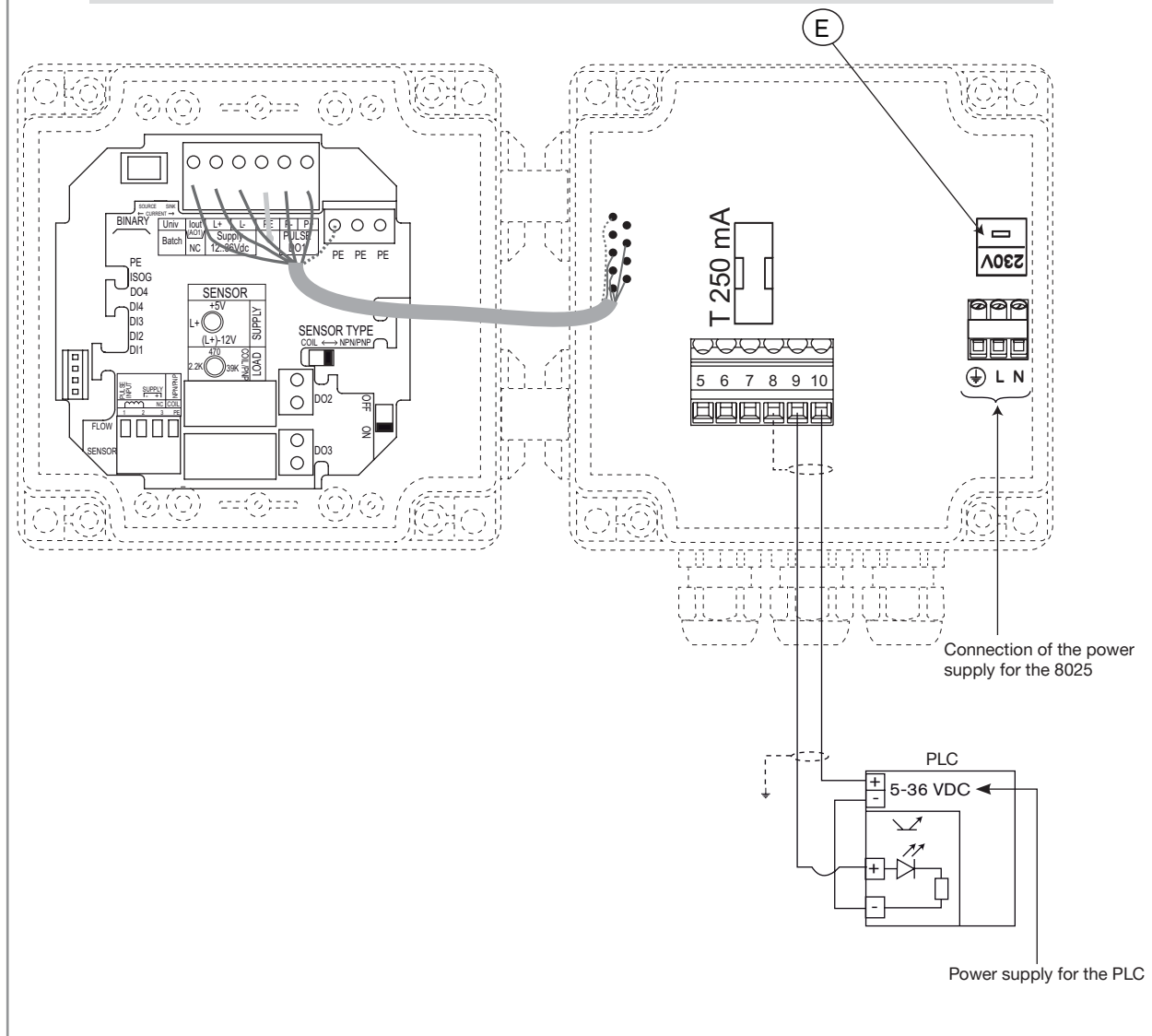


Figure 22: PNP wiring of the digital output DO1 (transistor) of a wall-mounted version, 115/230 V AC

### 7.4.10 Wiring the digital outputs DO2 and DO3 (relays) of a panel or a wall-mounted version



#### **DANGER**

Danger due to the operation of the relay outputs of a UL device in a wet location.

► If a UL device is used in a wet location:

- energize the relay outputs with an alternating voltage of max. 16 Vrms and 22.6 Vpeak.
- or energize the relay outputs with a direct voltage of max. 35 V DC.

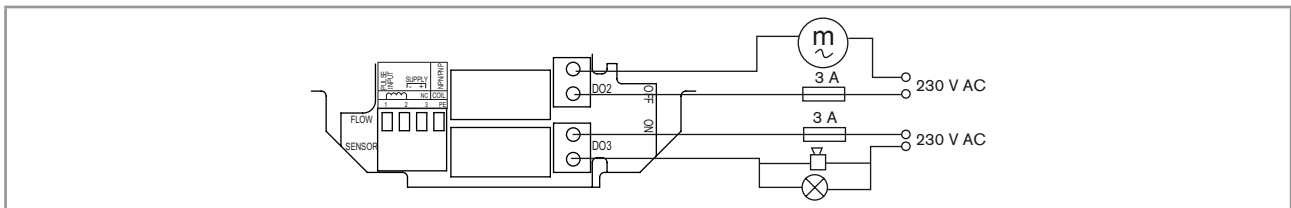


Figure 23: Wiring of the digital outputs DO2 and DO3 (relays)

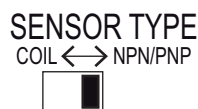
### 7.4.11 Connecting the flow sensor to the transmitter



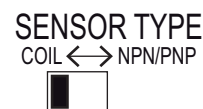
Before connecting the flow sensor to the transmitter 8025 UNIVERSAL:

- Set selector "SENSOR TYPE" depending on the output signal providing from the flow sensor. See [Figure 24](#) and [Table 3, page 33](#).
- If the selector "SENSOR TYPE" is set on "NPN/PNP", set the selector "SENSOR SUPPLY" depending on the transmitter supply voltage. See [Figure 25](#).
- Set selector "LOAD" depending on the type of signal sent out by the flow sensor and on the load wanted on terminal 1 "PULSE INPUT" of terminal block "FLOW SENSOR". See [Table 3, page 33](#).

Selector **D** makes it possible to configure the type of signal the 8025 UNIVERSAL receives from the flow sensor.



**D**



→ Set the selector on the right (default position) when the signal from the flow sensor which is connected to the 8025 UNIVERSAL is either:

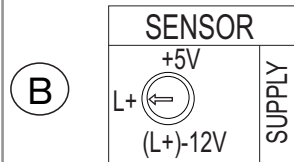
- a pulse signal, NPN or PNP
- an "on/off" signal (Reed relay for example)
- a 0...5 V DC standard voltage signal (TTL, for example)

→ Set the selector on the left when the signal from the flow sensor which is connected to the 8025 UNIVERSAL is a sine-wave signal (coil).

Figure 24: Using selector "SENSOR TYPE"




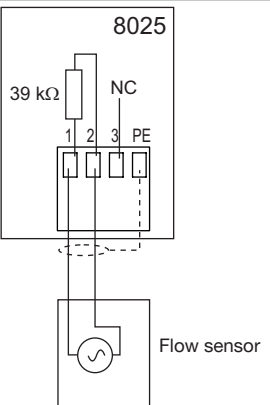
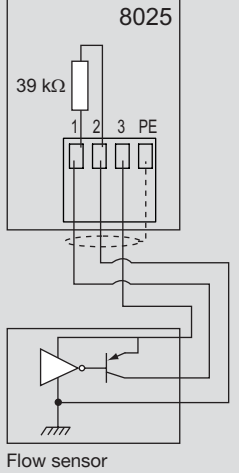
When selector "SENSOR TYPE" above is set on "NPN/PNP", selector (B) makes it possible to configure the supply voltage for the flow sensor.


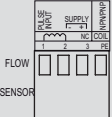
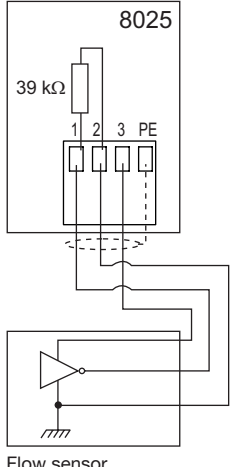
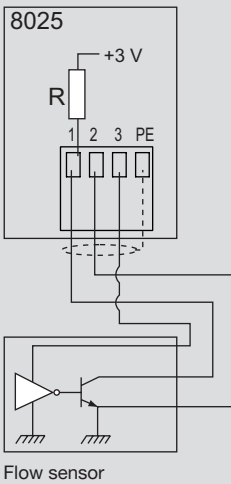


- If the 8025 UNIVERSAL is energized with a 115/230 V AC power supply, set selector "SENSOR SUPPLY" on "L+" (default position).
- If the 8025 UNIVERSAL is energized with a 12...36 V DC power supply, set the voltage selector "SENSOR SUPPLY" depending on the voltage needed by the remote flow sensor: "+5V", "L+" (default position) or "(L+)-12V".

Figure 25: Using selector "SENSOR SUPPLY"

Table 3: Position of selectors "SENSOR TYPE" and "LOAD" and terminal assignment of terminal block "FLOW SENSOR" depending on the signal emitted by the flow sensor

Type of signal emitted by the flow sensor	Selector "SENSOR TYPE" (D)	Selector "SENSOR SUPPLY" (B)	Selector "LOAD" (C)	Terminal assignment of terminal block "FLOW SENSOR"
sinusoid (coil)	→ Set the selector on "COIL" (Figure 24)	→ Any position.		
pulse, PNP	→ Set the selector on "NPN/PNP" (Figure 24)	→ Set the selector as shown in Figure 25.	→ Set selector "LOAD" on "39K": the input impedance on terminals 1 and 2 of terminal block "FLOW SENSOR" will then be 39 kΩ	

Type of signal emitted by the flow sensor	Selector "SENSOR TYPE" (D)	Selector "SENSOR SUPPLY" (B)	Selector "LOAD" (C)	Terminal assignment of terminal block "FLOW SENSOR"
0...5 V DC standard voltage signal (TTL, for example)	→ Set the selector on "NPN/ PNP" (Figure 24)	→ Set the selector as shown in Figure 25.		
			→ Set selector "LOAD" on "39K": the input impedance on terminals 1 and 2 of terminal block "FLOW SENSOR" will then be 39 kΩ	 <p>8025</p> <p>39 kΩ</p> <p>1 2 3 PE</p> <p>Flow sensor</p>
pulse, NPN	→ Set the selector on "NPN/ PNP" (Figure 24)	→ Set the selector as shown in Figure 25.	→ Set selector "LOAD": <ul style="list-style-type: none"> <li>• either on "2.2K": the load resistance R is then 2.2 kΩ</li> <li>• either on "470": the load resistance R is then 470 Ω</li> </ul>	 <p>8025</p> <p>+3 V</p> <p>R</p> <p>1 2 3 PE</p> <p>Flow sensor</p>


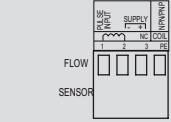
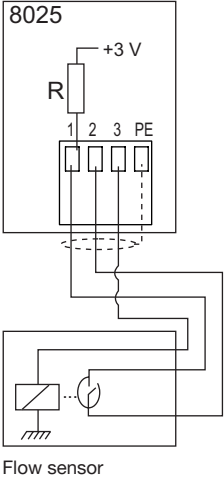
Type of signal emitted by the flow sensor	Selector "SENSOR TYPE" (D)	Selector "SENSOR SUPPLY" (B)	Selector "LOAD" (C)	Terminal assignment of terminal block "FLOW SENSOR"
"on/off" signal (Reed relay for example)	→ Set the selector on "NPN/ PNP" (Figure 24)	→ Set the selector as shown in <a href="#">Figure 25</a> .	 → Set selector "LOAD": <ul style="list-style-type: none"> <li>• either on "2.2K": the load resistance R is then 2.2 kΩ</li> <li>• either on "470": the load resistance R is then 470 Ω</li> </ul>	 

Table 4: Default positions of selectors "SENSOR SUPPLY", "LOAD" and "SENSOR TYPE"

Selector	Default position
SENSOR SUPPLY (B)	L+
LOAD (C)	2.2K
SENSOR TYPE (D)	NPN/PNP

## 8 OPERATING AND COMMISSIONING

### 8.1 Safety instructions



#### WARNING

**Risk of injury due to nonconforming operating.**

Nonconforming operating could lead to injuries and damage the device and its surroundings.

- ▶ The operators in charge of operating must have read and understood the contents of these Operating Instructions.
- ▶ In particular, observe the safety recommendations and intended use.
- ▶ The device/installation must only be operated by suitably trained staff.



#### WARNING

**Danger due to nonconforming commissioning.**

Nonconforming commissioning could lead to injuries and damage the device and its surroundings.

- ▶ Before commissioning, make sure that the staff in charge have read and fully understood the contents of the Operating Instructions.
- ▶ In particular, observe the safety recommendations and intended use.
- ▶ The device / the installation must only be commissioned by suitably trained staff.
- ▶ Before commissioning the device, enter the K factor of the fitting used. See chapter [8.6.3](#).

## 8.2 Operating levels of the device

The device has two operating levels: the Process level and the Configuration level.

The Process level makes it possible:

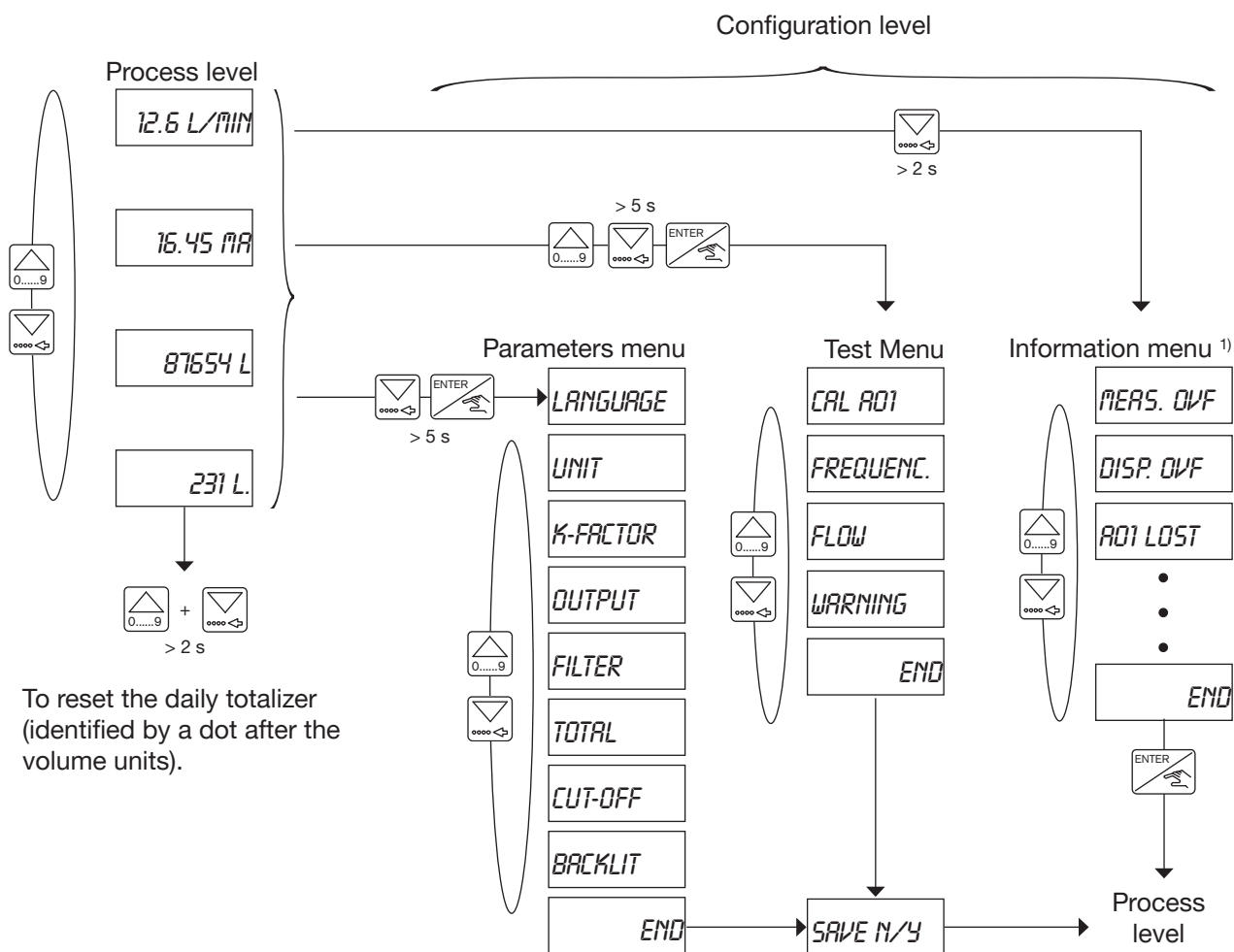
- to read the flow rate measured by the device, the value of the current transmitted on the 4...20 mA analogue output, the values of both the daily and main totalizers.
- to reset the daily totalizer.
- to access the Configuration level.

The Configuration level comprises three menus (Parameters, Test and Information) and makes it possible:

- to set the device parameters.
- to test some device parameters.
- to read, when the status LED of the device is orange or red, the warning and fault messages generated by the device.

Table 5: Default settings of the device

Function	Default value
LANGUAGE	English
UNIT of the flow rate	l/min
UNIT of the totalizers	Litre
OUTPUT AO1	4 mA = 0.000
	20 mA = 0.000
	ERR. 22 mA disabled
OUTPUT DO1	Pulse
	PU = 0.00 litre
OUTPUTS DO2 and DO3	Hysteresis, not inverted
	2- = 3- = 0.000
	2+ = 3+ = 0.000
	Time delays 2 and 3 = 0
K FACTOR	1
FILTER	2, fast
CUT-OFF	0.000
BACKLIT	Level 9, activated for 30 s
FLOW-WARNING	W- = W+ = 0.000
VOLUME-WARNING	000000



<sup>1)</sup> Accessible when the device status LED is orange or red (see chapter 8.3).

## 8.3 Description of the navigation keys and the status LEDs

- Scrolling up the parameters
- Incrementing the figure selected

- Selecting the displayed parameter.
- Confirming the settings.

Device status LED: see following table.

















Status LED of relay DO3 (LED ON = contact closed)

Status LED of relay DO2 (LED ON = contact closed)

- Reading the messages.
- Scrolling through the parameters.
- Selecting the figure on the left.

Device status LED	Status of the device
Green	The device operates correctly.
Orange	<p>A warning message is generated.</p> <p>→ Press the  key for 2 seconds in the Process level to access the message. See chapter 9.3 for the meaning of the message.</p> <p>Furthermore, a relay output (DO2 or DO3) or the transistor output DO1 switches if it is configured in the "WARNING" mode (see Figure 40 or Figure 42).</p>
Red	<p>An error message has been generated and the current output sends out a 22 mA current (if parameter "ERR. 22mA" is set to "ENABLED". See chapter 8.6.7).</p> <p>→ Press the  key for 2 seconds in the Process level to access the message. See chapter 9.3 for the meaning of the message.</p>
Blinking, whatever the colour	A check for the correct behaviour of the outputs is running (see chapter 8.7.3).

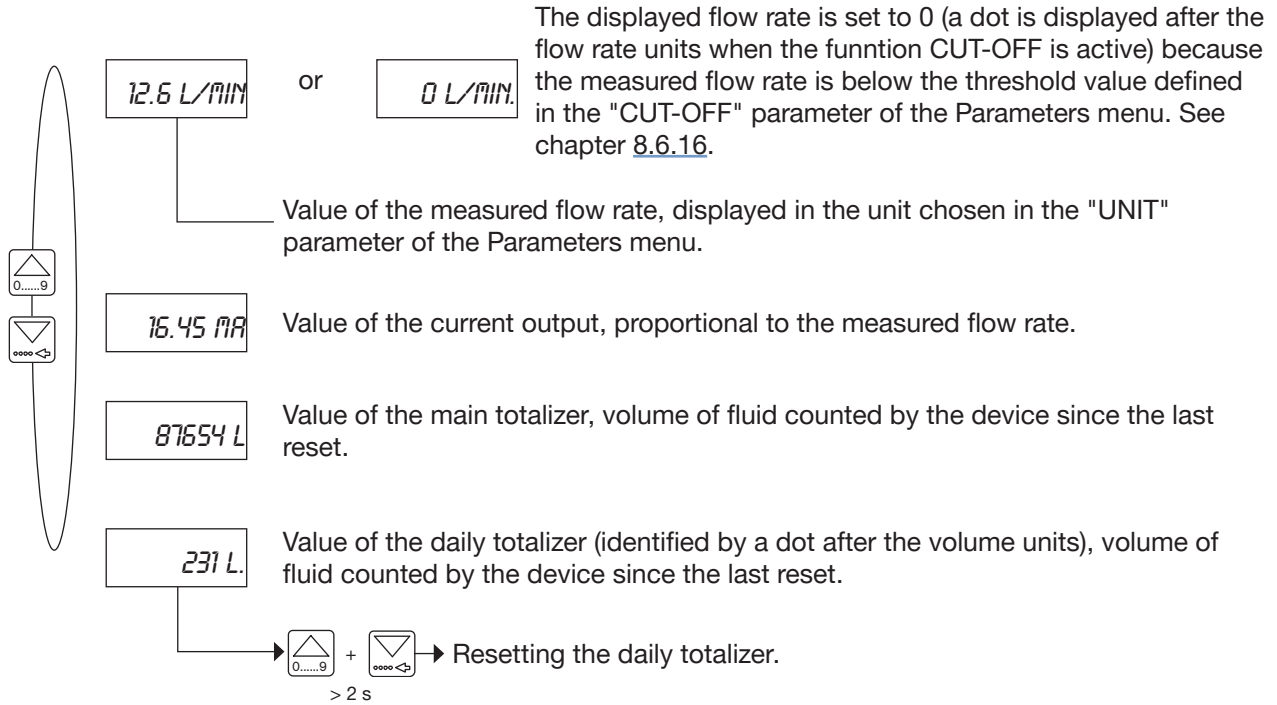
## 8.4 Using the navigation keys

You want to ...	Press ...
move between parameters within a level or a menu.	<ul style="list-style-type: none"> <li> to go to the next parameter.</li> <li> to go to the previous parameter.</li> </ul>
access the Parameters menu.	 +  simultaneously for 5 s, in the Process level.
access the Test menu.	 +  +  simultaneously for 5 s, in the Process level.
access the Information menu.	 for 2 s, in the Process level, when the device status LED is orange or red.
reset the daily totalizer, from the Process level.	 +  simultaneously for 2 s, when the daily totalizer is displayed in the Process level.
select the displayed parameter.	
confirm the displayed value.	
modify a numerical value.	<ul style="list-style-type: none"> <li> to increase the blinking digit.</li> <li> to select the digit at the left of the blinking digit.</li> <li> +  to move the decimal point.</li> </ul>





## 8.5 Details of the Process level

This level is active by default when the device is energized.



## 8.6 Details of the Parameters menu

To access the Parameters menu, simultaneously press keys   for at least 5 s.

This menu comprises the following configurable parameters:

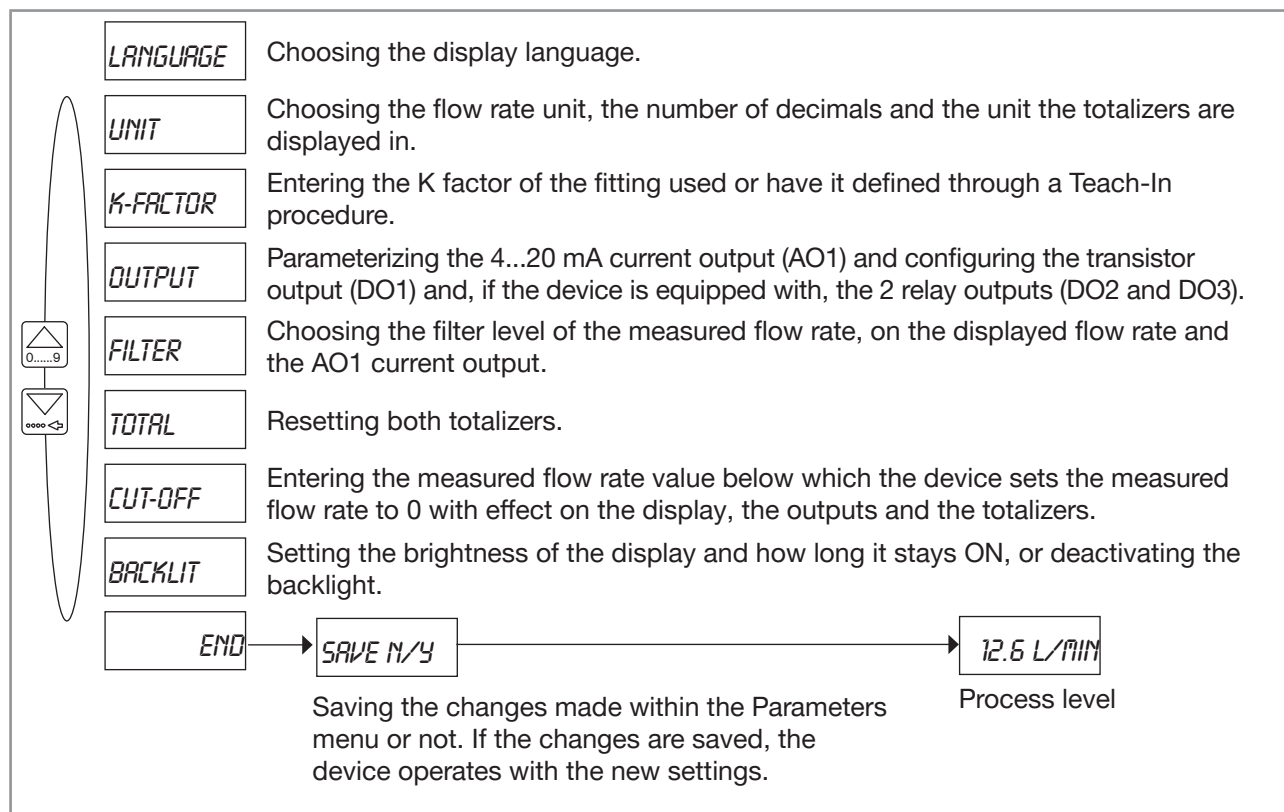


Figure 26: Diagram of the Parameters menu

### 8.6.1 Choosing the display language

When the device is energized for the first time, the display language is English.

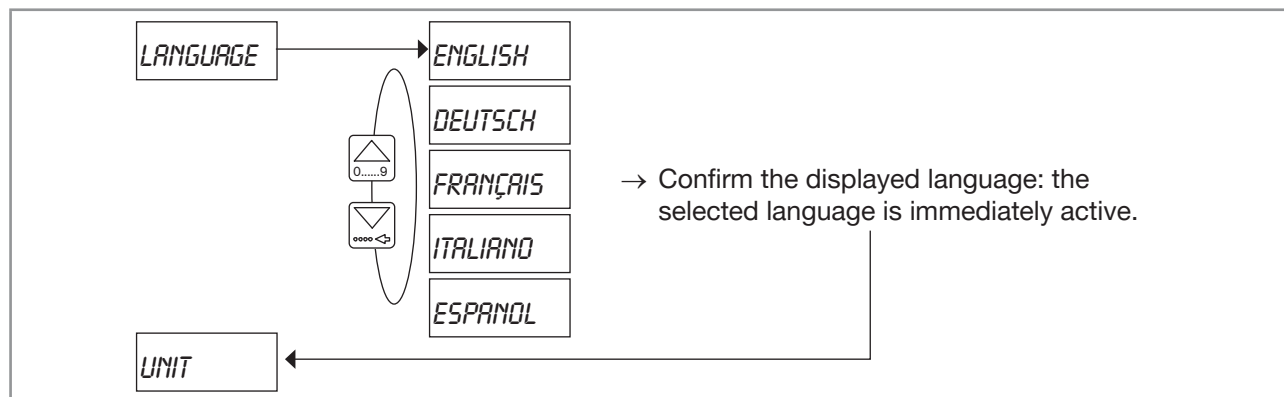



Figure 27: Diagram of the "LANGUAGE" parameter of the Parameters menu

→ If you do not want to adjust another parameter, go to the "END" parameter of the Parameters menu and press  to save the settings or not and go back to the Process level.

## 8.6.2 Choosing the flow rate units, the number of decimals and the units of the totalizers

When the flow rate unit has been changed:

- Manually reset both totalizers.
- Manually convert the flow rate values in the different settings.
- ! If, furthermore, the unit changes from "metric" to "gallon" and vice versa, convert the K factor using following formulae:
  - K factor in pulse/US Gallon = K factor in pulse/l x 3.785
  - K factor in pulse/IMP Gallon = K factor in pulse/l x 4.546

The max. flow rate that can be displayed depends on the number of decimals chosen:

- 9999 if the number of decimals = 0 or AUTO,
- ! • 999.9 if the number of decimals = 1,
- 99.99 if the number of decimals = 2,
- 9.999 if the number of decimals = 3.

- ! • If the units chosen for the totalizers is "millilitre", the totalizer values are displayed in litres followed by three decimals.
- If the units chosen for the totalizers is "litre", the totalizer values are displayed in litres without decimals.

The "UNIT" parameter makes it possible to choose:

- the flow rate units.
- a fixed number of decimals (choose 0, 1, 2 or 3) to display the flow rate in the Process level, or a floating decimal point (choose "AUTO"): the device automatically adjusts the position of the decimal point depending on the chosen unit and the measured flow rate.
- the volume units of the totalizers if the unit previously chosen is in litres, in millilitres or in m<sup>3</sup>. The totalizer values are automatically displayed in gallons if the flow rate unit chosen is in gallons.

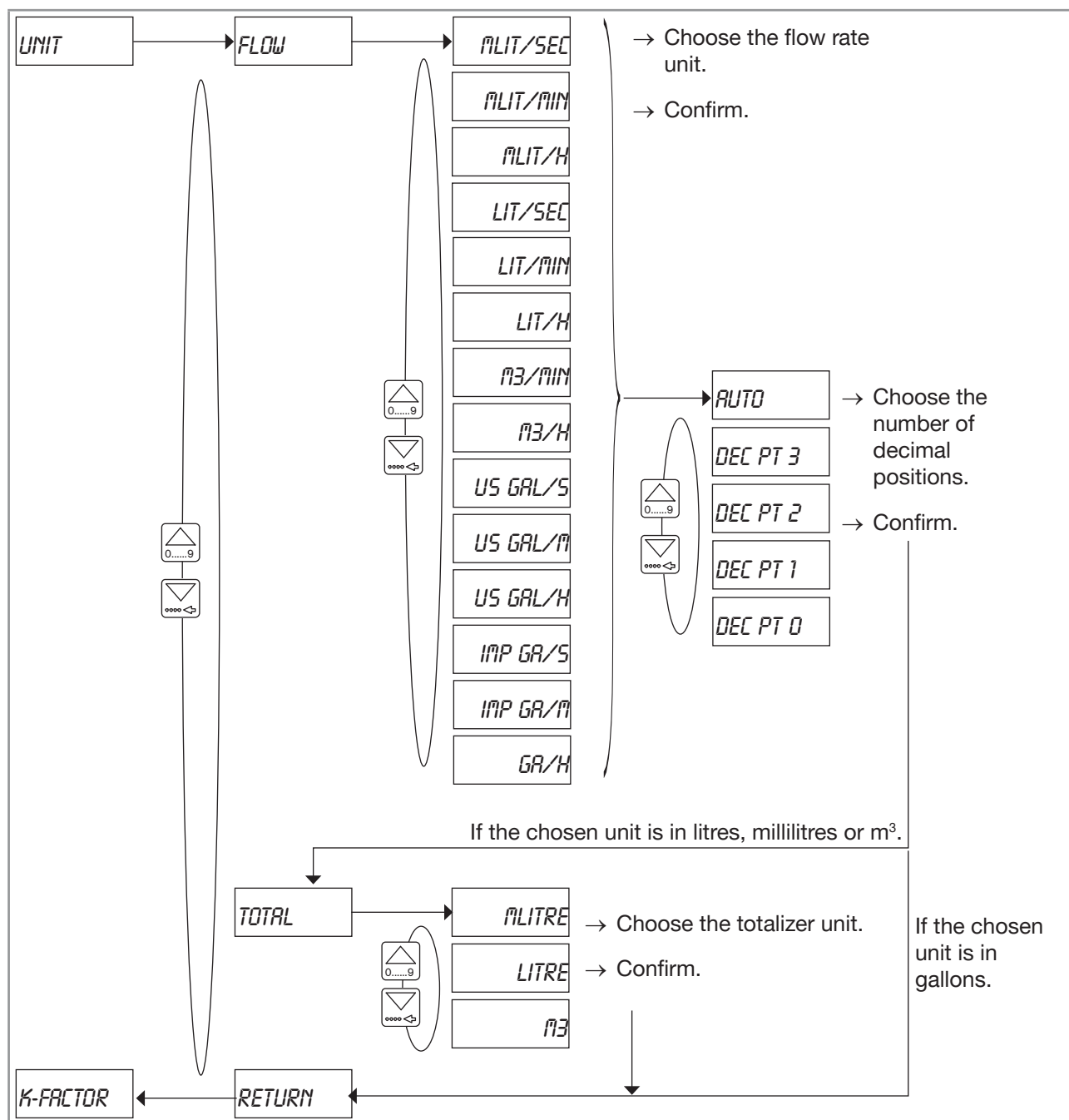



Figure 28: Diagram of the "UNIT" parameter of the Parameters menu

→ If you do not want to adjust another parameter, go to the "END" parameter of the Parameters menu and press  to save the settings or not and go back to the Process level.

### 8.6.3 Entering the K factor of the fitting used

The device determines the flow rate in the pipe using the fitting K factor.

The K factor of the fitting used can be entered here. The device may also determine the K factor using a Teach-In procedure: see chapter 8.6.4.



The device will use the new K factor as soon as "SAVE YES" is confirmed when leaving the Parameters menu.



The K factor of the fitting used is in the Operating Instructions of the fitting.

The Operating Instructions of the Bürkert fittings can be found on the internet at [country.burkert.com](http://country.burkert.com).

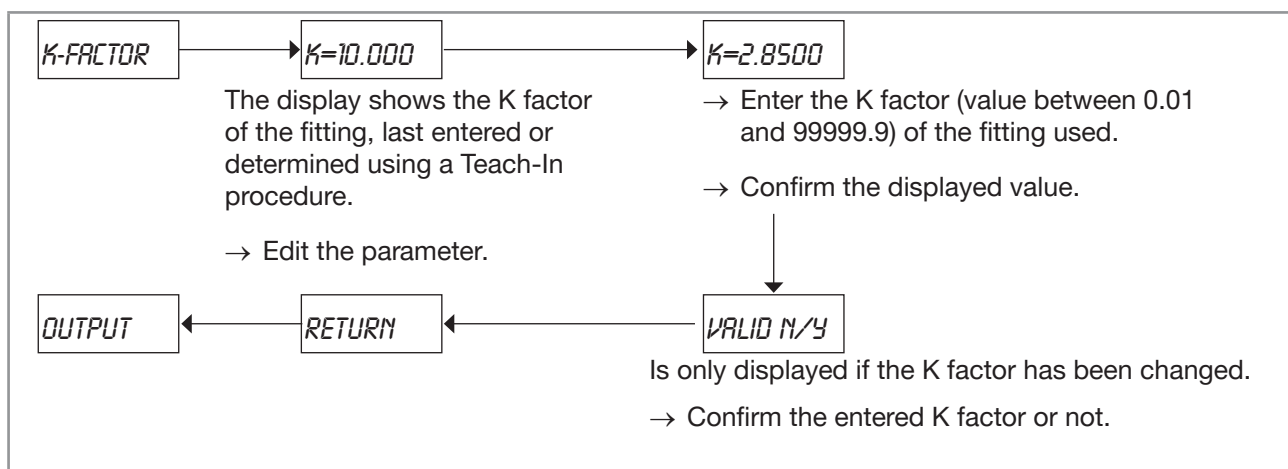



Figure 29: Entering the K factor of the fitting used

→ If you do not want to adjust another parameter, go to the "END" parameter of the Parameters menu and press  to save the settings or not and go back to the Process level.

### 8.6.4 Determining the fitting K factor using a Teach-In procedure

The device determines the flow rate in the pipe using the fitting K factor.

The "TEACH V." or "TEACH F." parameter allows the device to determine the fitting K factor using a Teach-In procedure. The K factor may also be directly entered: see chapter 8.6.3.

The Teach-In can be done either depending on a known volume ("TEACH V.") or depending on the flow rate ("TEACH F.") in the pipe, measured by a reference instrument.

## Determining the fitting K factor using a Teach-In procedure depending on a volume ("TEACH V.")



The device will use the new K factor as soon as "SAVE YES" is confirmed when leaving the Parameters menu.

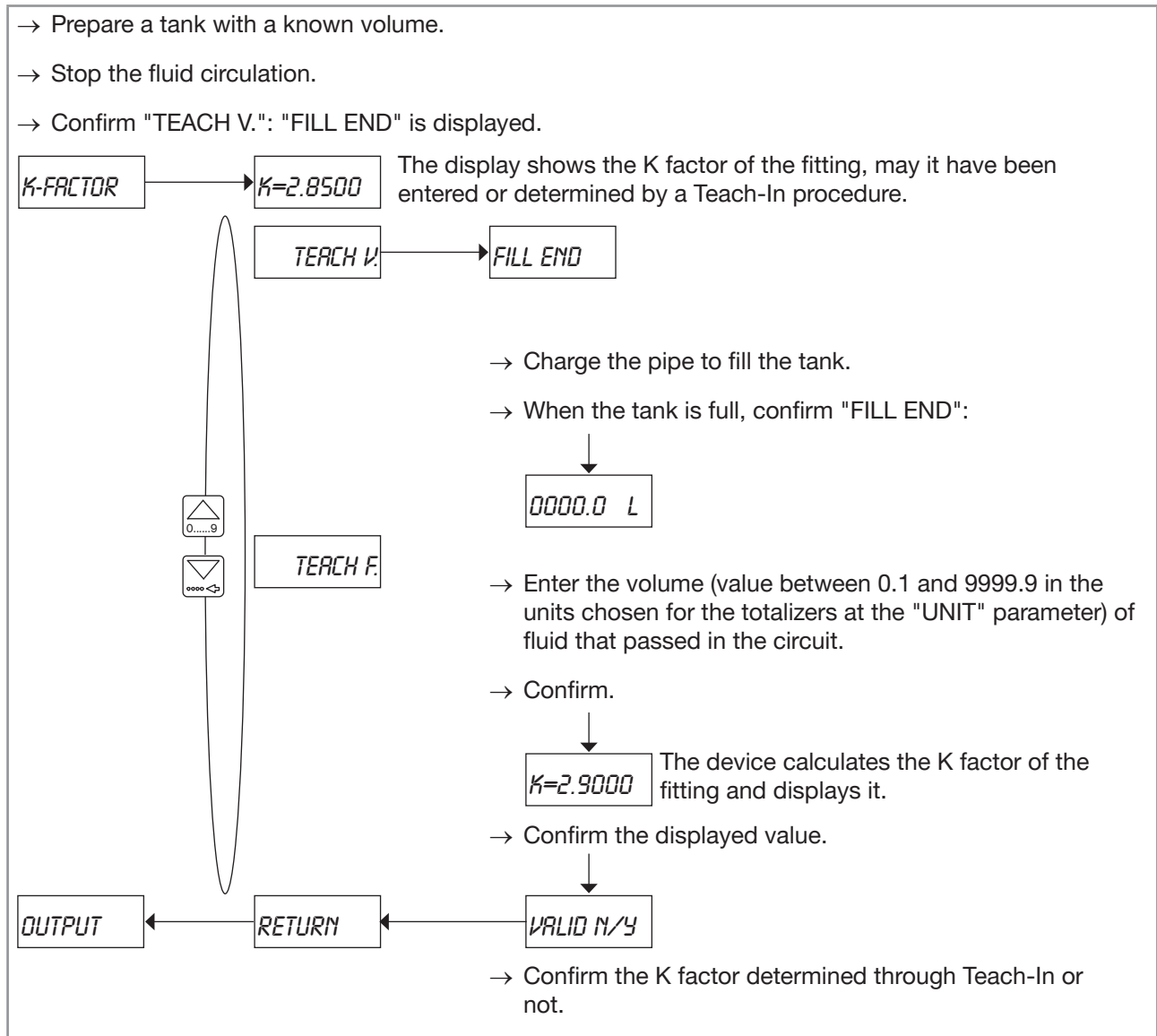



Figure 30: Teach-In procedure depending on a volume

→ If you do not want to adjust another parameter, go to the "END" parameter of the Parameters menu and press  to save the settings or not and go back to the Process level.

## Determine the fitting K factor using a Teach-In procedure depending on a volume ("TEACH F.")



The device will use the new K factor as soon as "SAVE YES" is confirmed when leaving the Parameters menu.

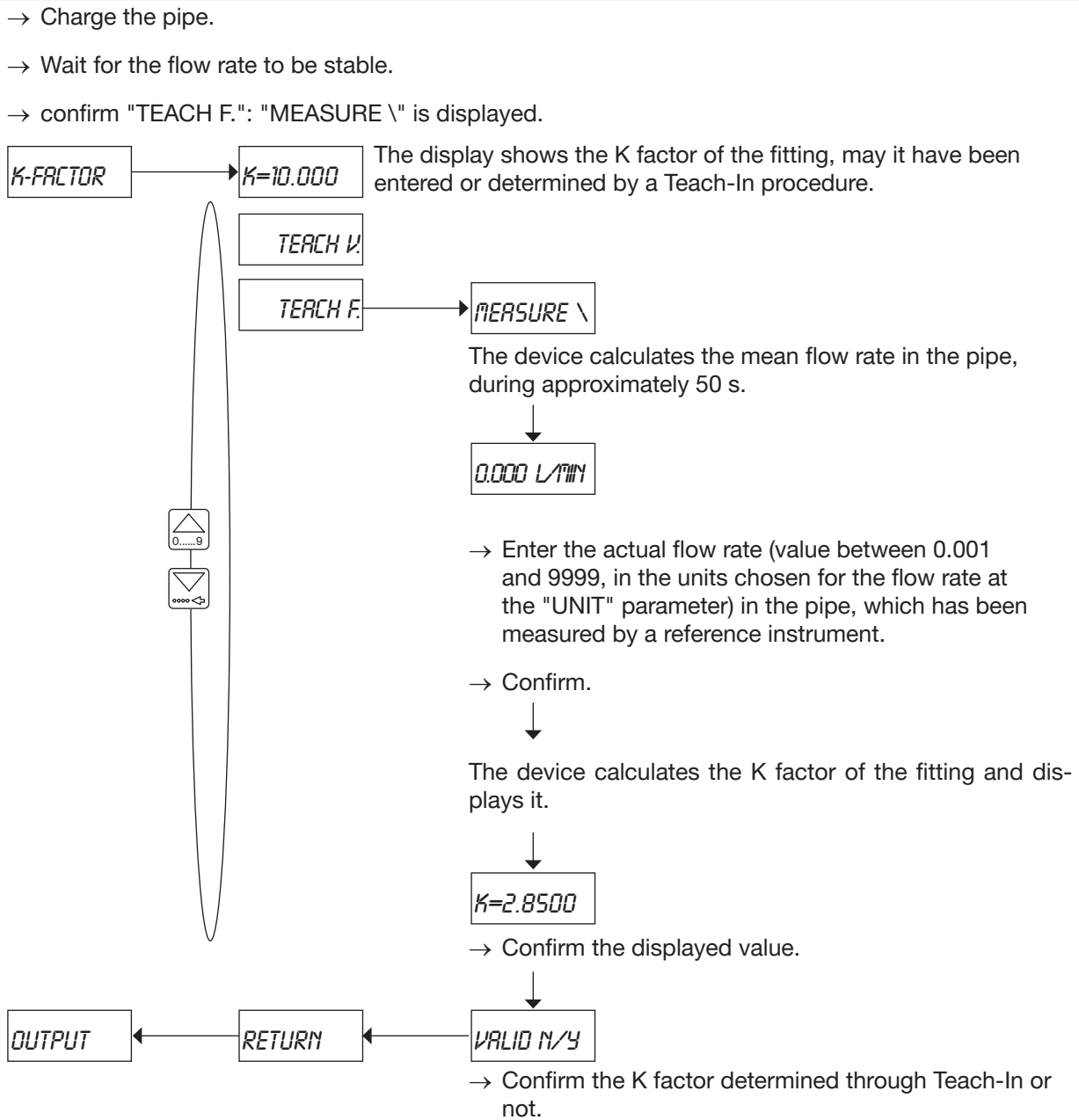



Figure 31: Teach-In procedure depending on the flow rate

→ If you do not want to adjust another parameter, go to the "END" parameter of the Parameters menu and press  to save the settings or not and go back to the Process level.

## 8.6.5 Configuring the outputs (general diagram)

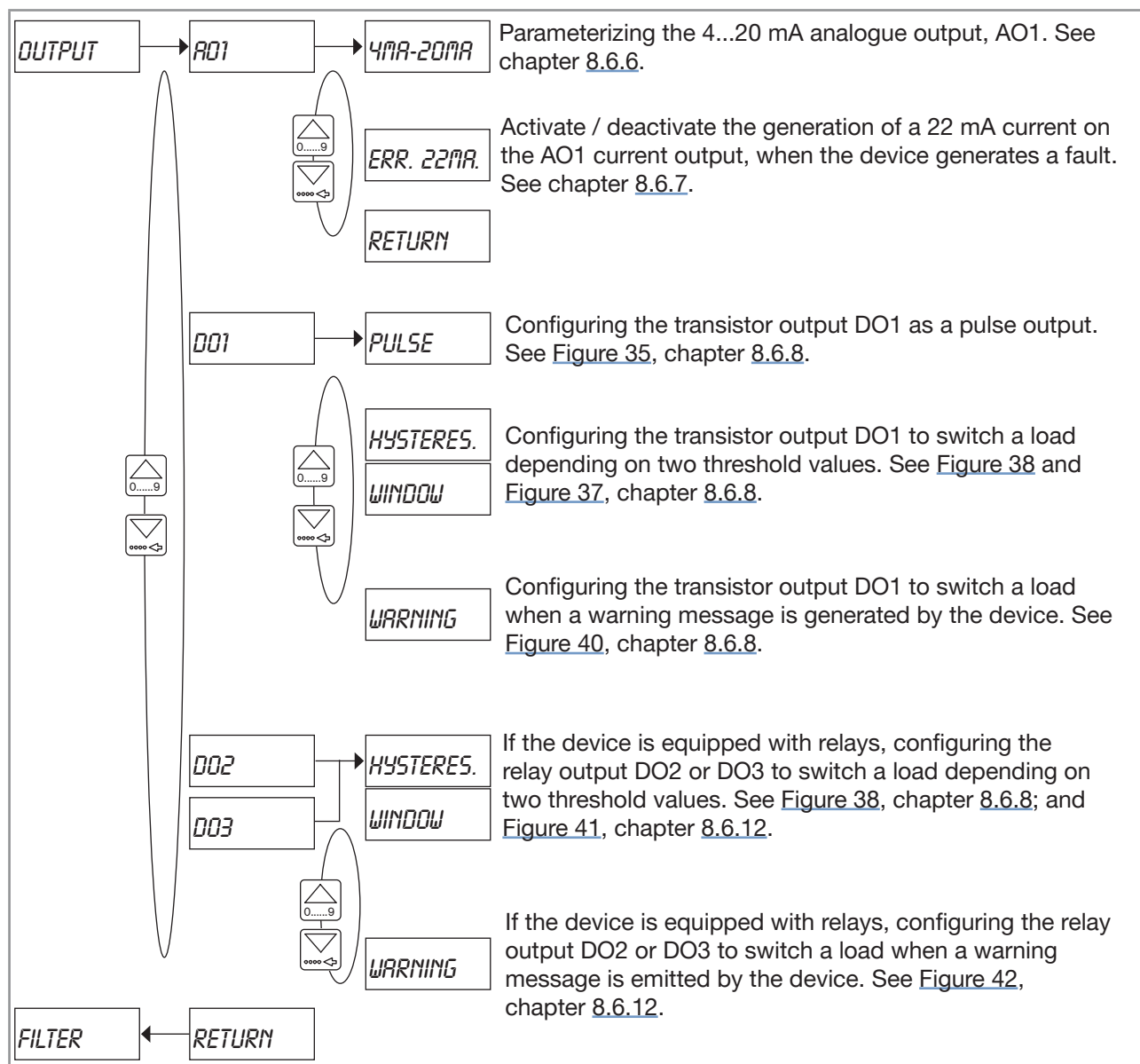
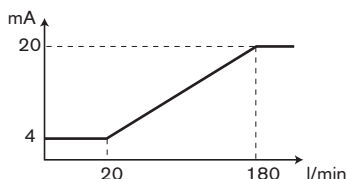


Figure 32: Diagram of the "OUTPUT" parameter of the Parameters menu

## 8.6.6 Associating a flow rate range to the current output AO1

The 4...20 mA output provides an electrical current, the value of which reflects the flow rate measured by the device.

Example of relation between the measuring range and the current output:





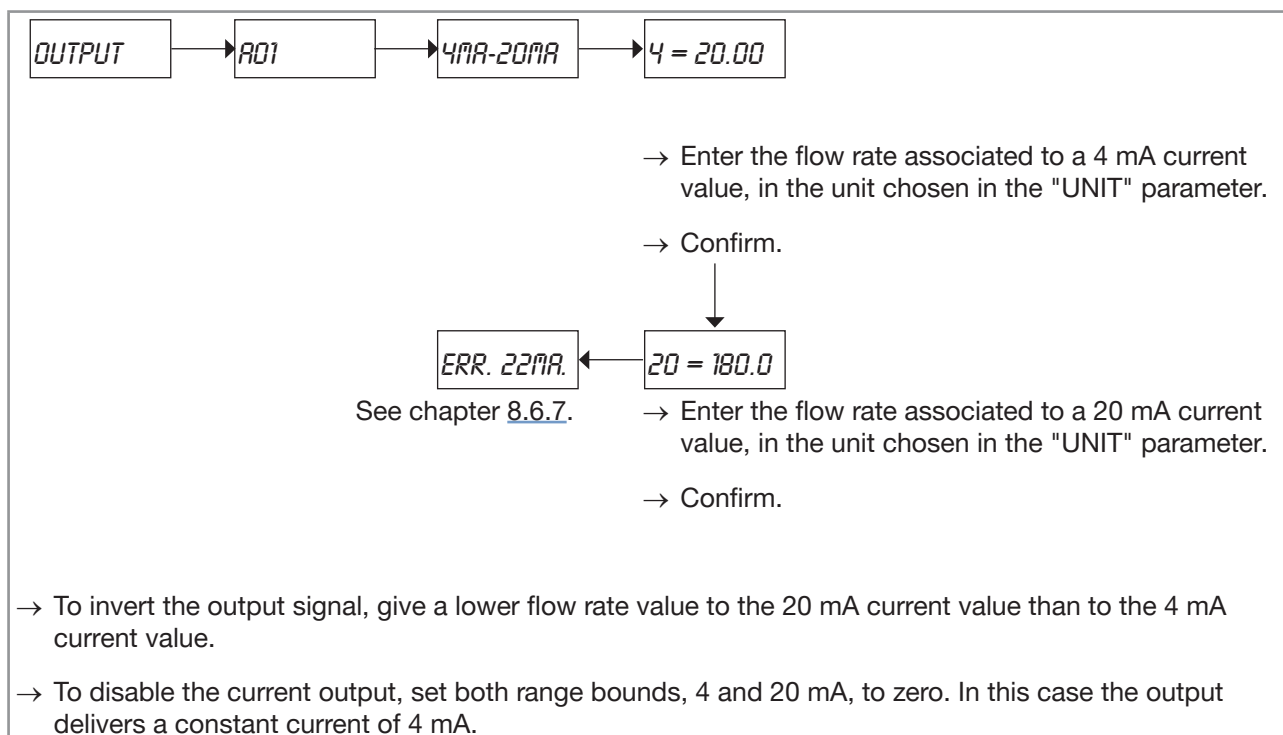


Figure 33: Associating a flow rate range to the current output

## 8.6.7 Activating / Deactivating the emission of a 22 mA current on the current output

When the device generates an operating fault (see chapter [9.3.2](#)), the current output can be configured to send out a 22 mA current even if the current output is deactivated.

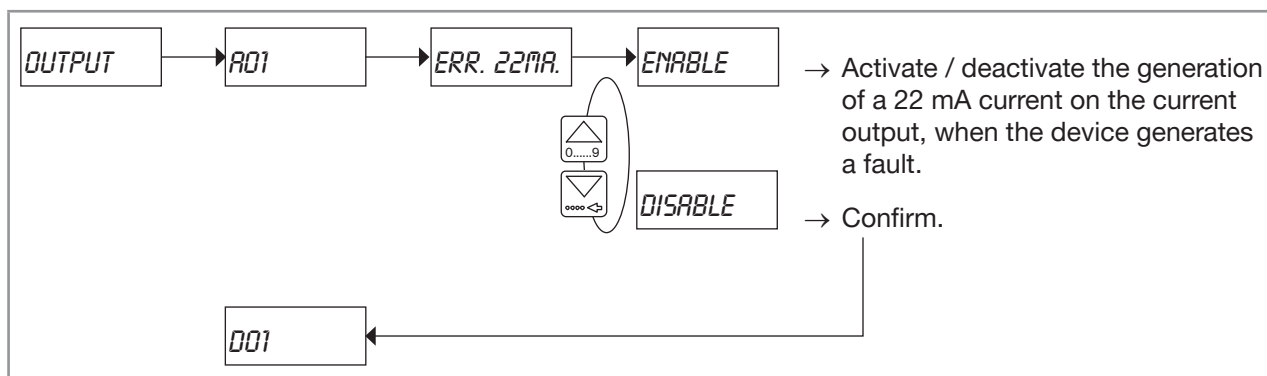


Figure 34: Activating or deactivating the emission of a 22 mA current

## 8.6.8 Configuring the transistor output DO1 as a pulse output proportional to a volume

When the DO1 transistor output is configured as a pulse output, a pulse is transmitted on the output each time the parametered volume of fluid has been measured by the device.



- When the frequency emitted on the pulse output is between 0.6 and 300 Hz, the duty cycle of the signal is between 45 % and 60 %.
- When the frequency emitted on the pulse output is between 300 and 1500 Hz, the duty cycle of the signal is between 40 % and 50 %.
- When the frequency emitted on the pulse output is between 1500 and 2200 Hz, detection on a pulse edge is possible.

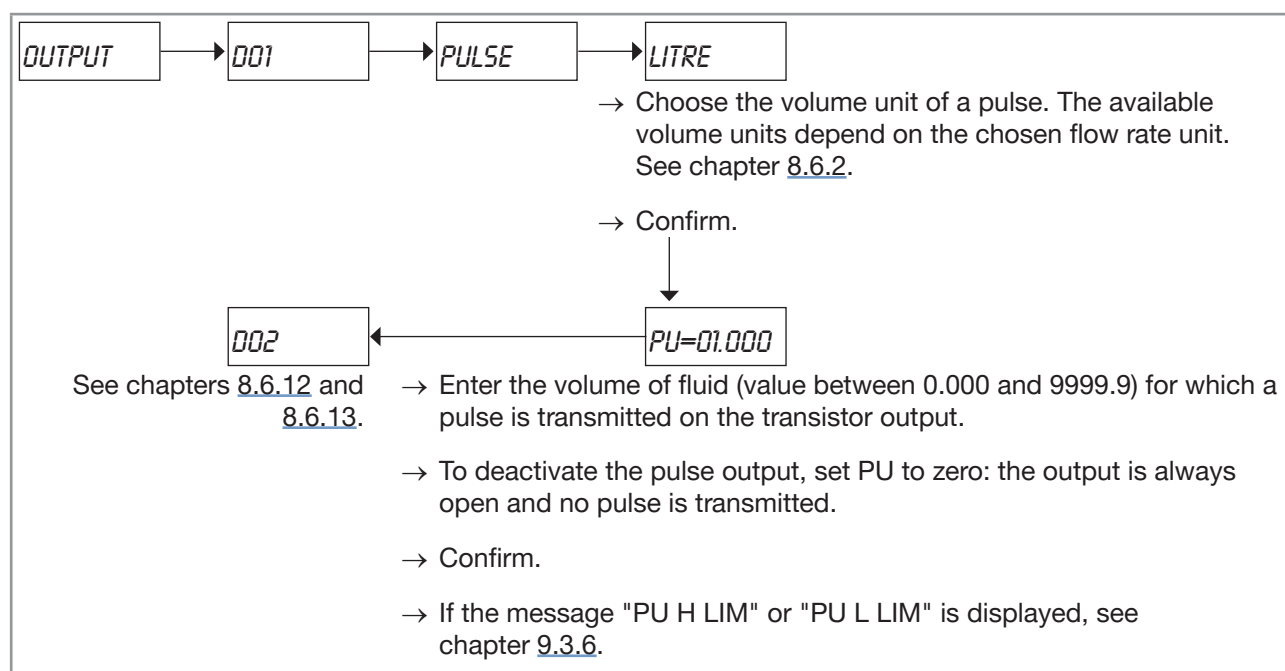


Figure 35: Configuration of the transistor output DO1 as a pulse output proportional to a volume

## 8.6.9 Configuring the transistor output DO1 to transmit the rotational frequency of the paddle wheel

When the transistor output DO1 is configured in "PULSE" mode and the unit "HERTZ" is chosen, each pulse from the paddle wheel flow sensor is transmitted to the transistor output DO1. The frequency generated by this output then equals the rotational frequency of the paddle wheel (this value can be read from the parameter "FREQUENC" in the Test menu).

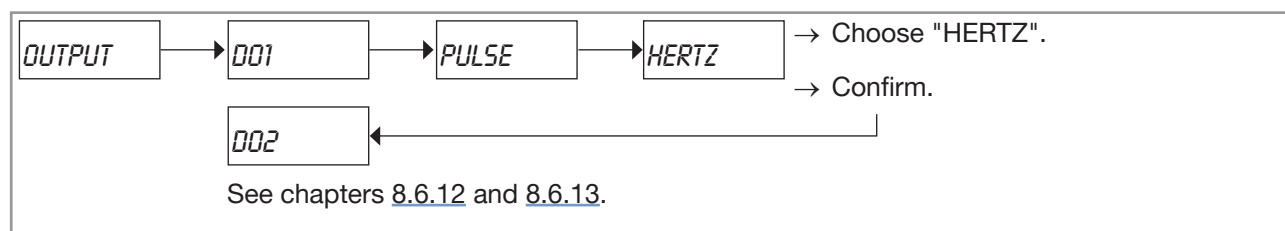


Figure 36: Configuration of the transistor output DO1 as a pulse output proportional to the rotational frequency of the paddle wheel

### 8.6.10 Configuring the transistor output DO1 to switch a load depending on two threshold values

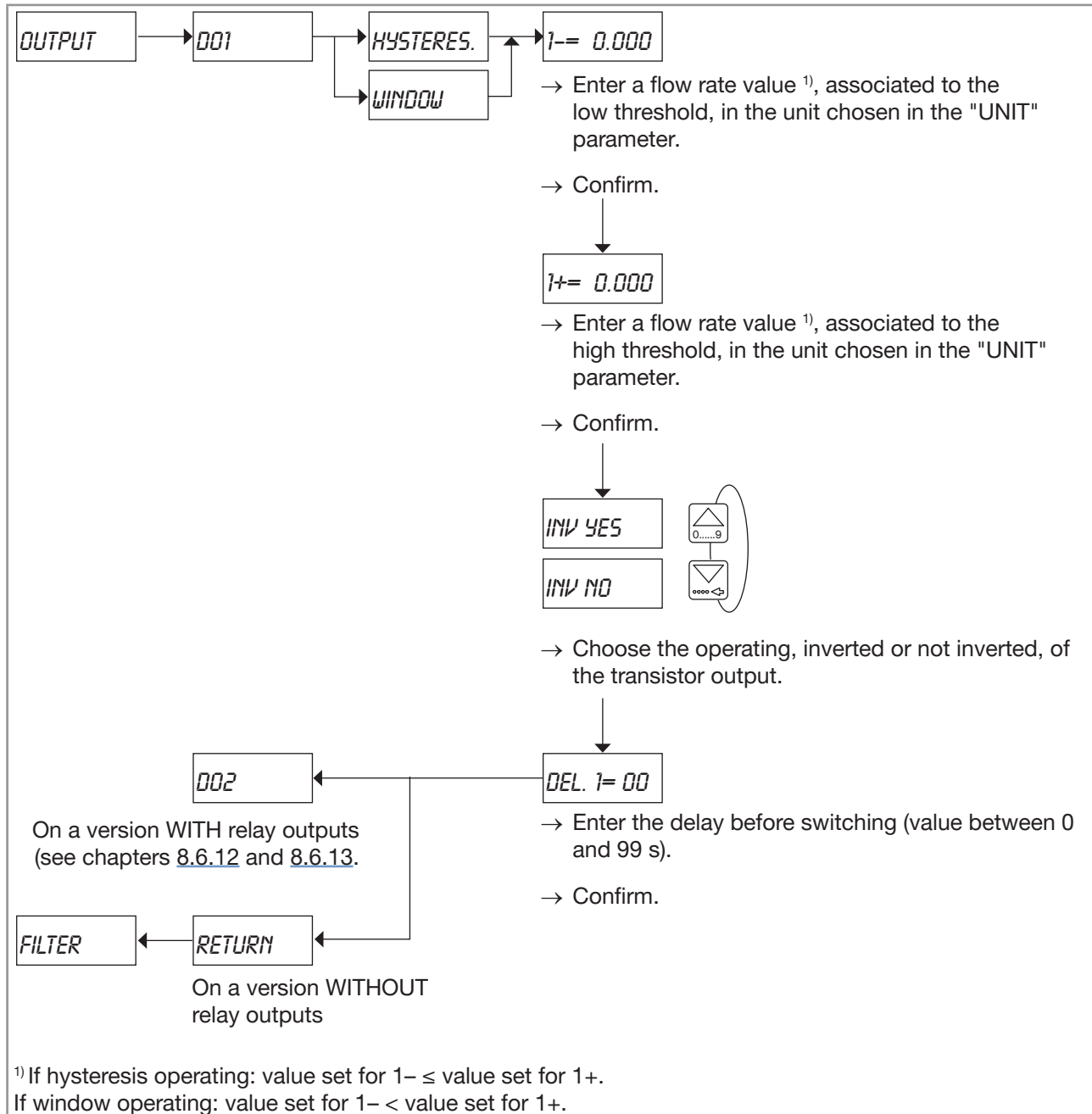


Figure 37: Configuration of the DO1 transistor output with switching thresholds

→ If you do not want to adjust another parameter, go to the "END" parameter of the Parameters menu and press to save the settings or not and go back to the Process level.

### Hysteresis operating

The output status changes when a threshold is reached:

- by increasing flow rate, the output status changes when the high threshold  $X+$  is reached.
- by decreasing flow rate, the output status changes when the low threshold  $X-$  is reached.



$X-$  = low switching threshold of the transistor or the relay (1-, 2- or 3-)

$X+$  = high switching threshold of the transistor or the relay (1+, 2+ or 3+)

**Window operating:** the output status changes as soon as any threshold ( $X-$  or  $X+$ ) is reached.



$X-$  = low switching threshold of the transistor or the relay (1-, 2- or 3-)

$X+$  = high switching threshold of the transistor or the relay (1+, 2+ or 3+)

Figure 38: Window or hysteresis operating

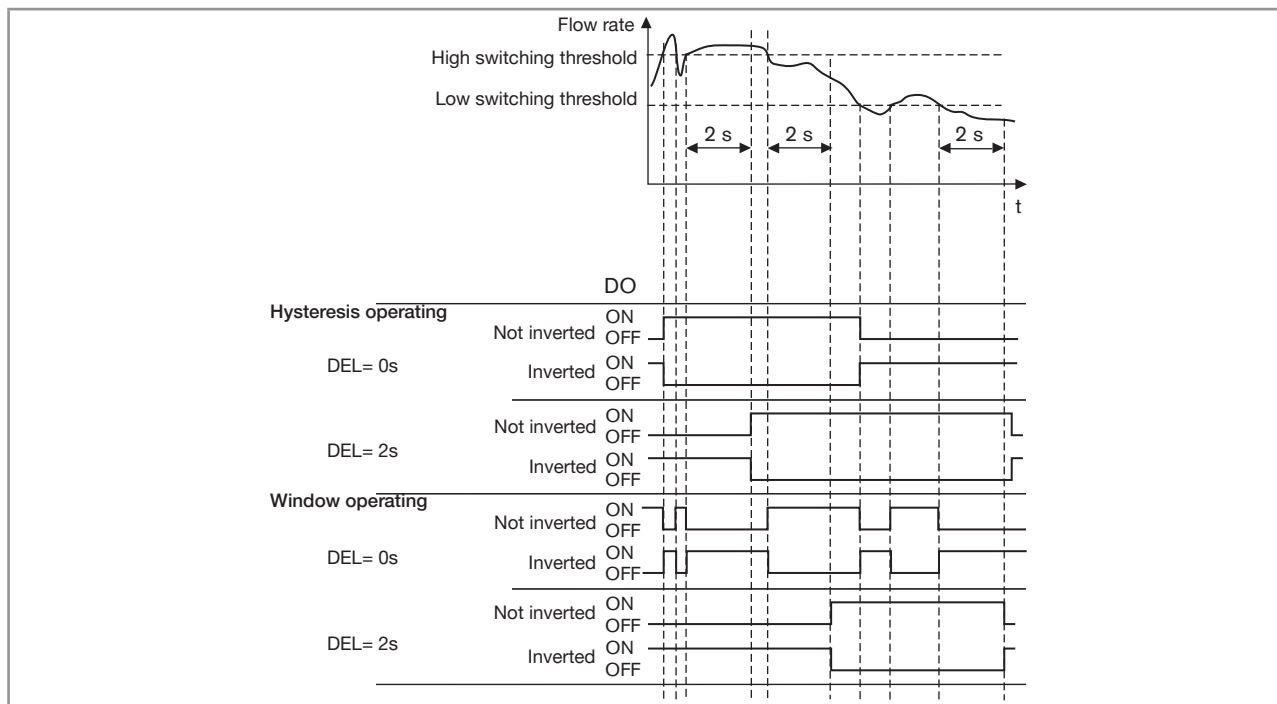


Figure 39: Operation example of the transistor output with switching thresholds

## 8.6.11 Configuring the transistor output DO1 to switch a load when a warning message is generated by the device

When the device generates a warning message, the device status LED is orange.

The generation of a warning message can also be indicated by the switching of the transistor output.

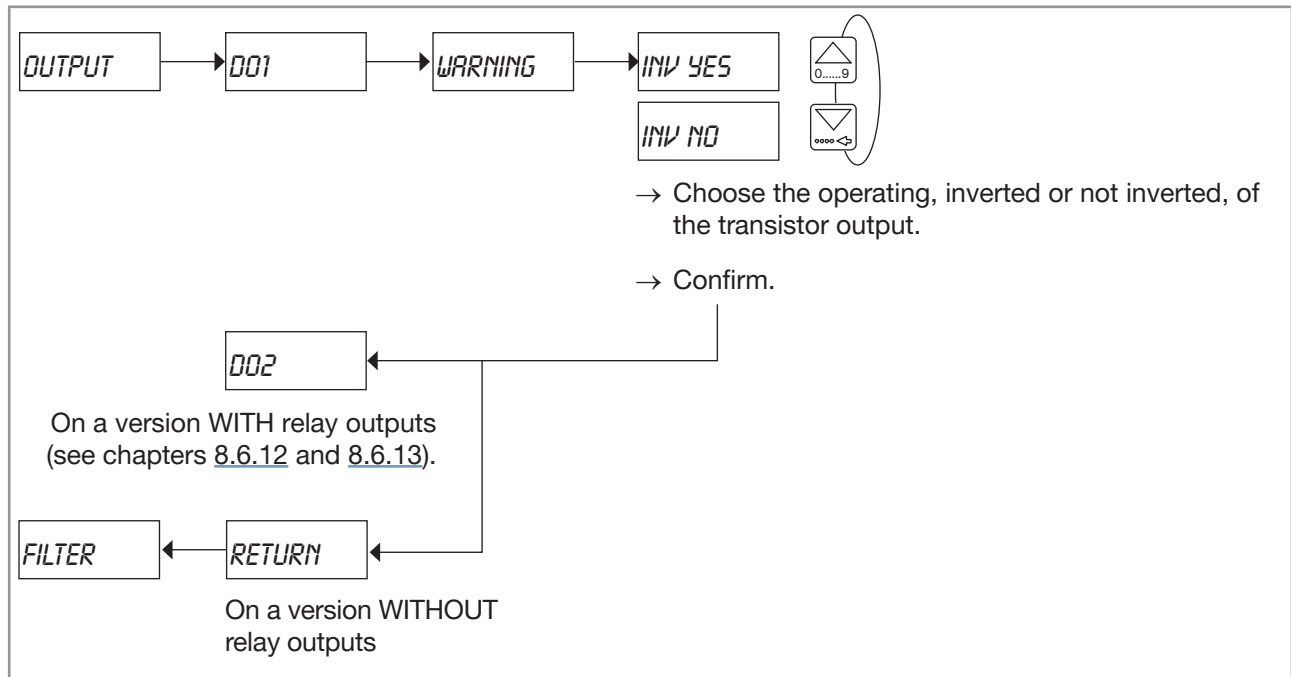



Figure 40: Configuration of the DO1 transistor output to indicate the generation of a warning message

→ If you do not want to adjust another parameter, go to the "END" parameter of the Parameters menu and press  to save the settings or not and go back to the Process level.

## 8.6.12 Configuring the relay outputs DO2 and DO3 to switch a load depending on two thresholds

The hysteresis or window operation is detailed in [Figure 38](#), chapter [8.6.8](#).

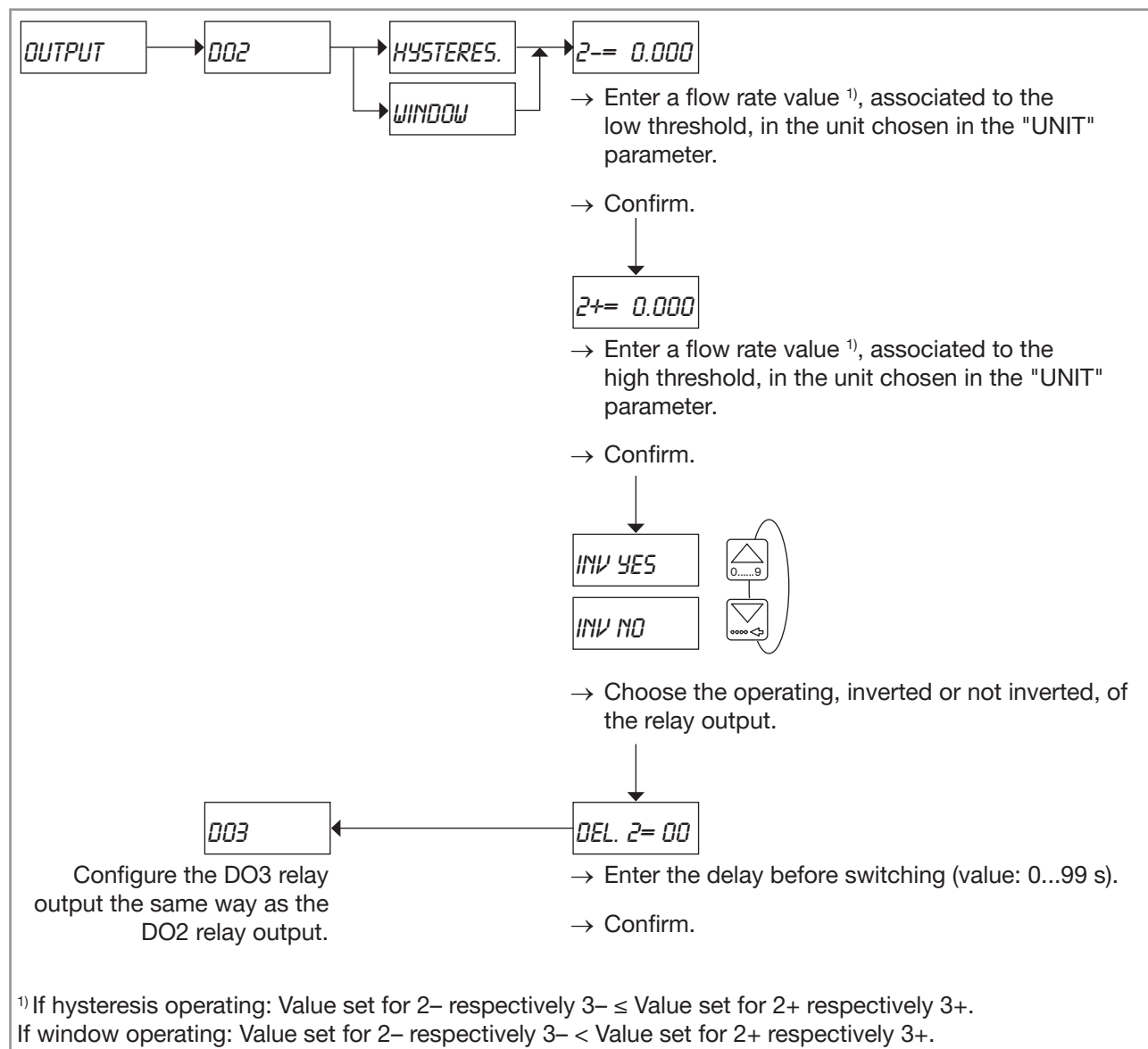


Figure 41: Configuration of the DO2 or DO3 relay output with switching thresholds

### 8.6.13 Configuring the relay outputs DO2 and DO3 to switch a load when a warning message is generated by the device

When the device generates a warning message, the device status LED is orange.

The generation of a warning message can also be indicated by the switching of the relay output.

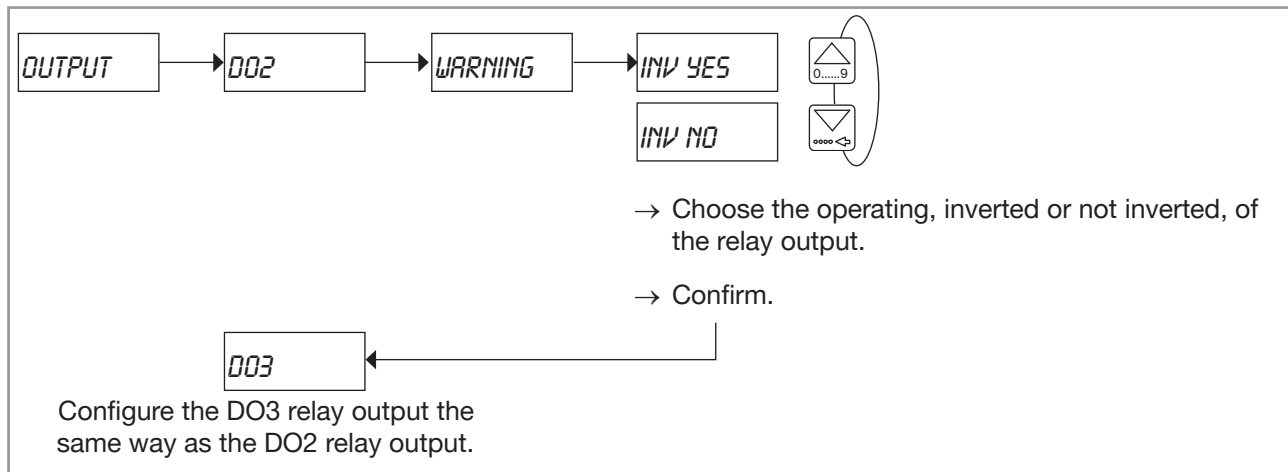


Figure 42: Configuration of the DO2 or DO3 relay output to indicate the generation of a warning message

### 8.6.14 Configuring the filter of the measured flow rate

This parameter makes it possible to dampen the fluctuations:

- of the display,
- of the AO1 current output.

Ten filters are available.



When the "fast" filter is active and the flow rate varies for  $\pm 30\%$  (for example when charging the pipe or stopping the flow), the filter is disabled: the new flow rate is immediately taken into account by the device.



If a too high filter is chosen, the device does not detect the sudden flow rate changes thus the flow rate in the pipe may strongly defer from the displayed flow rate or the flow rate transmitted to the current output.



A sudden stop of the flow is immediately detected whatever filter is active.

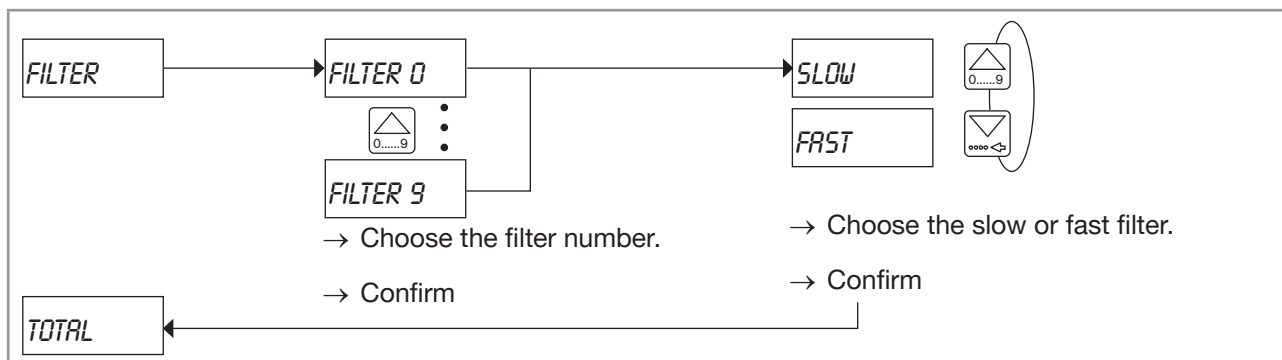


Figure 43: Diagram of the "FILTER" parameter of the Parameters menu

The following table shows the response times (10 % to 90 %) for the filters:

Filter	Response time
0	0.15 s
1	0.7 s
2	1.4 s
3	2.5 s
4	3.5 s

Filter	Response time
5	6 s
6	10 s
7	19 s
8	33 s
9	50 s

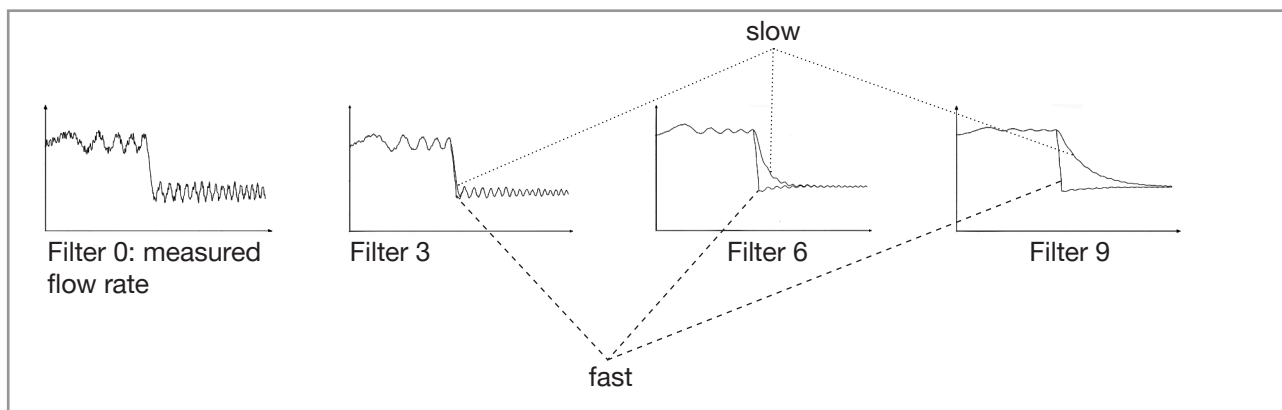



Figure 44: Available filters

→ If you do not want to adjust another parameter, go to the "END" parameter of the Parameters menu and press  to save the settings or not and go back to the Process level.



### 8.6.15 Resetting both totalizers

This parameter makes it possible to reset both totalizers.

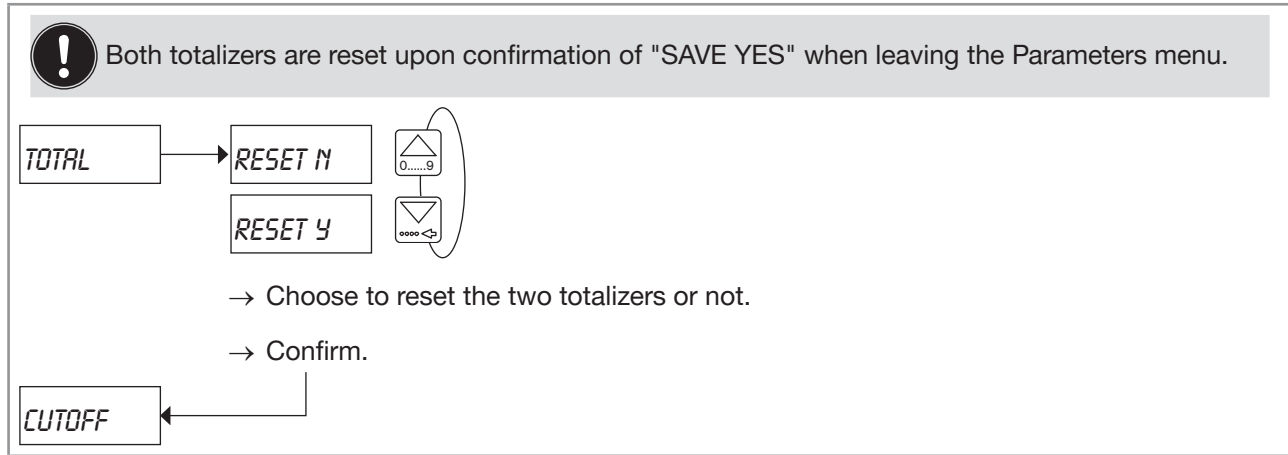




Figure 45: Diagram of the "TOTAL" parameter of the Parameters menu

 The daily totalizer can be reset from the Process level. See chapter [8.5](#).

→ If you do not want to adjust another parameter, go to the "END" parameter of the Parameters menu and press  to save the settings or not and go back to the Process level.

### 8.6.16 Parameterizing the cut-off flow rate

This parameter makes it possible to set the flow rate value to 0 if the measured value is less than the set cut-off value:

- the display then shows a flow rate = 0 (a dot is displayed after the flow rate units).
- the outputs and the totalizers react as if the actual flow rate was = 0.

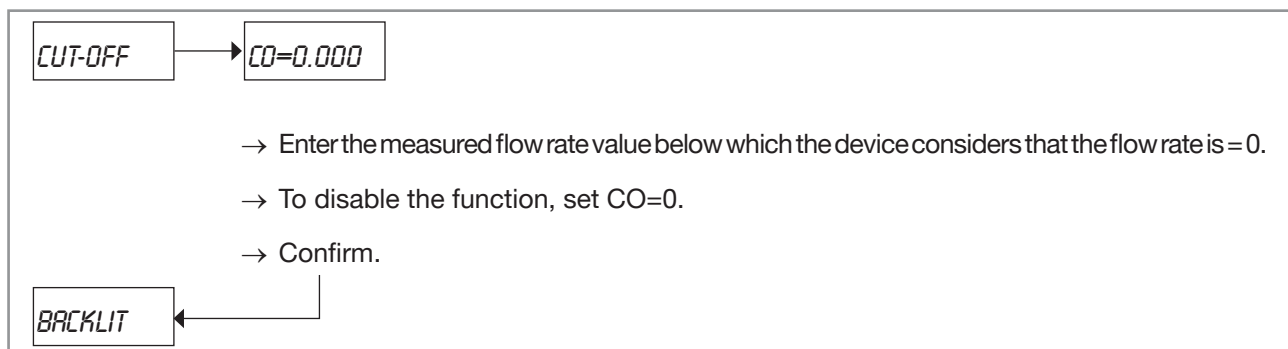



Figure 46: Diagram of the "CUT-OFF" parameter of the Parameters menu

→ If you do not want to adjust another parameter, go to the "END" parameter of the Parameters menu and press  to save the settings or not and go back to the Process level.

## 8.6.17 Setting the brightness of the display and how long it stays ON, or deactivating the backlight

This parameter makes it possible:

- to adjust the brightness of the display and how long the display is backlit after a key press.
- to deactivate the backlight.

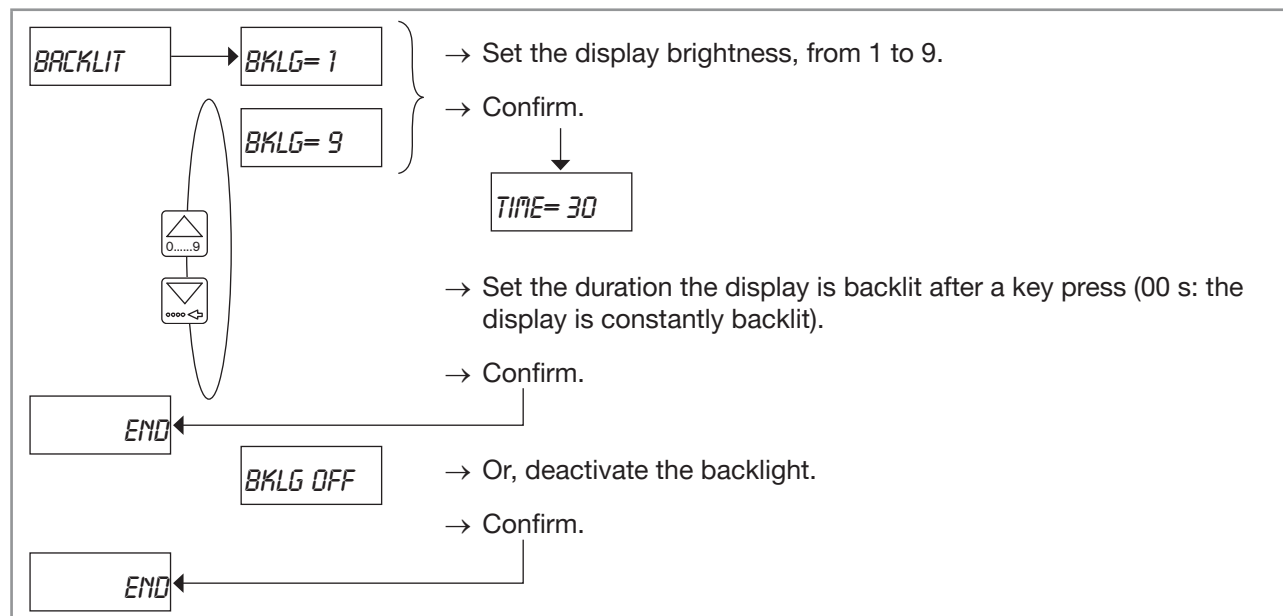





Figure 47: Diagram of the "BACKLIT" parameter of the Parameters menu

→ If you do not want to adjust another parameter, confirm the "END" parameter to save the settings or not and go back to the Process level.

## 8.7 Details of the Test menu

To access the Test menu, simultaneously press keys    for at least 5 s.

This menu comprises the following configurable parameters:

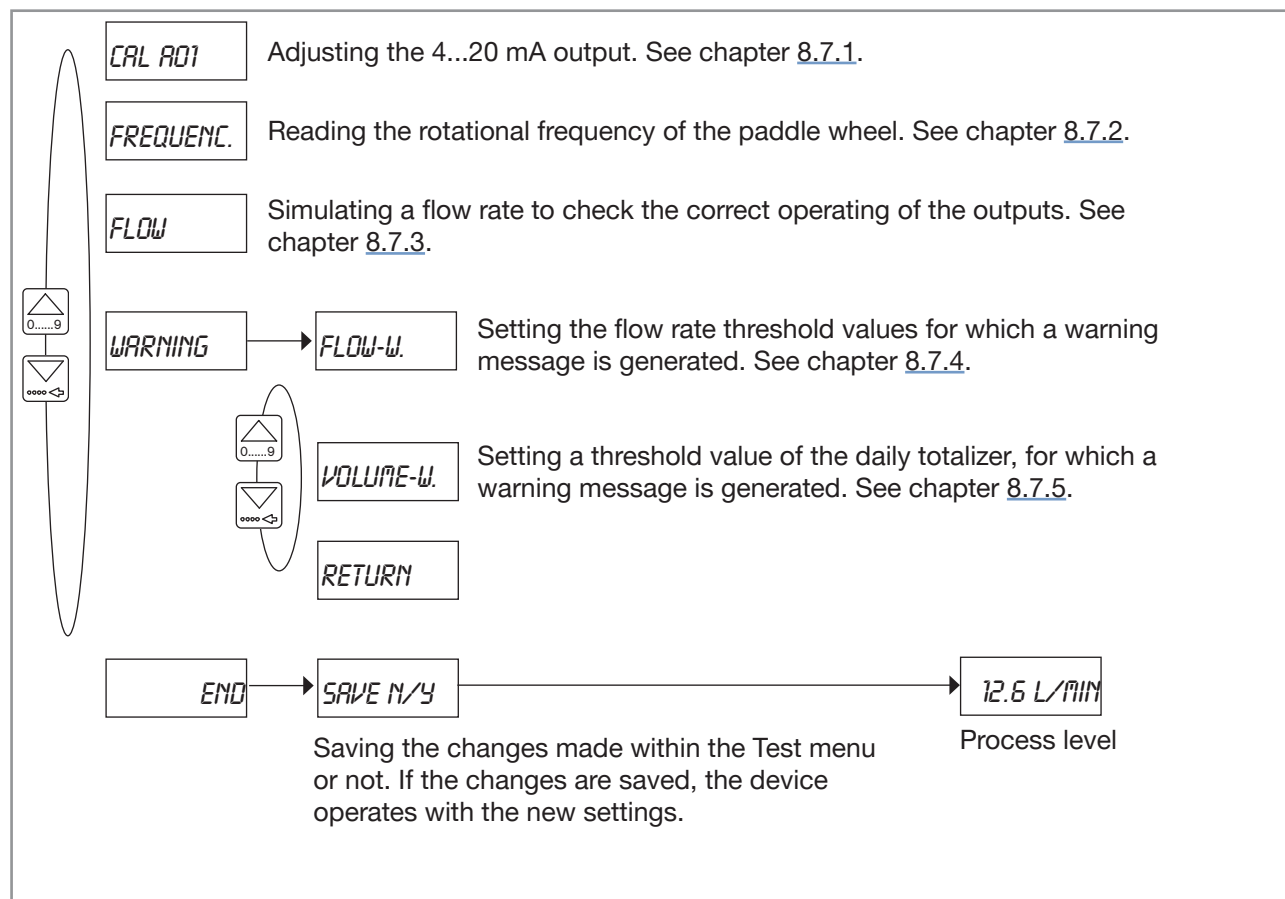


Figure 48: Diagram of the Test menu

### 8.7.1 Adjusting the current output

This parameter makes it possible to adjust the value of the current transmitted on the analogue output.

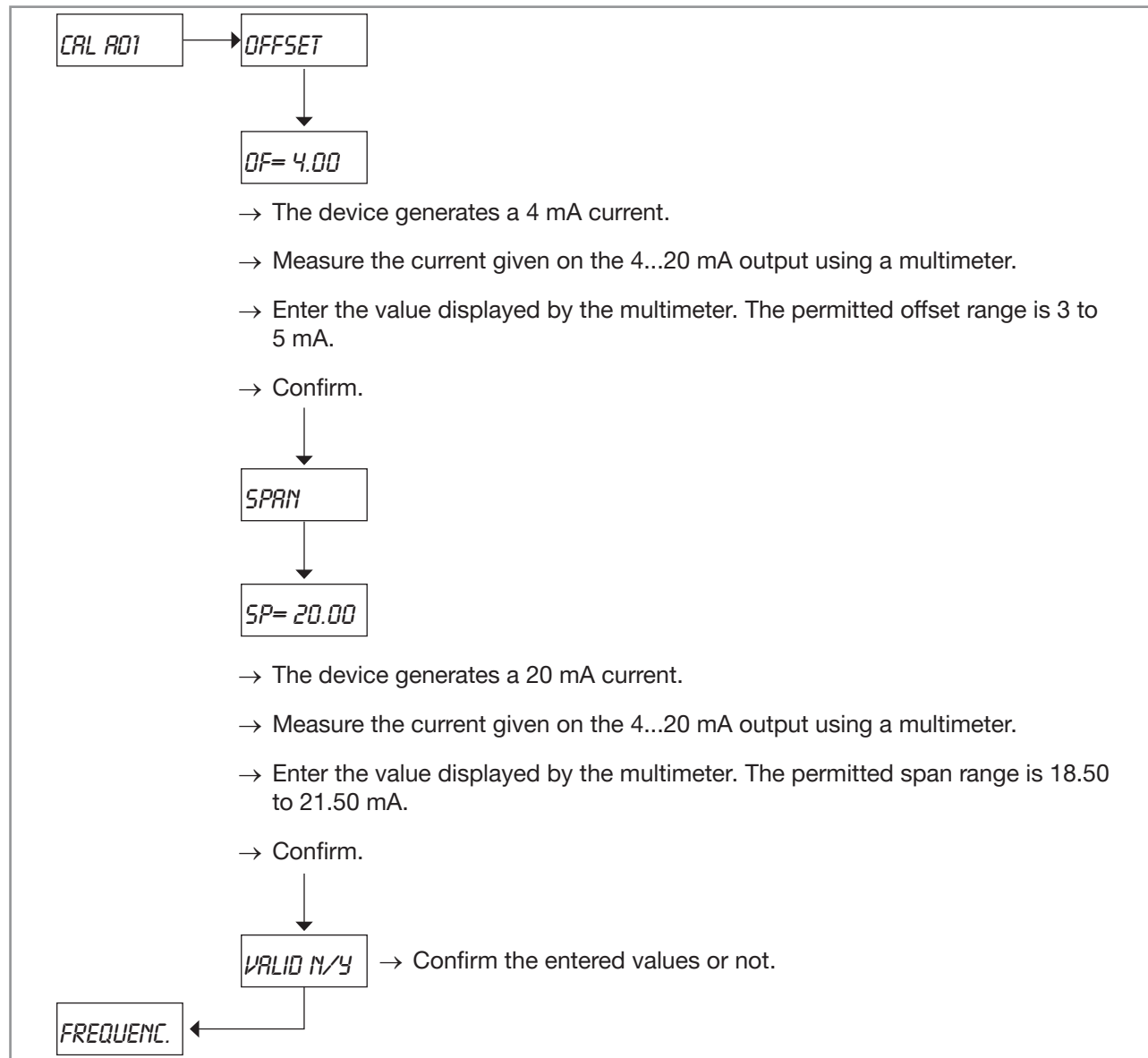



Figure 49: Diagram of the "CAL AO1" of the Test menu

→ If you do not want to adjust another parameter, go to the "END" parameter of the Test menu and press  to save the settings or not and go back to the Process level.

## 8.7.2 Reading the rotational frequency of the paddle wheel

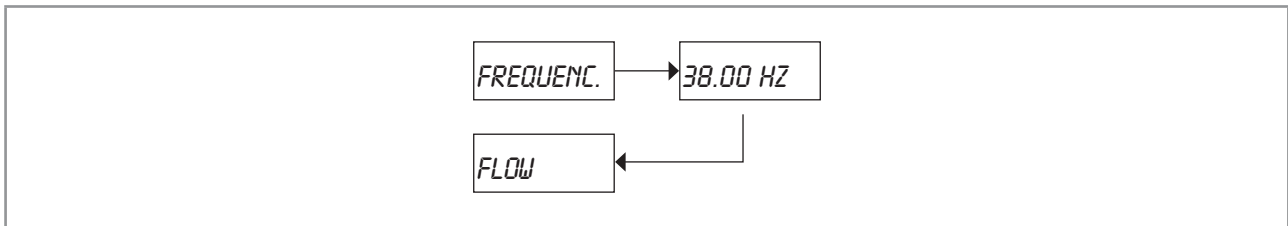



Figure 50: Diagram of the "FREQUENC." parameter of the Test menu

→ If you do not want to adjust another parameter, go to the "END" parameter of the Test menu and press  to save the settings or not and go back to the Process level.

## 8.7.3 Checking the outputs behaviour

This parameter makes it possible to simulate a flow rate in order to check that the outputs are behaving as expected by the configuration made.



- The totalizers are incremented depending on the measured value of the flow rate and not on the simulated value.
- The transistor output DO1 configured in "PULSE" mode operates depending on the measured value of the flow rate and not on the simulated value.
- The device status LED flashes during the running check of the output behaviour.

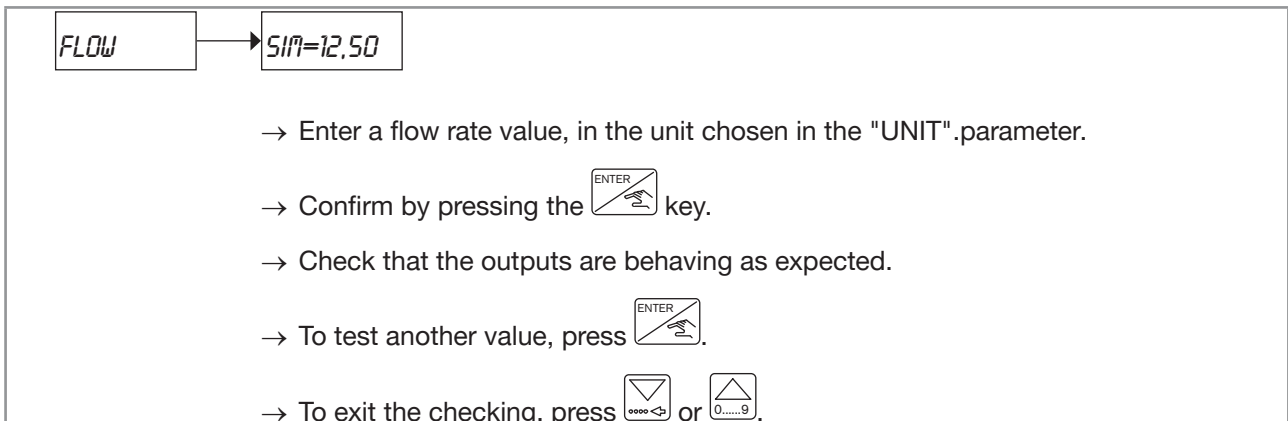



Figure 51: Diagram of the "FLOW" parameter of the Test menu

→ If you do not want to adjust another parameter, go to the "END" parameter of the Test menu and press  to save the settings or not and go back to the Process level.

## 8.7.4 Monitoring the flow rate in the pipe

A malfunction in your process or the flow sensor may be indicated by a flow rate which is too low or too high.

The parameter "FLOW-W." makes it possible to monitor the flow rate and configure the behaviour of the device if the parametered range is exceeded.



- To disable the flow rate monitoring, set  $W- = W+ = 0$ .
- To disable one of the limits, set it to 0.

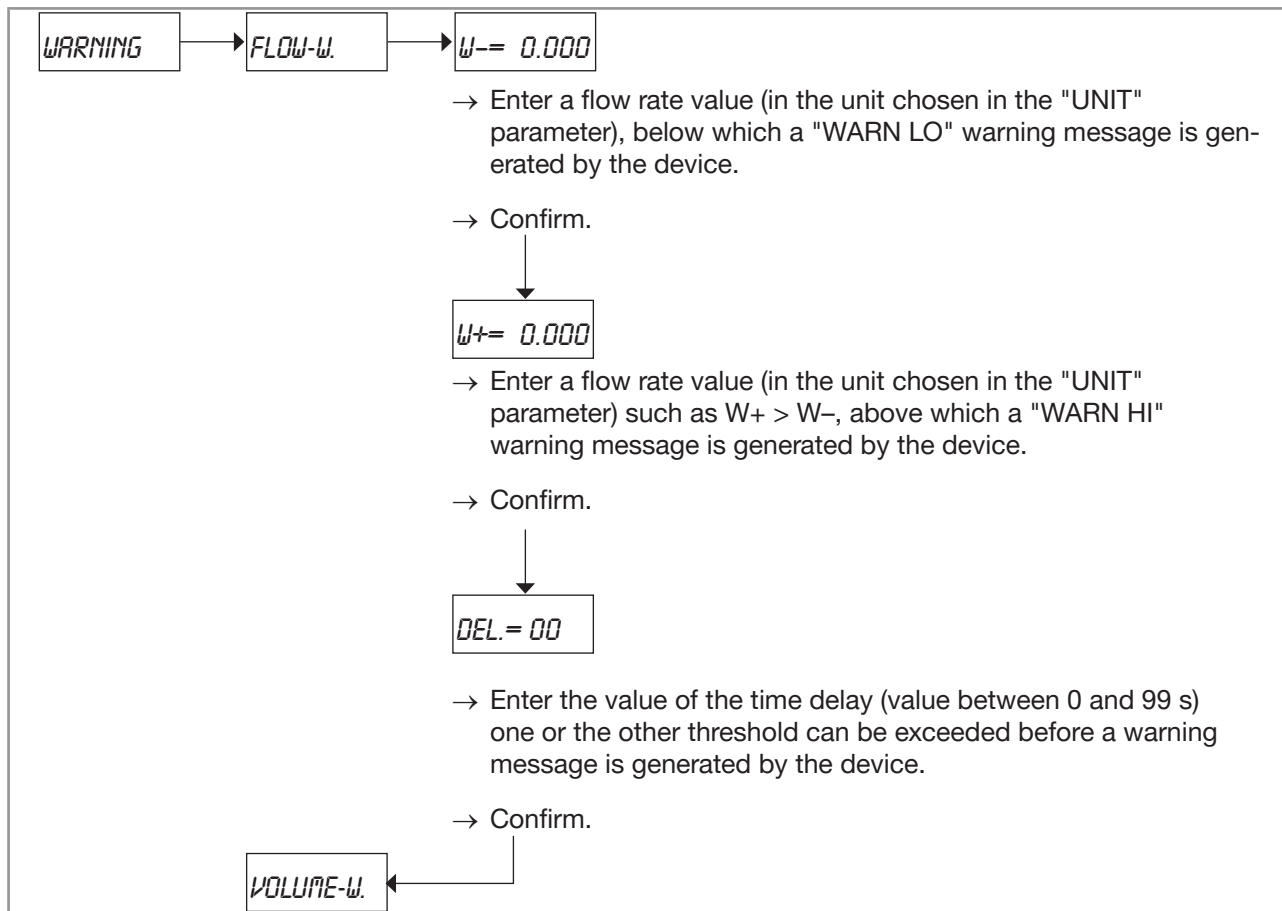


Figure 52: Diagram of the "FLOW-W." parameter of the Test menu

To be warned when the flow rate is too low or too high, enter the flow rate range (in the units that have been chosen in the "UNIT" parameter of the Parameters menu), outside which the device generates a warning message, "WARN LO" or "WARN HI", and turns the device status LED to orange.

When a warning message, "WARN LO" or "WARN HI", is generated by the device:

- check the process.
- if the process is not faulty, check the flow sensor condition and clean it if necessary.
- if the flow rate measurement is still faulty, contact the Bürkert retailer.



- The transistor output or either relay output can be configured to switch when a warning message is generated by the device. See chapter [8.6.5](#).
- See also "If you encounter problems" in chapter [9.3](#).

- If you do not want to adjust another parameter, confirm the "END" parameter to save the settings or not and go back to the Process level.

## 8.7.5 Monitoring the value of the daily totalizer

The parameter "VOLUME-W." makes it possible to monitor the value of the daily totalizer. When the set value is reached, a warning message is generated by the device.

**!** To deactivate the monitoring of the totalizer, set "VOLUME-W." to zero.

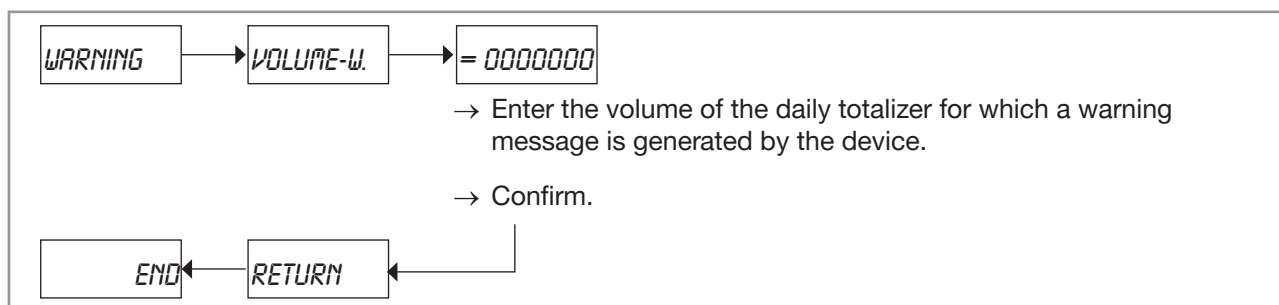


Figure 53: Diagram of the "VOLUME-W." parameter of the Test menu

When the warning message "WARN. VOL." is sent out, reset the totalizer: see chapter 8.5 or 8.6.15.

→ If you do not want to adjust another parameter, confirm the "END" parameter to save the settings or not and go back to the Process level.

## 8.8 Details of the Information menu

- !** This menu is available when the device status LED is orange or red.
- For the meaning of a message, go to chapters 9.3.2 and 9.3.3.

To access the Information menu, press the  key for at least 2 s, in the Process level.

In this menu read the fault and warning messages generated by the device.

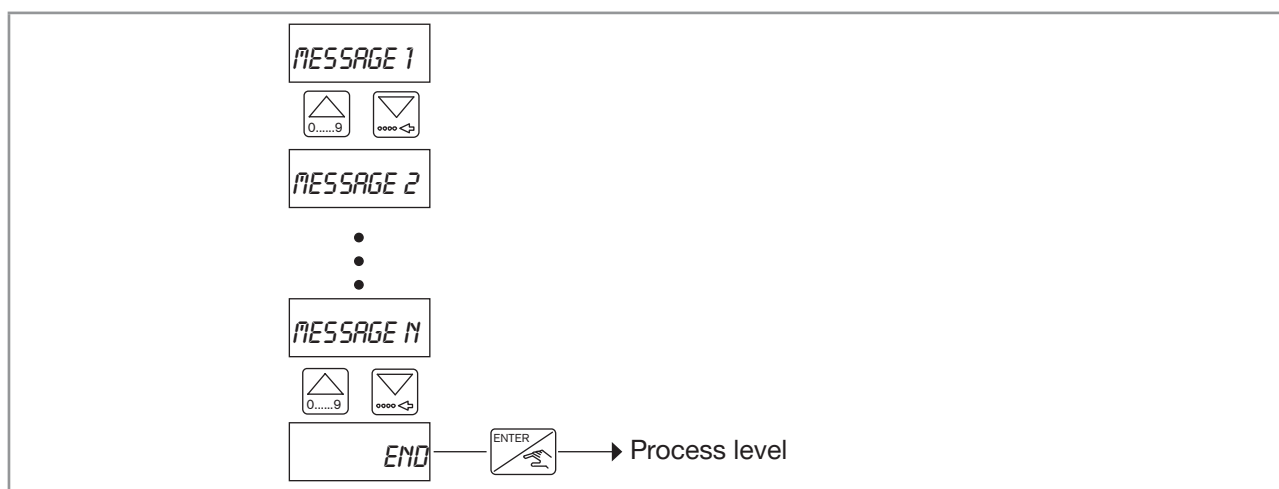


Figure 54: Diagram of the Information menu

## 9 MAINTENANCE AND TROUBLESHOOTING

### 9.1 Safety instructions



#### **DANGER**

Risk of injury due to electrical voltage.

- ▶ If a 12...36 V DC energized version is installed either in a wet environment or outdoors, all the electrical voltages must be of max. 35 V DC.
- ▶ Disconnect the electrical power for all the conductors and isolate it before carrying out work on the system.
- ▶ Observe all applicable accident protection and safety regulations for electrical equipment.



#### **WARNING**

Risk of injury due to non-conforming maintenance.

- ▶ Maintenance must only be carried out by qualified and skilled staff with the appropriate tools.
- ▶ Ensure that the restart of the installation is controlled after any interventions.

### 9.2 Cleaning the device

The device can be cleaned with a cloth dampened with water or a detergent compatible with the materials the device is made of.

Please feel free to contact your Bürkert supplier for any additional information.

### 9.3 If you encounter problems

#### 9.3.1 Resolution of problems when the device status LED is OFF

Device status LED	Current output AO1	Output DO1 and/or DO2 and/or DO3	Message displayed	Possible cause	Recommended action
OFF	0 mA	not switched	OFF	The device is not energized.	→ Check the wiring. → Check the fuse of the installation and replace it if necessary. → Check that the installation is not shut-down. → Check that the power source is working properly.



### 9.3.2 Resolution of problems without message generation and device status LED is red

Device status LED	Current output AO1	Output DO1 and/or DO2 and/or DO3	Message displayed	Possible cause	Recommended action
red	0 mA	low level	"PWRFAIL"	The supply voltage is too low. The device does not function.	→ Check that the supply voltage at the terminals of the 8025 is between 12 and 36 V DC. → If the problem occurs again, take contact with the retailer.
red	4...20 mA	depending on thresholds	"ERROR3"	The user parameters are lost. The device measures wrong values.	→ Start the device again. → If the message persists, return the device to Bürkert. → If the problem occurs again, take contact with the retailer.
red	22 mA <sup>1)</sup>	depending on thresholds	"ERROR4"	The totalizer values are lost. The values saved upon the next to last power down are retrieved.	→ Start the device again. → If the problem occurs again, take contact with the retailer.
red	4...20 mA	depending on thresholds	"ERROR5"	Both "ERROR3" and "ERROR4".	→ Start the device again. → If the message persists, configure the device again. → If the problem occurs again, take contact with the retailer.
red	22 mA <sup>1)</sup>	depending on thresholds	"ERROR6"	Totalizer values definitely lost. Both totalizers are reset.	→ Start the device again. → If the problem occurs again, take contact with the retailer.
red	4...20 mA	depending on thresholds	"ERROR7"	Both "ERROR3" and "ERROR6".	→ Start the device again. → If the message persists, configure the device again. → If the problem occurs again, take contact with the retailer.
red	22 mA <sup>1)</sup>	depending on thresholds	"MEAS. OVF"	The rotational frequency of the paddle wheel is > 2.2 kHz.	→ Check the flow rate in the pipe. → If necessary, adjust the flow rate. → If the problem occurs again, take contact with the retailer.

<sup>1)</sup> If parameter "ERR. 22mA" is set to "ACTIVE". See chapter [8.6.7](#).

### 9.3.3 Resolution of problems without message generation and device status LED is orange

Device status LED	Current output AO1	Output DO1 and/or DO2 and/or DO3	Message displayed	Possible cause	Recommended action
orange	4...20 mA	Switched <sup>1)</sup>	"WARN. LO"	The measured flow rate has stayed under the minimum threshold for the set time delay.  This message appears when the flow rate is monitored (see chapter 8.7.4).	→ Check the flow rate in the pipe and its consequences on the process. → If necessary, clean the flow sensor.
orange	4...20 mA	Switched <sup>1)</sup>	"WARN. HI"	The measured flow rate has stayed above the maximum threshold for the set time delay.  This message appears when the flow rate is monitored (see chapter 8.7.4).	→ Check the flow rate in the pipe and its consequences on the process. → If necessary, clean the flow sensor.
orange	4...20 mA	Switched <sup>1)</sup>	"DISP. OVF"	The real flow rate cannot be displayed (display has reached its max. possible value).  Except the display, the device operates depending on the real flow rate.	→ Adjust the unit or the number of decimals in the UNIT parameter of the Parameters menu so that the display can show higher values.
orange	4...20 mA	Switched <sup>1)</sup>	"AO1 LOST"	Calibration of the current output is lost.  The device generates unprecise intensities on the analogue output AO1.	→ Adjust the current output within the Test menu.
orange	4...20 mA	Switched <sup>1)</sup>	"WARN. VOL."	The daily totalizer has reached the value set in parameter "VOLUME-W." of the Test menu.	→ Carry out the planned maintenance operation. → Reset the daily totalizer: see chapter 8.5 or 8.6.15.

<sup>1)</sup> If the output is configured to switch when a warning message is generated. See chapter 8.6.5.

### 9.3.4 Resolution of problems without message generation but device status LED is ON

Device status LED	Current output AO1	Output DO1 and/or DO2 and/or DO3	Problem	Recommended action
any colour	0 mA	depending on the thresholds or switched <sup>1)</sup>	The current output transmits 0 mA.	→ Check the wiring of the current output. → Check the fuse of the installation and replace it if necessary. → Check the position of the sink/source switch. See chapter <a href="#">7.4.6</a> . → If the problem occurs again, take contact with the retailer.
			The current output transmits a value between 0 and 4 mA.	→ Switch the device power supply off then on. → If the problem occurs again, take contact with the retailer.
any colour	4 mA	depending on the thresholds or switched <sup>1)</sup>	The current output transmits 4 mA whatever the displayed flow rate value.	→ Check the configuration of the current output. See chapter <a href="#">8.6.6</a> .
any colour	20 mA	depending on the thresholds or switched <sup>1)</sup>	The current output transmits 20 mA whatever the displayed flow rate value.	→ Check the configuration of the current output. See chapter <a href="#">8.6.6</a> .
any colour	4...20 mA	depending on the thresholds or switched <sup>1)</sup>	The current value transmitted on the AO1 current output does not correspond to the displayed flow rate.	→ Check the configuration of the current output. See chapter <a href="#">8.6.6</a> . → Check the OFFSET and SPAN parameters of the current output. See chapter <a href="#">8.7.1</a> .
any colour	4...20 mA	The DO2 and DO3 outputs do not switch whatever the displayed flow rate value.		→ Check the configuration of the DO2 and DO3 relay outputs. See chapter <a href="#">8.6.12</a> . → Check the flow rate unit. → Check the behaviour of the outputs. See chapter <a href="#">8.7.3</a> .

<sup>1)</sup> If the output is configured to switch when a warning message is generated. See chapter [8.6.5](#).

### 9.3.5 Resolution of problems without message generation and device status LED is green

Device status LED	Current output AO1	Output DO1 and/or DO2 and/or DO3	Possible cause	Recommended action
green	4...20 mA	depending on the thresholds or switched <sup>1)</sup>	The device does not properly measure the flow rate.	<ul style="list-style-type: none"> <li>→ Check that the K factor corresponds to the fitting used.</li> <li>→ Carry out a Teach-In procedure to determine the K factor of the fitting used.</li> </ul>
green	4...20 mA	depending on the thresholds or switched <sup>1)</sup>	The displayed flow rate is not nil but the flow rate in the pipe is.	<ul style="list-style-type: none"> <li>→ Check that the flow rate in the pipe is nil.</li> <li>→ Check the filter chosen. See chapter 8.6.14.</li> </ul>
green	4...20 mA	depending on the thresholds or switched <sup>1)</sup>	The displayed flow rate is always nil.	<ul style="list-style-type: none"> <li>→ Check that the flow rate in the pipe is not nil.</li> <li>→ Check that the entered K factor is correct, and</li> <li>→ Choose a smaller flow rate unit or increase the number of displayed decimals.</li> </ul>
green	4...20 mA	depending on the thresholds or switched <sup>1)</sup>	The displayed flow rate is not stable.	<ul style="list-style-type: none"> <li>→ Check that there is fluid in the pipe.</li> <li>→ Choose a higher filter value.</li> </ul>
green	4...20 mA	depending on the thresholds or switched <sup>1)</sup>	The displayed flow rate changes very slowly.	<ul style="list-style-type: none"> <li>→ Check that there is fluid in the pipe.</li> <li>→ Choose a lower filter value.</li> </ul>

<sup>1)</sup> If the output is configured to switch when a warning message is generated. See chapter 8.6.5.

### 9.3.6 Resolution of problems linked to warning messages not registered in the Information menu

Device status LED	Current output AO1	Output DO1 and/or DO2 and/or DO3	Message displayed	Possible cause	Recommended action
any colour	4...20 mA	depending on thresholds	"PU H LIM"	<p>The message is displayed after the pulse value has been entered (parameter "PU" of the transistor output DO1) or upon validation of the settings of the Parameters menu.</p> <p>The pulse value times the K factor of the device is <math>&gt; 1000000</math>.</p> <p>The entered volume for a pulse is too high.</p>	→ Enter a lower volume value for a pulse. See chapter <a href="#">8.6.8</a> .
any colour	4...20 mA	depending on thresholds	"PU L LIM"	<p>The message is displayed after the pulse value has been entered (parameter "PU" of the transistor output DO1) or upon validation of the settings of the Parameters menu.</p> <p>The pulse value times the K factor of the device is <math>&lt; 1</math>.</p> <p>The entered volume for a pulse is too low.</p>	→ Enter a higher volume value for a pulse. See chapter <a href="#">8.6.8</a> .

## 10 SPARE PARTS AND ACCESSORIES



### CAUTION

Risk of injury and/or damage caused by the use of unsuitable parts.

Incorrect accessories and unsuitable replacement parts may cause injuries and damage the device and the surrounding area.

- Use only original accessories and original replacement parts from Bürkert.



A damaged electronic board or housing can be replaced.

- Contact your local Bürkert sales office.

Spare part, panel version	Article number
Mounting set (screws, washers, nuts, cable clips)	554807
Seal	419350
Set with 8 FLOW foils	553191

Spare part, wall-mounting version	Article number
Power supply board 115/230 V AC + mounting instruction sheet	555722

## 11 PACKAGING, TRANSPORT

### NOTICE

#### Damage due to transport

Transport may damage an insufficiently protected device.

- Transport the device in shock-resistant packaging and away from humidity and dirt.
- Do not expose the device to temperatures that may exceed the admissible storage temperature range.
- Protect the electrical interfaces using protective plugs.

## 12 STORAGE

### NOTICE

Poor storage can damage the device.

- Store the device in a dry place away from dust.
- Storage temperature of the device: -10...+60 °C.

## 13 DISPOSAL

### Environmentally friendly disposal



- Follow national regulations regarding disposal and the environment.
- Collect electrical and electronic devices separately and dispose of them as special waste.



