

Type 8026 - 8036 - SE36

Flowmeter and Flow transmitter
Durchfluss-Messgerät und Durchfluss-Transmitter
Débitmètre et 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 modification technique.

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1 ABOUT THIS MANUAL

This manual describes the entire lifecycle of the device. Please keep this manual in a safe place, accessible to all users and any new owners.

This manual contains important safety information.

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

- ▶ Whatever the version of the device, this manual must be read and understood.

1.1 Definition of the word "device"

The word "device" used within this manual refers to the flowmeter type 8026, the flowmeter type 8036 or the flow transmitter type SE36.

1.2 Validity of the manual

The manual is valid for the following devices:

- flowmeter 8026 from the version V2,
- flowmeter 8036 from the version V2,
- flow transmitter SE36 from the version V2.

These informations are available on the name plate, see chap. [5.3](#).

1.3 Symbols used

DANGER

Warns against an imminent danger.

- ▶ Failure to observe this warning can result 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.

ATTENTION

Warns against a possible risk.

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

NOTE

Warns against material damage.

- ▶ Failure to observe this warning may result in damage to the device or system.



Indicates additional information, advice or important recommendations.



Refers to information contained in this manual 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.

✔ Indicates the result of a specific instruction.

2 INTENDED USE

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

Flowmeters 8026 and 8036 and flow transmitter SE36 associated with a sensor-fitting are intended to measure the flow rate of liquids.

- ▶ Use this device in compliance with the characteristics and commissioning and use conditions specified in the contractual documents and in the user manual.
- ▶ Never use this device for security applications.
- ▶ Protect this device against electromagnetic interference, ultraviolet rays and, when installed outdoors, the effects of climatic conditions.
- ▶ Use this device only if in perfect working order.
- ▶ Requirements for the safe and proper operation of the device are proper transport, storage and installation, as well as careful operation and maintenance.
- ▶ 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 devices.
- the local safety regulations for which the operating company is responsible including the staff in charge of installation and maintenance.



Danger due to electrical voltage.

- ▶ If a 12-36 V DC or a 14-36 V DC powered 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.

Danger due to high pressure in the installation.

- ▶ Stop the circulation of fluid, cut off the pressure and drain the pipe before loosening the process connections.

Danger due to high temperatures of the fluid.

- ▶ Use safety gloves to handle the device.
- ▶ Stop the circulation of fluid and drain the pipe before loosening the process connections.

Danger due to the nature of the fluid.

- ▶ Respect the prevailing regulations on accident prevention and safety relating to the use of aggressive fluids.



Various dangerous situations

To avoid injury take care:

- ▶ not to use the device for the measurement of gas flow rates.
- ▶ not to use the device in explosive atmospheres.
- ▶ not to use the device in an environment incompatible with the materials it is made of.
- ▶ not to use fluid that is incompatible with the materials the device is made of.
- ▶ not to make any modifications to the device.
- ▶ not to subject the device to mechanical loads.
- ▶ to prevent any unintentional power supply switch-on.
- ▶ to carry out the installation and maintenance work by qualified and skilled staff with the appropriate tools.
- ▶ to guarantee a defined or controlled restarting of the process, after a power supply interruption.
- ▶ to observe the general technical rules when installing and using the device.

NOTE

The device may be damaged by the fluid in contact with.

- ▶ Systematically check the chemical compatibility of the component materials of the device and the fluids likely to come into contact with it (for example: alcohols, strong or concentrated acids, aldehydes, alkaline compounds, esters, aliphatic compounds, ketones, halogenated aromatics or hydrocarbons, oxidants and chlorinated agents).

NOTE

Elements / Components sensitive to electrostatic discharges

- ▶ This 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:

www.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 this manual.

4.3 Information on the Internet

You can find the user manuals and technical data sheets regarding the types 8026, 8036 and SE36 at:

www.burkert.com

5 DESCRIPTION

5.1 Area of application

8026, 8036 and SE36 devices are intended to measure the flow rate of liquids:

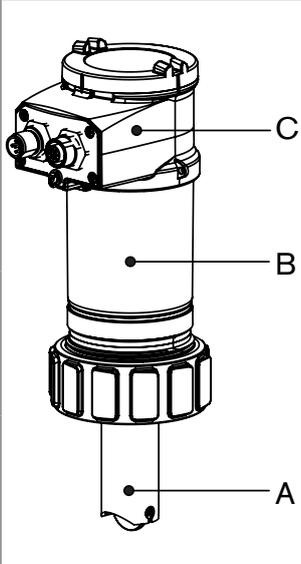
- flowmeters 8026 and 8036 are used to measure the flow of neutral or slightly aggressive liquids,
- flow transmitter SE36 with sensor-fitting S070 or S077 is used to measure the flow rate of viscous liquids such as honey or oil and which are free of solid particles.

Thanks to one or two fully adjustable transistor outputs, the device can be used to switch a solenoid valve, activate an alarm and, thanks to one or two 4-20-mA current outputs, establish one or two control loops.

5.2 General description

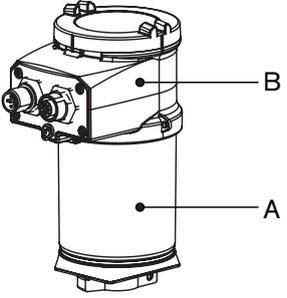
5.2.1 Construction of the 8026

The flowmeter 8026 comprises:

	<p>A: a paddle-wheel flow sensor, the rotation of which generates pulses.</p> <p>Set in rotation by the flow, the 4 permanent magnets integrated in the vanes of the paddle generate pulses, the frequency of which is proportional to the flow velocity of the fluid. A conversion coefficient specific to each pipe (material and diameter) is necessary to establish the flow rate value associated with the measurement.</p> <p>The conversion coefficient (K-factor) expressed in pulses per litre is given in the user manual for the fitting used.</p> <p>B: an acquisition / conversion module for the process values measured:</p> <ul style="list-style-type: none"> ▪ acquisition of the pulse frequency ▪ conversion of the frequency measured into flow rate units <p>C: an electrical housing which can include a display module. The display module has a navigation button to read and/or configure the parameters of the device. The display module is not delivered with all the versions of the flowmeter but is available as accessory (see chap. 11).</p>
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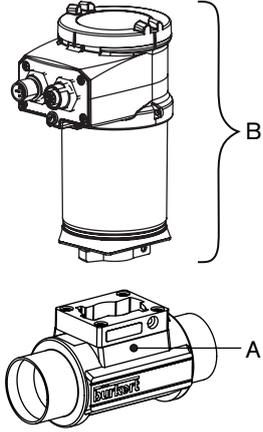
5.2.2 Construction of the SE36

The flow transmitter SE36 comprises:

	<p>A: an acquisition / conversion module for the process values measured:</p> <ul style="list-style-type: none"> ▪ acquisition of the pulse frequency ▪ conversion of the frequency measured into flow rate units
	<p>B: an electrical housing which can include a display module. The display module has a navigation button to read and/or configure the parameters of the device. The display module is not delivered with all the versions of the flowmeter but is available as accessory (see chap. 11).</p>

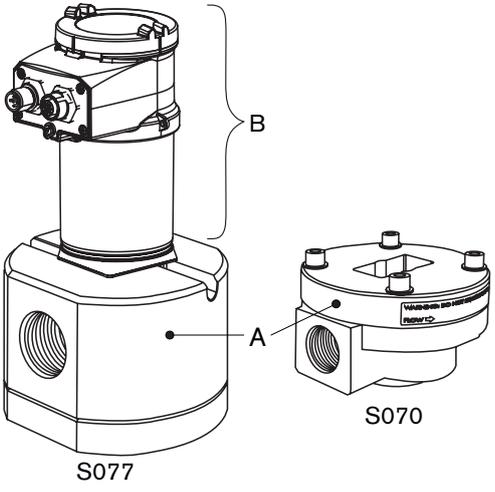
5.2.3 Construction of the 8036

The flowmeter 8036 comprises:

	<p>A: an S030 sensor-fitting including the paddle-wheel flow sensor.</p> <p>Set in rotation by the flow, the 4 permanent magnets integrated in the vanes of the paddle generate pulses, the frequency of which is proportional to the flow velocity of the fluid. A conversion coefficient specific to each pipe (material and diameter) is necessary to establish the flow rate value associated with the measurement.</p> <p>The conversion coefficient (K-factor) expressed in pulses per litre is given in the user manual for the sensor-fitting used.</p>
	<p>B: a flow transmitter SE36 (see chap. 5.2.2)</p>

5.2.4 Construction of the SE36 with sensor-fitting S070 or S077

The flow transmitter SE36 with sensor-fitting S070 or S077 comprises:

	<p>A: an S070 or S077 sensor-fitting including the flow sensor with oval gears.</p> <p>Set in rotation by the flow, the magnets integrated in the oval gears generate pulses, the frequency of which is proportional to the volume of fluid. A conversion coefficient specific to each pipe (material and diameter) is necessary to establish the flow rate value associated with the measurement.</p>
	<p>The conversion coefficient (K-factor) expressed in pulses per litre is given in the user manual for the sensor-fitting used.</p> <p>B: a flow transmitter SE36 (see chap. 5.2.2)</p>

5.3 Description of the name plate

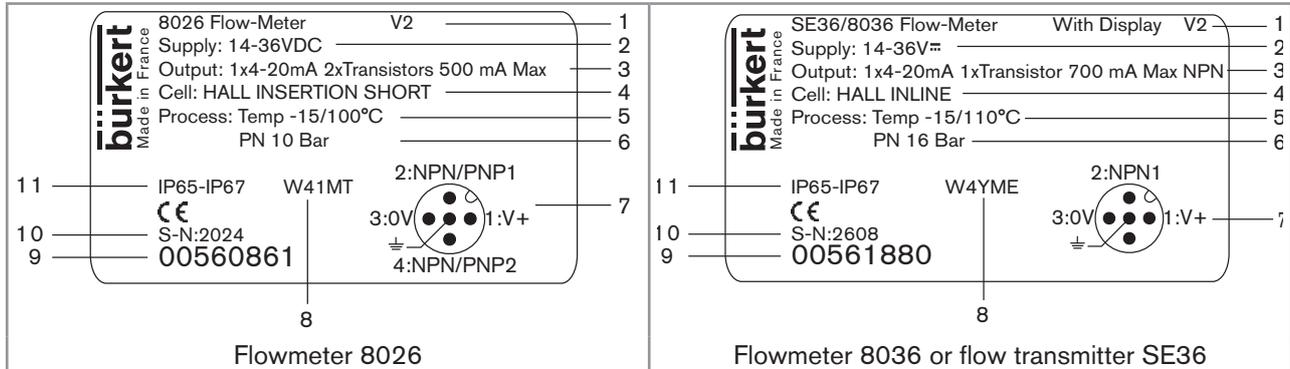


Fig. 1 : Examples of a name plate

1. Type of the device, measured variable and version
2. Power supply
3. Output specifications
4. Type of sensor
5. Fluid temperature range
6. Fluid pressure
7. Allocation of the pins on the M12 fixed connectors
8. Manufacturing code
9. Order code
10. Serial number
11. Protection rating

5.4 Available versions of type 8026

The following versions of the 8026 flowmeter are available. Each version of the 8026 flowmeter is available without or with the display module.

The display module is also available as an accessory (see chap. 11).

Voltage supply	Outputs	Electrical connection	Type of sensor	Seal of the sensor	UL	Type of connection of the outputs	Order code of the 8026	
							without display module	with display module
14-36 V DC	1 NPN transistor + 1 x 4-20 mA	Male 5-pin M12 fixed connector	Short	FKM ¹⁾	no	2-wire	560 860	561 860
			Long	FKM ¹⁾			560 870	561 870
			Short	FKM ¹⁾	yes	2-wire	560 863	561 863
			Long	FKM ¹⁾			560 873	561 873
	2 x transistor, NPN/PNP, + 1 x 4-20 mA	Male 5-pin M12 fixed connector	Short	FKM ¹⁾	no	2-wire	560 861	561 861
			Long	FKM ¹⁾			560 871	561 871
			Short	FKM ¹⁾	yes	2-wire	560 864	561 864
			Long	FKM ¹⁾			560 874	561 874
12-36 V DC	2 x transistor, NPN/PNP, + 2 x 4-20 mA	Male 5-pin M12 fixed connector + female 5-pin M12 fixed connector	Short	FKM ¹⁾	no	3-wire	560 862	561 862
			Long	FKM ¹⁾			560 872	561 872
			Short	FKM ¹⁾	yes	3-wire	560 865	561 865
			Long	FKM ¹⁾			560 875	561 875

¹⁾ A set with additional seals (1 green FKM seal + 1 black EPDM seal) is delivered with each device.

5.5 Available versions of the transmitter SE36

The following versions of the transmitter SE36 are available. The references of the S030 and S077 sensor-fittings including the flow sensor can be found on the related technical data sheets for these product types.

Each version of the transmitter is available without or with the display module.

The display module is also available as an accessory (see chap. 11).

Voltage supply	Outputs	Electrical connection	Type of connection of the outputs	UL	Order code of the SE36	
					without display module	with display module
14-36 V DC	1 NPN transistor + 1 x 4-20 mA	Male 5-pin M12 fixed connector	2-wire	no	560 880	561 880
				yes 	560 883	561 883
	2 x transistor, NPN/PNP, + 1 x 4-20 mA	Male 5-pin M12 fixed connector	2-wire	no	560 881	561 881
				yes 	560 884	561 884
12-36 V DC	2 x transistor, NPN/PNP, + 2 x 4-20 mA	Male 5-pin M12 fixed connector + female 5-pin M12 fixed connector	3-wire	no	560 882	561 882
				yes 	560 885	561 885

6 TECHNICAL DATA

6.1 Conditions of use

Ambient temperature	-10 to +60 °C
Air humidity	< 85%, non condensated
Protection rating according to EN 60529	IP67 and IP65 with connectors plugged in and tightened and transmitter cover fully closed and sealed

6.2 Conformity to standards and directives

6.2.1 Conformities common to the 8026 and the SE36

- EMC: EN 61000-6-2, EN 61000-6-3
- Vibration: EN 60068-2-6
- Shock: EN 60068-2-27



For UL devices () in the United States of America and Canada:

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

6.2.2 Conformity to the pressure equipment directive

The devices 8026 and the sensor-fittings S030, S070 and S077 comply with article 3§3 of the pressure equipment directive 97/23/CE.

According to this directive, the product can only be used in the following cases (depending on max. pressure, pipe diameter and fluid):

Type of fluid	Conditions
Fluid group 1, par. 1.3.a	<ul style="list-style-type: none"> ▪ Flowmeter 8026 and sensor-fitting S030: DN ≤ 25 only ▪ Sensor-fittings S070 and S077: Forbidden
Fluid group 2 par. 1.3.a	DN ≤ 32 or DN > 32 and PNxDN ≤ 1000
Fluid group 1 par. 1.3.b	<ul style="list-style-type: none"> ▪ Flowmeter 8026: DN ≤ 25 or DN > 25 and PNxDN ≤ 2000 ▪ Sensor-fittings S030, S070 and S077: PNxDN ≤ 2000
Fluid group 2 par. 1.3.b	<ul style="list-style-type: none"> ▪ Flowmeter 8026: DN ≤ 400 ▪ Sensor-fittings S030, S070 and S077: DN ≤ 200

6.3 Mechanical data

Part	Material
Box / seals	stainless steel 1.4404, PPS / EPDM
Cover / seal	PC / silicone
Display module	PC / PBT
M12 fixed connector	nickel-plated brass (stainless steel on request)
Fixed connector holder	stainless steel 1.4404 (316L)
Screws	stainless steel
Nut	PC
Flow sensor holder / seal (only 8026)	PVDF / FKM (default)
Axis and shaft of the paddle wheel (only 8026)	Ceramic (Al ₂ O ₃)
Paddle wheel (only 8026)	PVDF
Quarter-turn system (only SE36)	PC

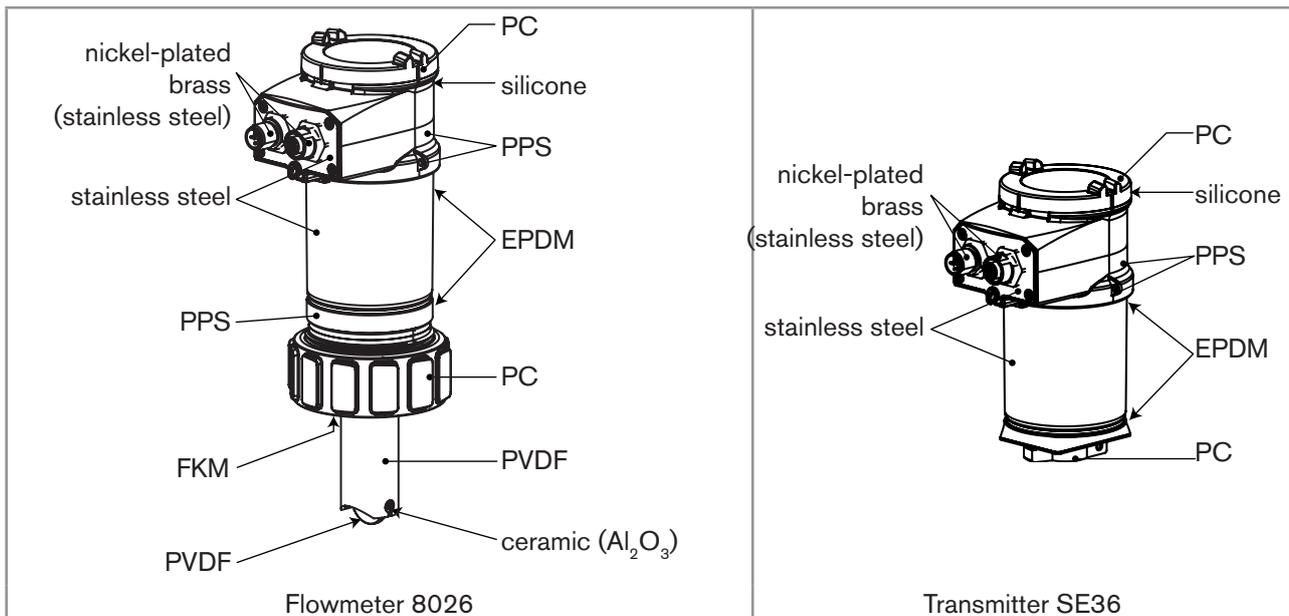


Fig. 2 : Materials used in the flowmeter 8026 and the transmitter SE36

- Materials in contact with the fluid (only for 8026): PVDF, ceramic, FKM (default).
- Dimensions of devices: please refer to the technical data sheets regarding the types 8026, 8036 or SE36 available at www.burkert.com
- Mechanical data of fittings: please refer to the technical data sheets regarding the related fittings, available at www.burkert.com

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6.4 Fluid data

Pipe diameter	DN06 to DN400; For fitting S020 or sensor-fitting S030, the appropriate diameter is determined using the flow rate / DN / fluid velocity graphs: refer to the manuals of the fittings
Fluid temperature	
▪ 8026	▪ -15 to +100 °C; Also factor in the fluid temperature/pressure dependency for the 8026 with fitting S020 : see Fig. 3
▪ 8036	▪ see the manual delivered with the sensor-fitting S030 or the technical data sheet
▪ SE36 with a sensor-fitting S070 or S077	▪ see the manual delivered with the sensor-fitting S070 or S077 or the technical data sheet
Fluid pressure	
Also refer to the requirements of the Pressure Equipment Directive: see chap. 6.2.2	
▪ 8026	▪ PN10; Also factor in the fluid temperature/pressure dependency for the 8026 with fitting S020 (see Fig. 3)
▪ 8036	▪ see the manual delivered with the sensor-fitting S030 or the technical data sheet
▪ SE36 with a sensor-fitting S070 or S077	▪ see the manual delivered with the sensor-fitting S070 or S077 or the technical data sheet
Type of fluid	
▪ 8026 and 8036	▪ Neutral or slightly aggressive fluids
▪ SE36 with sensor-fitting S070 or S077	▪ Viscous fluids, free of solid particles
Fluid viscosity	
▪ 8026 and 8036	▪ 300 cSt max.
▪ SE36 with sensor-fitting S070 or S077	▪ see the manual delivered with the sensor-fitting S070 or S077 or the technical data sheet
Solid particle rate in the fluid	
▪ 8026 and 8036	▪ ≤ 1%
▪ SE36 with sensor-fitting S070 or S077	▪ 0 %
Flow rate measurement	
▪ Measurement range	▪ 0,3 to 10 m/s
▪ Linearity	▪ ±0,5% ¹⁾ of the full scale
▪ Repeatability	▪ ±0,4% ¹⁾ of the measured value
▪ Measurement deviation with standard K-factor	▪ ±2,5% ¹⁾ of the measured value
▪ Measurement deviation with a Teach-In procedure	▪ ±1% ¹⁾ of the measured value (at the Teach-In point)

¹⁾ Determined in the following reference conditions: fluid = water, water and ambient temperatures = 20 °C, upstream and downstream distances respected, appropriate pipe dimensions.

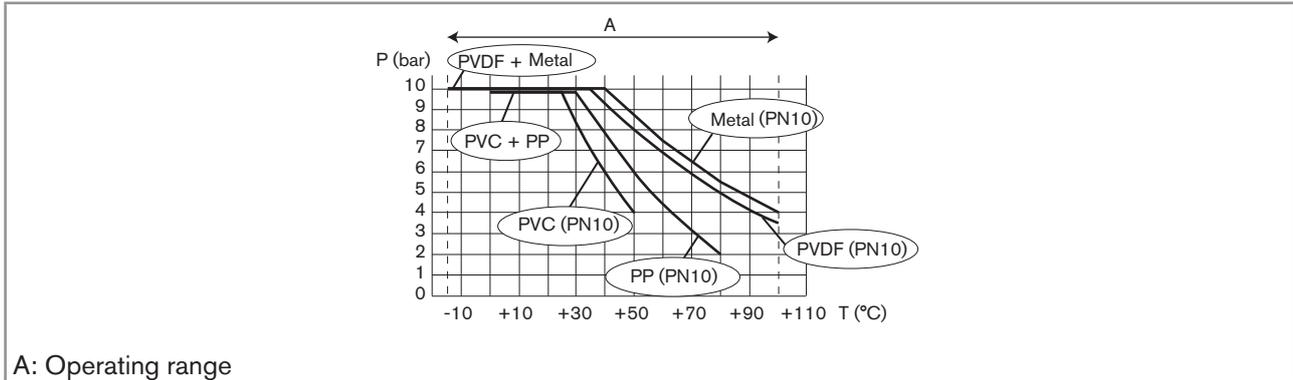


Fig. 3 : Fluid temperature-pressure dependency for the flowmeter 8026 associated to a fitting S020

6.5 Electrical data

Power supply	
▪ version with 2 or 3 outputs (2 wires)	▪ 14-36 V DC, filtered and regulated
▪ version with 4 outputs (3 wires)	▪ 12-36 V DC, filtered and regulated
Specifications of the power source (not supplied) of the UL devices	▪ limited energy source (in accordance to UL 61010-1, paragraph 9.3) or ▪ Class 2 source (in accordance to standards 1310/1585 and 60950-1)
Current consumption	
▪ version with 2 or 3 outputs (2 wires)	▪ 25 mA max. (at 14 V DC)
▪ version with 4 outputs (3 wires)	▪ 5 mA max. (at 12 V DC)
Current consumption, with loads on the transistors	1 A max.
Power consumption	40 W max.
Protection against polarity reversal	yes
Protection against voltage spikes	yes
Protection against short circuits	yes, transistor outputs
Transistor output	
▪ Version with only 1 transistor output	▪ NPN, open collector, 700 mA max., 1-36 V DC
▪ Version with 2 transistor outputs	▪ NPN (/sink) or PNP (/source) (depending on parameter setting), open collector, 700 mA max., 500 mA max. per transistor if both transistor outputs are wired. NPN output: 1-36 V DC PNP output: supply voltage
Current output	
	4-20 mA, sink ("NPN sink") or source ("PNP source") (depending on parameter setting)
▪ Version with only 1 current output (2 wires)	▪ max. loop impedance: 1100 Ω at 36 V DC, 610 Ω at 24 V DC, 180 Ω at 14 V DC
▪ version with 2 current outputs (3 wires)	▪ max. loop impedance: 1100 Ω at 36 V DC, 610 Ω at 24 V DC, 100 Ω at 12 V DC

7 ASSEMBLY

7.1 Safety instructions



DANGER

Risk of injury due to electrical voltage.

- ▶ Shut down and isolate the electrical power source 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 assembly.

- ▶ The device must only be assembled by qualified and skilled staff with the appropriate tools.

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 defined or controlled restarting of the process after any intervention on the device.

7.2 Removing the cover

NOTE

The tightness of the device is not guaranteed when the cover is removed.

- ▶ Once the cover is removed, prevent ingress of liquid inside the housing.

The device may be damaged if a metal component comes into contact with the electronics.

- ▶ Prevent contact of the electronics with a metal component.

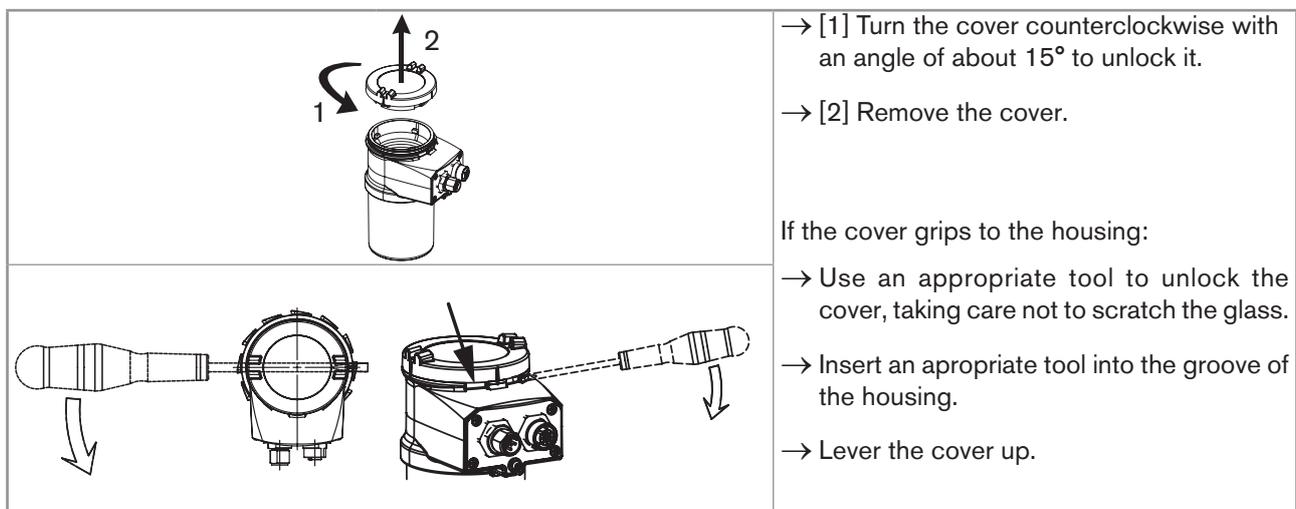


Fig. 4 : Removing the cover

7.3 Mounting the cover

	<ul style="list-style-type: none"> → Check that there is a seal on the housing and that it is not damaged. Replace it if necessary. → Grease the seal if necessary, using a component compatible with the seal material. → [1] Set the cover to ensure that the 4 grooves of the cover match with the 4 pins of the housing. → [2] Turn the cover clockwise with an angle of about 15° to lock it.
--	--

Fig. 5 : Closing the cover

7.4 Mounting the display module

	<ul style="list-style-type: none"> → Remove the cover (see chapter 7.2). → Set the display module at an angle of about 20° in relation to the desired position.
	<ul style="list-style-type: none"> → The module can be mounted in 4 different positions, at 90° intervals.
	<ul style="list-style-type: none"> → Fully push in the module and turn clockwise to lock it.

Fig. 6 : Mounting the display module

7.5 Removing the display module

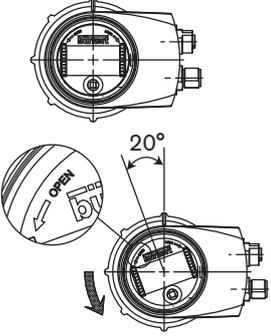
	<p>→ Remove the cover if necessary (see chapter 7.2).</p> <p>→ Turn the module by ca. 20° counterclockwise.</p> <p>Once unlocked, the module is raised slightly by the spring action.</p>
	<p>→ Remove the module from its housing.</p>

Fig. 7 : Removing the display module

8 INSTALLATION AND WIRING

8.1 Safety instructions



DANGER

Risk of injury due to high pressure in the installation.

- ▶ Stop the circulation of fluid, cut off the pressure and drain the pipe before loosening the process connections.

Risk of injury due to electrical voltage.

- ▶ 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.

Risk of injury due to the nature of the fluid.

- ▶ Respect the prevailing regulations on accident prevention and safety relating to the use of aggressive fluids.



WARNING

Risk of injury due to non-conforming installation.

- ▶ The electrical and fluid installation can only be carried out by qualified and skilled staff with the appropriate tools.
- ▶ Install appropriate safety devices (correctly rated fuse and/or circuit-breaker).
- ▶ Respect the assembly instructions for the fitting used.

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 defined or controlled restarting of the process after any intervention on the device.

8.2 Installation of a 8026 on a pipe

DANGER

Risk of injury due to high pressure in the installation.

- ▶ Stop the circulation of fluid, cut off the pressure and drain the pipe before loosening the process connections.

Risk of injury due to the nature of the fluid.

- ▶ Respect the prevailing regulations on accident prevention and safety relating to the use of aggressive fluids.

Follow the next steps to install the flowmeter 8026 properly:

1. Install the fitting S020 in the pipe,
2. Insert the flowmeter 8026 into the fitting S020,
3. Complete the installation of the 8026.

8.2.1 Install the fitting S020 in the pipe

→ Select a fitting S020 adapted to the fluid velocity.



To select a fitting, please refer to the chart in the technical data sheet of the related fitting.

Choose a place for the fitting on the pipe so that:

- air bubbles do not appear in the pipe, in the section around the sensor (Fig. 8).
- the pipe is always filled in the section around the sensor (Fig. 8).

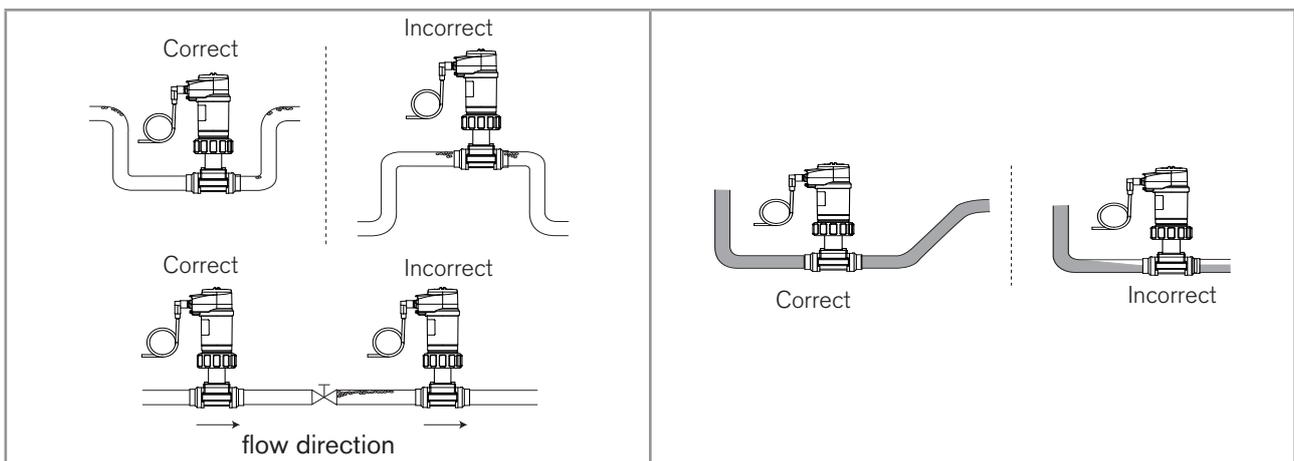


Fig. 8 : Air bubbles within the pipe / Filling of the pipe

ATTENTION

Risk of damage when installing the fitting.

- ▶ Respect the installation instructions given in the user manual for the fitting.

→ Install the fitting S020 in the pipe so that the paddle wheel axis of the device is horizontal (Fig. 9).

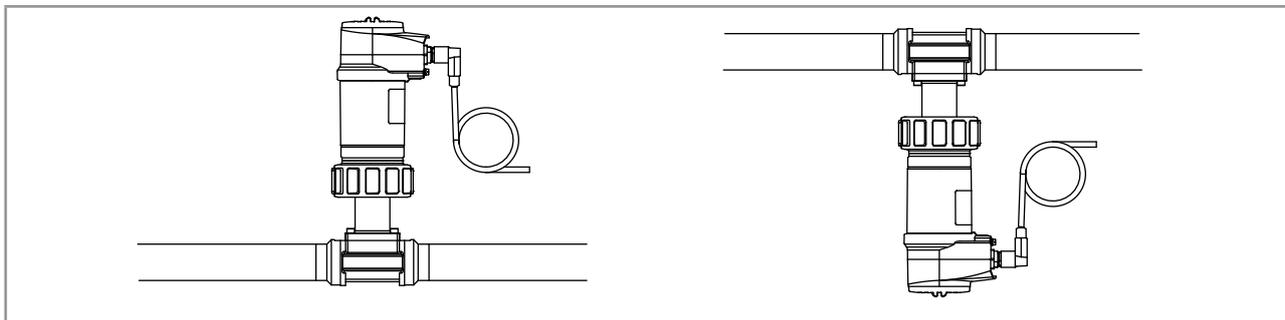
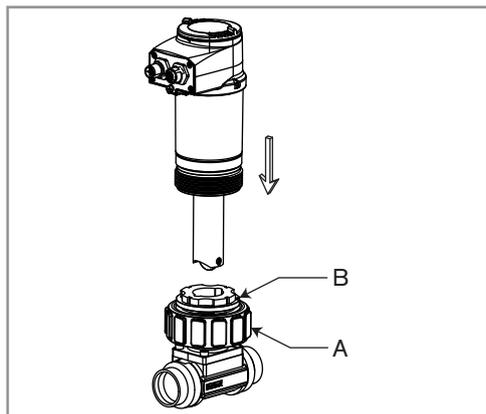


Fig. 9 : *The paddle wheel axis must be horizontal*

8.2.2 Install the flowmeter 8026 into the fitting S020



→ Fit the display module to parameter the device (see chap. 7.4).



- Check that there is a seal on the fitting and that it is not damaged. Replace the seal if necessary.
- Place nut A on the fitting and insert circlip B into the groove.
- Carefully insert the device into the fitting.
- ✓ If assembly is correct, the device can no longer rotate on itself.
- Secure the unit with nut A, tightening only by hand.

Fig. 10 : *Installation of flowmeter 8026 into the fitting S020*

8.2.3 Complete the installation of the 8026

→ Wire the device (see chap. 8.5) and supply power to the device.

→ Set the K-factor or determine it through a Teach-In procedure (see chap. 9.13.5).

8.3 Installation of a 8036 on a pipe



DANGER

Risk of injury due to high pressure in the installation.

- ▶ Stop the circulation of fluid, cut off the pressure and drain the pipe before loosening the process connections.

Risk of injury due to the nature of the fluid.

- ▶ Respect the prevailing regulations on accident prevention and safety relating to the use of aggressive fluids.

Follow the next steps to install the flowmeter 8036 properly:

1. Install the sensor-fitting S030 in the pipe,
2. Assemble the flow transmitter SE36 on the sensor-fitting S030,
3. Complete the installation of the 8036.

8.3.1 Install the sensor-fitting S030 in the pipe

→ Select a sensor-fitting S030 adapted with the fluid velocity.



To select a fitting, please refer to the chart in the technical data sheet of the related fitting.

Choose a place for the sensor-fitting S030 on the pipe so that:

- air bubbles do not appear in the pipe, in the section around the sensor (Fig. 8, chap. 8.2.1).
- the pipe is always filled in the section around the sensor (Fig. 8, chap. 8.2.1).



ATTENTION

Risk of damage when installing the fitting.

- ▶ Respect the installation instructions given in the user manual for the fitting.

→ Install the sensor-fitting S030 in the pipe so that the paddle wheel axis is horizontal (Fig. 9, chap. 8.2.1).

8.3.2 Assemble the flow transmitter SE36 on the sensor-fitting S030



→ Fit the display module to parameter the device (see chap. 7.4).

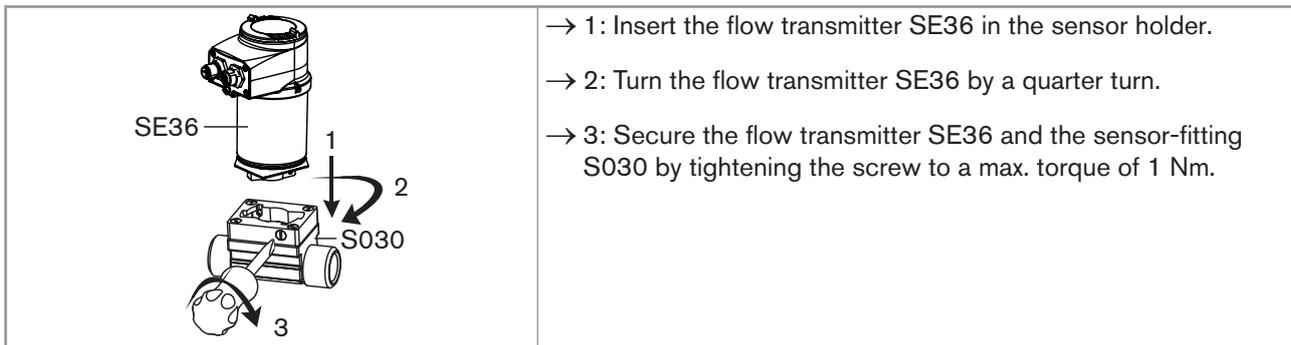


Fig. 11 : Assembling the flowmeter 8036

8.3.3 Complete the installation of the 8036

→ Wire the device (see chap. 8.5) and supply power to the device.

→ Set the K-factor or determine it through a Teach-In procedure (see chap. 9.13.5).

8.4 Installation of a flow transmitter SE36 with sensor-fitting S070 or S077 in a pipe



DANGER

Risk of injury due to high pressure in the installation.

- ▶ Stop the circulation of fluid, cut off the pressure and drain the pipe before loosening the process connections.

Risk of injury due to the nature of the fluid.

- ▶ Respect the prevailing regulations on accident prevention and safety relating to the use of aggressive fluids.

Follow the next steps to install the flow transmitter SE36 properly on the sensor-fitting S070 or S077, mounted in the pipe:

1. Install the sensor-fitting S070 or S077 in the pipe,
2. Assemble the flow transmitter SE36 on the sensor-fitting S070 or S077,
3. Complete the installation of the flow transmitter SE36 with sensor-fitting S070 or S077.

8.4.1 Install the sensor-fitting S070 or S077 in a pipe

→ Select a sensor-fitting S070 or S077 adapted to the fluid viscosity.



To select a fitting, please refer to the chart in the technical data sheet of the related fitting.

→ Install the sensor-fitting S070 or S077 in the pipe so that the oval gear axes are in the horizontal plane (see Fig. 12).

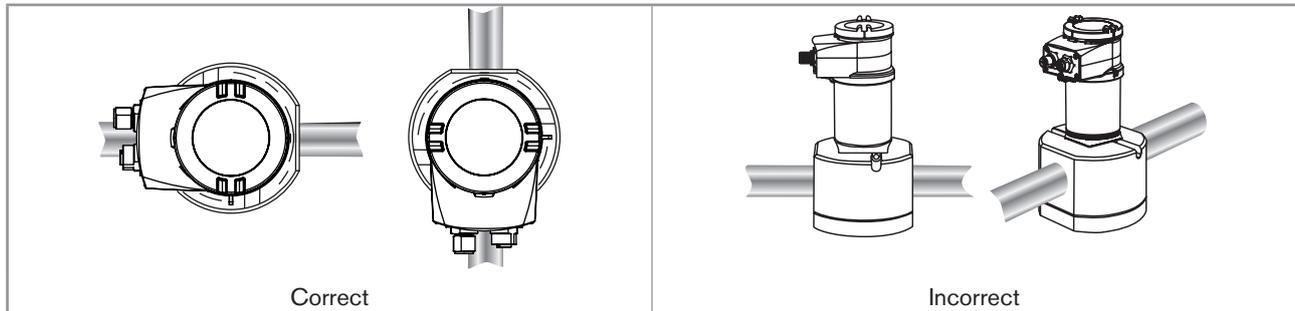


Fig. 12 : The oval gear axes must be horizontal

8.4.2 Assemble the flow transmitter SE36 on the sensor-fitting S070 or S077

! → Fit the display module to parameter the device (see chap. 7.4).

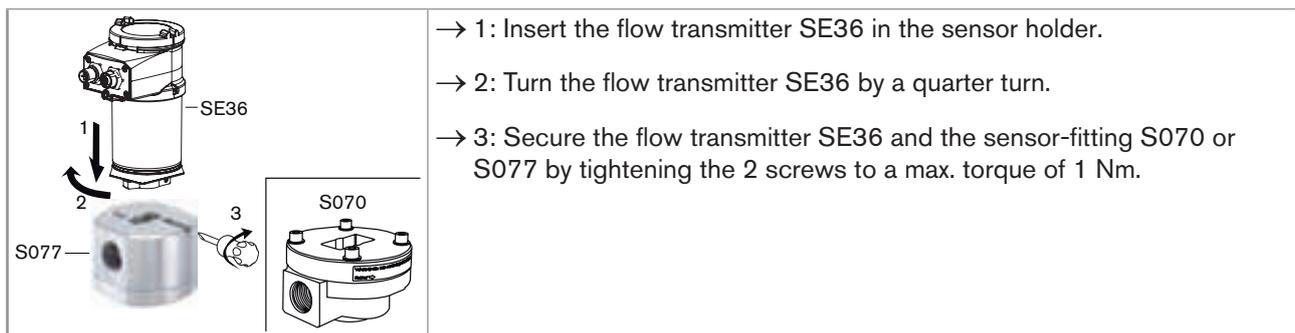


Fig. 13 : Assembling the flow transmitter SE36 with sensor-fitting S070 or S077

8.4.3 Complete the installation of the flow transmitter SE36 with sensor-fitting S070 or S077

→ Wire the device (see chap. 8.5) and supply power to the device.

→ Set the K-factor or determine it through a Teach-In procedure (see chap. 9.13.5).

8.5 Wiring

! DANGER

Risk of injury due to electrical voltage.

- ▶ Shut down and isolate the electrical power source before carrying out work on the system.
- ▶ Observe all applicable accident protection and safety regulations for electrical equipment.



- Use a high quality electrical power supply (filtered and regulated).
- Make sure the installation is equipotential (see chap. 8.5.3).
- Use a shielded cable.
- Once the device is wired, set the "HWMode" parameter depending on the wiring carried out, sink/NPN or source/PNP (see chap. 9.12.8).

8.5.1 Electrical connections

Number of fixed connectors	Type of connectors
1 male M12 fixed connector	female 5-pin M12 (available as an accessory: see chap. 11)
1 male M12 fixed connector and 1 female M12 fixed connector	female 5-pin M12 + male 5-pin M12 (both available as accessories: see chap. 11)

8.5.2 Assembling the male or female connector (accessories: see chap. 11)

	<ul style="list-style-type: none"> → Unscrew the nut [1] on the body [4]. → Insert the cable into the nut [1], the cable clamp [2] and the seal [3], and then into the body [4].
	<ul style="list-style-type: none"> → Strip 20 mm of the cable. → Cut the central wire (earth) so that its length is equal to 11.5 mm. → Expose 5.5 mm of the wires on the stripped cable. → Insert each wire into the appropriate pin on the terminal block [5] (see chap. 8.5.4 to chap. 8.5.6). → Tighten the terminal block [5] wired to the body [4]. → Tighten the connector nut [1].

Fig. 14 : Multipin M12 connector (available as an accessory)

8.5.3 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 grounding of the shield of the power supply cable (see Fig. 15 and Fig. 16).
- 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 devices such as pumps or valves, that are as close as possible to the device (see Fig. 16).

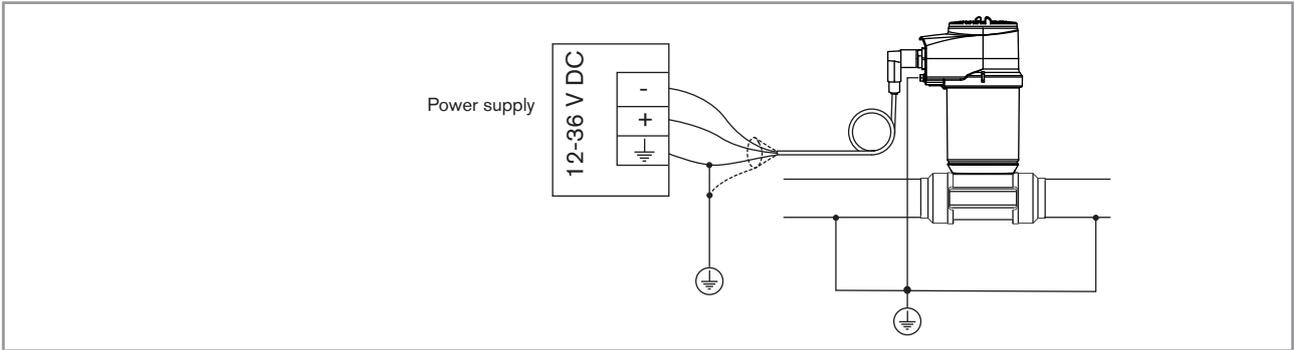


Fig. 15 : Equipotentiality skeleton diagram with pipes in metal

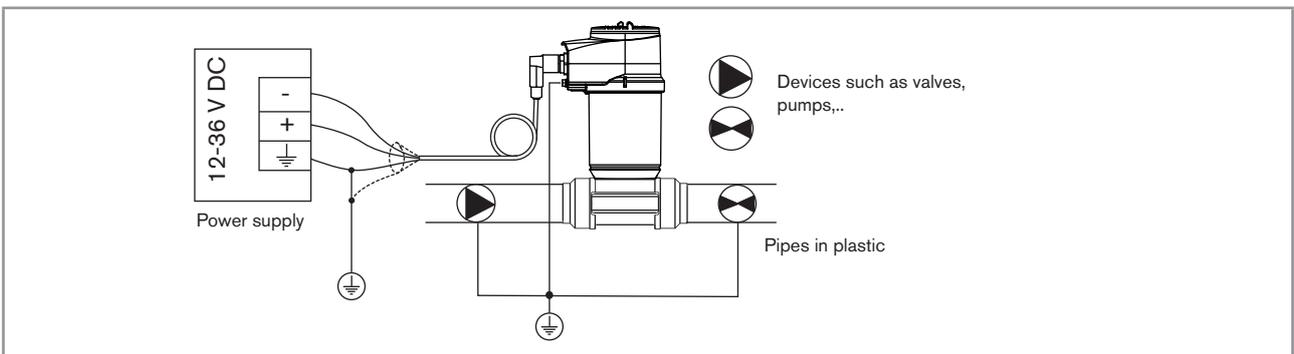


Fig. 16 : Equipotentiality skeleton diagram with pipes in plastic

8.5.4 Wiring a version with a single M12 fixed connector and an NPN transistor output and a current output

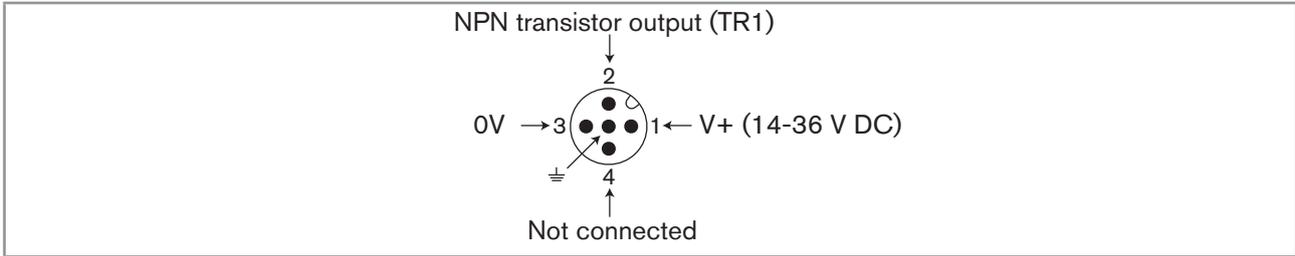


Fig. 17 : Pin assignment of the male fixed connector on a version with 1 NPN transistor output and 1 current output

Pin of the female M12 connector available as an accessory (order code 438680)	Colour of the wire
1	brown
2	white
3	blue
4	black
5	grey

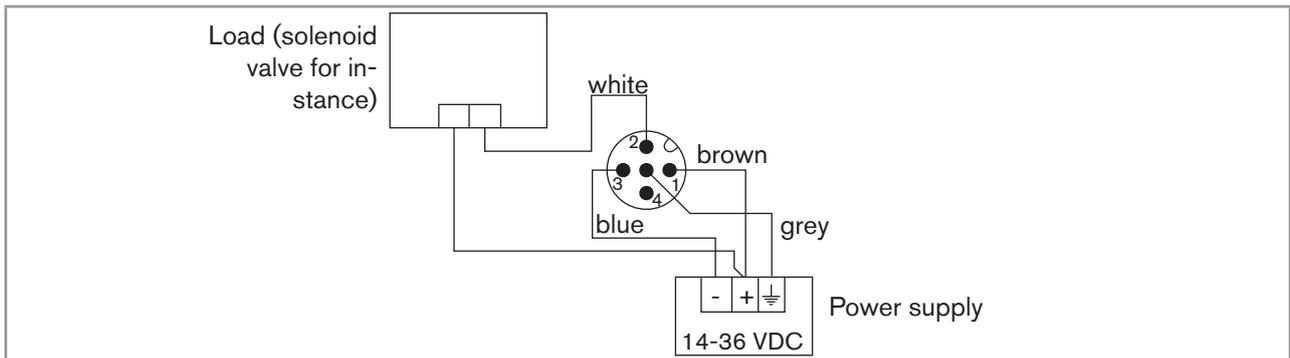


Fig. 18 : Wiring the NPN transistor output (parameter setting "NPN/sink", cannot be changed), of a version with 1 M12 fixed connector, 1 NPN transistor output and 1 current output

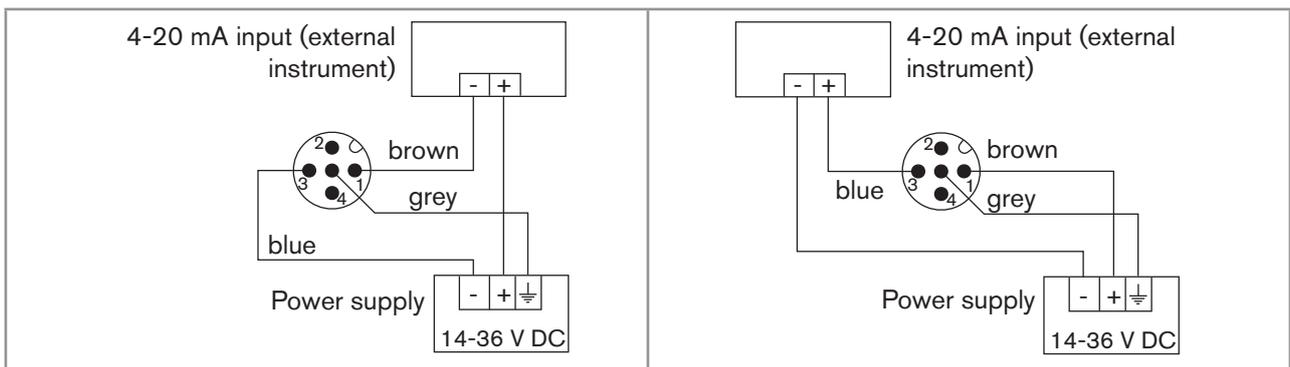


Fig. 19 : Possible electrical connections of the current output only, on a version with 1 M12 fixed connector, 1 NPN transistor output and 1 current output

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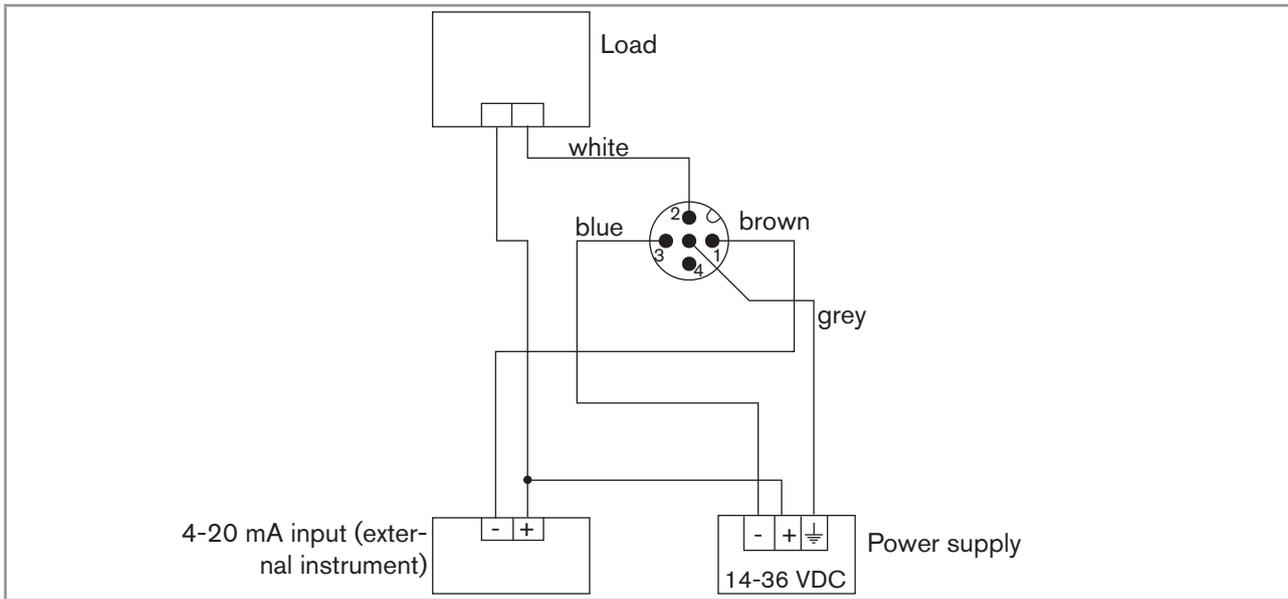


Fig. 20 : Wiring the NPN transistor output and the current output in sinking mode (parameter setting "NPN/sink", cannot be changed), on a version with 1 M12 fixed connector, 1 NPN transistor output and 1 current output

8.5.5 Wiring a version with a single M12 fixed connector and two transistor outputs and one current output

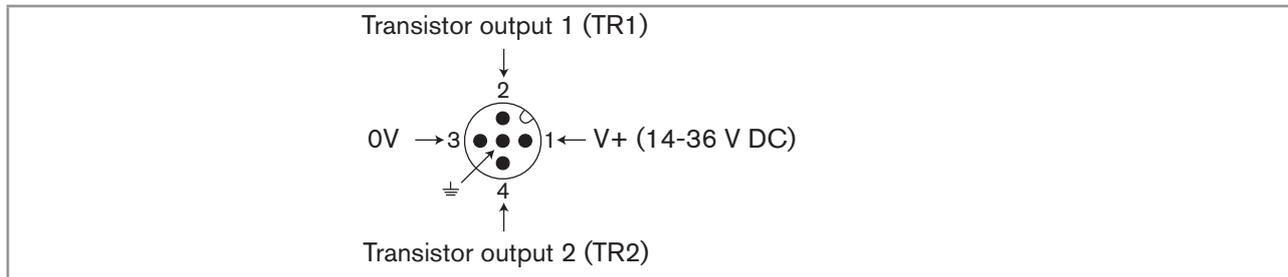


Fig. 21 : Pin assignment of the male fixed connector on a version with 2 transistor outputs and 1 current output

Pin of the female M12 connector available as an accessory (order code 438680)	Colour of the wire
1	brown
2	white
3	blue
4	black
5	grey

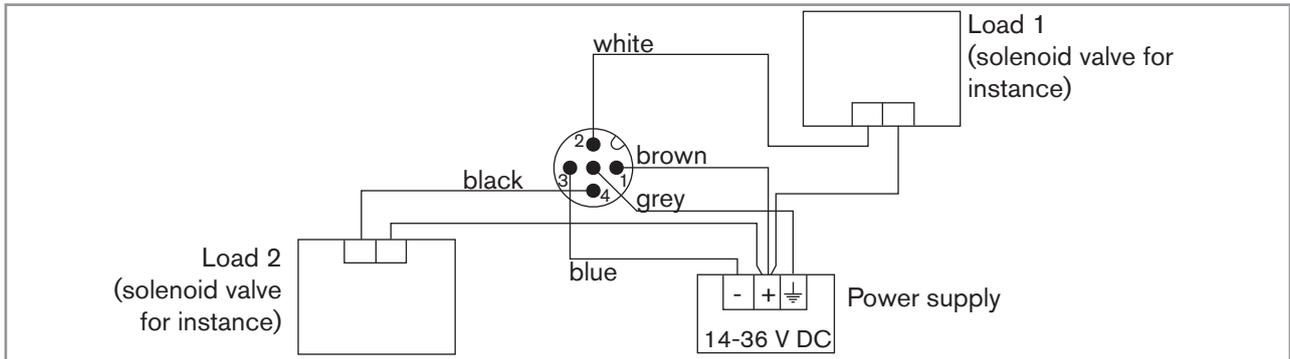


Fig. 22 : NPN wiring of both transistor outputs (parameter setting "NPN/sink"), of a version with 1 M12 fixed connector

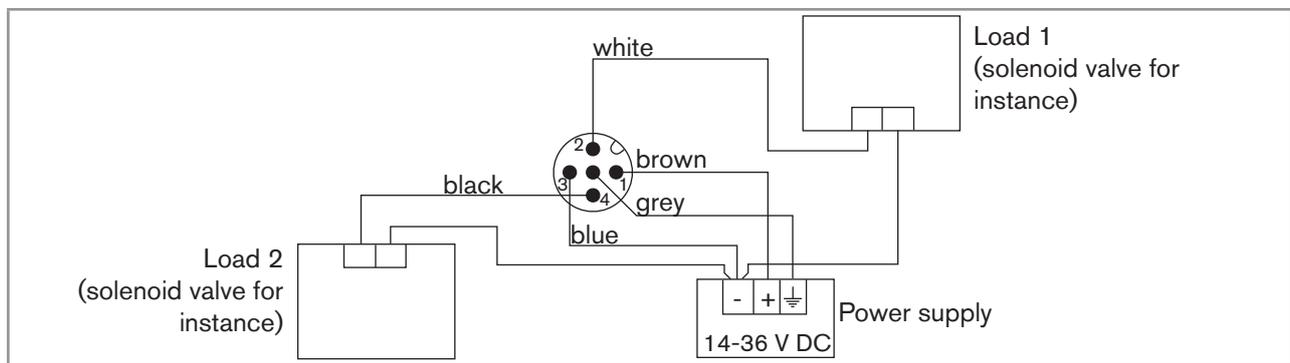


Fig. 23 : PNP wiring of both transistor outputs (parameter setting "PNP/source"), of a version with 1 M12 fixed connector

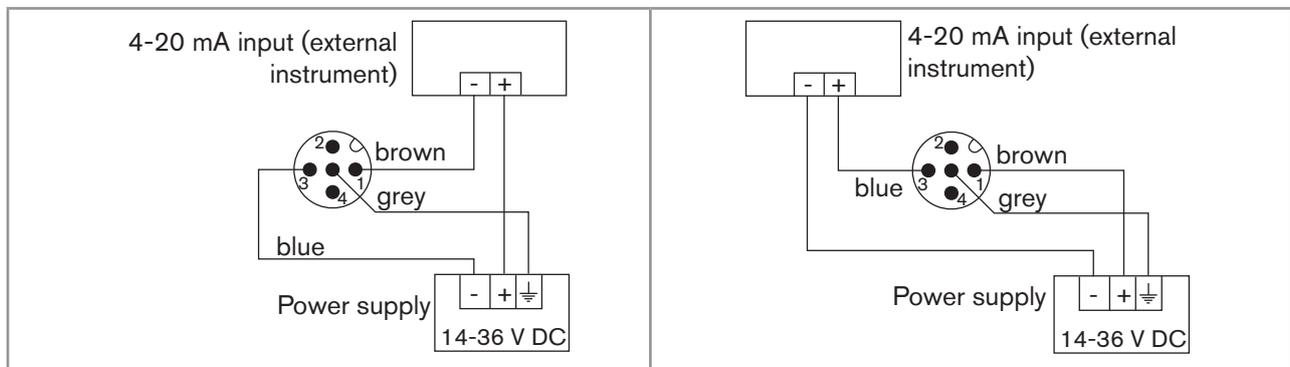


Fig. 24 : Possible electrical connections of the current output only (whatever the parameter setting, "NPN/sink" or "PNP/source"), on a version with 1 M12 fixed connector

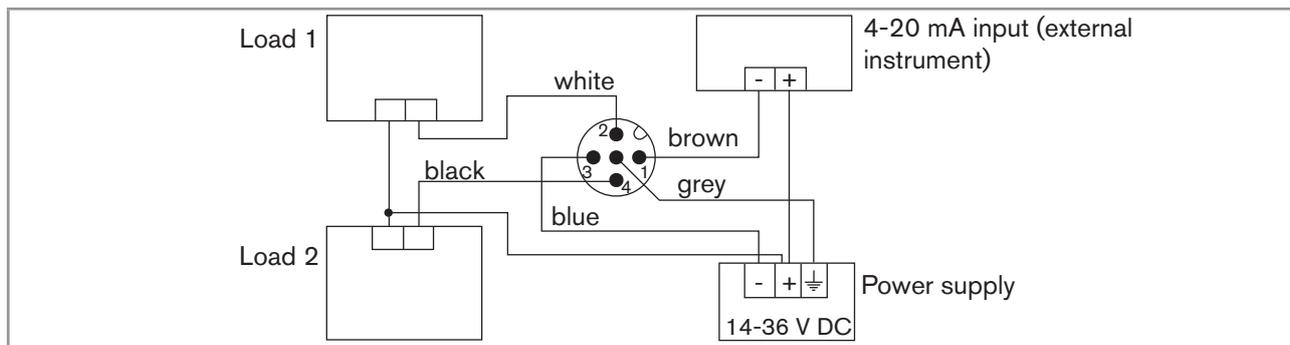


Fig. 25 : NPN wiring of both transistor outputs and wiring the current output in sinking mode (parameter setting "NPN/sink"), of a version with 1 M12 fixed connector

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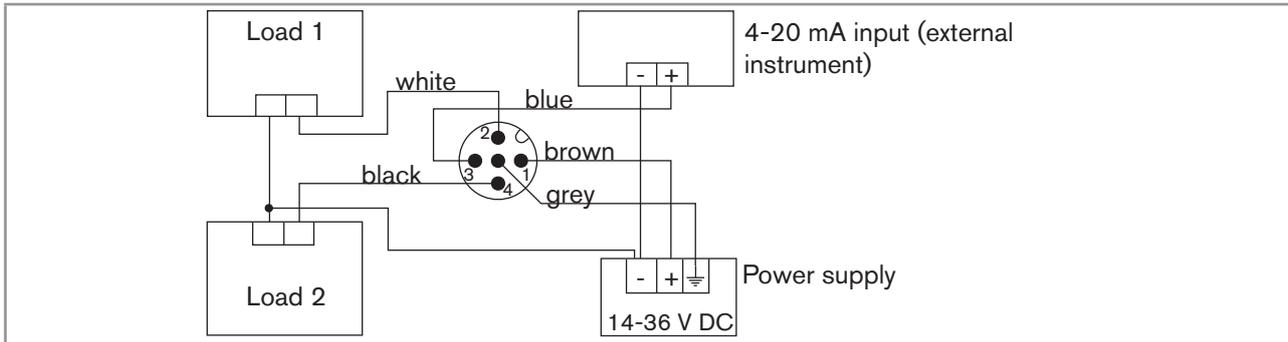


Fig. 26 : PNP wiring of both transistor outputs and wiring the current output in sourcing mode (parameter setting "PNP/ source"), of a version with 1 M12 fixed connector

8.5.6 Wiring a version with two M12 fixed connectors and two transistor outputs and two current outputs

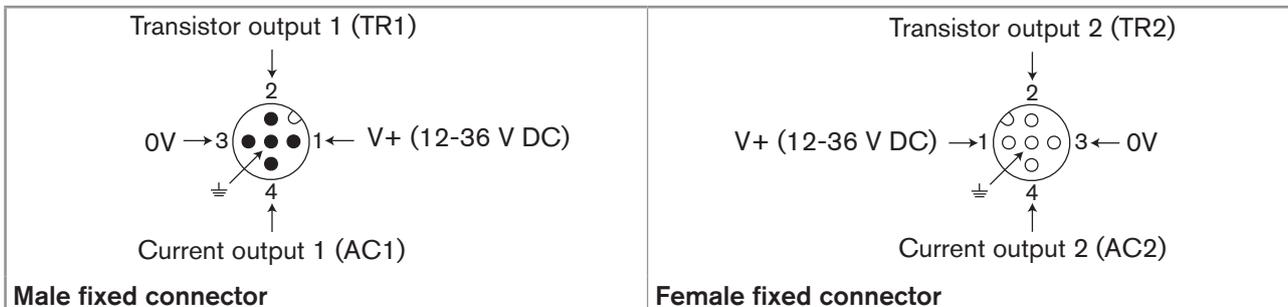


Fig. 27 : Pin assignment of the male and female M12 fixed connectors

! Connect the power supply for the device to the male fixed connector; the supply is then transferred internally to pins 1 and 3 of the female fixed connector in order to ease wiring of the load to the female fixed connector.

Pin of the female respectively male M12 cables available as accessories (order code 438680 respectively 559177)	Colour of the wire
1	brown
2	white
3	blue
4	black
5	grey

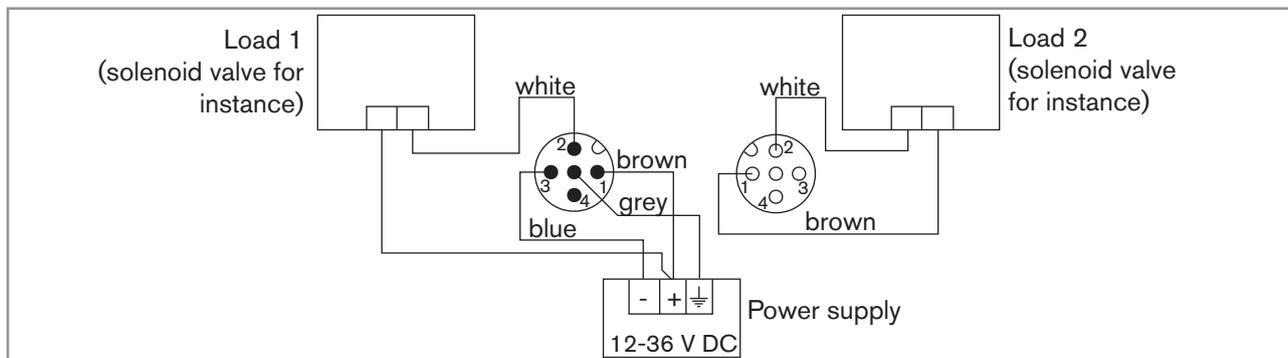


Fig. 28 : NPN wiring of both transistor outputs (parameter setting "NPN/sink"), of a version with 2 M12 fixed connectors

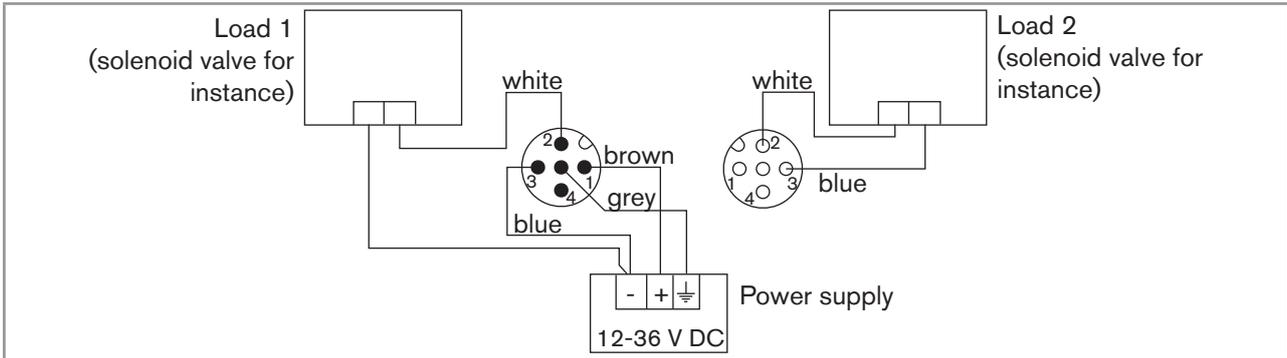


Fig. 29 : PNP wiring of both transistor outputs (parameter setting "PNP/source"), of a version with 2 M12 fixed connectors

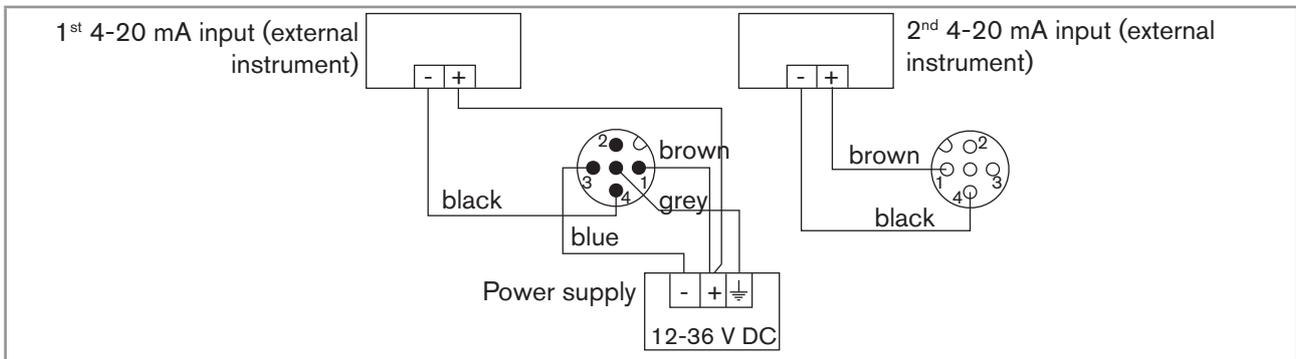


Fig. 30 : Wiring of both current outputs in sinking mode, on a version with 2 fixed connectors (parameter setting "NPN/sink")

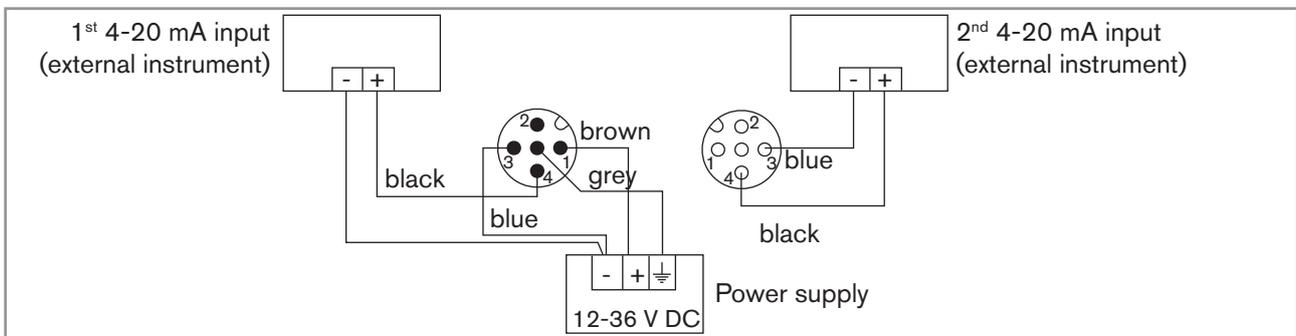


Fig. 31 : Wiring of both current outputs in sourcing mode, on a version with 2 fixed connectors (parameter setting "PNP/source")

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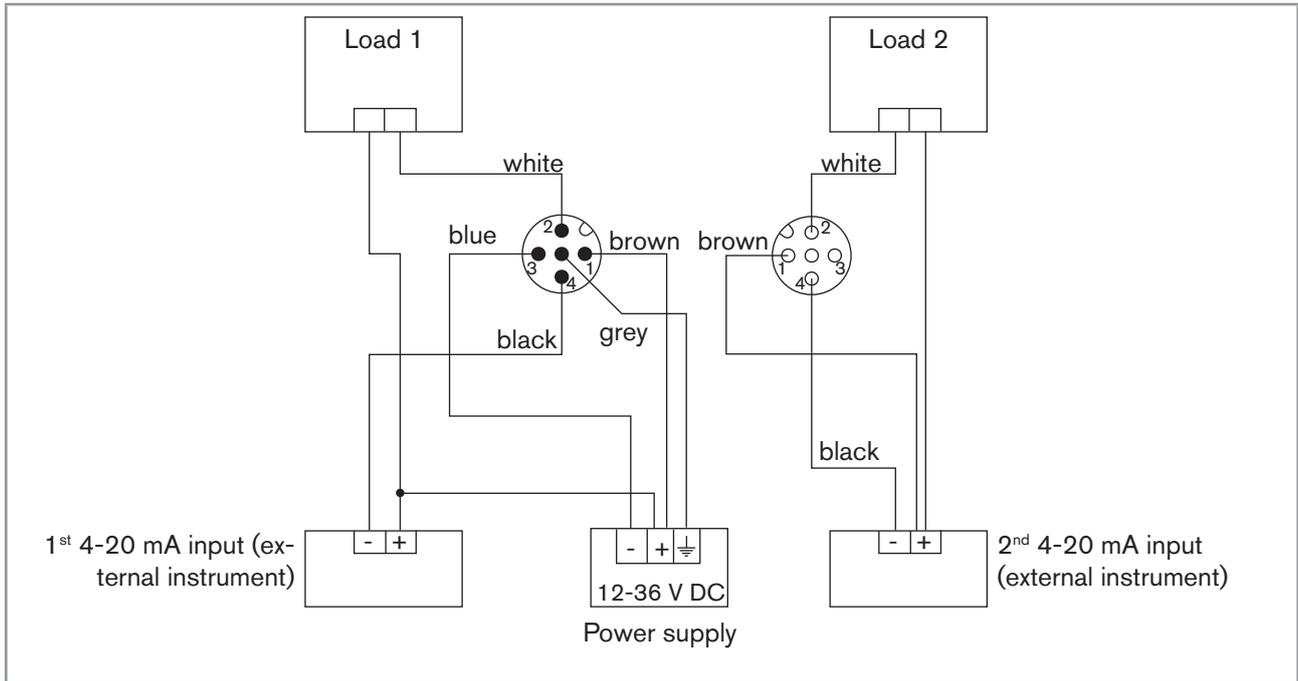


Fig. 32 : NPN wiring of both transistor outputs and wiring of both current outputs in sinking mode, on a version with 2 fixed connectors (parameter setting "NPN/sink")

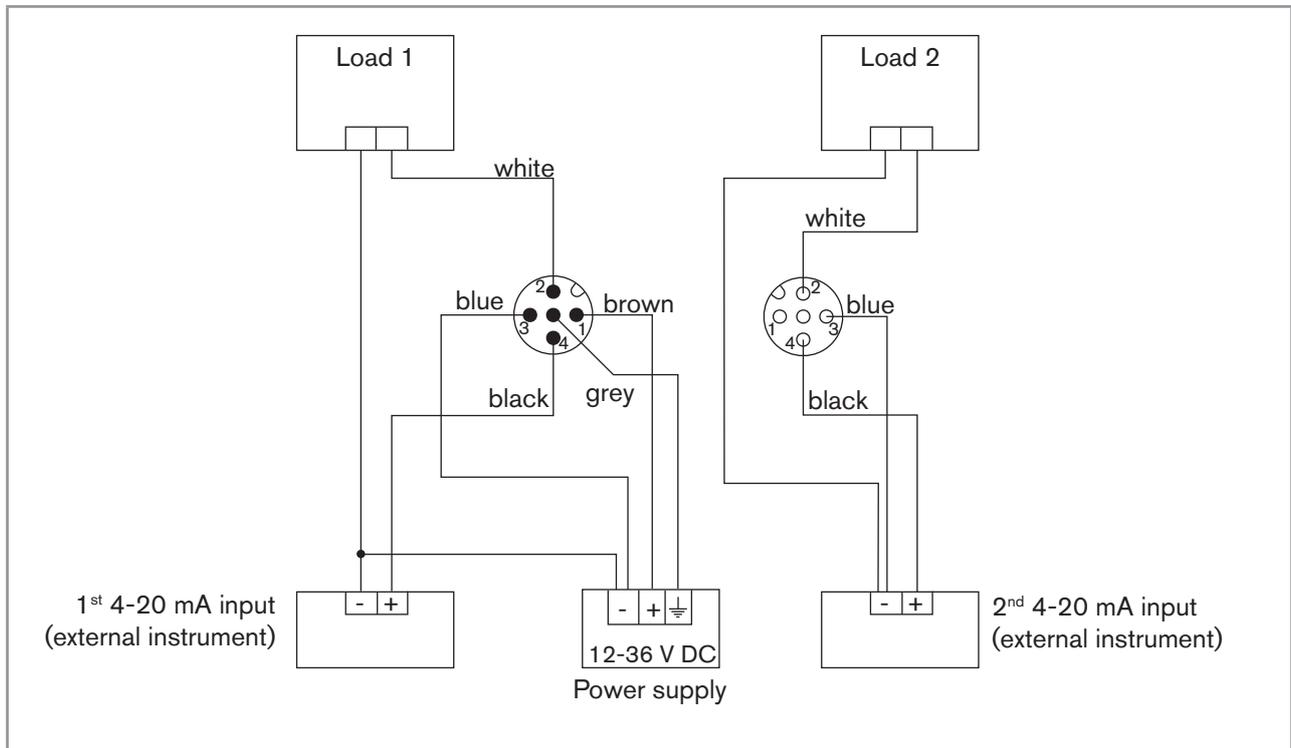


Fig. 33 : PNP wiring of both transistor outputs and wiring of both current outputs in sourcing mode, on a version with 2 fixed connectors (parameter setting "PNP/source")

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9 ADJUSTMENT AND COMMISSIONING



- The settings can only be done on a device with a display module.
- Do not remove the display module while making the settings on the device.

9.1 Safety instructions



WARNING

Risk of injury due to non-conforming adjustment.

Non-conforming operating could lead to injuries and damage the device and its surroundings.

- ▶ The operators in charge of adjustment must have read and understood the contents of this manual.
- ▶ In particular, observe the safety recommendations and intended use.
- ▶ The device/installation must only be adjusted by suitably trained staff.



WARNING

Danger due to nonconforming commissioning.

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

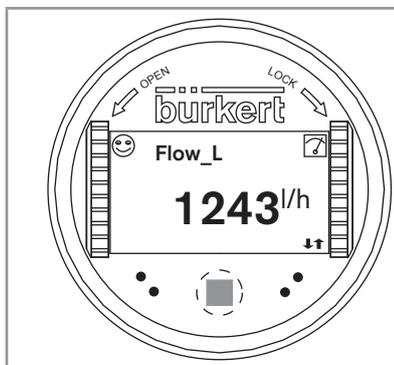
- ▶ Before commissioning, make sure that the staff in charge have read and fully understood the contents of the manual.
- ▶ In particular, observe the safety recommendations and intended use.
- ▶ The device / the installation must only be commissioned by suitably trained staff.
- ▶ Before commissioning, set the K-factor of the fitting used (see chap. 9.13.5)



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

9.2 When switching on the device

When the device is switched on and the display module mounted on the transmitter, the display indicates the software version of the display. The display then shows the first screen of the Process level:



See chap. 9.12.4 to 9.12.7 to choose the data to be displayed in the Process level.



If the message "ERROR - This display does not support this Element - Contact Bürkert" is displayed, the version of the display module is not compatible with the software version of the device. Contact your local Bürkert sales office.

Fig. 34 : Display indications when powering on the device

9.3 Knowing the operating levels

The device has 2 operating levels:

Process level

This level is used:

- to read the value of the measured flow rate and/or the sensor input frequency
- to read the values of both volume totalizers
- to reset totalizer 2
- to read both the lowest and highest values of the flow rate or the input frequency that has been measured by the device since the latest reset (this feature is not active by default),
- to reset both the lowest and highest values of the flow rate or the input frequency, if the feature has been activated
- to read the current values emitted on the 4-20 mA outputs
- to know the status of the device and the status of the sensor thanks to the relevant icons.

Configuration level

This level comprises 5 menus:

Menu title	Relevant icon
"Param": see chap. 9.12	
"Calib": see chap. 9.13	
"Diagnostic": see chap. 9.14	
"Test": see chap. 9.15	
"Info": see chap. 9.16	

9.4 Using the navigation button

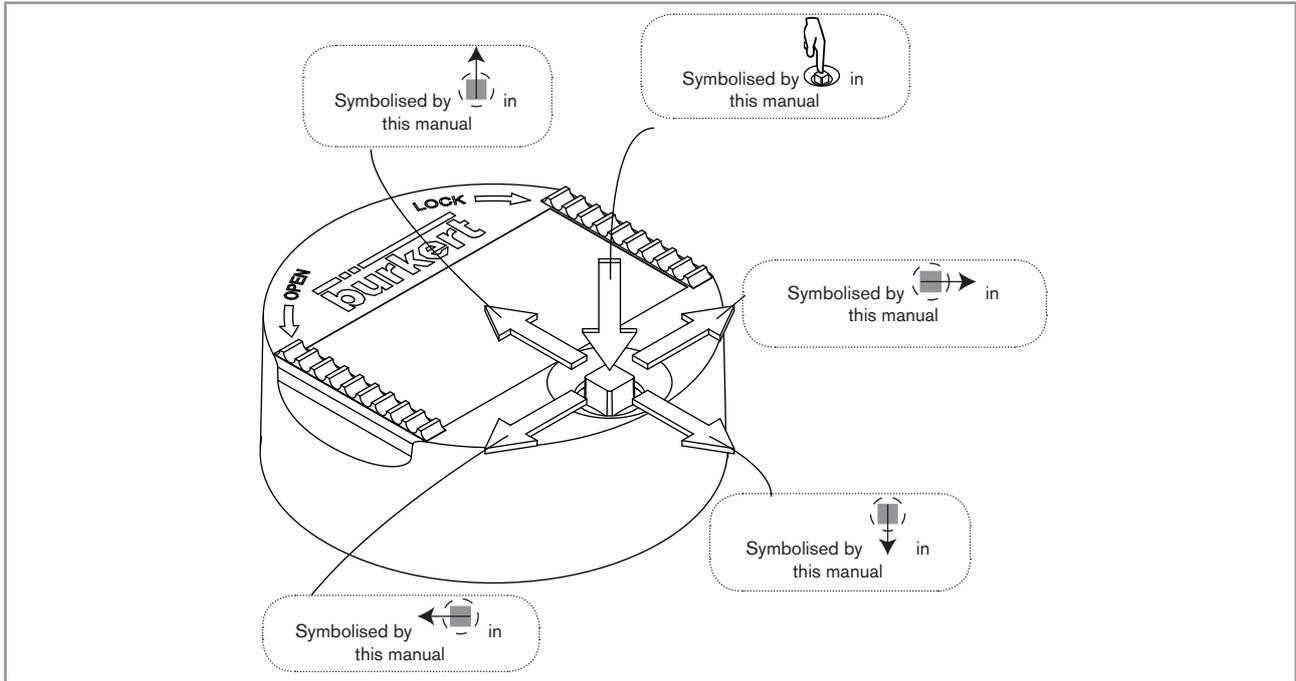


Fig. 35 : Using the navigation button

You want to...	Press...
...browse in Process level	<ul style="list-style-type: none"> next screen: previous screen:
<ul style="list-style-type: none"> ...access the Configuration level ...display the Param menu 	for at least 2 sec., from any screen of the Read level
...browse in the menus of the Configuration level	<ul style="list-style-type: none"> next menu: previous menu:
...access the menu displayed	
...browse in the menu functions	<ul style="list-style-type: none"> next function: previous function:
...select the highlighted function	

You want to...	Press...
...browse in the dynamic functions bar (MEAS, BACK, ABORT, OK, YES, NO)	next function:  previous function: 
...confirm the highlighted dynamic function	
...modify a numerical value	
- increment the figure selected	- 
- decrement the figure selected	- 
- select the previous figure	- 
- select the next figure	- 
- allocate the "+" or "-" sign to the numerical value	-  to the extreme left of the numerical value then  until the desired sign is displayed
- move the decimal point	-  to the extreme right of the numerical value then  until the decimal point is in the desired place

9.5 Using the dynamic functions

You want to...	Choose...
...go back to the Process level, without validating the modifications made	dynamic function "MEAS"
...confirm the entering	dynamic function "OK"
...go back to the parent menu	dynamic function "BACK"
...abort the current operation and go back to the parent menu	dynamic function "ABORT"
...answer the question asked	dynamic function "YES" or "NO"

9.6 Entering a numerical value (example)

Modify each digit of the numerical value using:

- to increase the digit selected,
- to decrease the digit selected.

After confirming the numerical value entering, modify the time unit using or .

Select the digit at the extreme right of the numerical value with then move the decimal point with .

Dynamic functions (accessible through and): see chap. 9.5

9.7 Browsing in a menu (example)

The icon identifies the current menu

Title of the current menu, sub-menu or function.

Highlighted function

The arrow indicates that some more functions are available which can be displayed by using

The arrow indicates that some more functions are available which can be displayed by using

Dynamic functions (accessible through and): see chap. 9.5

9.8 Knowing the icons and LEDs

-  The display module is not available on all versions of the device. The display module is can be ordered as an accessory (see chap. 11).

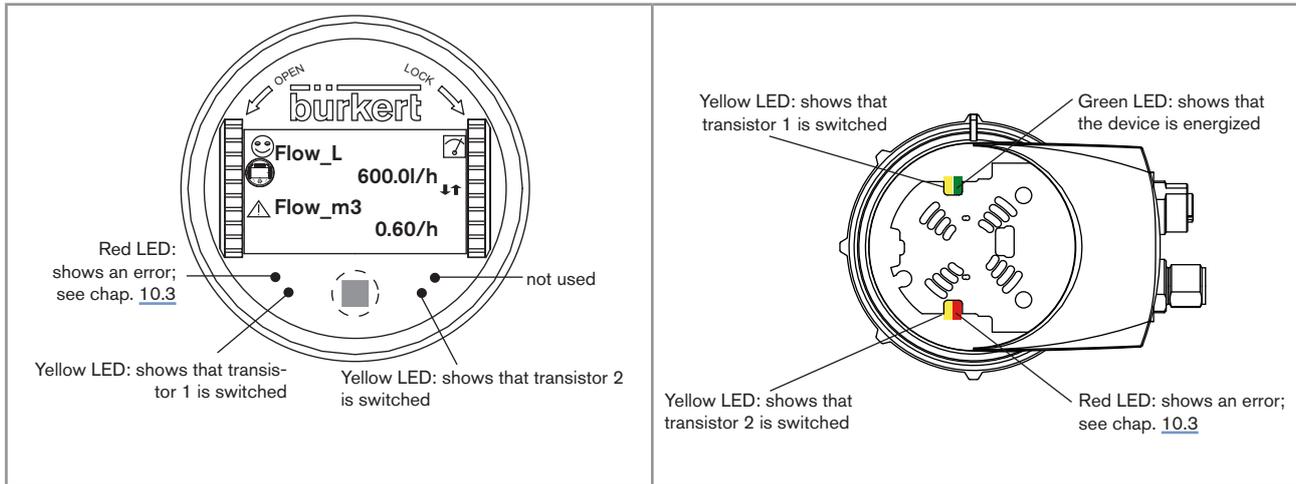
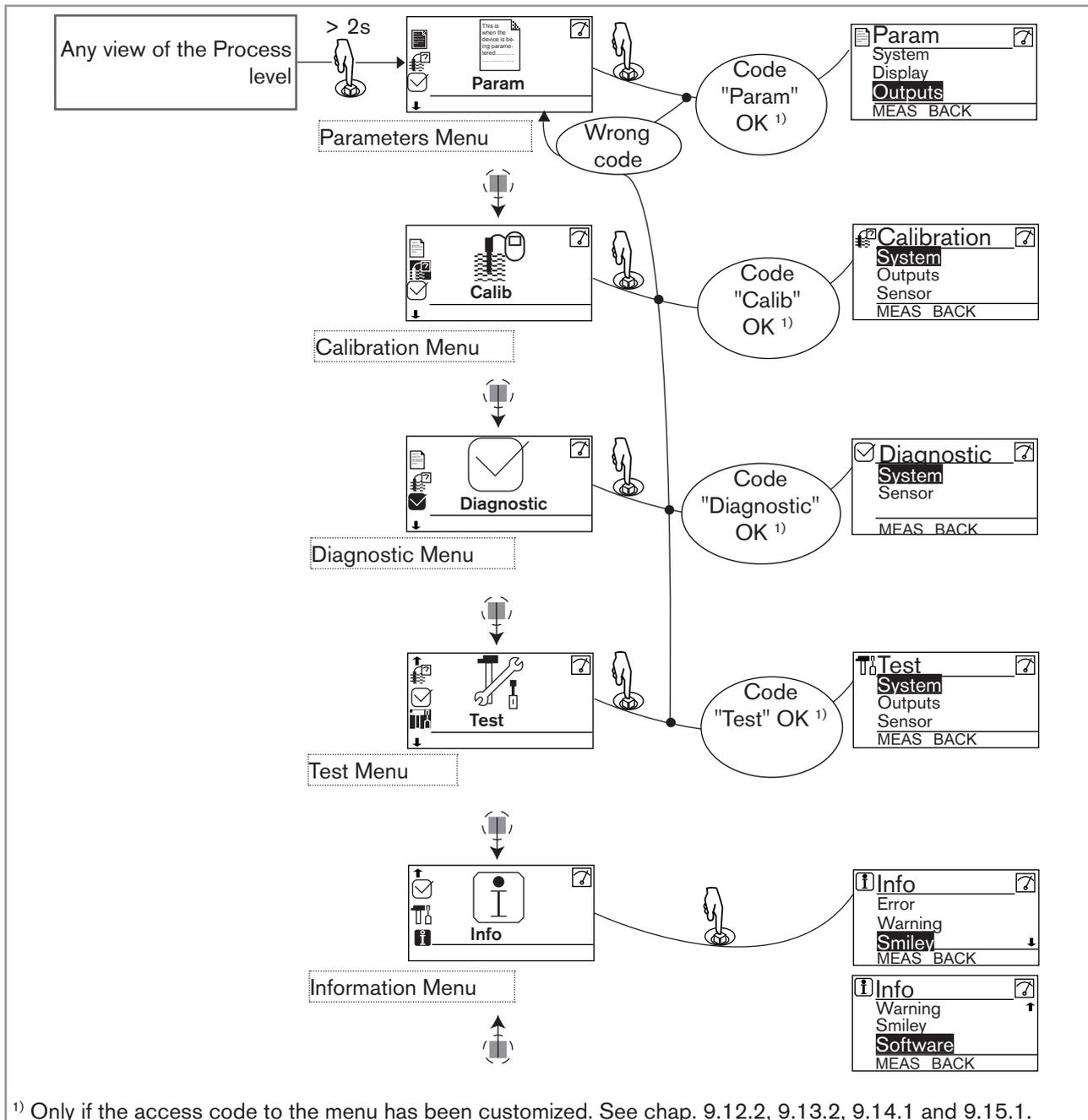


Fig. 36 : Position of the icons and description of the LEDs

-  The LEDs of the display module are duplicated on the electronic board that is located under the display module: these LEDs become visible when the device is not equipped with the display module.
- The yellow LED related to a transistor output is deactivated if the transistor output is configured in pulse mode ("Pulse").

Icon	Possible cause and alternatives
	Sensor input frequency within the defined ranges The alternatives, in this position, if monitoring of the sensor input frequency is activated, are: <ul style="list-style-type: none"> , associated with  : see chap. 9.14.2 and chap. 10.3 , associated with  : see chap. 9.14.2 and chap. 10.3
	The device is measuring. The alternative icons in this position are: <ul style="list-style-type: none">  flashing: HOLD mode activated (see chap. 9.13.1)  : running check that the outputs are working and behaving correctly (see chap. 9.15.2 and 9.15.3)
	"warning" message ; see chap. 9.14.2 and chap. 10.3
	"error" message ; see chap. 9.14.2 and chap. 10.3

9.10 Accessing the Configuration level

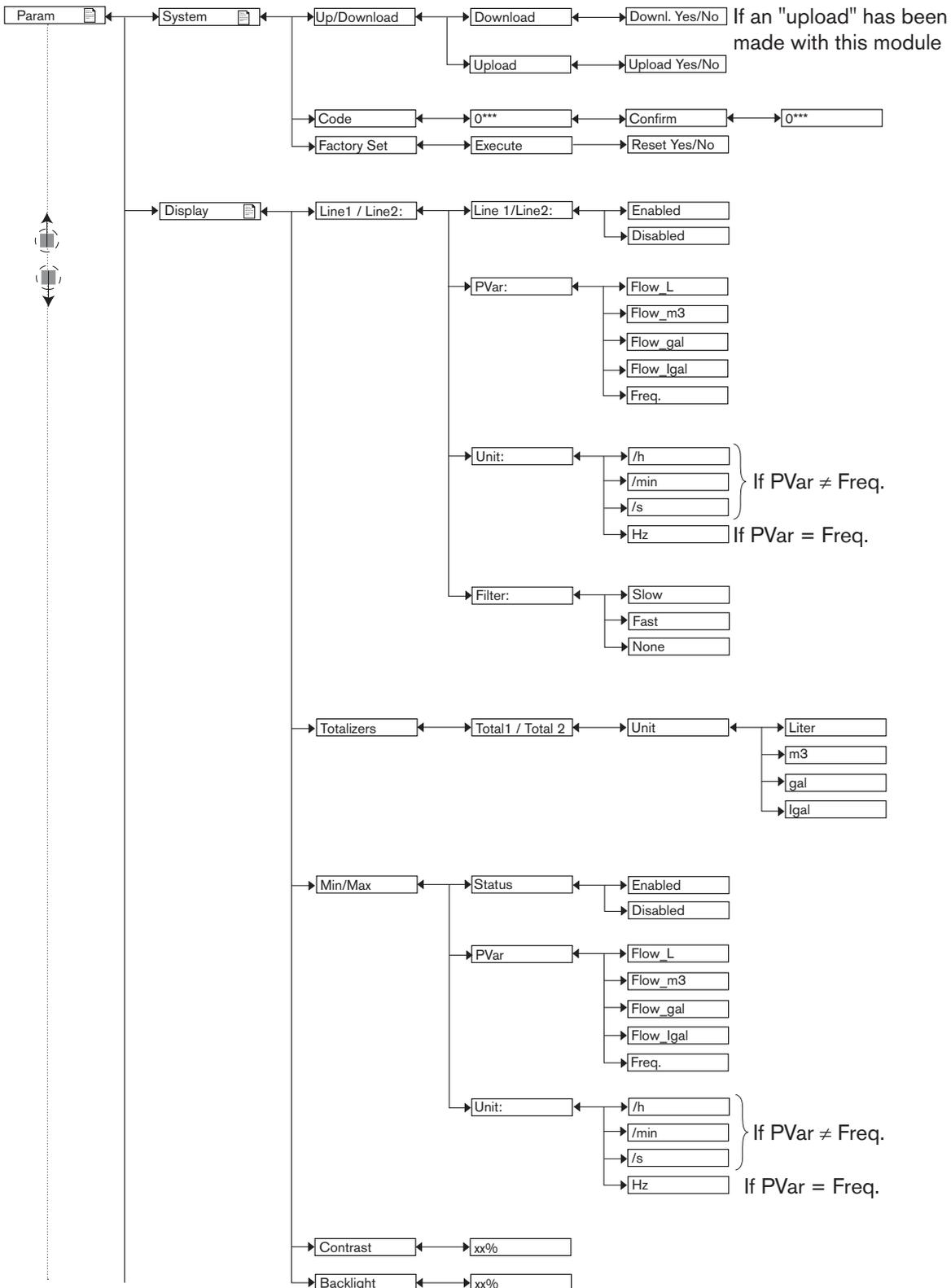


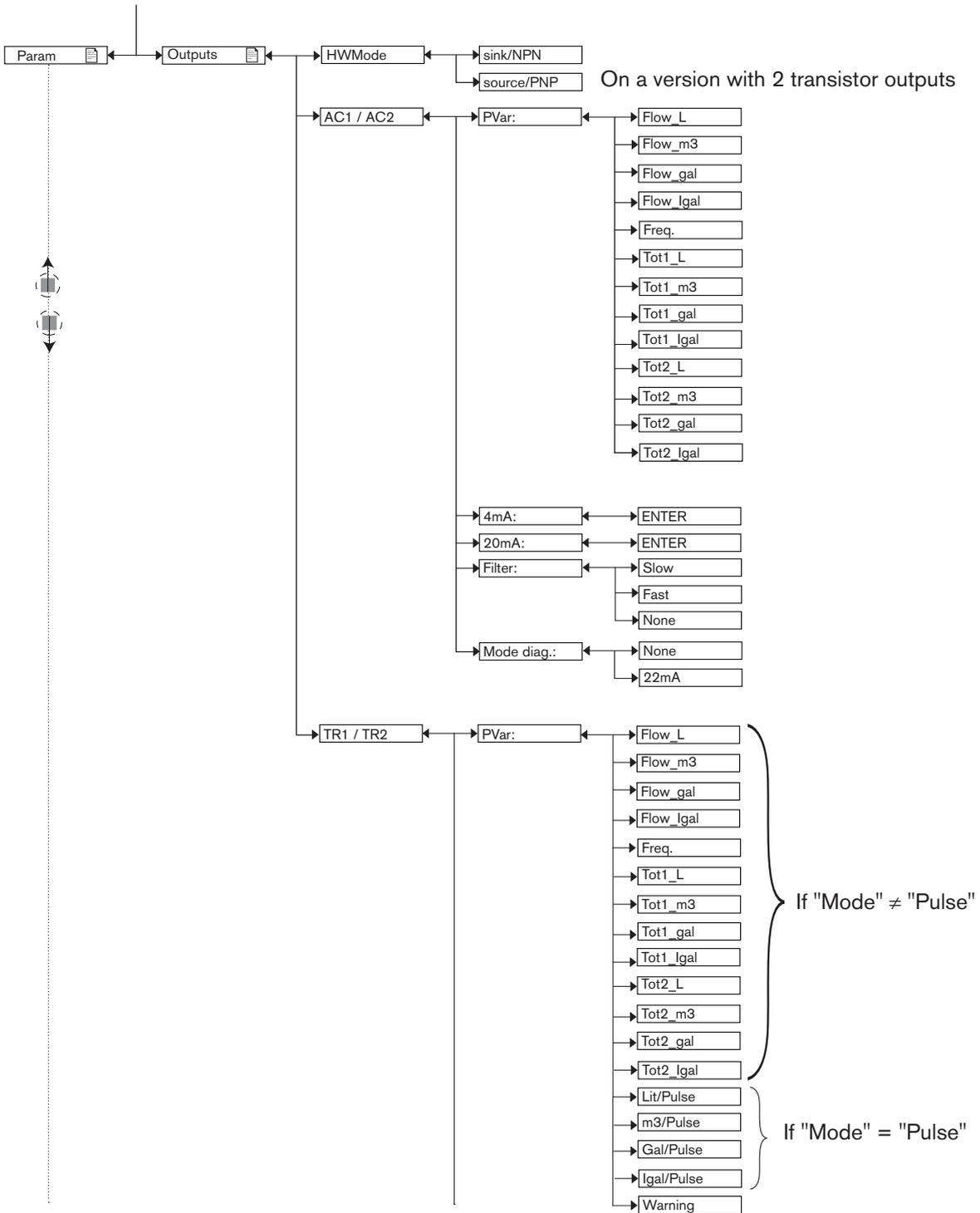
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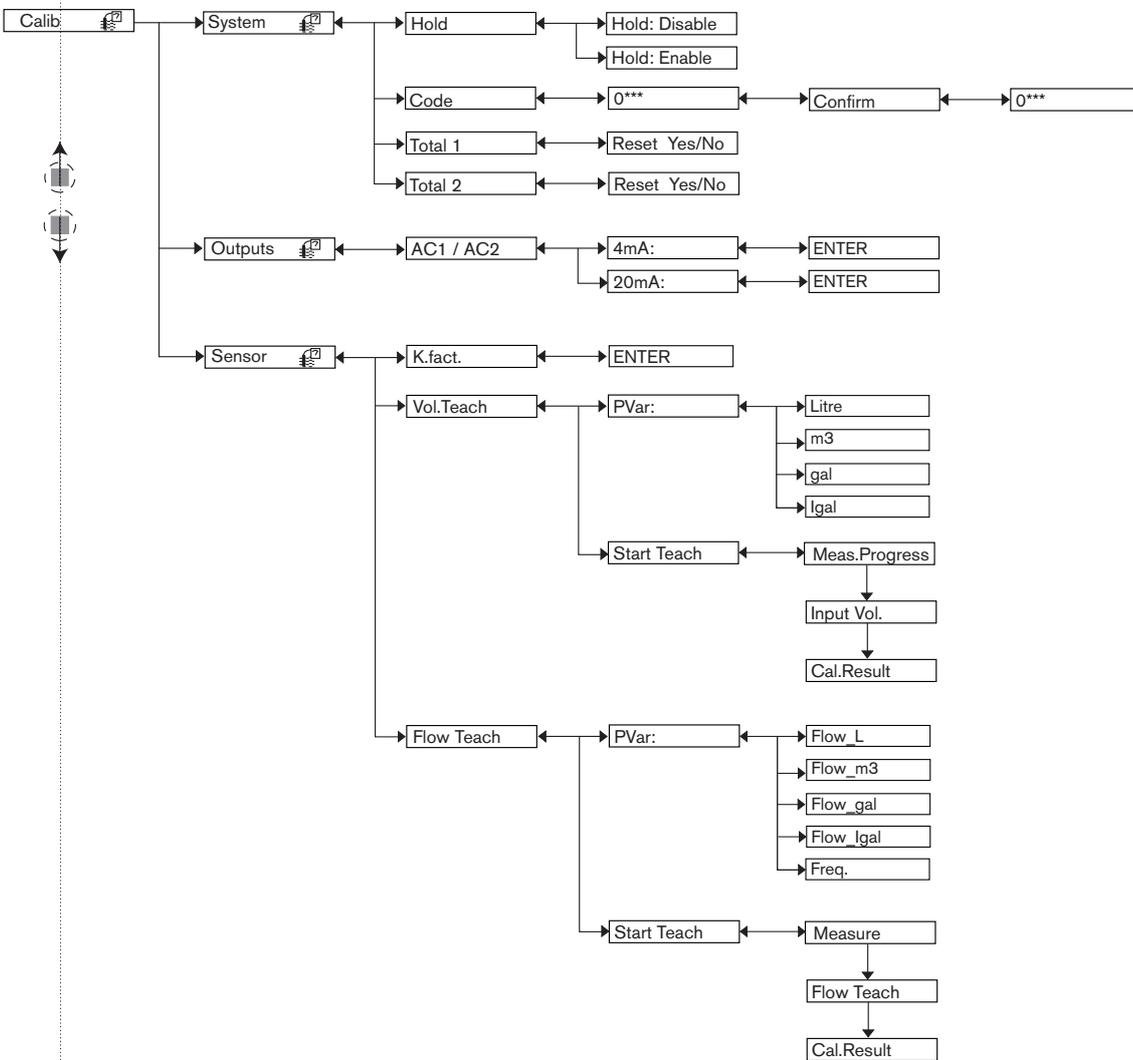
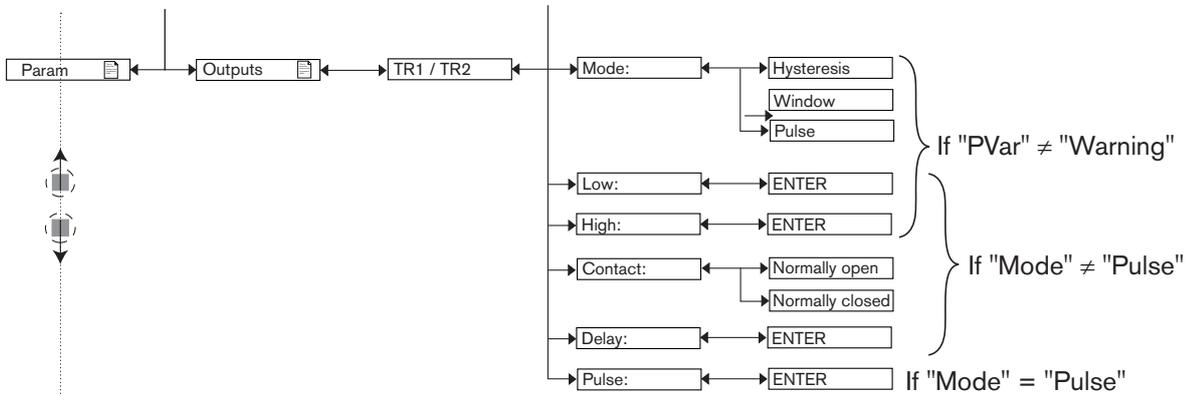
→ See chap. 9.11 for the detailed functions.

9.11 Knowing the structure of the Configuration menus

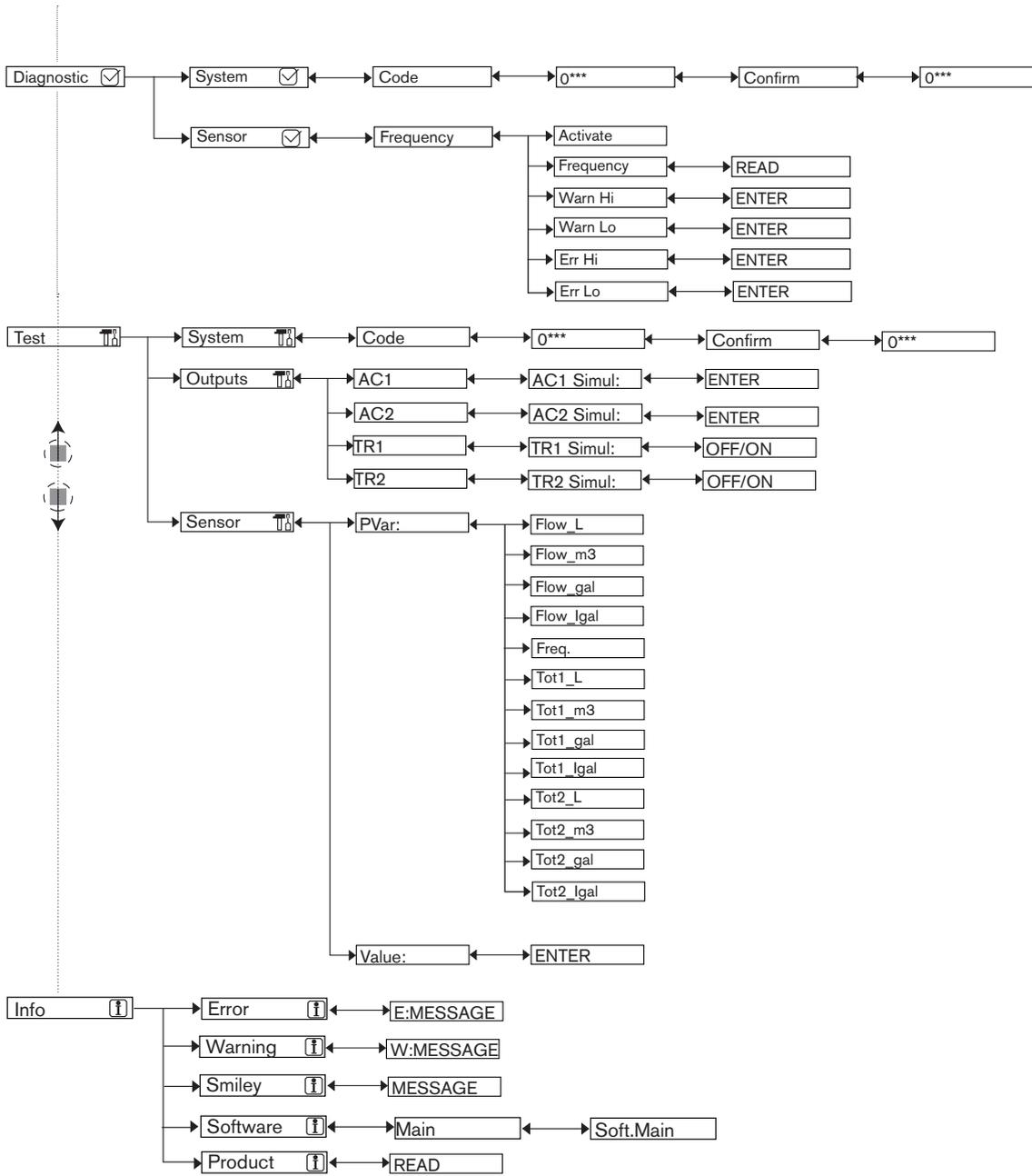
See chap. 9.10 to access the Configuration level.







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9.12 Knowing the menu Parameter

9.12.1 Transferring data from one device to another

See chap. 9.10 to access the "Param" menu.



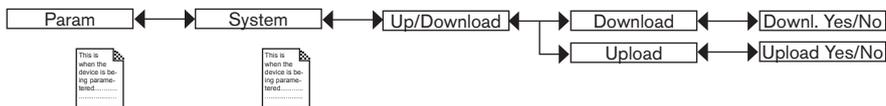
- Transferring data is not possible if:
 - in the menu "Info -> Software -> Versions -> Main" of the sending device, the software version is V2 and
 - in the menu "Info -> Software -> Versions -> Main" of the receiving device, the software version is V1
- On each device, check the software version in the menu "Info -> Software -> Versions -> Main".



- If the software version of the sending device is V1 and the software version of the receiving device is V2 then, during the data transfer, the following data are not transferred:
- the access codes to the menus,
 - the wire mode of the outputs (function "HWMode").



- Function "DOWNLOAD" is only present if an "UPLOAD" has been successfully carried out.
- Never interrupt a data transfer else the device could be damaged.



The following data can be transferred from a device to another device of the same type:

- user set data of the "Param" menu (except the contrast and brightness levels for the display),
- K-factor of the fitting,
- user set data of the "Diagnostic" menu,
- the access codes to the menus.

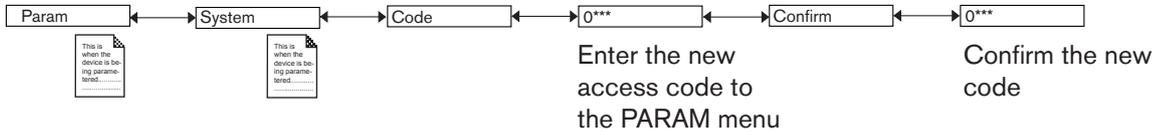
DOWNLOAD: transfer the data previously uploaded in the display module by means of the "UPLOAD" function.

The parameters transferred are used by the device as soon as the message "Download OK" is displayed.

UPLOAD: upload data from the device to the display module.

9.12.2 Modifying the access code of menu "Param"

See chap. 9.10 to access the "Param" menu.



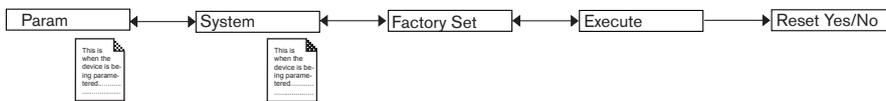
If the default code (0000) is entered, the code will not be requested to access the menu.

9.12.3 Restoring the default parameters of the Process level and the outputs

See chap. 9.10 to access the "Param" menu.

The following data can be restored to their default value:

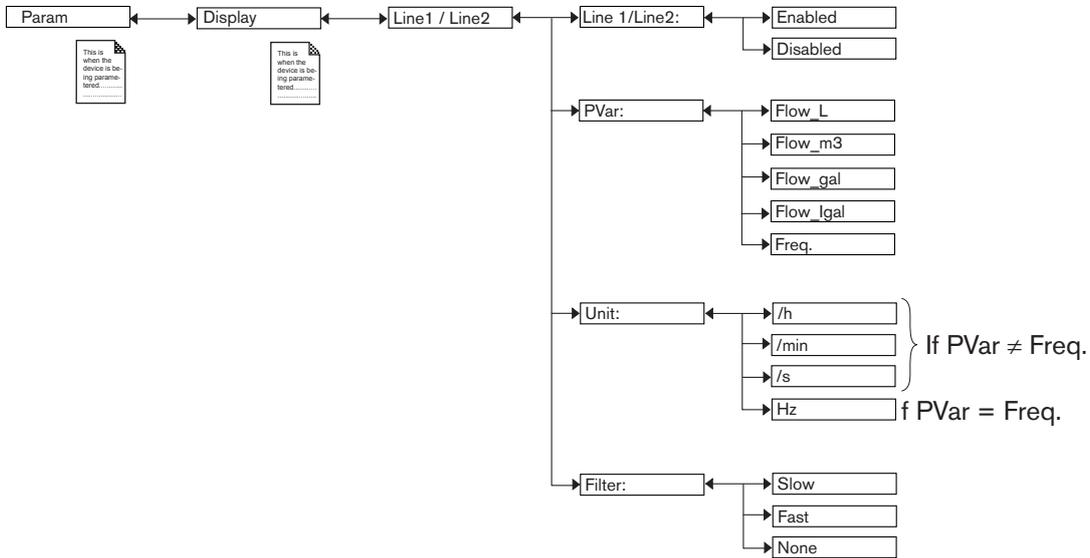
- user set data of the "Param" menu (except contrast and brightness levels for the display),
- K-factor of the fitting,
- user set data of the DIAGNOSTIC menu,
- the access codes to the menus.



EXECUTE : restore (choose "Yes") the default parameters of the Process level and of the outputs, or keep the current parameters (choose "No").

9.12.4 Setting the data displayed in Process level

See chap. 9.10 to access the "Param" menu.



Activate or deactivate line 1 or line 2 respectively in Process level.

LINE1 or *LINE2* : Activate (choice "Enabled") or deactivate (choice "Disabled") the display of line 1 or line 2 respectively.

Set the parameters of the data displayed in Process level on line 1 or line 2 respectively when the corresponding line is activated:

PVAR: Choose the flow rate volume unit or the input frequency to be displayed on line 1 or line 2 of the display respectively.

UNIT: Choose the preferred time unit in which the flow rate is displayed.



Take care to choose the time unit according to the flow rate in the pipes as the display indicates a maximum flow rate of 9999 volume units/time unit (see [Tab. 1](#)).

Selected time unit	Measured flow rate	Displayed flow rate
/h (default setting)	≥ 0 volume units/h and ≤ 9999 volume units/h	0 to 9999 volume units/h
	≥ 10000 volume units/h	10000/60 volume units/min to 9999 volume units/min, i.e. 166,66 volume units/min to 9999 volume units/min
	≥ 10000 volume units/min	10000/60 volume units/s to 9999 volume units/s, i.e. 166,66 volume units/s to 9999 volume units/s
/min	< 1 volume units/min	0 to 59,99 volume units/h
	≥ 1 volume units/min and ≤ 9999 volume units/min	1 to 9999 volume units/min
	≥ 10000 volume units/min	10000/60 volume units/s to 9999 volume units/s, i.e. 166,66 volume units/s to 9999 volume units/s
/s	< 1 volume units/min	0 to 59,99 volume units/h
	≥ 1 volume units/min and < 60 volume units/min	1 to 59,99 volume units/min
	≥ 1 volume units/s and ≤ 9999 volume units/s	1 to 9999 volume units/s

Tab. 1 : Displayed flow rate per unit time

Attenuate the measurement variations on the display

FILTER: choose the level of damping for the flow rate or frequency measured values displayed on the line selected. Three levels of damping are proposed: "slow" (slow filter), "fast" (fast filter) or "none" (no filter).

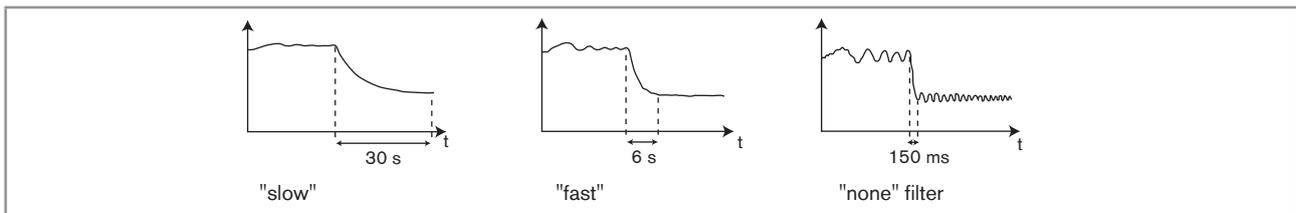
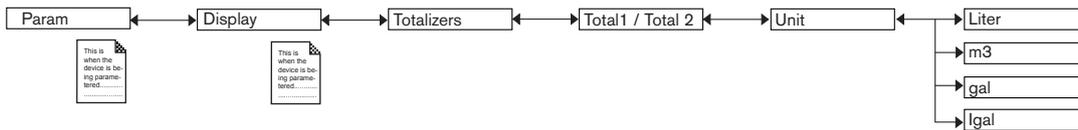


Fig. 37 : Filter curves

9.12.5 Choosing the units for the totalizers displayed in Process level

See chap. 9.10 to access the "Param" menu.

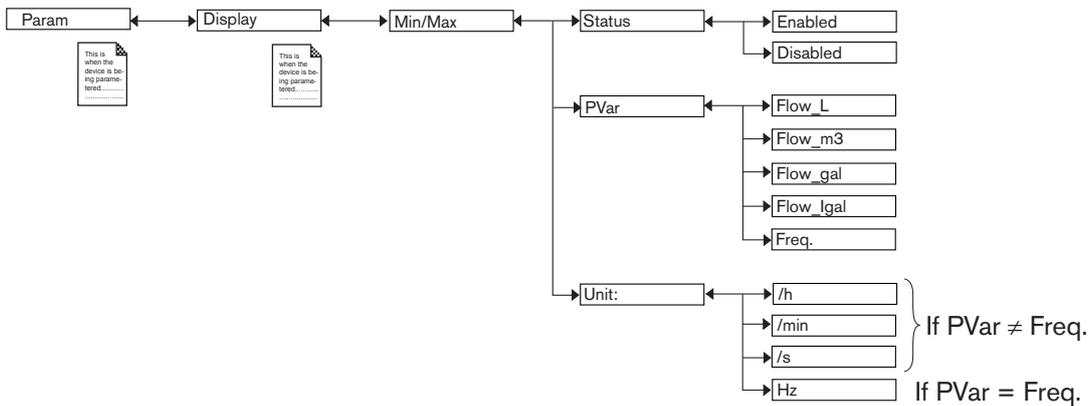
! The totalizers are saved if a power cut occurs.



UNIT: Choose the volume unit in which the value of totalizer 1 and totalizer 2 respectively is displayed.

9.12.6 Displaying the lowest and highest values measured

See chap. 9.10 to access the "Param" menu.



STATUS: Choose to display (choice "Enabled") or not display (choice "Disabled") the minimum and maximum values measured since the last reset.

PVAR: Choose a physical parameter (volume unit of the flow rate or input frequency), the minimum and maximum measured values which are displayed in Process level.

UNIT: Choose the preferred time unit in which the min. and max. measured flow rate values are displayed.

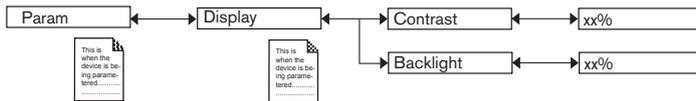
! Take care to choose the time unit according to the flow rate in the pipes as the display indicates a maximum flow rate of 9999 volume units/time units. See chap. 9.12.4.

9.12.7 Setting the contrast and the backlight of the display

See chap. 9.10 to access the "Param" menu.



On a version with a single M12 fixed connector and if the power supply is lower than 15 V, do not increase the backlight over 30%, to not influence the 4-20mA current output.



Set percentage using  and .

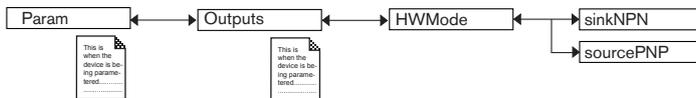
CONTRAST: Choose the display contrast level (as a %).

BACKLIGHT: Choose the light intensity of the display (as a %).

These settings only affect the display module. They are not part of a device data UPLOAD (see chap. 9.12.1).

9.12.8 Defining the connection mode of the outputs

See chap. 9.10 to access the "Param" menu.



On a version of the device with an NPN transistor output and a current output, only the choice "sink/NPN" is possible.



The setting has no effect on a version with one fixed connector, 2 transistor outputs and a single current output, if the sole current output is wired (see Fig. 19).

The wiring mode is the same for all outputs.

If you choose "sink NPN", the current outputs must be wired in sinking mode and the transistor outputs in NPN mode.

If you choose "source PNP", the current outputs must be wired in sourcing mode and the transistor outputs in PNP mode.

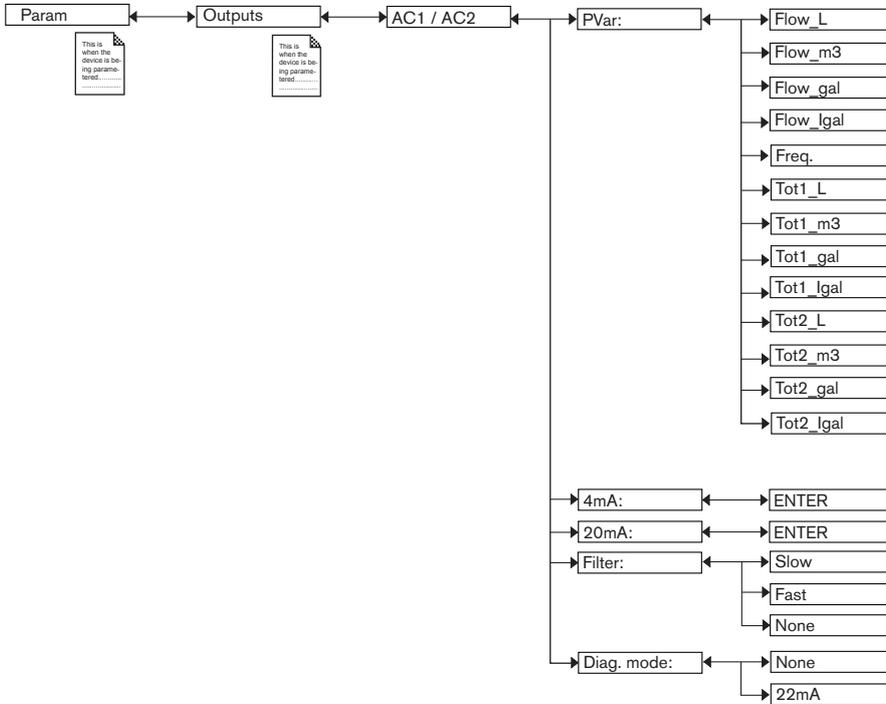


See the wiring for the outputs in chap. 8.5.

9.12.9 Setting the parameters of the current outputs

See chap. 9.10 to access the "Param" menu.

The 2nd current output "AC2" is only available on a version with 2 current outputs.



Functions "4mA" and "20mA" are used to define the measurement range for the flow rate, the input frequency or the totalizer associated with the current on the 4-20 mA output.

P_1 and P_2 are the values associated with a current of 4 mA or 20 mA respectively:

If P_1 is higher than P_2 , the signal is inverted and the range P_1-P_2 corresponds to the range for the 20-4 mA current.

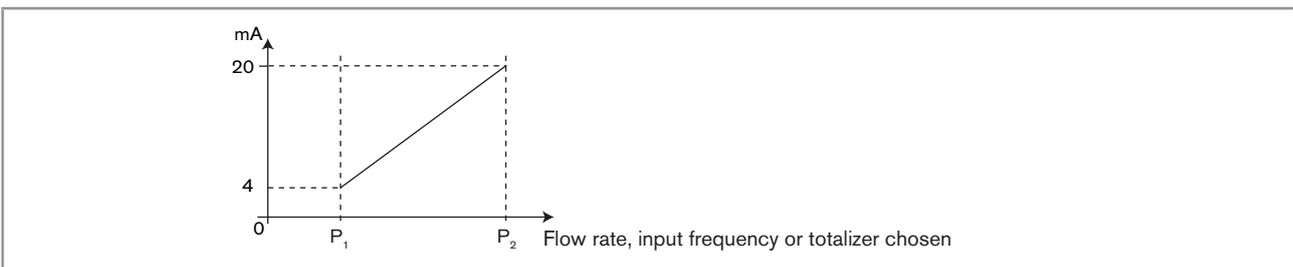


Fig. 38 : 4-20 mA current according to the chosen physical parameter or totalizer

PVAR: Choose a physical parameter (flow rate volume unit or input frequency) or a totalizer combined with current output 1 or current output 2 respectively.

4mA: Choose the value of the physical parameter or the totalizer (previously selected) and the flow time unit, combined with a current of 4 mA for each current output.

20mA: Choose the value of the physical parameter or the totalizer (previously selected) and the flow time unit, combined with a current of 20 mA for each current output.

FILTER: choose the level of damping for the fluctuations of the current value for each current output. Three filter levels are proposed: "slow", "fast" or "none".

The damping for the current outputs is similar to the damping of the display (see Fig. 37).

MODE DIAG: choose to emit a current of 22 mA on the current output selected when an "error" event related to diagnostics (see chap. 9.14.2) and is generated by the device or allow the current output to operate normally (choose "none").



An "error" event linked to a malfunction of the device is always indicated by the generation of a 22 mA current, whatever the adjustment made in the function "MODE DIAG".

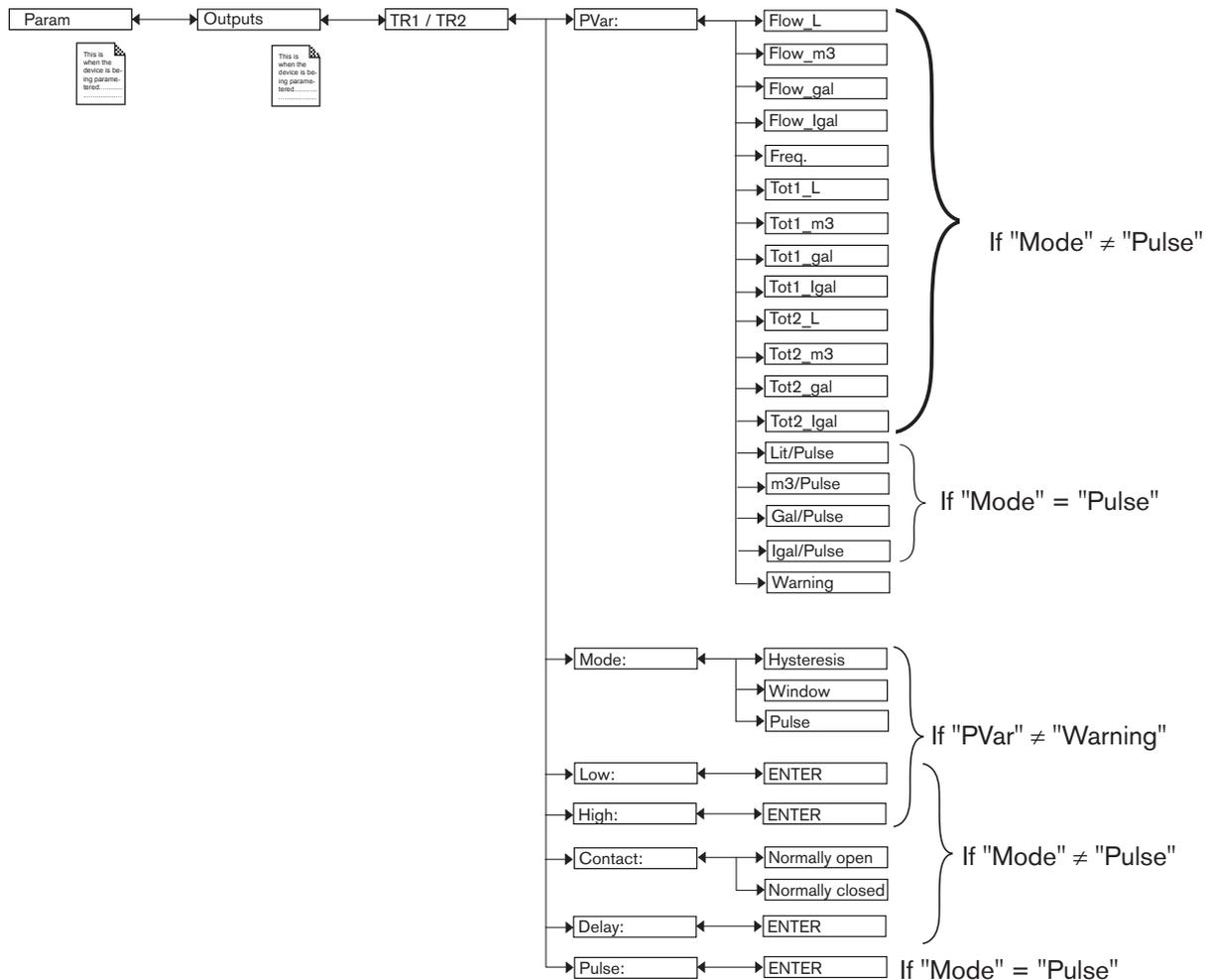


See also "If you encounter problems" in chap. 10.3

9.12.10 Setting the parameters of the transistor outputs

See chap. 9.10 to access the "Param" menu.

The 2nd transistor output "TR2" is only available on a version with 2 transistor outputs.



PVAR: Choose a physical parameter (flow rate volume unit or input frequency) or a totalizer associated with a transistor output or associate the "warning" event (see chap. 9.14.2) with transistor output. If the selected transistor output is linked to the "warning" event, the transistor switches as soon as such an event is generated by the device.

If the mode "Pulse" is selected, choose the volume unit for which a pulse must be transmitted.

MODE: Choose either the hysteresis or window operating mode, for the transistor, or operating on pulse mode (choice "Pulse") for the transistor output.

LOW: enter the low switching threshold value for the transistor output, as well as the flow rate time unit (see details hereafter).

HIGH: enter the high switching threshold value for the transistor output, as well as the flow rate time unit (see details hereafter).

CONTACT: choose the type off-position (normally open, NO, or normally closed, NC) for the transistor output (see details hereafter).

DELAY: choose the value for the time delay prior to switching (from 0 to 60 s) for each transistor output. The time delay before switching is applicable to both switching thresholds.

Switching only occurs if one of the thresholds, high or low (functions "High" or "Low"), is exceeded for a duration longer than this time delay.

PULSE: When the choice "Pulse" is selected in MODE function above, enter here the volume of fluid for which a pulse must be transmitted on the selected transistor output.

Hysteresis operating

The output status changes when a threshold is reached:

- by increasing flow rate, the output status changes when the high threshold ("high") is reached.
- by decreasing flow rate, the output status changes when the low threshold ("low") is reached.



Fig. 39 : Hysteresis operating

Window operating (choice "Window")

The change of status occurs whenever one of the thresholds is detected.



Fig. 40 : Window operating

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Pulse operating (choice "Pulse")

This function is used to generate a pulse on the transistor output each time a predetermined volume of fluid passes.

Enter the desired fluid volume and, if necessary, modify the volume units/pulse in the "PULSE" function in the "Output.TR1" or "Output.TR2" menu

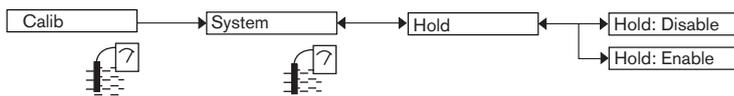


- If the volume entered multiplied by the K-factor of the device > 1000000 , the device emits a "Warning" event and displays the message "W:TRnPu too big".
- If the volume entered multiplied by the K-factor of the device < 1 the device emits a "Warning" event and displays the message "W:TRnPu 1:1:set". In this case, the pulse frequency is forced to the value of the input frequency.

9.13 Knowing the menu Calibration

9.13.1 Activating/deactivating the Hold function

See chap. 9.10 to access the "Calib" menu.



If the mode "Hold" is activated and if there is a power interruption, then, when the device restarts, the mode "Hold" is automatically deactivated.

The mode "Hold" is used to carry out maintenance work without interrupting the process.

To activate the mode HOLD:

- access the "HOLD" function;
- choose "enabled" and confirm by "OK".

To deactivate the mode HOLD:

- access the "HOLD" function;
- choose "disabled" and confirm by "OK".

In practice, when the device is in mode "Hold":

- the  icon is displayed in place of the  icon;
- the current emitted on each 4-20 mA output is fixed at the value of the last measurement of the physical parameter associated with each output;
- each transistor output is fixed at the status acquired at the moment the Hold function is activated;

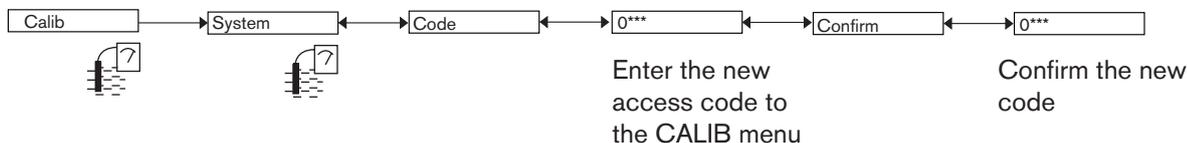


The Hold mode has no effect on the transistor outputs when they are operating in "Pulse" mode (see chap. 9.12.10).

- the device is in Hold mode until the HOLD function is deactivated.

9.13.2 Modifying the Calibration menu access code

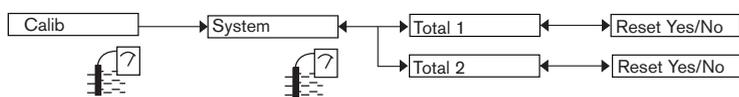
See chap. 9.10 to access the "Calib" menu.



If the default code (0000) is entered, the code will not be requested to access the menu.

9.13.3 Resetting totalizer 1 or totalizer 2 respectively

See chap. 9.10 to access the "Calib" menu.



TOTAL 1 or *TOTAL 2* respectively: Reset (choice "Yes") or do not reset (choice "No") totalizer 1 or totalizer 2 respectively.



Totalizer 2 can be reset from Process level. See chap. 9.9.

9.13.4 Adjusting the current outputs

See chap. 9.10 to access the "Calib" menu.



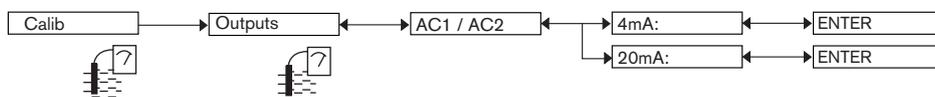
On a version with a single M12 fixed connector and if the power supply is lower than 15 V, before calibrate the current output, make sure the backlight is lower as 30% (see chap. 9.12.7).



WARNING

Risk of injury due to wrong adjustment.

- ▶ Make sure the Hold mode is disabled (see chap. 9.13.1).



The entered values are not memorised in this menu. Only the values emitted on the current outputs are adjusted after pressing "OK" when the message "Recalibrate AC outputs?" is shown.

4mA: adjust the offset of current output 1 or current output 2.

When the "4mA" function is selected, the device generates a current of 4 mA:

→ measure the current emitted by the 4-20 mA output using a multimeter and

→ enter the value given by the multimeter in the function "AC1.4mA" or "AC2.4mA".

20mA: Adjust the span of current output 1 or current output 2.

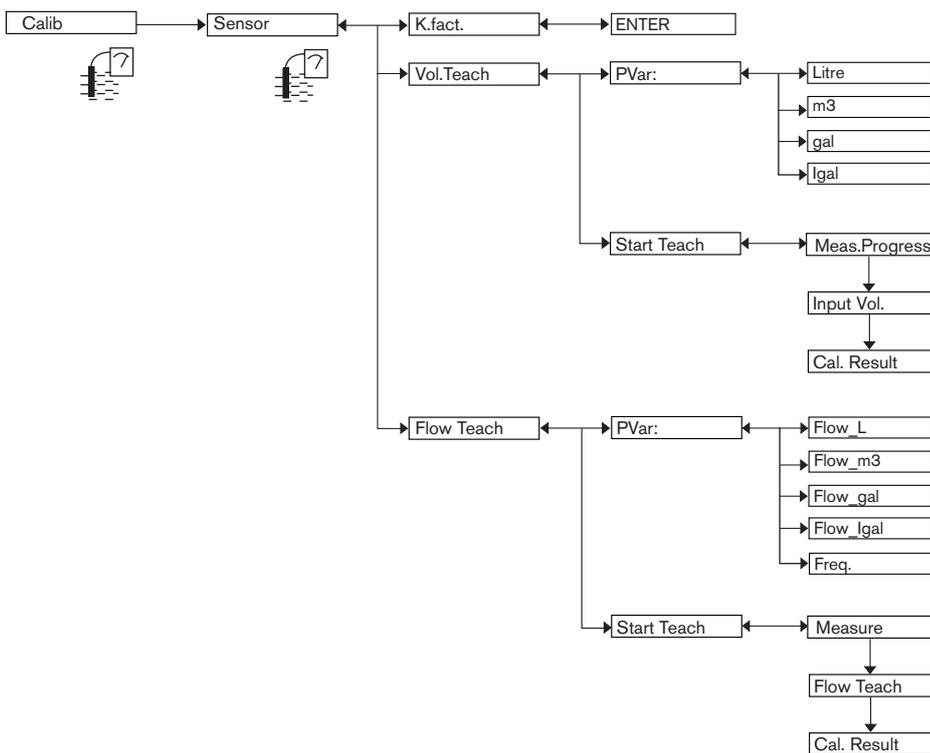
When the "20mA" function is selected, the device generates a current of 20 mA:

→ measure the current emitted by the 4-20 mA output using a multimeter and

→ enter the value given by the multimeter in the function "AC1.20mA" or "AC2.20mA".

9.13.5 Entering the K-factor or determining it with Teach-In

See chap. 9.10 to access the "Calib" menu.



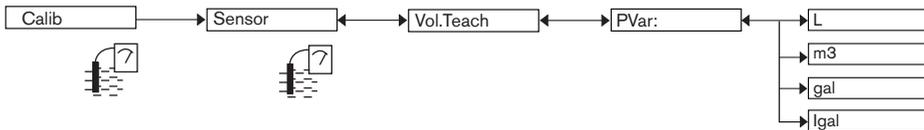
K.FACT.: Enter the K-factor of the fitting used.

VOL.TEACH: Determine the fitting K-factor using a Teach-In procedure depending on a volume.

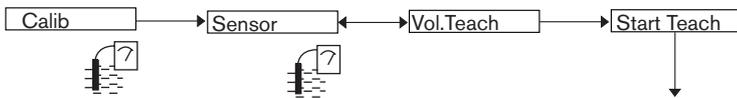
Detailed procedure of a Teach-In by volume (“Vol.Teach” function in the “Sensor” menu)

→ Prepare a tank capable of containing 100 litres, for example.

→ Choose the volume unit for the Teach-In:



→ Run the Teach-In:



→ Open the valve to fill the tank.



Meas. Progr.
2.001 l/s

The device displays the instantaneous flow of the fluid.

→ When the tank is filled, close the valve.



Input Vol.
101.2 l
+099.0 l

The device displays the volume calculated with the current K-factor. If the display shows “++++”, the volume calculated > 9999 volume units: continue the procedure as normal.

→ Enter the actual volume of fluid in the tank.



The device displays the K-factor calculated by Teach-In.

Cal. Result
K taught:
K=3,810

If the calculated K-factor is ≥ 9999 , it is forced to 9999.

K taught set to
max K=9999



Cal. Result
Save: Yes/No

→ Save the new K-factor calculated or not.



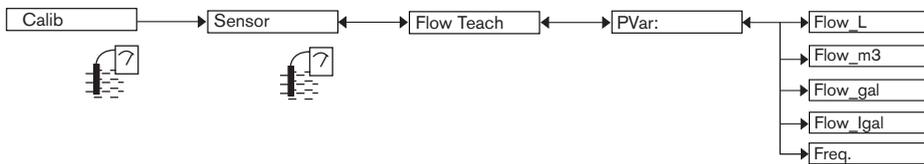
Save modified
data? Yes/No

→ Confirm the K-factor =9999 with “YES” or keep the current K-factor with “NO”.

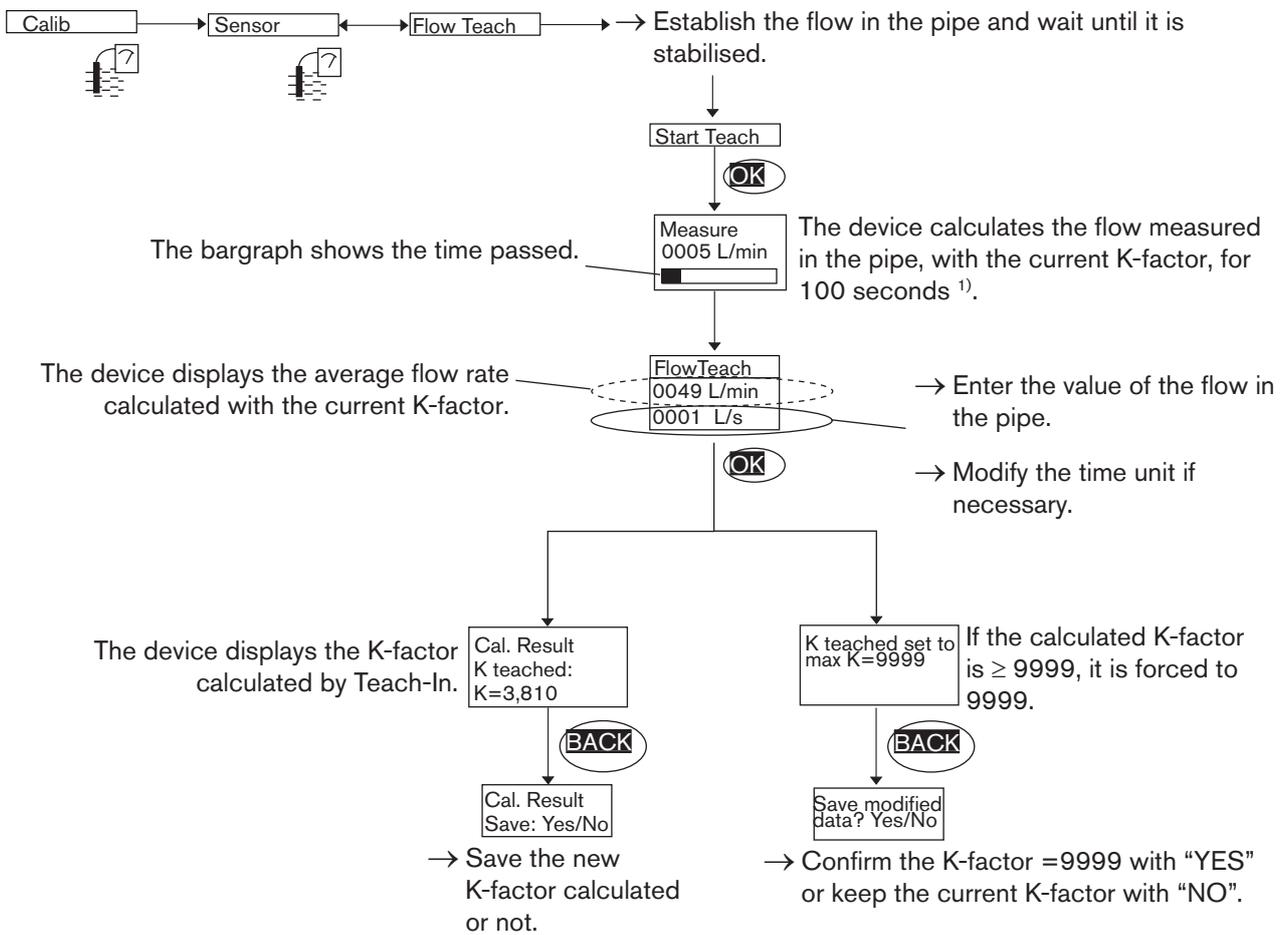
FLOW TEACH: Determine the fitting K-factor using a Teach-In procedure depending on the flow rate.

Detailed procedure of a Teach-In by flow rate (“Flow.Teach” function in the “Sensor” menu)

→ Choose the volume unit for the Teach-In:



→ Run the Teach-In:

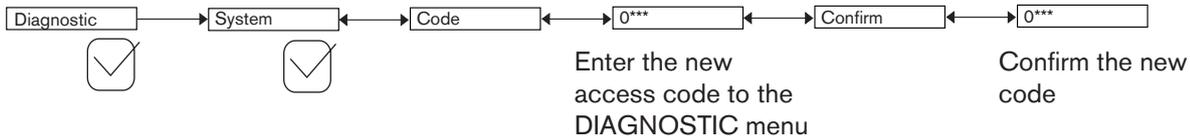


¹⁾ Measurement can be suspended at any time by selecting “OK”.

9.14 Knowing the menu Diagnostic

9.14.1 Modifying the Diagnostic menu access code

See chap. 9.10 to access the "Diagnostic" menu.



If the default code (0000) is entered, the code will not be requested to access the menu.

9.14.2 Monitoring the sensor input frequency

See chap. 9.10 to access the "Diagnostic" menu.

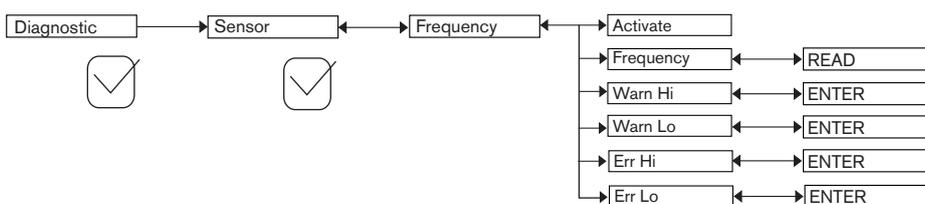
A malfunction in your process or the sensor may be revealed by an out-of-range input frequency.

The function allows for monitoring the sensor input frequency and configure the behaviour of the device if the parametered ranges are exceeded.

The sensor input frequency f is used to determine the flow Q in the pipes using the formula $f = KQ$ (the K-factor being expressed in pulses/s and the flow rate Q in l/s).

To be warned when the input frequency is out of range:

- activate monitoring of the sensor input frequency in the function "activate", then
- enter an input frequency range outside of which the device generates a "warning" event and displays the icons ☹ and ⚠.
- enter an input frequency range outside of which the device generates an "error" event and displays the icons ☹ and ERR.



ACTIVATE: choose whether or not to activate monitoring of the sensor input frequency.

This monitoring is done by the generation of a "warning" event if the input frequency range defined in the "Warn hi/lo" functions below is exceeded and an "error" event if the input frequency range defined in the "Err hi/lo" functions below is exceeded.

FREQUENCY: read the sensor input frequency

WARN HI: enter the input frequency value above which a "warning" event is generated.

WARN LO: enter the input frequency value below which a "warning" event is generated.

ERR HI: enter the input frequency value above which an "error" event is generated.

ERR LO: enter the input frequency value below which an "error" event is generated.

When the device generates a "warning" or "error" event:

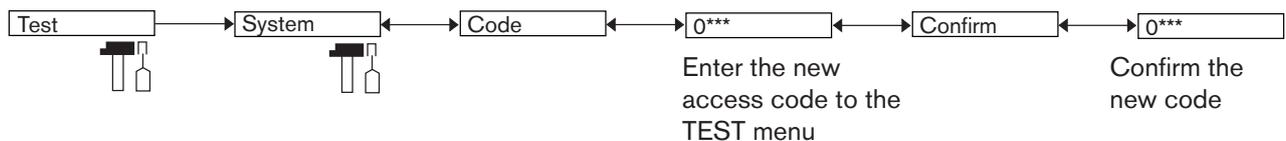
- go into the "Info" menu to read the cause of the event generation.
- and/or go into the "Sensor" function of the menu "Diagnostic" to read the measured input frequency.
- if necessary, clean the paddle or the oval gears.
- if necessary, check the process.

- The "warning" event may also be associated with one or both transistor outputs (see chap. [9.12.9](#), function "Output.TR1" or "Output.TR2").
- The "error" event may also be associated with one or both current outputs (see chap. [9.12.10](#), function "Output.AC1" or "Output.AC2").
- See also "If you encounter problems" at chap. [10.3](#)

9.15 Knowing the menu Test

9.15.1 Modifying the Test menu access code

See chap. [9.10](#) to access the "Test" menu.

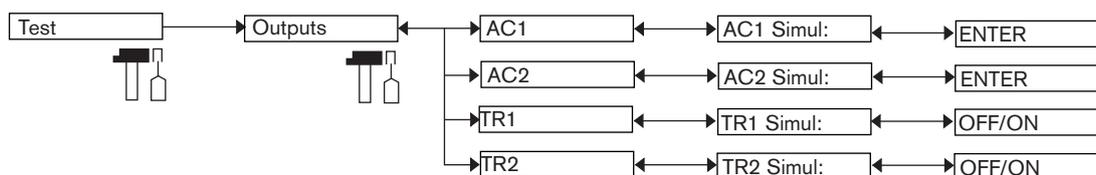


If the default code (0000) is entered, the code will not be requested to access the menu.

9.15.2 Checking the output functions

See chap. [9.10](#) to access the "Test" menu.

- Make sure that the mode "Hold" is deactivated (see chap. [9.13.1](#)).
- The **T** icon is displayed in place of the **?** icon as soon as the check for the correct working of an output has started. During the check the related output does not react according to the measured physical value.



AC1: check that current output 1 is working correctly by entering a current value in mA and then selecting "OK".

AC2: check that current output 2 is working correctly by entering a current value in mA and then selecting "OK".

TR1: check that transistor output 1 is working correctly by selecting the status of the transistor ("ON" or "OFF") then "OK".

TR2: check that transistor output 2 is working correctly by selecting the status of the transistor ("ON" or "OFF") then "OK".

9.15.3 Checking the outputs behaviour

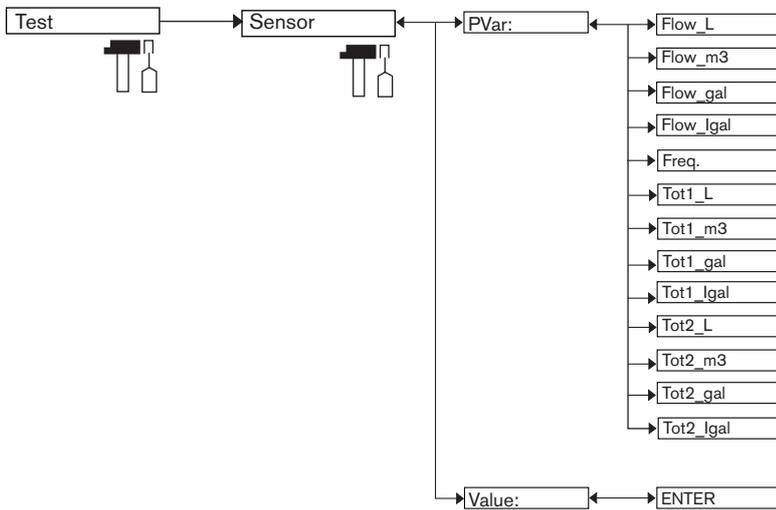
See chap. 9.10 to access the "Test" menu.

The feature allows to simulate the measurement of the physical parameter or the value of the totalizer to check if the outputs are correctly configured.



Make sure that the mode "Hold" is deactivated (see chap. 9.13.1).

The **T** icon is displayed in place of the icon as soon as the check for the correct working of an output has started. During the check the related output does not react according to the measured physical value.

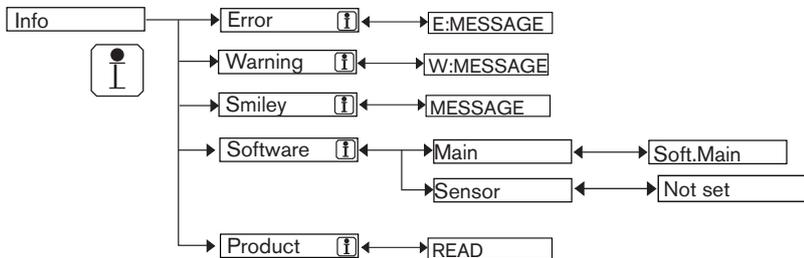


PVAR: choose the physical parameter or the totalizer to be tested.

VALUE: enter a physical parameter value by modifying the flow time unit or a totalizer value, depending on the choice made in the "PVAR" function above, to check output behaviour.

9.16 Knowing the menu Information

See chap. 9.10 to access the "Info" menu.



This menu allows to read:

- a short description of the cause that generated an event related to the following icons, when they are displayed by the device:
 - ERROR:
 - WARNING:
 - SMILEY: or



See also "If you encounter problems" at chap. 10.3

- the software version (function "SOFTWARE") of the acquisition/conversion board for the physical parameters measured.
- the type, serial number and order code of the device.

10 MAINTENANCE AND TROUBLESHOOTING

10.1 Safety instructions



DANGER

Risk of injury due to high pressure in the installation.

- ▶ Stop the circulation of fluid, cut off the pressure and drain the pipe before loosening the process connections.

Risk of injury due to electrical voltage.

- ▶ Shut down and isolate the electrical power source before carrying out work on the system.
- ▶ Observe all applicable accident protection and safety regulations for electrical equipment.

Danger due to high temperatures of the fluid.

- ▶ Use safety gloves to handle the device.
- ▶ Stop the circulation of fluid and drain the pipe before loosening the process connections.

Risk of injury due to the nature of the fluid.

- ▶ Respect the prevailing regulations on accident prevention and safety relating to the use of aggressive fluids.



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.

10.2 Cleaning the device

→ Clean the device 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.



The fouling of the paddle-wheel may result in a drift of the flow rate measurement.

→ Clean the paddle-wheel according to the type of fouling.

10.3 Solving problems

Red LED	Current output	Transistor output	Icon	Message displayed in the Info menu	Possible cause	Recommended action
ON	22 mA	depending on thresholds		"Sensor not found"	The connection to the measurement module is interrupted.	<ul style="list-style-type: none"> → Switch the power supply off then on again. → If the error persists, return the device to Bürkert.
ON	22 mA	depending on thresholds		"TR EE Fact Read" "TR EE User Read"	Parameter reading error.	<ul style="list-style-type: none"> → Switch the power supply off then on again. → If the error persists, set the device back to the default settings (chap. 9.12.3). → If the error persists, return the device to Bürkert.
ON	22 mA	depending on thresholds		"TR EE UserWrite"	Parameter saving error.	<ul style="list-style-type: none"> → Switch the power supply off then on again. → Save the settings again. → If the error persists, set the device back to the default settings (chap. 9.12.3). → If the error persists, return the device to Bürkert.
ON	22 mA ¹⁾	depending on thresholds		"E:Frequency"	<p>The input frequency is out of range.</p> <p>This message is displayed if monitoring of the input frequency is activated, depending on the set thresholds ERR LO and ERR HI (see chap. 9.14.2).</p>	<ul style="list-style-type: none"> → Go into the "Sensor" function in the Diagnostic menu to read the value of the input frequency. → check that the paddle is clean and that it rotates freely on its axis or → check that the oval gears rotate freely. → check the installation.

Red LED	Current output	Transistor output	Icon	Message displayed in the Info menu	Possible cause	Recommended action
OFF	4-20 mA	Switched ²⁾	△ + ☹	"W:Frequency"	The input frequency is out of range. This message is displayed if monitoring of the input frequency is activated, depending on the settings of the thresholds WARN LO and WARN HI (see chap. 9.14.2).	→ Go into the "Sensor" function in the Diagnostic menu to read the value of the input frequency. → check that the paddle is clean and that it rotates freely on its axis or → check that the oval gears rotate freely. → check the installation.
OFF	4-20 mA	Switched ²⁾	△	"W:TRnPu too big"	In "Pulse" mode, the volume entered for a pulse is incorrect (see chap. 9.12.10).	→ Enter an appropriate volume. → check the K-factor.
OFF	4-20 mA	Switched ²⁾	△	"W:TRnPu 1:1 set"	In "Pulse" mode, the volume entered for a pulse is incorrect (see chap. 9.12.10).	→ Enter an appropriate volume. → check the K-factor.
OFF	4-20 mA	depending on thresholds	△	"W:to low supply"	The operating supply of the device is too low. If a power shut down occurs, the saving of the totalizers is not guaranteed.	→ check the electrical wiring. → check that the electrical specifications are inside the allowed range (chap. 6.5)

¹⁾ if the MODE DIAG function of the "Output.AC1" or "Output.AC2" menu is set to "22 mA" (see chap. [9.12.9](#)); else, the current output delivers a standard current between 4 and 20 mA

²⁾ If the "PVAR" function of the "Output.TR1" and/or "Output.TR2" menus is set to "warning" (see chap. [9.12.10](#)); else, the transistor outputs are operating depending on the set thresholds.

11 SPARE PARTS AND ACCESSORIES

ATTENTION

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.

Spare part (only for flowmeters type 8026)	Order code
Set with 1 green FKM seal + 1 black EPDM seal	552 111
Snap ring	619 205
Nut	619 204

Accessory	Order code
Display module	559 168
Set with 2 opaque covers, with seals: - 1 screw cover with 1 EPDM seal - 1 quarter turn closing cover with 1 silicone seal	560 948
Set with 2 transparent covers, with seals: - 1 screw cover with 1 EPDM seal - 1 quarter turn closing cover with 1 silicone seal	561 843
5-pin female M12 connector, moulded on shielded cable (2 m)	438 680
5-pin male M12 connector, to be wired	560 946
5-pin male M12 connector, moulded on shielded cable (2 m)	559 177

12 PACKAGING, TRANSPORT

NOTE

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.

13 STORAGE

NOTE

Poor storage can damage the device.

- ▶ Store the device in a dry place away from dust.
- ▶ Storing temperature for type 8026: -10 to +60°C.
- ▶ Storing temperature for type SE36: -10 to +60°C.
- ▶ Storing temperature for the fitting: refer to the related manual

14 DISPOSAL OF THE PRODUCT

→ Dispose of the device and its packaging in an environmentally-friendly way.

NOTE

Damage to the environment caused by parts contaminated by the fluid.

- ▶ Comply with the national and/or local regulations which concern the area of waste disposal.

