bürkert
FLUID CONTROL SYSTEMS

Type 8026 - 8036 - 8076

Flowmeters and Flow transmitters
Durchfluss-Messgerät oder Durchfluss-Transmitter
Débitrmètres et transmetteurs de débit



MAN 1000182212 EN Version: A Status: RL (released | freigegeben) printed: 29.08.2013

Operating Instructions

Bedienungsanleitung
Manuel d'utilisation

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Technische Änderungen vorbehalten.
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1. ABOUT THIS MANUAL

This manual describes the entire life cycle 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.

- This manual must be read and understood.

1.1. 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 a procedure to be carried out.

1.2. Definition of the word "device"

The word "device" used within this manual refers to the flowmeter type 8026, 8036 or 8076.

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2. INTENDED USE

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

- 8026, 8036 and 8076 devices are intended to measure the flow rate of liquids:
  - 8026 and 8036 flowmeters are used to measure the flow of neutral or slightly aggressive liquids,
  - 8076 flowmeters are used to measure the flow rate of viscous liquids such as honey or oil, which are free of solid particles.
- This device must be protected against electromagnetic interference, ultraviolet rays and, when installed outdoors, the effects of climatic conditions.
- This device must be used in compliance with the characteristics and commissioning and use conditions specified in the contractual documents and in the user manual.
- 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.

→ Observe any existing restraints when the device is exported.

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3. BASIC SAFETY INFORMATION

This safety information does not take into account:

- any contingencies or occurences 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 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 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.

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:

- to prevent any unintentional power supply switch-on.
- to ensure that installation and maintenance work are carried out by qualified, authorised personnel in possession of the appropriate tools.
- to guarantee a defined or controlled restarting of the process, after a power supply interruption.
- to use the device only if in perfect working order and in compliance with the instructions provided in the instruction manual.
- to observe the general technical rules when installing and using the device.
- not to use the device in explosive atmospheres.
- not to use the device for the measurement of gas flow rates.
- 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 subject the device to mechanical loads (e.g. by placing objects on top of it or by using it as a step).
- Do not make any external modifications to the device. Do not paint or varnish any part of the device.

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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 the EN 61340-5-1 and 5-2 norms.
- Also ensure that you do not touch any of the live electrical components.

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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 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 or 8076 at: www.burkert.com

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5. DESCRIPTION

5.1. Area of application

8026, 8036 and 8076 devices are intended to measure the flow rate of liquids:

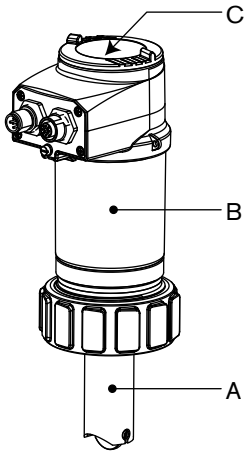
- 8026 and 8036 flowmeters are used to measure the flow of neutral or slightly aggressive liquids,
- 8076 flowmeters are used to measure the flow rate of viscous liquids such as honey or oil, which are free of solid particles.

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 8026 flowmeter comprises:

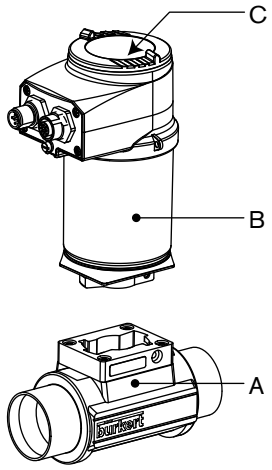


A: a paddle-wheel flow sensor, the rotation of which generates pulses. Set in rotation by the flow, the 4 permanent magnets integrated in the vanes of the paddle generate pulses, the frequency of which is proportional to the flow speed of the fluid. A conversion coefficient specific to each pipe (material and diameter) is necessary to establish the flow rate value associated with the measurement. The conversion coefficient (Factor K) expressed in pulses per litre is given in the user manual for the fitting used.
B: an acquisition / conversion module for the process values measured: ▪ acquisition of the pulse frequency ▪ conversion of the frequency measured into flow rate units
C: a display module with navigation button used to read and/or configure the parameters of the device. The display module is not delivered with all the versions of the flowmeter but it is available as an accessory. See chap. 11.

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5.2.2. Construction of the 8036

The 8036 flowmeter comprises:



A: an S030 fitting including the paddle-wheel flow sensor.

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 speed 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.

The conversion coefficient (Factor K) expressed in pulses per litre is given in the user manual for the fitting used.

B: an acquisition / conversion module for the process values measured:

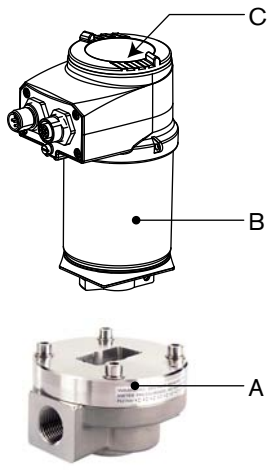
- acquisition of the pulse frequency
- conversion of the frequency measured into flow rate units

C: a display module with navigation button used to read and/or configure the parameters of the device. The display module is not delivered with all the versions of the flowmeter but it is available as an accessory.

See chap. 11.

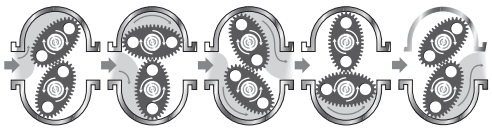
5.2.3. Construction of the 8076

The 8076 flowmeter comprises:



A: an S070 fitting including the flow sensor with oval gears.

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.



The conversion coefficient (Factor K) expressed in pulses per litre is given in the user manual for the fitting used.

B: an acquisition / conversion module for the process values measured:

- acquisition of the pulse frequency
- conversion of the frequency measured into flow rate units

C: a display module with navigation button used to read and/or configure the parameters of the device. The display module is not delivered with all the versions of the flowmeter but it is available as an accessory.

See chap. 11.

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5.3. Description of the name plate

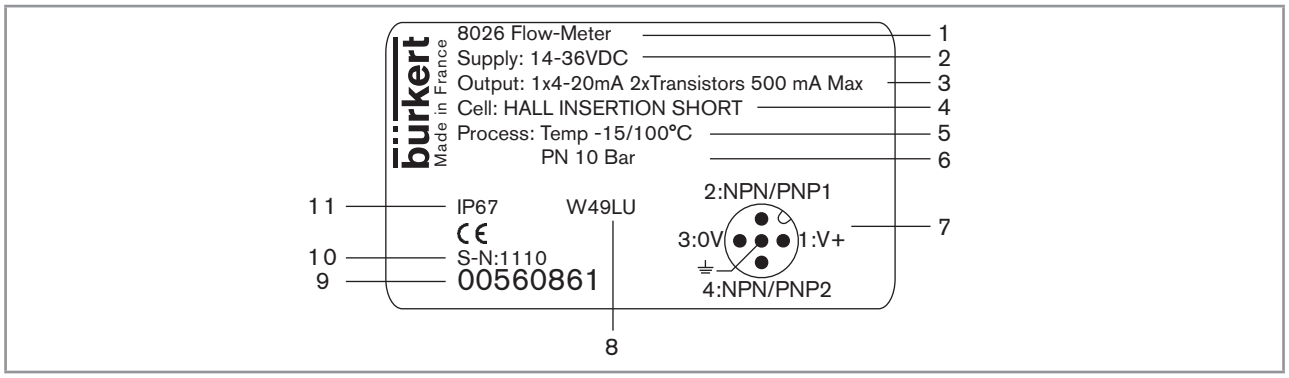


Figure 1 : Example of a name plate

1. Type of the device and measured varaible
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

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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	**560860**	**561860**
			Long	FKM [1]			**560870**	**561870**
			Short	FKM [1]	yes	2-wire	**560863**	**561863**
			Long	FKM [1]	cULus		**560873**	**561873**
	2 x transistor, NPN/PNP, + 1 x 4-20 mA	Male 5-pin M12 fixed connector	Short	FKM [1]	no	2-wire	**560861**	**561861**
			Long	FKM [1]			**560871**	**561871**
			Short	FKM [1]	yes	2-wire	**560864**	**561864**
			Long	FKM [1]	cULus		**560874**	**561874**
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	**560862**	**561862**
			Long	FKM [1]			**560872**	**561872**
			Short	FKM [1]	yes	3-wire	**560865**	**561865**
			Long	FKM [1]	cULus		**560875**	**561875**

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

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5.5. Available versions of the electronic module SE36

The following versions of the electronic module SE36, part of the flowmeter 8036 or 8076 are available. The references of the S030 and S070 fittings including the flow sensor can be found on the relevant technical data sheets for these product types.

Each version of the electronic module 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	**560880**	**561880**
				yes	**560883**	**561883**
	2 x transistor, NPN/PNP, + 1 x 4-20 mA	Male 5-pin M12 fixed connector	2-wire	no	**560881**	**561881**
				yes	**560884**	**561884**
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	**560882**	**561882**
				yes	**560885**	**561 885**

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6. TECHNICAL DATA

6.1. Conditions of use

Ambient temperature	-10 to +60 °C
Air humidity	< 85%, non condensated
Protection rating	IP67 and IP65 with connectors plugged in and tightened and electronic module cover fully screwed down

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 directive of flowmeters 8026 and fittings S030 and S070

The devices 8026 and the fittings S030 and S070 comply with article 3§3 of the pressure directive.

Acc. to the 97/23/CE pressure 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	▪ Flowmeter 8026 and fitting S030: DN ≤ 25 only ▪ Fitting S070: Forbidden
Fluid group 2 par. 1.3.a	DN ≤ 32 or DN > 32 and PNxDN ≤ 1000
Fluid group 1 par. 1.3.b	▪ Flowmeter 8026: DN ≤ 25 or DN > 25 and PNxDN ≤ 2000 ▪ Fittings S030 and S070: PNxDN ≤ 2000
Fluid group 2 par. 1.3.b	▪ Flowmeter 8026: DN ≤ 400 ▪ Fittings S030 and S070: DN ≤ 200

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6.3. General technical data

6.3.1. Mechanical data

Part	Material
Box / seals	stainless steel 1.4404, PPS / EPDM
Cover / seal	PC / EPDM
Display module	PC / PBT
M12 fixed connector	nickel-plated brass
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_2O_3)
Paddle wheel (only 8026)	PVDF
Quarter-turn system (only SE36)	PC

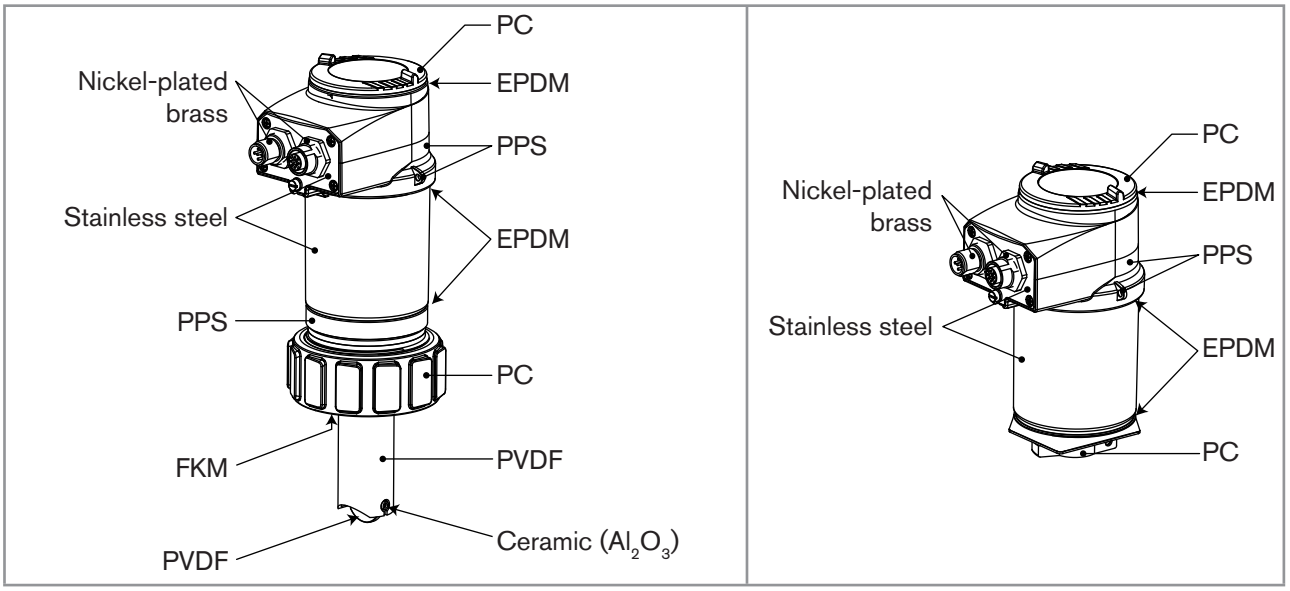
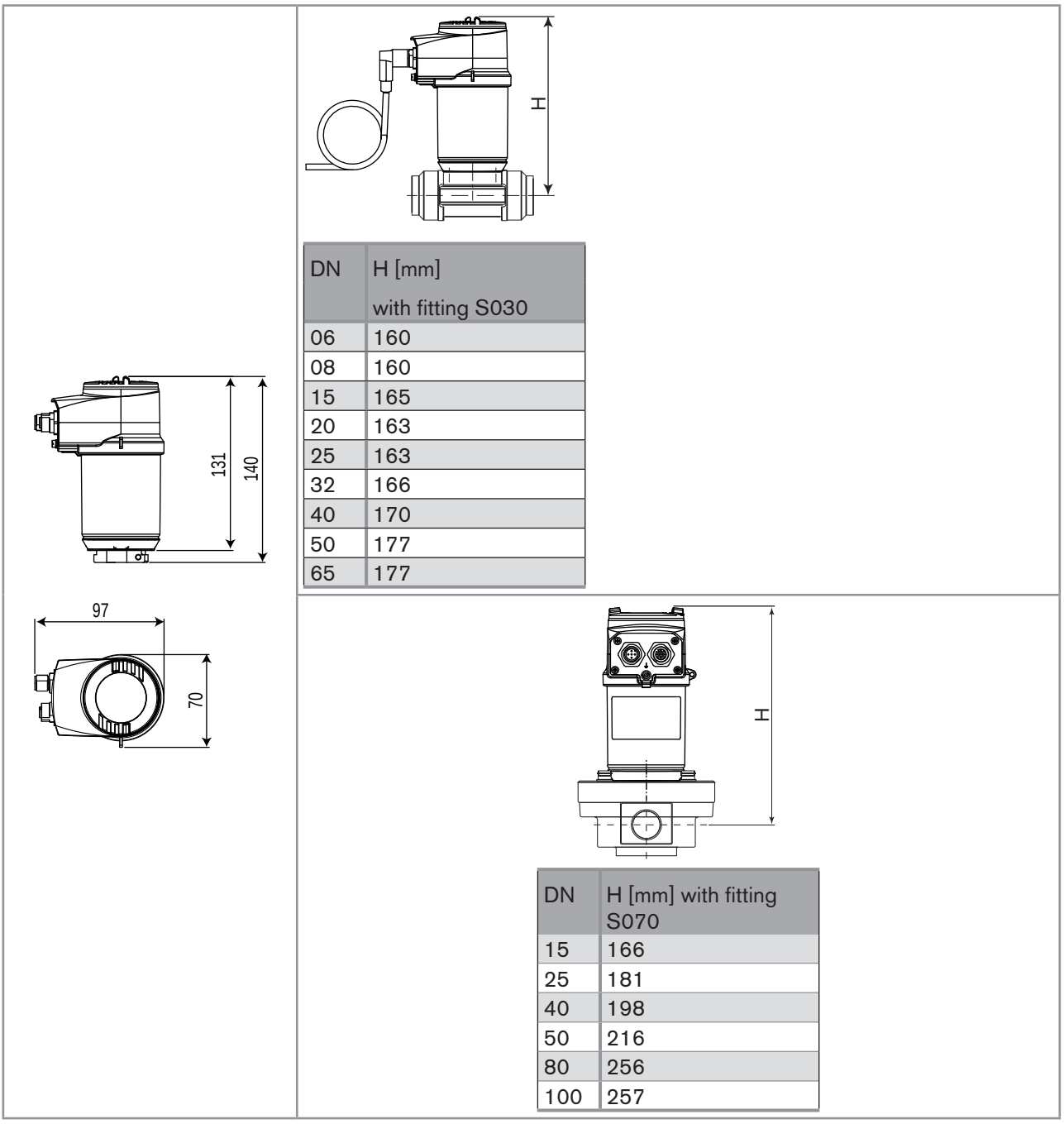


Figure 2 : Materials used in the 8026 fowmeters and the SE36 electronic module for the 8036 or 8076 flowmeters

- Materials of the 8026 in contact with the fluid: PVDF, ceramic, FKM (default).

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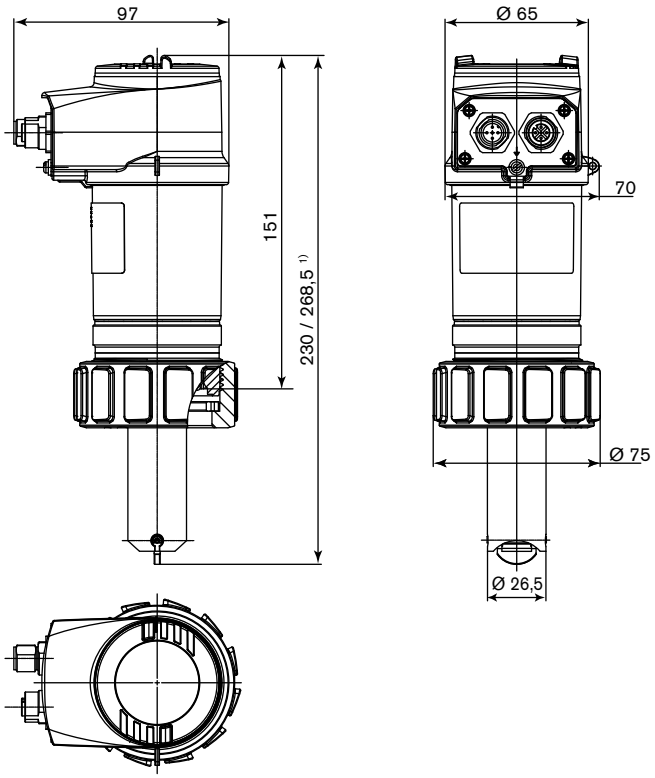
DN	H [mm] with fitting S030
06	160
08	160
15	165
20	163
25	163
32	166
40	170
50	177
65	177

DN	H [mm] with fitting S070
15	166
25	181
40	198
50	216
80	256
100	257

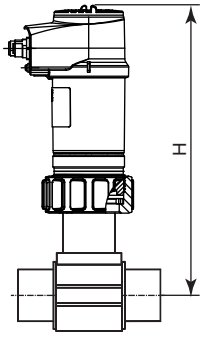
Figure 3 : Dimensions of the electronic module SE36 and dimension H of flowmeters 8036 and 8076

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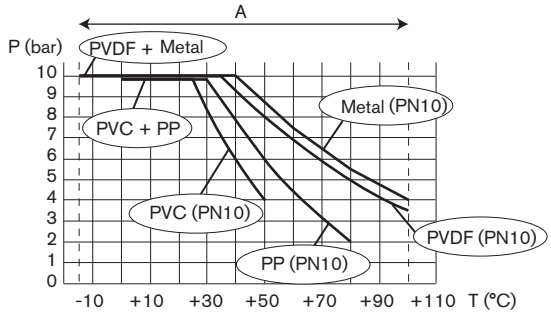


1) with short sensor / with long sensor



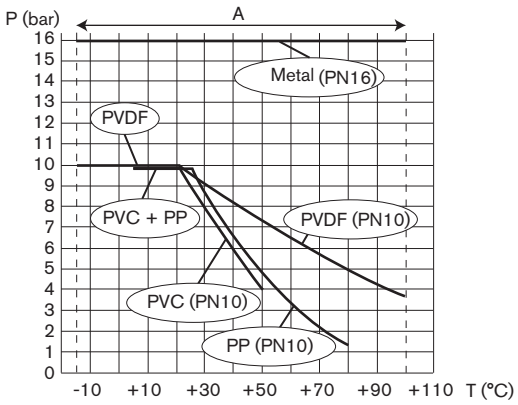
DN of the fitting [mm]	H [mm] with fitting S020 type:			
	T-fitting	Flange fitting	Plastic spigot	Spigot or welding tab in stainless steel
15	231.5			
20	229.5			
25	229.5			
32	232.5.			
40	236.5			
50	242.5	267.5		237.5
65	242.5	265.5	250.5	243.5
80		270.5	256.5	248.5
100		275.5	263.5	258.5
110		271.5		
125		278.5	298.5	269.5
150		248.5	305.5	280.5
180		312.5		
200		324.5	326.5	301.5
250			344.5	361.5
300			356.5	380.5
350			369.5	392.5
400			384.5	

Figure 4 : Dimensions of flowmeters 8026 and dimension H when the flowmeter 8026 is inserted into a fitting S020



A: Operating range

Figure 5 : Fluid temperature-pressure dependency for the flowmeter 8026 associated to a fitting S020



A: Operating range

Figure 6 : Fluid temperature-pressure dependency for the flowmeter 8036 (SE36 associated to a fitting S030 with PVDF paddle wheel)

6.3.2. General data

Pipe diameter	DN06 to DN400; For a fitting S020 or S030 the appropriate diameter is determined using the flow rate / DN / fluid velocity graphs: refer to the operating manuals of the fittings
Type of fitting	▪ S020 for flowmeter 8026: see corresponding operating manual ▪ S030 for flowmeter 8036: see corresponding operating manual ▪ S070 for flowmeter 8076: see corresponding operating manual
Fluid temperature	
▪ 8026	▪ -15 to +100 °C; Also factor in the fluid temperature/pressure dependency for the 8026 inserted into an S020 fitting: see Figure 5
▪ 8036 with fitting S030 in PVC [1)]	▪ 0 to +50 °C; Also factor in the fluid temperature/pressure dependency for the 8036: see Figure 6
▪ 8036 with fitting S030 in PP [1)]	▪ 0 to +80 °C; Also factor in the fluid temperature/pressure dependency for the 8036: see Figure 6
▪ 8036 with fitting S030 in PVDF [1)], brass[1)] or stainless steel [1)]	▪ -15 to +80 °C; Also factor in the fluid temperature/pressure dependency for the 8036: see Figure 6
▪ 8076 with fitting S070 in aluminium	▪ max. +80 °C
▪ 8076 with fitting S070 in stainless steel	▪ max. +100 °C

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Fluid pressure	Also refer to the requirements of the Pressure Directive: see chap. 6.2.2
▪ 8026	▪ PN10; Also factor in the fluid temperature/pressure dependency for the 8026 inserted into an S020 fitting (see Figure 5)
▪ 8036	▪ PN16; Also factor in the fluid temperature/pressure dependency for the 8036 (SE36 mounted on an S030 fitting): see Figure 6
▪ 8076 with a fitting S070 of DN15	▪ max. 55 bar
▪ 8076 with a fitting S070 of DN25	▪ max. 55 bar (or the rules governing the flanges)
▪ 8076 with a fitting S070 of DN40 or DN50	▪ max. 18 bar
▪ 8076 with a fitting S070 of DN80	▪ max. 12 bar
▪ 8076 with a fitting S070 of DN100	▪ max. 10 bar
Type of fluid	
▪ 8026 and 8036	▪ Neutral or slightly aggressive fluids
▪ 8076	▪ Viscous fluids, free of solid particles
Fluid viscosity	
▪ 8026 and 8036	▪ 300 cSt max.
▪ 8076	▪ Refer to the operating manual for fitting S070
Solid particle rate in the fluid	
▪ 8026 and 8036	▪ ≤ 1%
▪ 8076	▪ 0 %
Flow rate measurement	
▪ Measurement range	▪ 0,3 to 10 m/s
▪ Linearity	▪ ±0,5% [2] of the full scale
▪ Repeatability	▪ ±0,4% [2] of the measured value
▪ Measurement error with standard K factor	▪ ±2,5% [2] of the measured value
▪ measurement error with a Teach-in procedure	▪ ±1% [2] of the measured value (at the teach-in point)

[1] and PVDF paddle wheel

[2] Determined in the following reference conditions: fluid = water, water and ambiant temperatures = 20 °C, upstream and downstream distances respected, appropriate pipe dimensions.

6.3.3. 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

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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) ▪ version with 4 outputs (3 wires)	 ▪ 25 mA max. (at 14 V DC) ▪ 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 ▪ Version with 2 transistor outputs	 ▪ NPN, open collector, 700 mA max., 1-36 V DC ▪ 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 ▪ Version with only 1 current output (2 wires) ▪ version with 2 current outputs (3 wires)	4-20 mA, sink ("NPN sink") or source ("PNP source") (depending on parameter setting) ▪ max. loop impedance: 1100 Ω at 36 V DC, 610 Ω at 24 V DC, 180 Ω at 14 V DC ▪ max. loop impedance: 1100 Ω at 36 V DC, 610 Ω at 24 V DC, 100 Ω at 12 V DC

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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 set or controlled restarting of the process subsequent to any intervention on the device.

7.2. Unscrewing the cover

NOTE

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

- Once the cover is removed, prevent the projection 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 (screwdriver, for example).

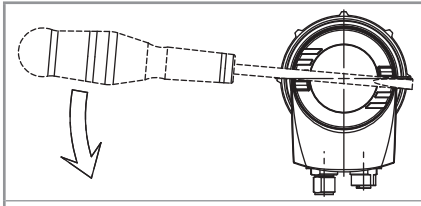
	→ To unscrew the cover, use your hand or a tool which can be used as a lever, taking care not to scratch the glass.
	→ Turn the cover until fully unscrewed.

Figure 7 : Unscrewing the cover

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7.3. Mounting the cover

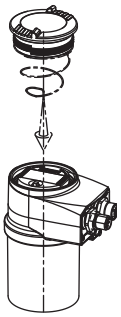
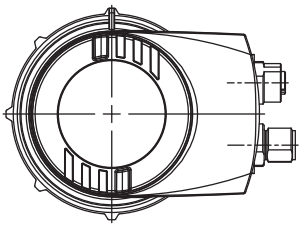
	→ Check that there is a seal on the cover and that it is not damaged. Replace it if necessary. → Grease the seal if necessary, using a component compatible with the seal material.
	→ Fully tighten by hand to guarantee tightness.

Figure 8 : Fitting the cover

7.4. Mounting the display module

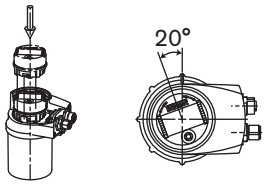
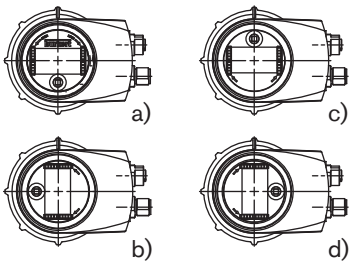
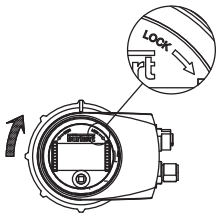
	→ Unscrew the cover (see chapter 7.2). → Set the display module at an angle of ca. 20° in relation to the desired position.
	→ The module can be mounted in 4 different positions, at 90° intervals.
	→ Fully push in the module and turn to the right to lock it.

Figure 9 : Mounting the display module

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7.5. Dismounting the display module

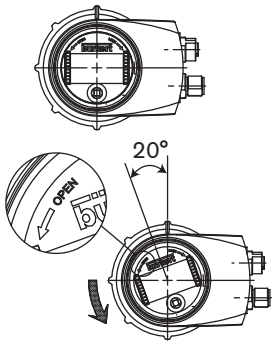
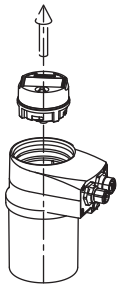
	→ Unscrew the cover if necessary (see chapter 7.2). → Turn the module by ca. 20° to the left. Once unlocked, the module is raised slightly by the spring action.
	→ Remove the module from its housing.

Figure 10 : Dismounting the display module

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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.

- 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.

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 set or controlled restarting of the process subsequent to any intervention on the device.

8.2. Installation onto the 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.

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8.2.1. Recommendations on installing an 8026 or an 8036 on a pipe

ATTENTION

Risk of damage when installing the fitting.

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

→ Install the fitting on the pipe, respecting the instructions given in the manual for the fitting used.

→ Respect the following additional conditions of installation to ensure that the device operates correctly (Figure 11 and Figure 12).

- Install the device in such a way that the paddle wheel axis is horizontal.
- Prevent the formation of air bubbles in the pipe in the section around the sensor.
- Ensure that the pipe is always filled in the section around the sensor.

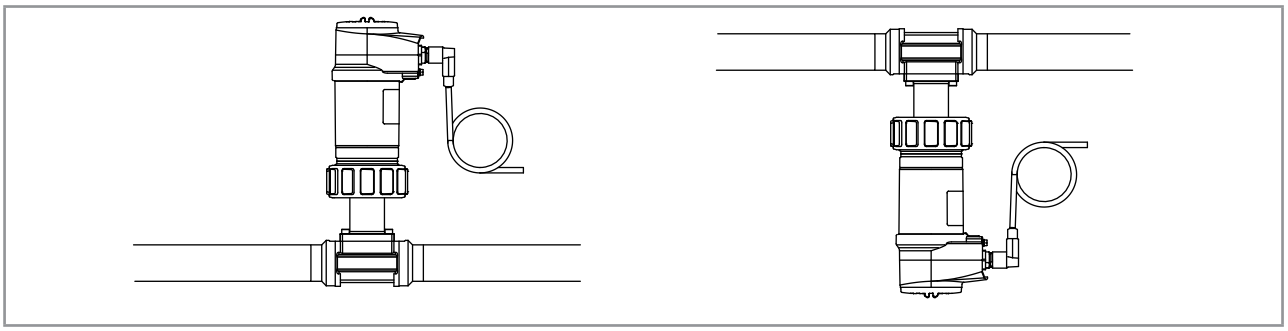


Figure 11 : The paddle wheel axis must be horizontal

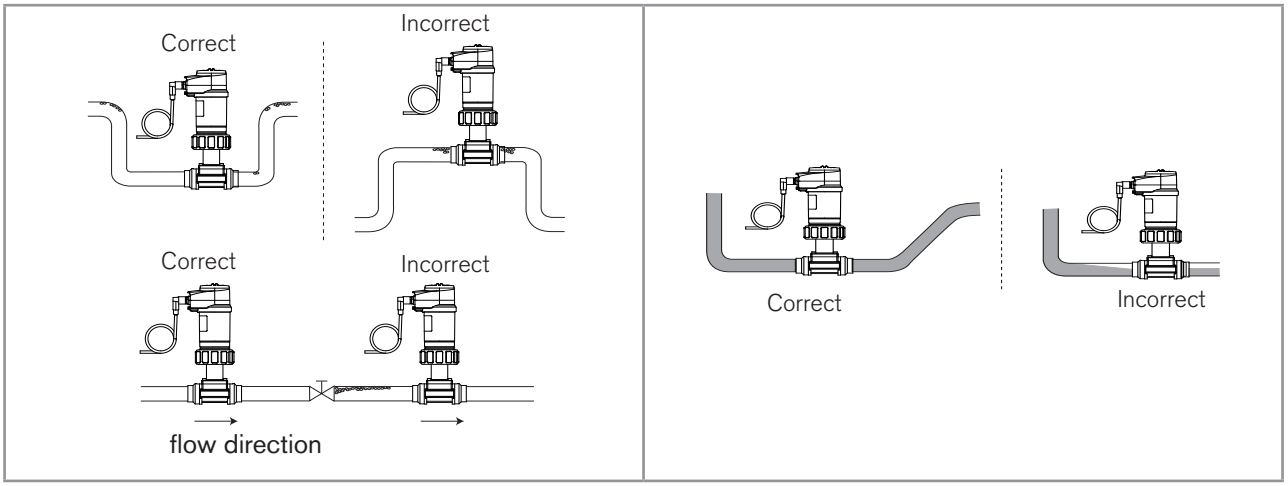
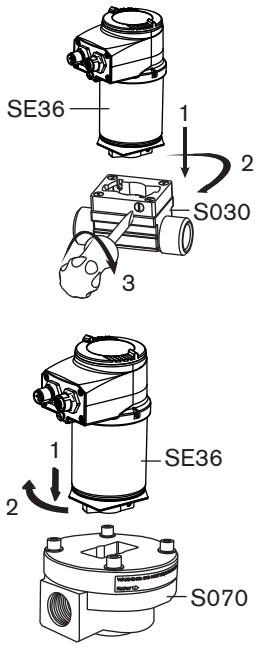


Figure 12 : Air bubbles within the pipe / Filling of the pipe

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

→ Assemble the flowmeter 8036 (see Figure 13) or install the flowmeter 8026 into the fitting S020 (see Figure 14)

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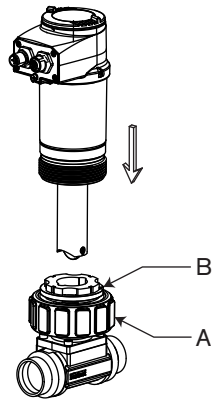


→ 1: Insert the electronic module in the sensor holder.

→ 2: Turn the electronic module by a quarter turn.

→ 3: Secure the electronic module and the S030 fitting only, by tightening the screw with a suitable tool to a max. tightening torque of 1 Nm.

Figure 13 : Assembling the SE36 and the fitting S030 or S070



→ 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.

Figure 14 : Installation of flowmeter 8026 into the fitting S020

→ Set the K factor parameter (see chap. 9.13.5) or have it determined through a teach-in procedure.

8.2.2. Recommendations on installing an 8076 on a pipe

→ Install the fitting S070 on the pipe in such a way that the oval gear axes are in the horizontal plane, as shown in Figure 15.

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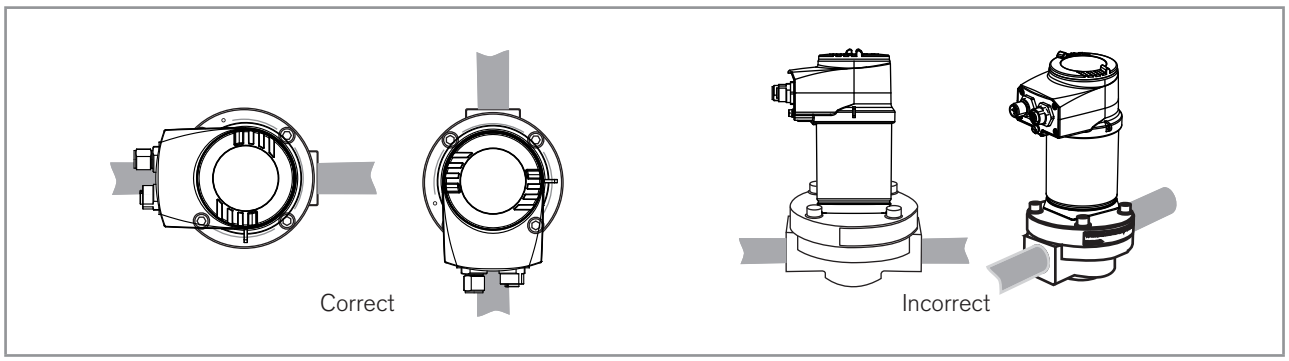


Figure 15 : The oval gear axes must be horizontal (seen from the front)

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

→ Assemble flowmeter type 8076 (see Figure 13)

→ Set the K factor parameter (see chap. 9.13.5) or have it determined through a teach-in procedure.

8.3. Wiring

DANGER

Risk of injury due to electrical voltage.

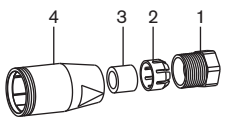
- Shut down and isolate the electrical power source before carrying out work on the system.
- Observe all applicable accident protection and safety regulations for electrical equipment.

- Use a high quality electrical power supply (filtered and regulated).
- Make sure the installation is equipotential. See chap. 8.3.3.
- 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.

8.3.1. 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)

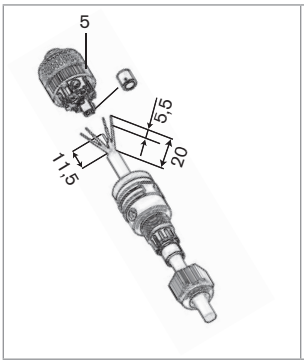
8.3.2. Assembling the male or female connector (accessories:



→ 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].

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→ 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. 8.3.4 to chap. 8.3.6).

→ Tighten the terminal block [5] wired to the body [4].

→ Tighten the connector nut [1].

Figure 16 : Multipin M12 connector (available as an accessory)

8.3.3. 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.

→ 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.

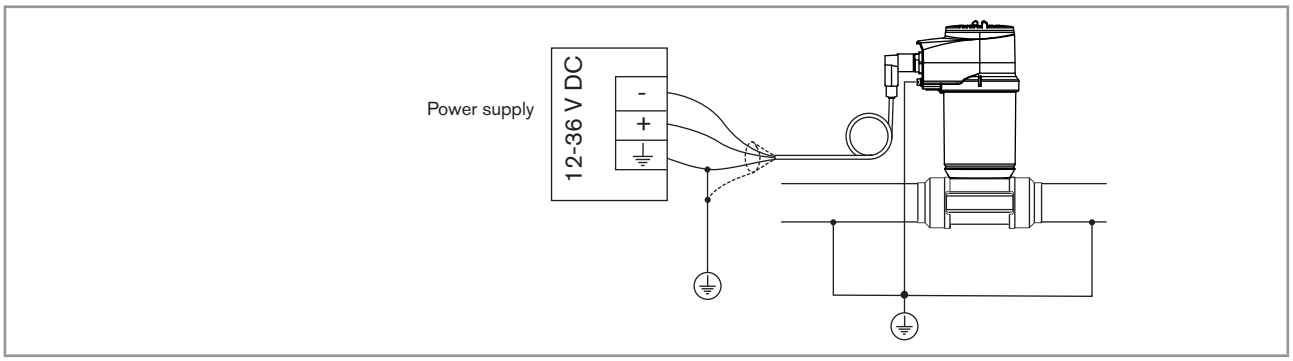


Figure 17 : Equipotentiality skeleton diagram with pipes in metal

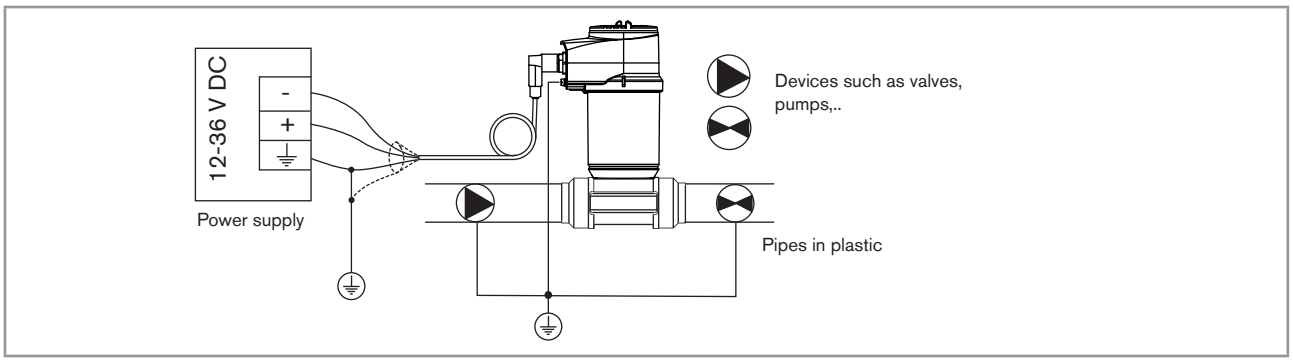


Figure 18 : Equipotentiality skeleton diagram with pipes in plastic

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

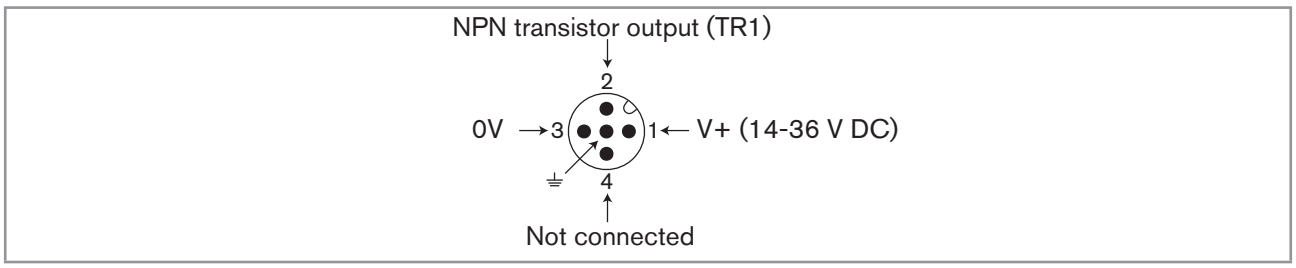


Figure 19 : Pin assignment of the male fixed connector on a version with 1 NPN transistor output and 1 current output

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

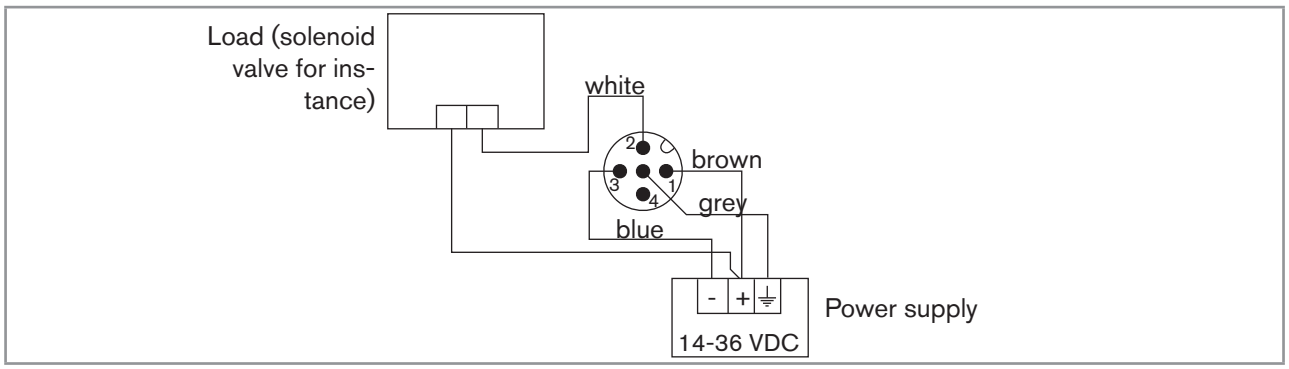


Figure 20 : Wiring the NPN transistor output (parameter setting "NPN/sink", cannot be changed), of a version with 1 M12 fixed connector, 1 NPN transistor output and 1 current output

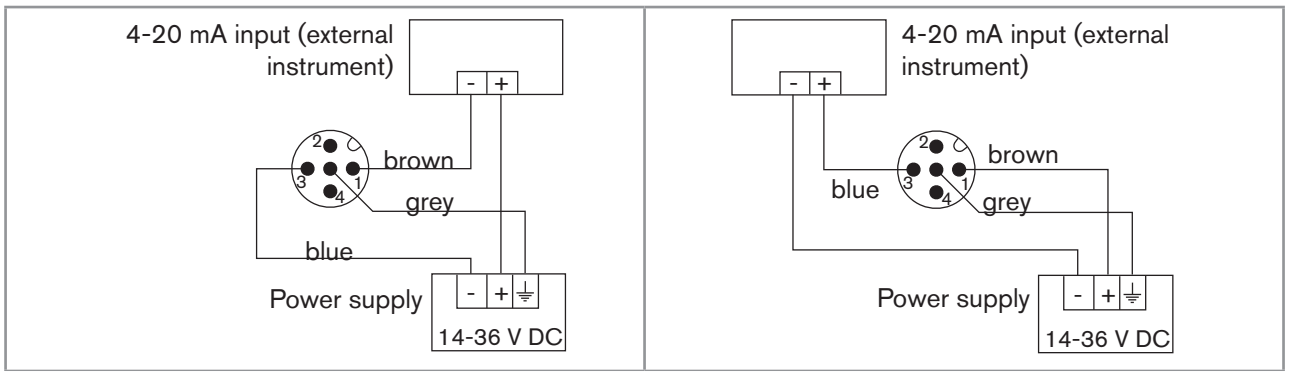


Figure 21 : Possible electrical connections of the current output only, on a version with 1 M12 fixed connector, 1 NPN transistor output and 1 current output

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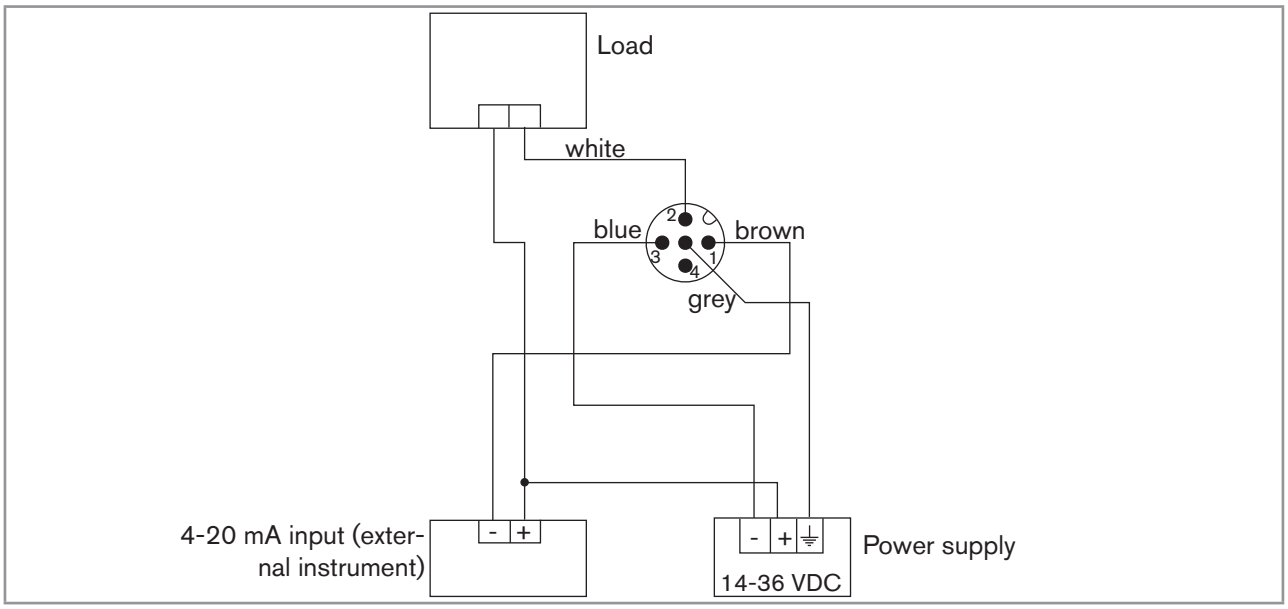


Figure 22 : Wiring the NPN transistor output and the current output in sinking mode (parameter setting "NPN/sink", cannot be changed), on a version with 1 M12 fixed connector, 1 NPN transistor output and 1 current output

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

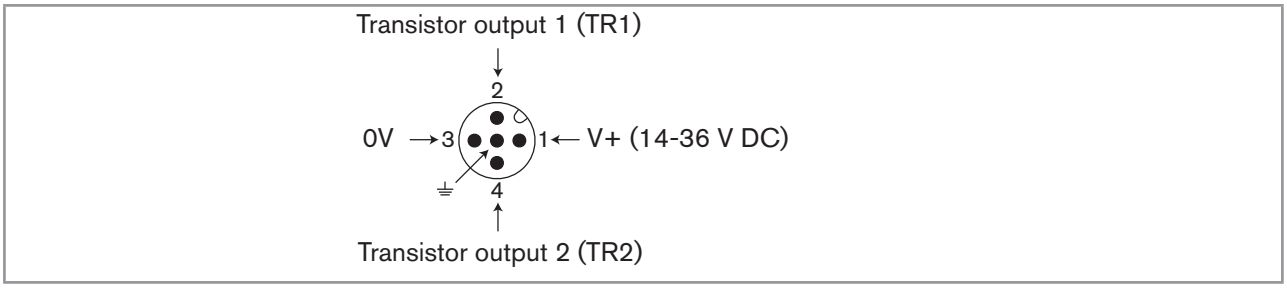


Figure 23 : Pin assignment of the male fixed connector on a version with 2 transistor outputs and 1 current output

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

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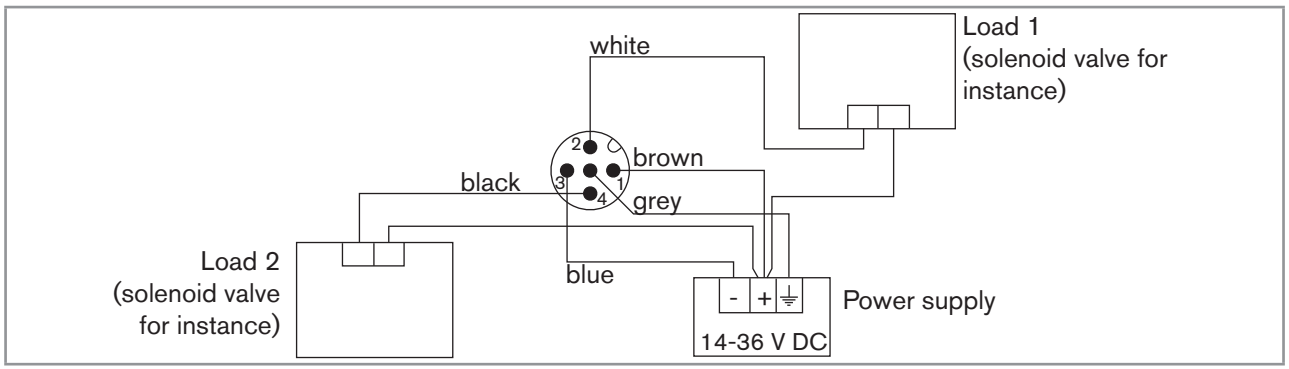


Figure 24 : NPN wiring of both transistor outputs (parameter setting "NPN/sink"), of a version with 1 M12 fixed connector

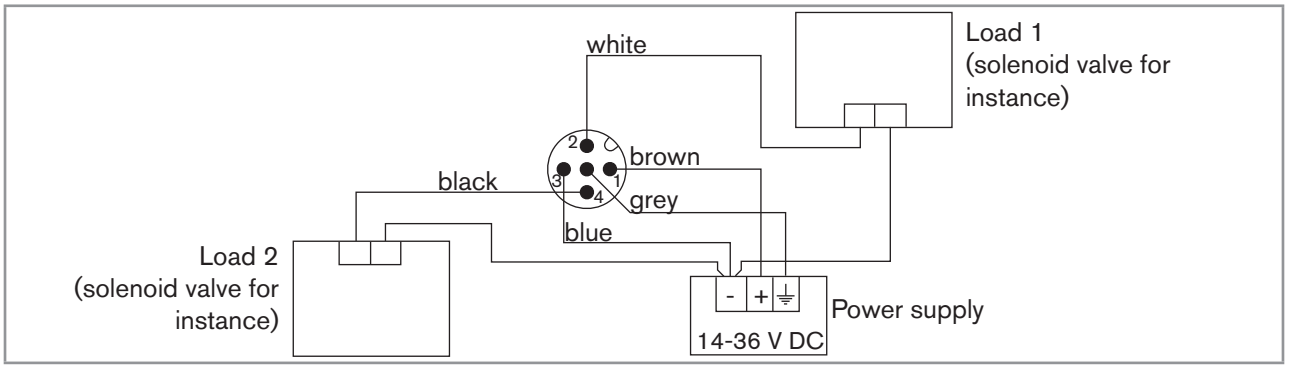


Figure 25 : PNP wiring of both transistor outputs (parameter setting "PNP/source"), of a version with 1 M12 fixed connector

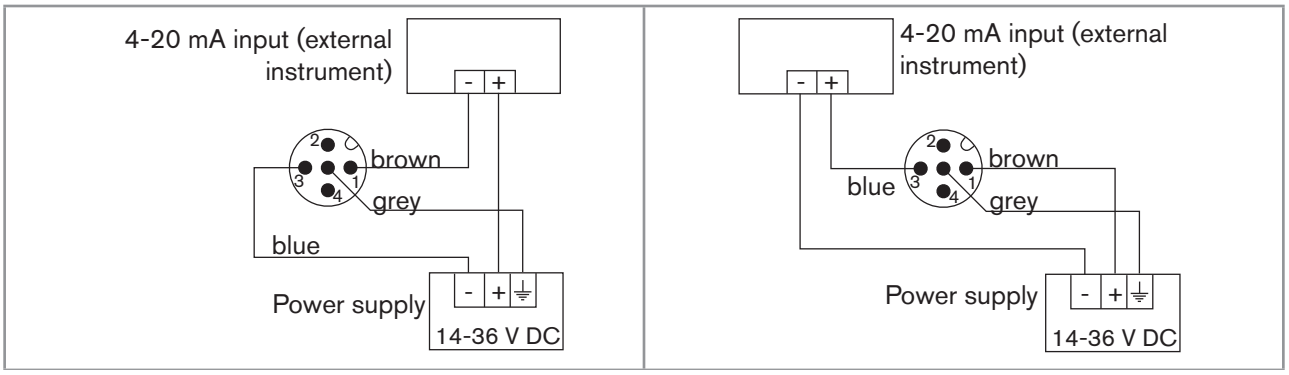


Figure 26 : Possible electrical connections of the current output only (whatever the parameter setting, "NPN/sink" or "PNP/source"), on a version with 1 M12 fixed connector

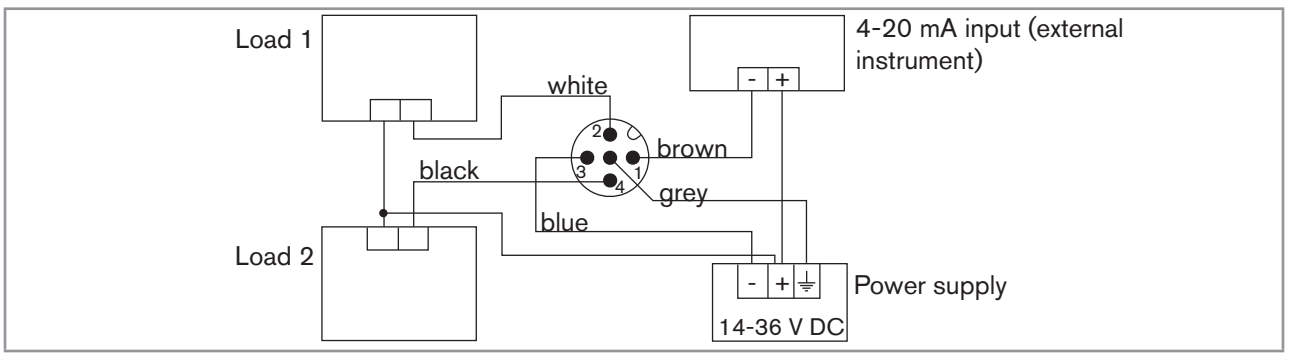


Figure 27 : NPN wiring of both transistor outputs and wiring the current output in sinking mode (parameter setting "NPN/sink"), of a version with 1 M12 fixed connector

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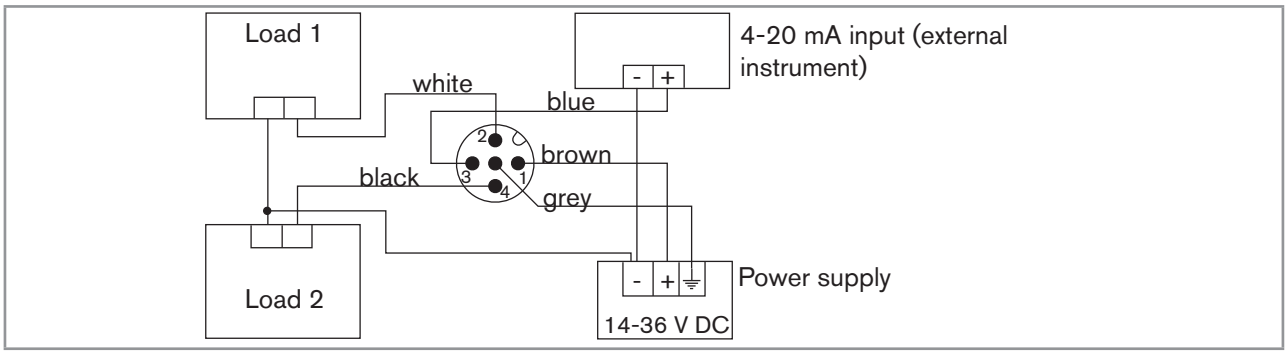


Figure 28 : PNP wiring of both transistor outputs and wiring the current output in sourcing mode (parameter setting "PNP/source"), of a version with 1 M12 fixed connector

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

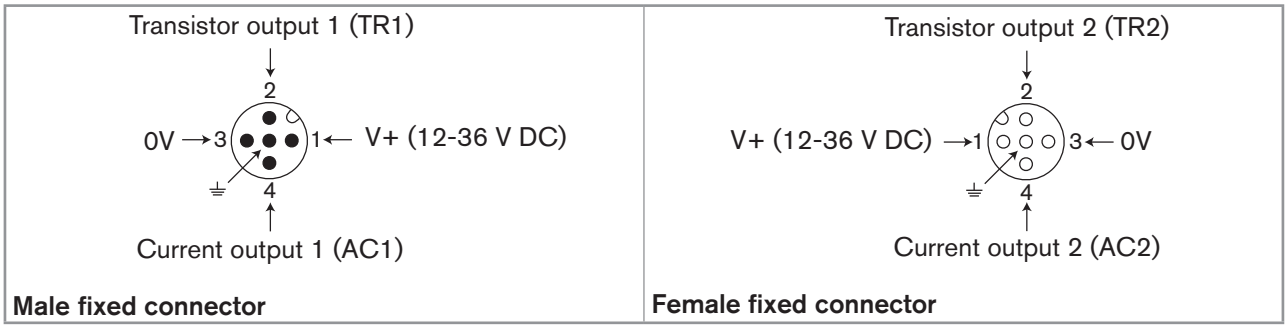


Figure 29 : Pin assignment of the male and female M12 fixed connectors

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

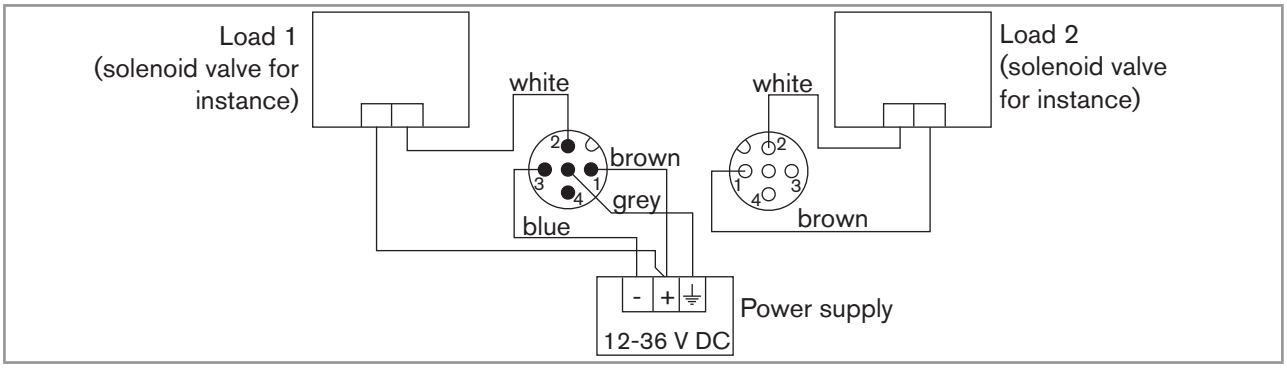


Figure 30 : NPN wiring of both transistor outputs (parameter setting "NPN/sink"), of a version with 2 M12 fixed connectors

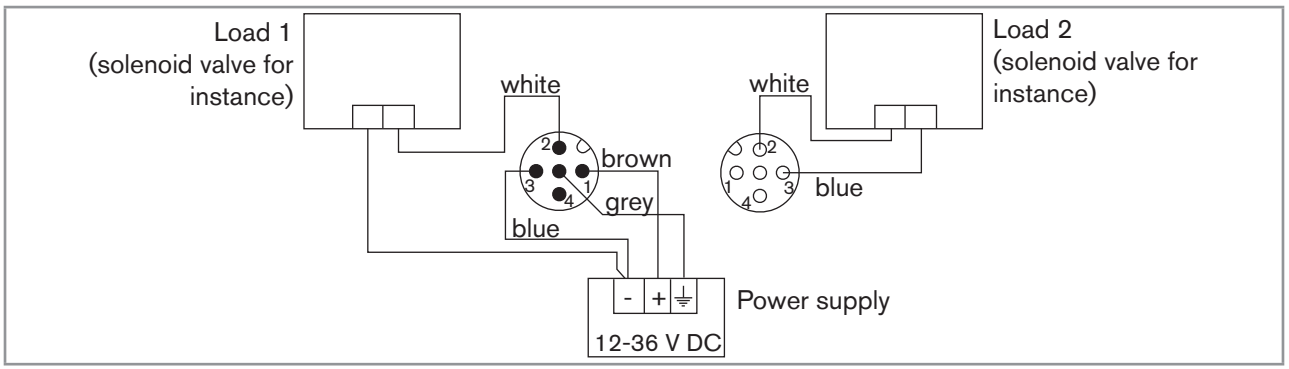


Figure 31 : PNP wiring of both transistor outputs (parameter setting "PNP/source"), of a version with 2 M12 fixed connectors

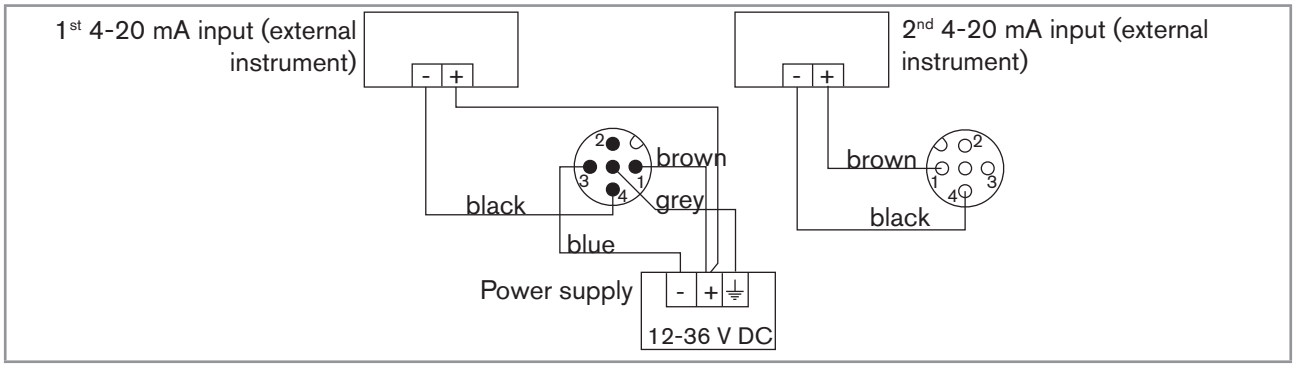


Figure 32 : Wiring of both current outputs in sinking mode, on a version with 2 fixed connectors (parameter setting "NPN/ sink")

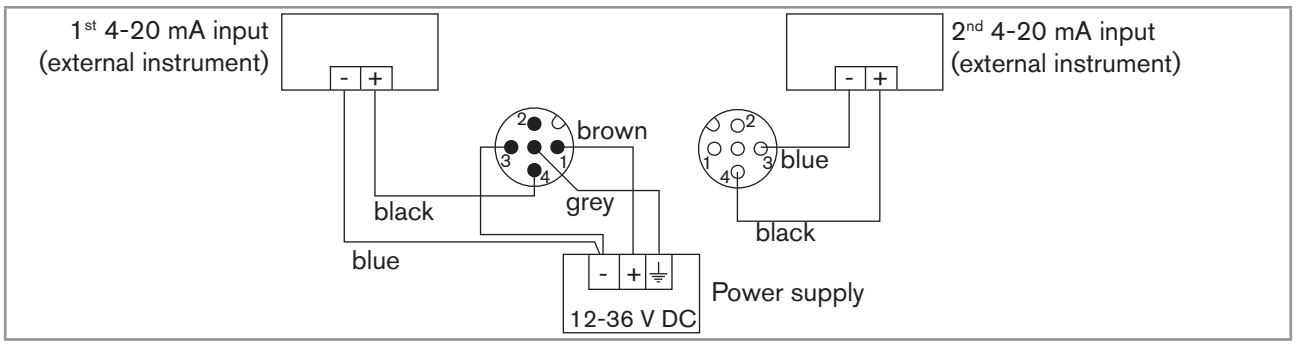


Figure 33 : Wiring of both current outputs in sourcing mode, on a version with 2 fixed connectors (parameter setting "PNP/source")

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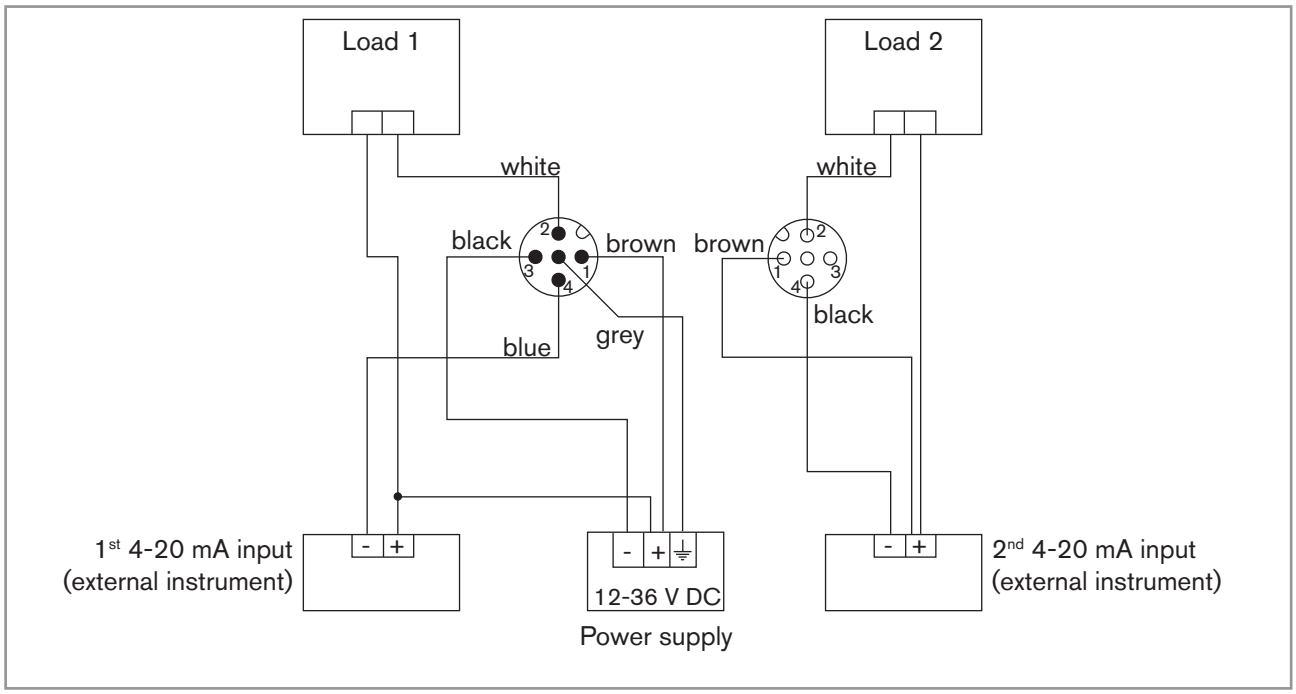


Figure 34 : NPN wiring of both transistor outputs and wiring of both current outputs in sinking mode, on a version with 2 fixed connectors (parameter setting "NPN/sink")

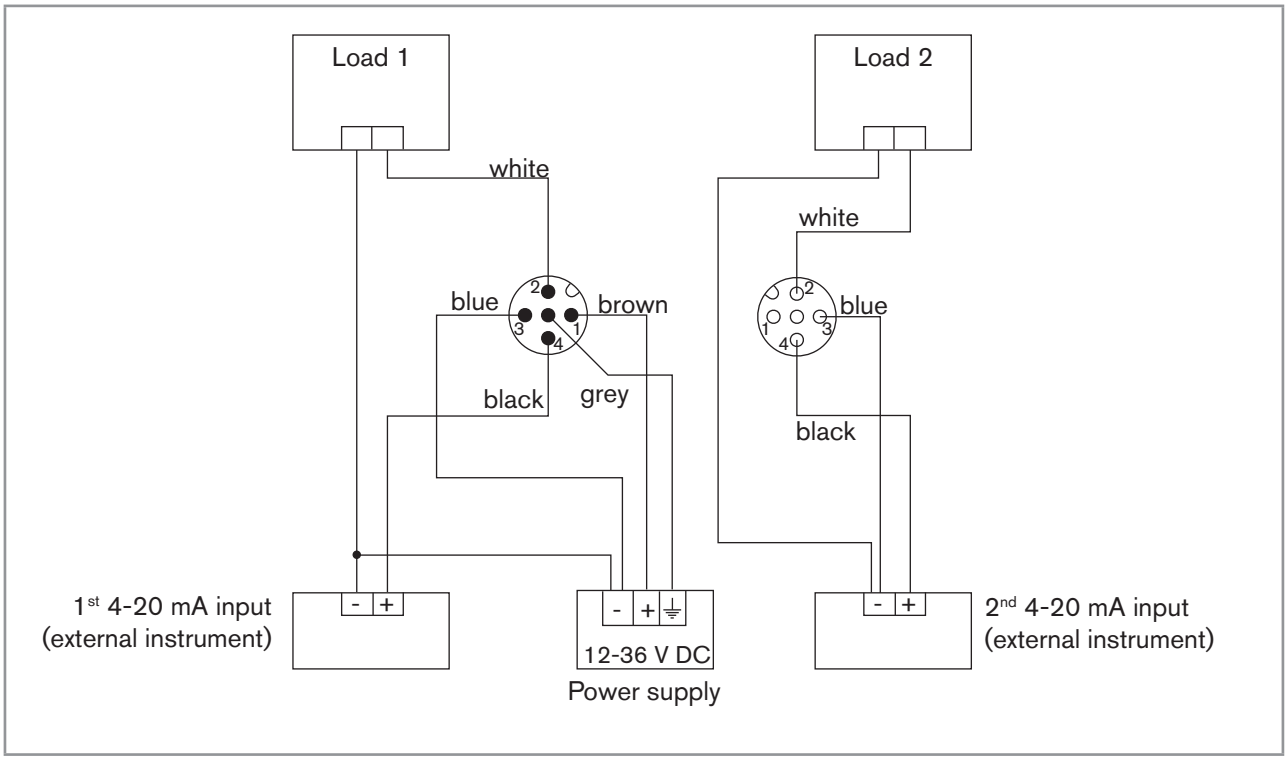


Figure 35 : PNP wiring of both transistor outputs and wiring of both current outputs in sourcing mode, on a version with 2 fixed connectors (parameter setting "PNP/source")

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9. ADJUSTMENT AND COMMISSIONING

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.

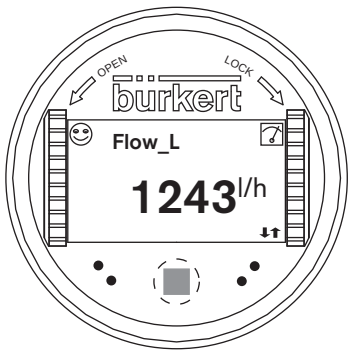
Nonconforming commissioning could lead to injuries and damage the device and its surroundings.

- 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.

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 or the display module mounted on the electronic module, 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 Bürkert reseller.

Figure 36 : Display indications when powering on the device

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9.3. 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 have 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.

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	

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9.4. Using the navigation button

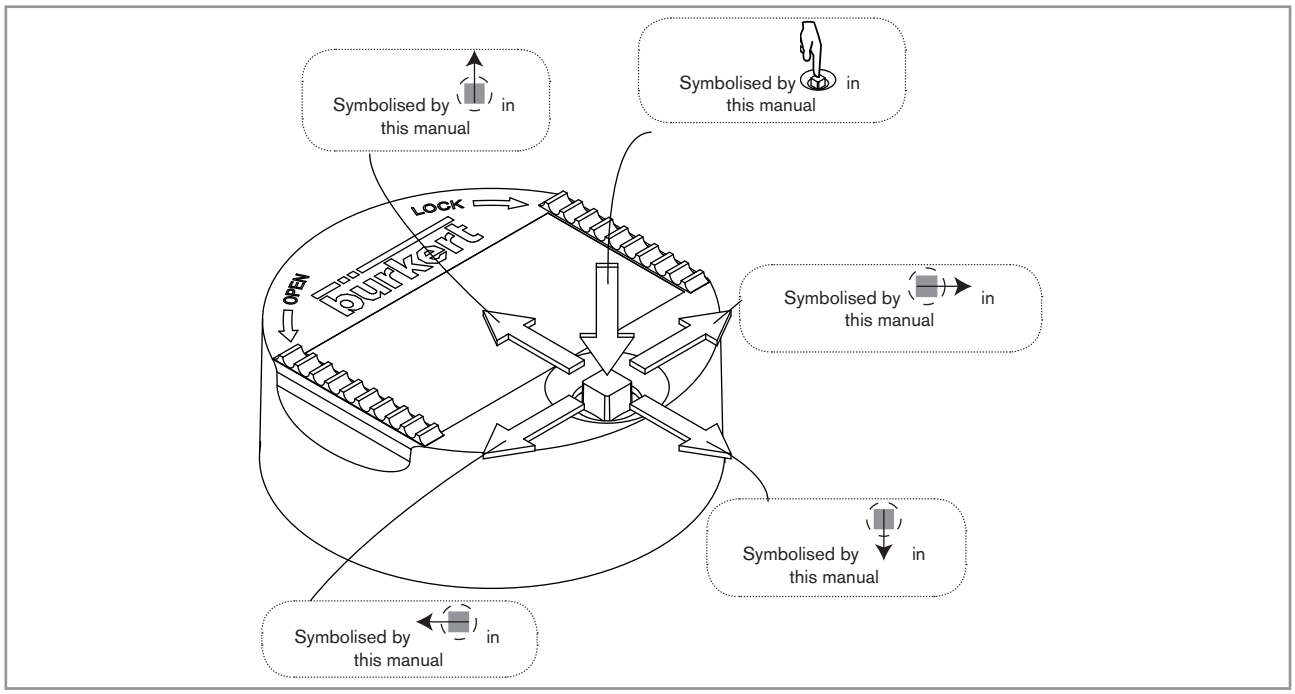


Figure 37 : Using the navigation button

You want to...	Press...
...browse in Read level	▪ next screen: ▪ previous screen:
▪ ...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	▪ next menu: ▪ previous menu:
...access the menu displayed	
...browse in the menu functions	▪ next function: ▪ previous function:
...select the highlighted function	

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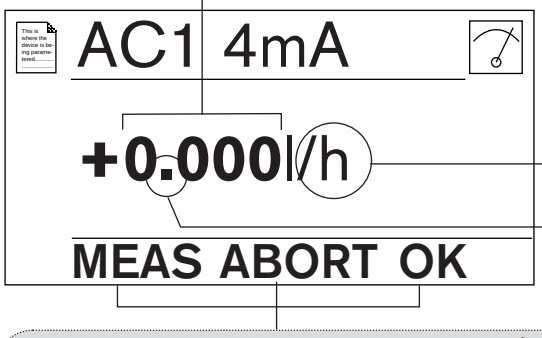
You want to...	Press...
...browse in the dynamic functions bar (MEAS, BACK, ABORT, OK, YES, NO)	▪ next function:  ▪ previous function: 
...confirm the highlighted dynamic function	
...modify a numerical value	
- increment the figure selected	- 
- decrement the figure selected	- 
- select the previous 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 READ 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"

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9.6. Example for the input of a numerical value



Modify each digit of the numerical value using:

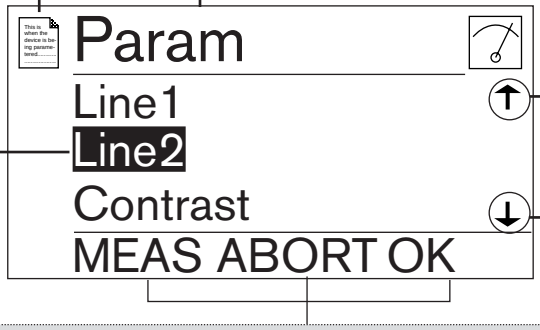
- to increase the digit selected,
- to decrease the digit selected.

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. Example for browsing in a menu



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

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9.8. Description of icons and 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").

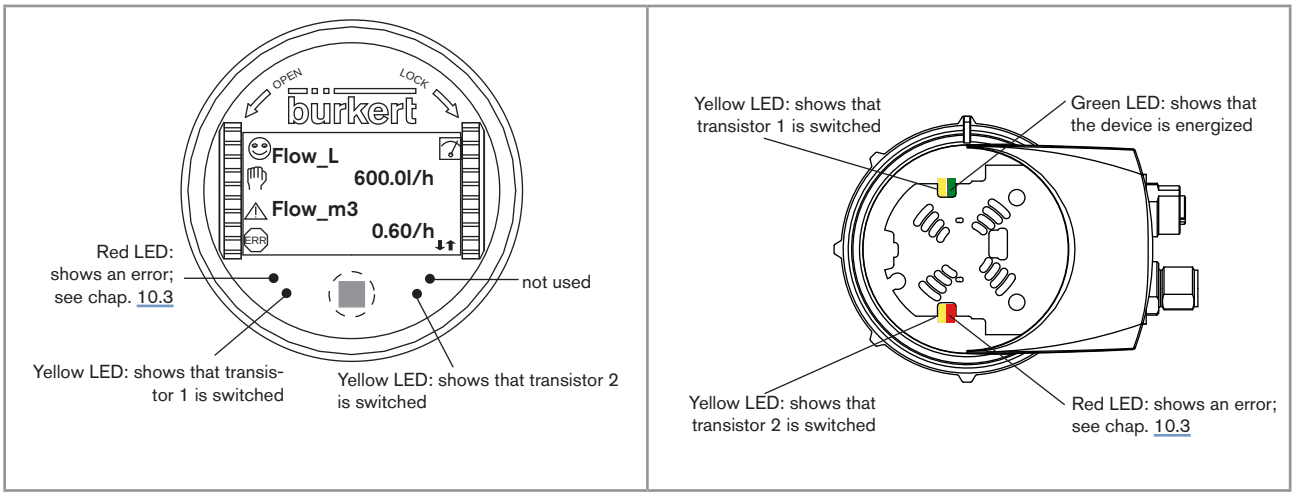
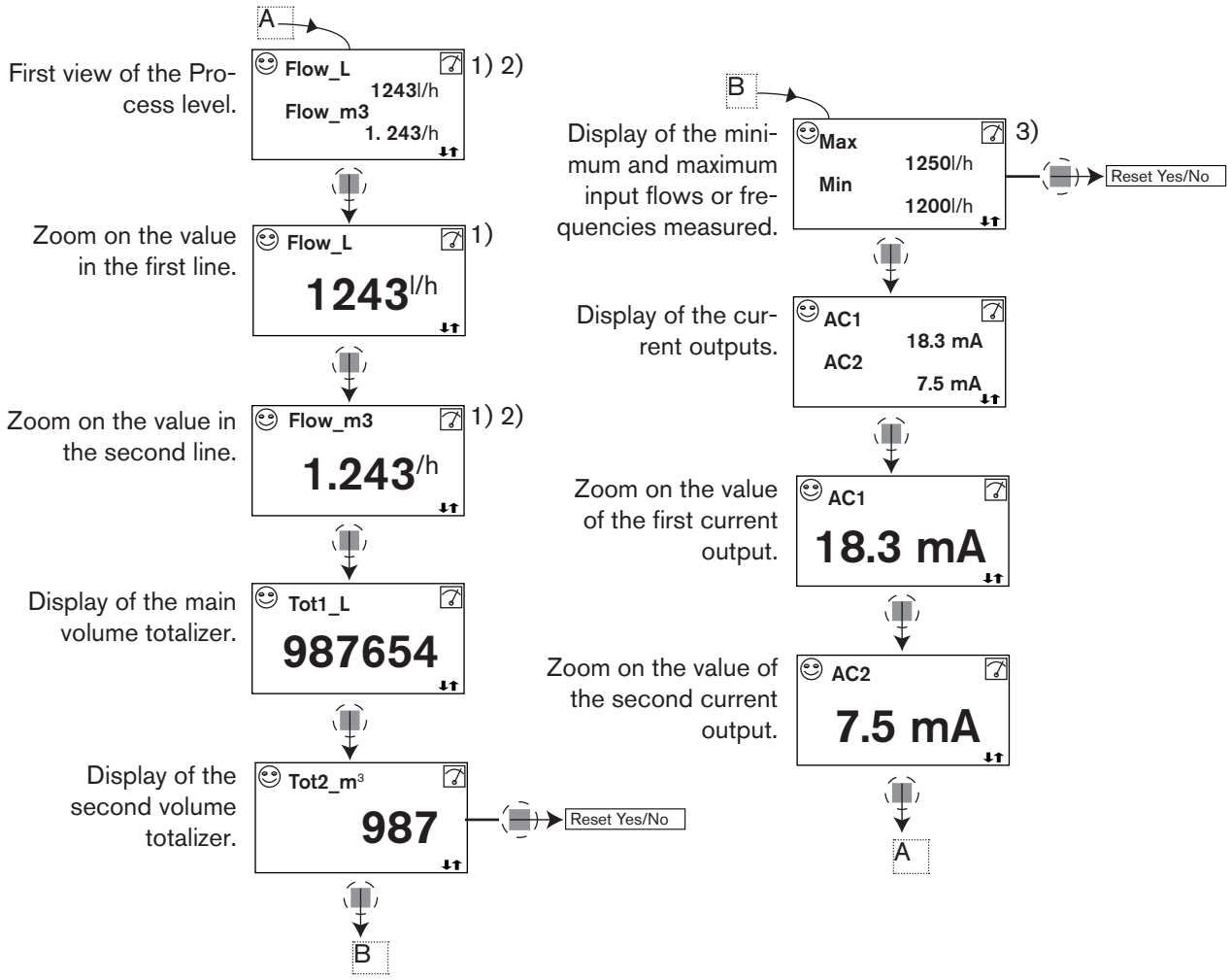


Figure 38 : Position of the icons and description of the LEDs

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: ▪ , associated with ⚠: see chap. 9.14.2 and chap. 10.3 ▪ , associated with ERR: see chap. 9.14.2 and chap. 10.3
	The device is measuring. The alternative icons in this position are: ▪ HOLD flashing: HOLD mode activated (see chap. 9.13.1) ▪ T : 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
ERR	"error" message; See chap. 9.14.2 and chap. 10.3

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9.9. Process level



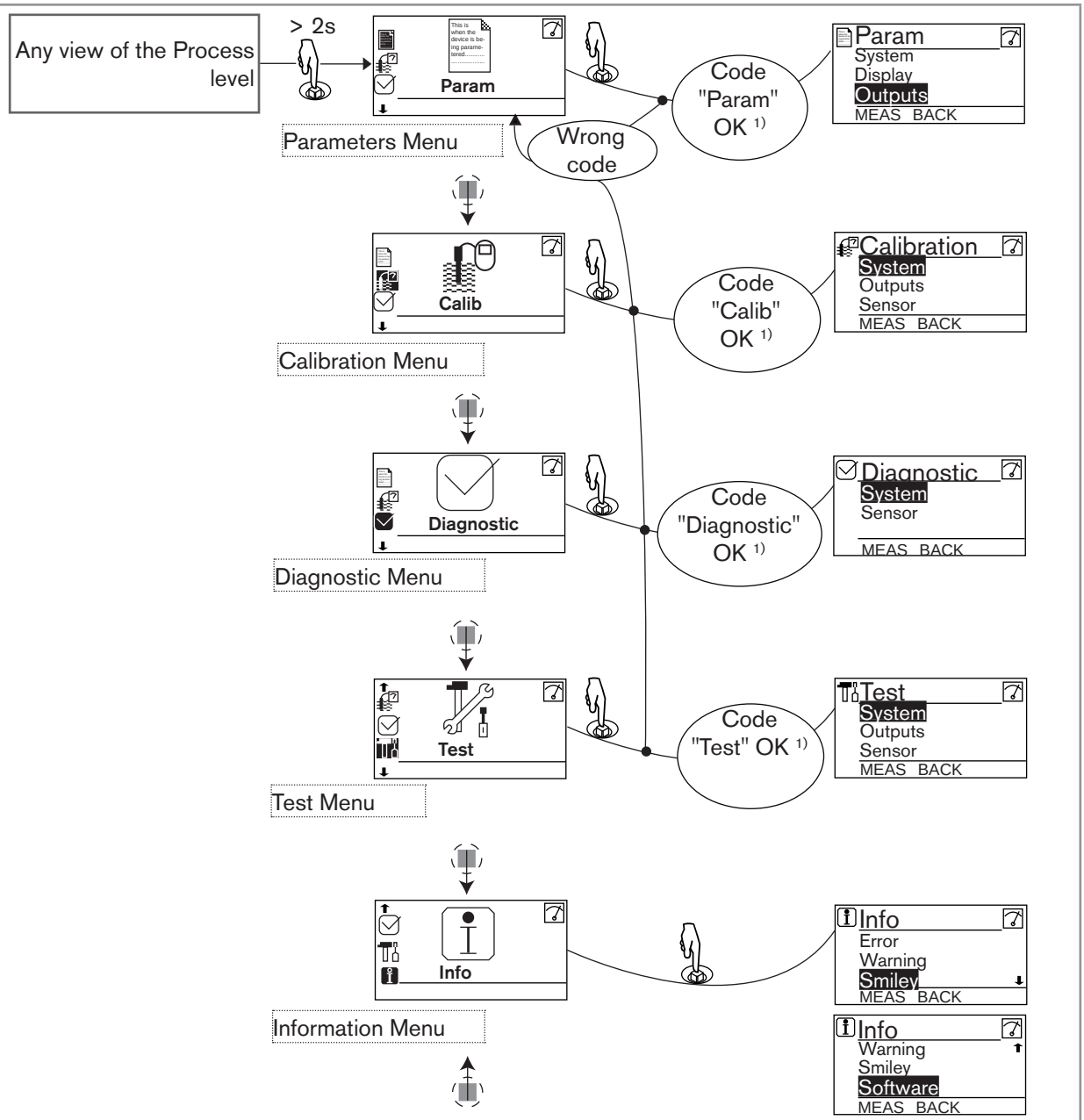
[1] These displays appear if line 1 and line 2 are activated. Only line 1 is activated by default. To activate/deactivate these displays or choose the parameters to be displayed, see chap. 9.12.4.

[2] Only the time unit is displayed when the PVAR chosen is "Flow_m3", "Flow_gal" or "Flow_lgal".

[3] Display of the minimum and maximum flow rates in the Process level is deactivated by default. To activate it, see chap. 9.12.6

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9.10. Accessing the Configuration level



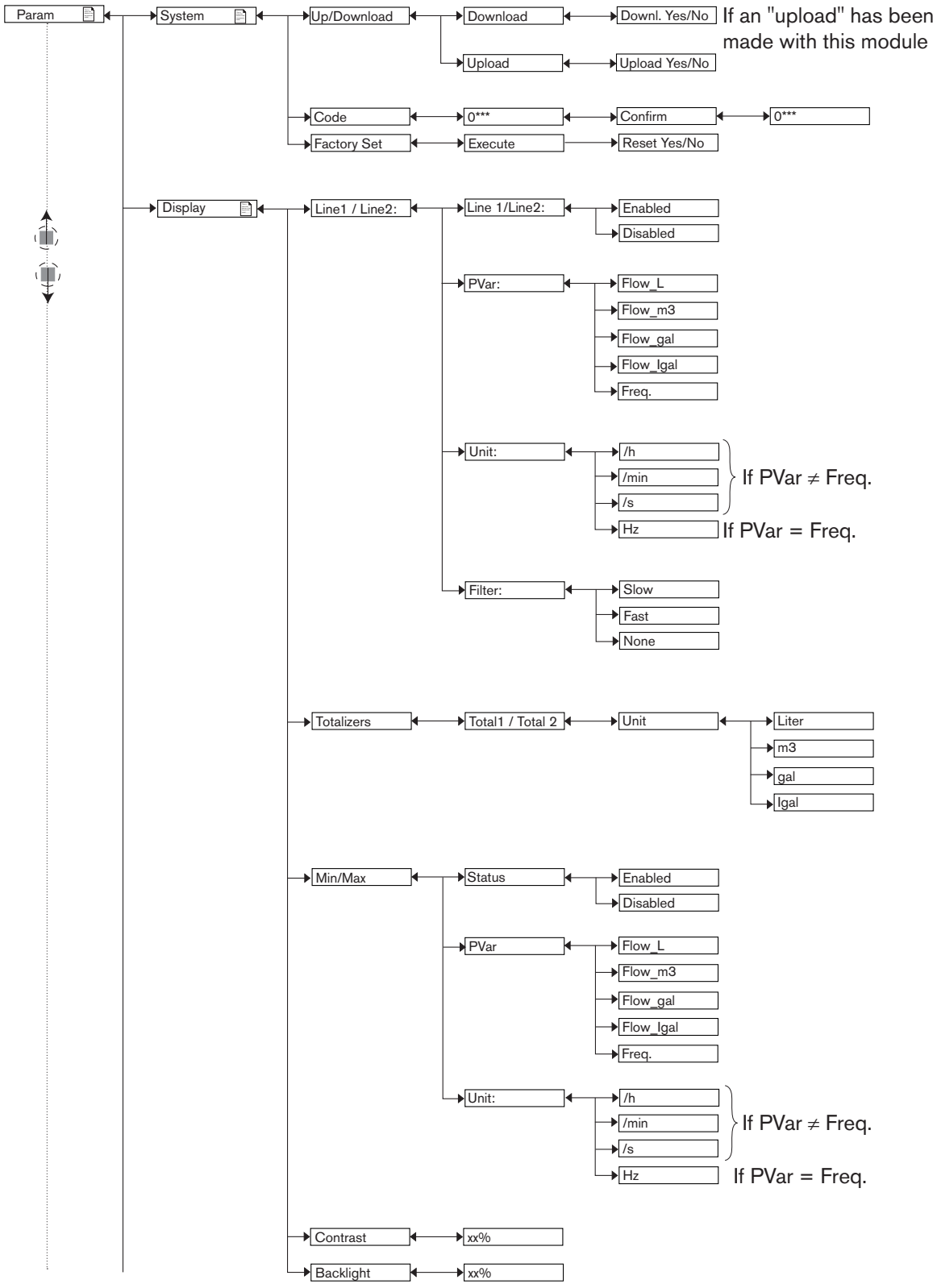
1) Default code "0000"

→ See chap. 9.11 for the detailed menu functions

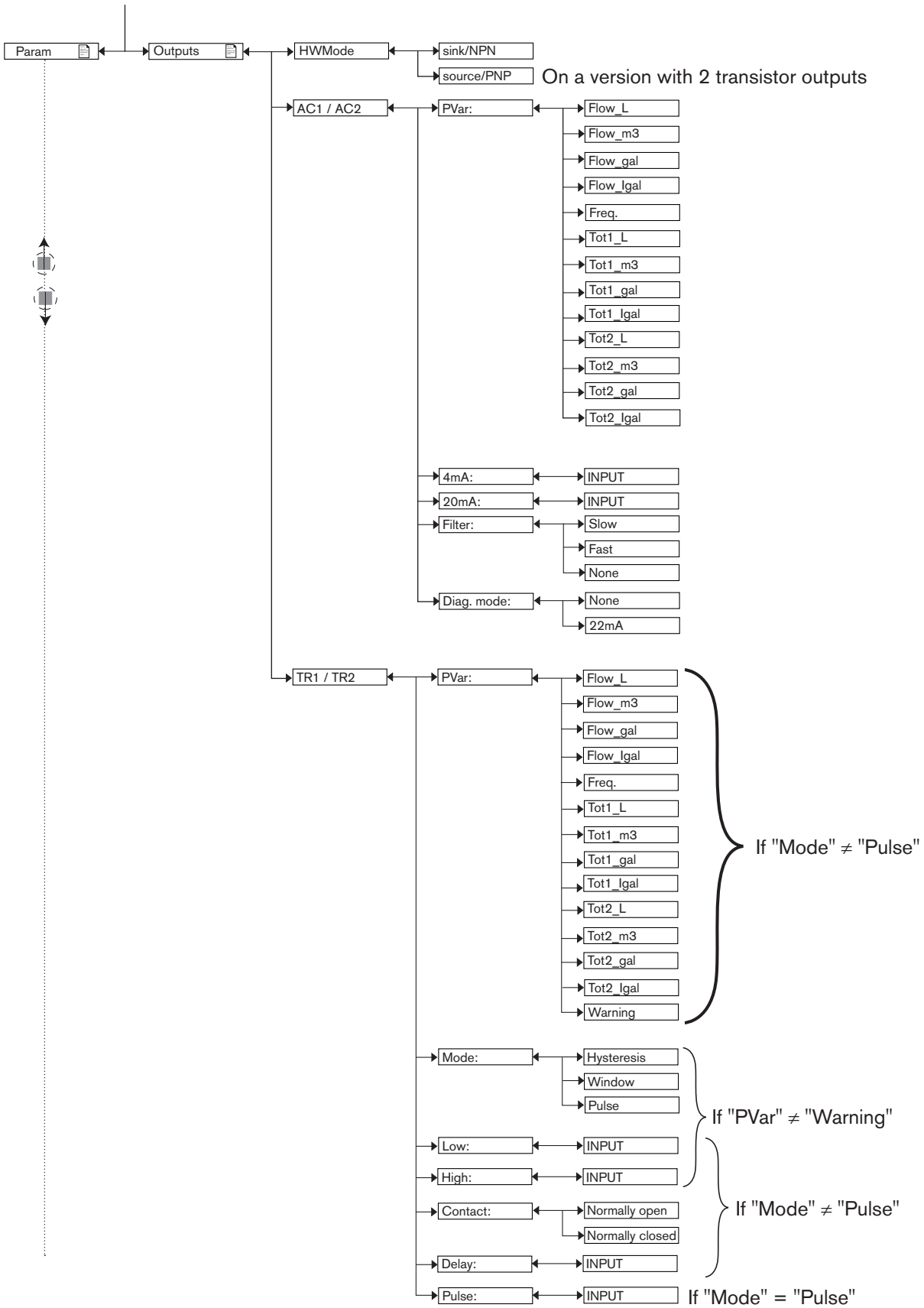
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9.11. Structure of the Configuration menus

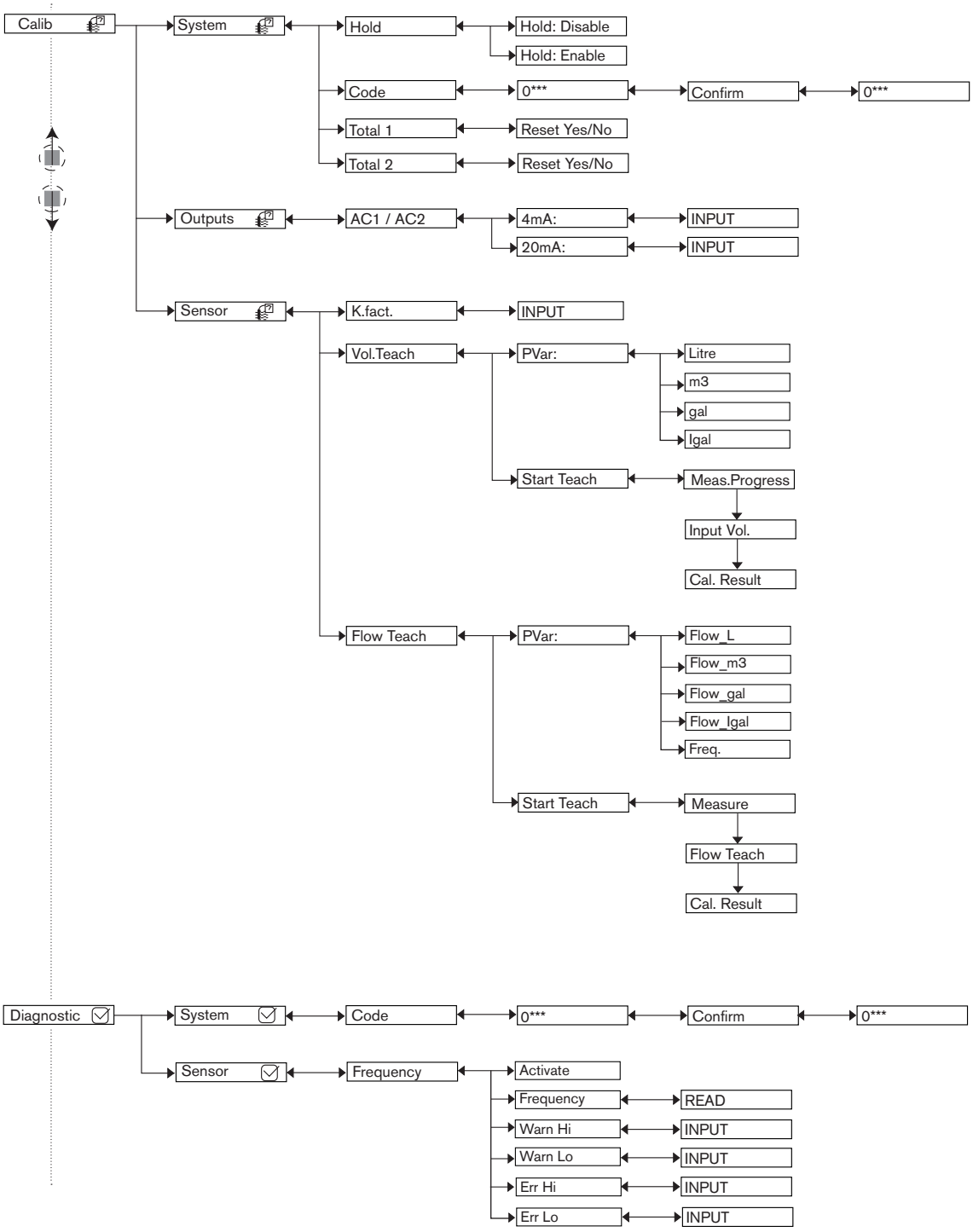
See chap. 9.10 to access the Configuration level.



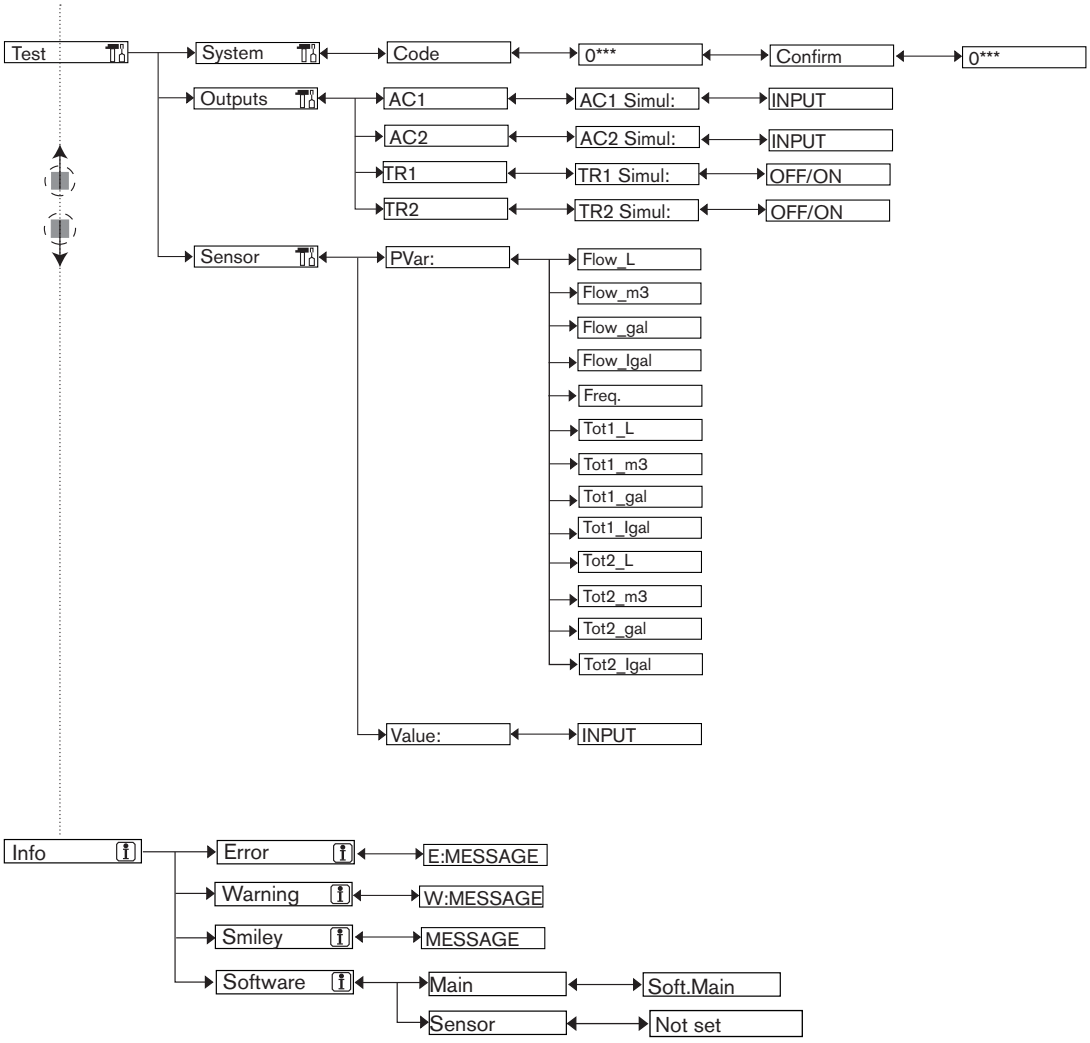
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9.12. Parameters Menu

9.12.1. Transferring data from one device to another

See chap. 9.10 to access the Param menu.

This function is only possible with a display module with software version V2.

- The software version of the display module is displayed when the display module is turned on.

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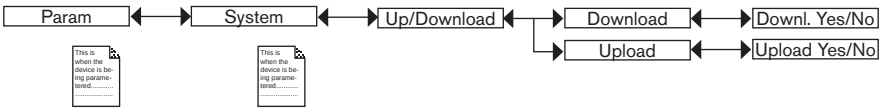
The data transfer is impossible from a device having an acquisition / conversion module for the process values measured with a V2 software version to a device having an acquisition / conversion module for the process values measured with a V1 software version.

- On each device, check the software version of the acquisition / conversion module for the process values measured, in the menu "Info -> Software -> Versions -> Main".

When transferring data from a device having an acquisition / conversion module for the process values measured with a V1 software version to a device having an acquisition / conversion module for the process values measured with a V2 software version, the following data are not transferred:

- the access codes to the menus,
- the wire mode of the outputs (fonction "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:

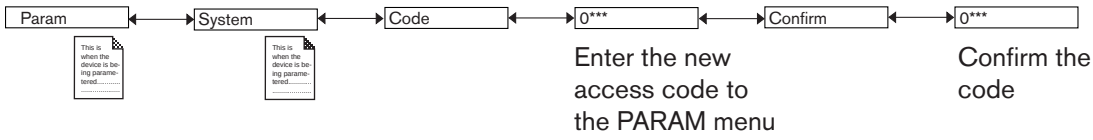
- user set data of the PARAM menu (except the date, the time, the contrast and brightness levels for the display),
- K factor of the fitting,
- user set data of the DIAGNOSTIC menu,
- the access codes to the menus.

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.

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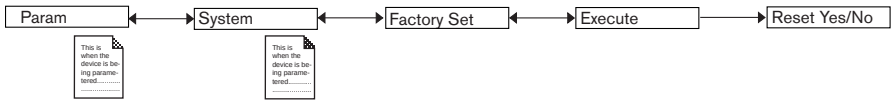
9.12.2. Modifying the PARAM menu access code

See chap. 9.10 to access the Param menu. The default access code is "0000".



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

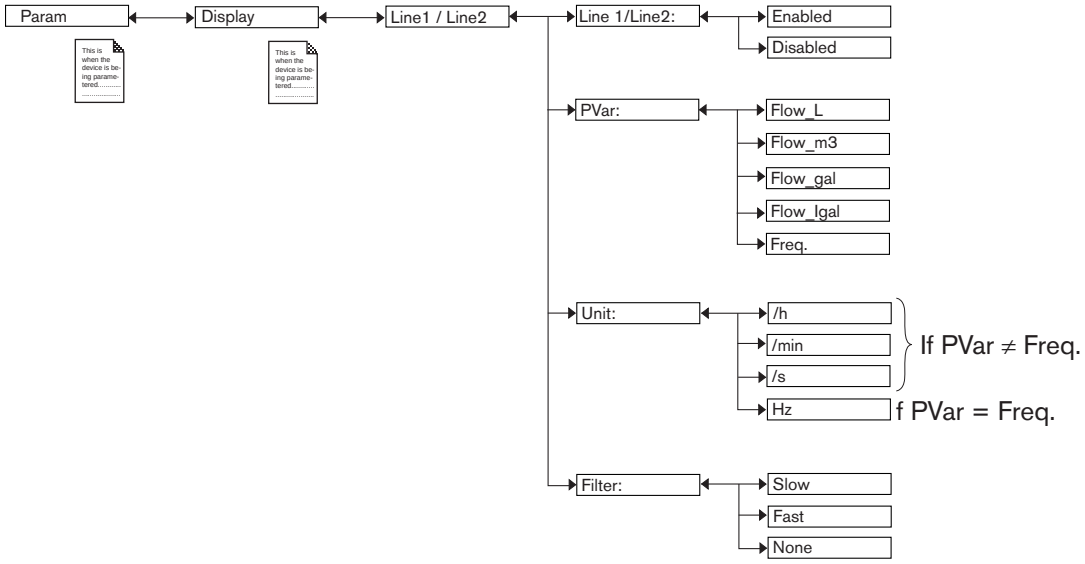
See chap. 9.10 to access the Param menu.



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 on lines 1 and 2 of the display module

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.

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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.

- If the flow rate measured is 0 ≤ volume unit/h ≤ 9999, choose the time unit “/h” so that the display indicates a flow rate in volume units/h.
- If the flow rate measured is 1 ≤ volume unit/min ≤ 9999, choose the time unit "/min" so that the display indicates a flow rate in volume units/min.
- If the flow rate measured is 1 ≤ volume unit/s ≤ 9999, choose the time unit "/s" so that the display indicates a flow rate in volume units/s.
- If the flow rate measured is 0 ≤ volume unit/min or volume unit/s < 1, the display indicates a flow rate in volume units/h, regardless of the time unit chosen.
- If the flow rate measured is ≥ 10000 volume unit/h, the display indicates a flow rate 166,66 ≥ volume units/min ≤ 9999, regardless of the time unit chosen.
- If the flow rate measured is ≥ 10000 volume unit/min, the display indicates a flow rate 166,66 ≥ volume units/s ≤ 9999, regardless of the time unit chosen.
- If the flow rate measured is 1 ≤ volume unit/min < 60, the display indicates a flow rate in volume units/min, even if the time unit chosen is "/s".

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**

Attenuate the measurement variations on the display

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

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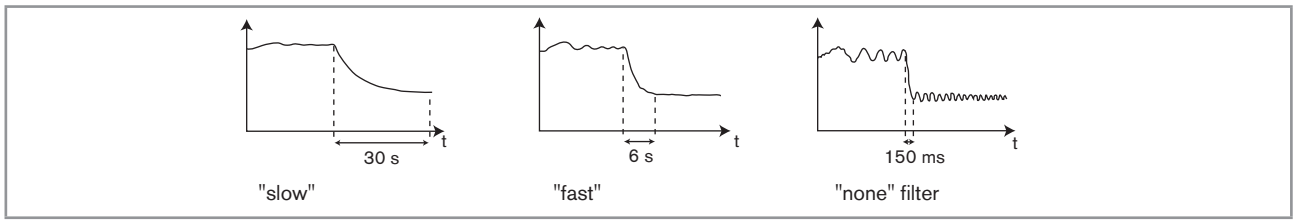
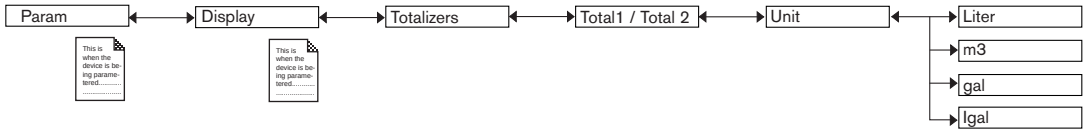


Figure 39 : Filter curves

9.12.5. Choosing the units for the totalizers displayed in Process level

See chap. 9.10 to access the Param menu.

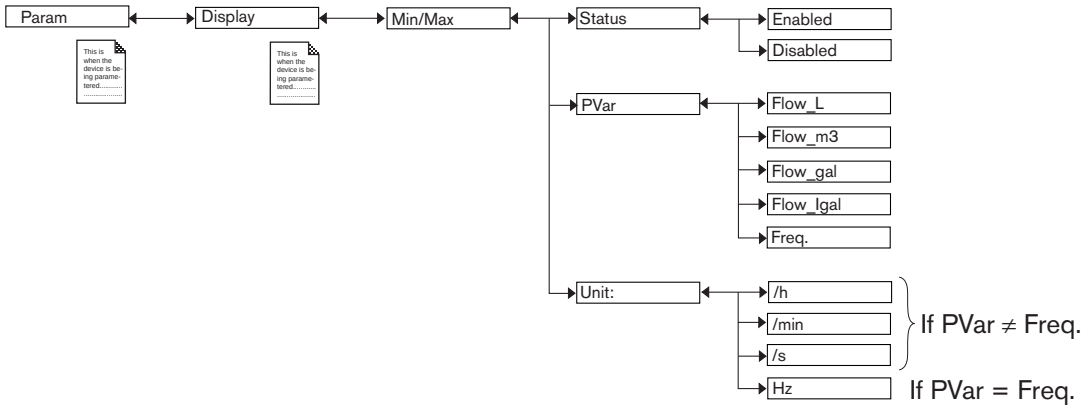
The totalizers are saved if a power cut occurs.



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 of which are displayed in Process level.

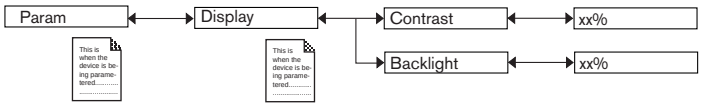
UNIT: Choose the preferred time unit in which the min. and max. measured flow rate values are displayed.

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.

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9.12.7. Setting the parameters for the reading comfort level of the data displayed

See chap. 9.10 to access the Param menu.



Set each percentage using and .

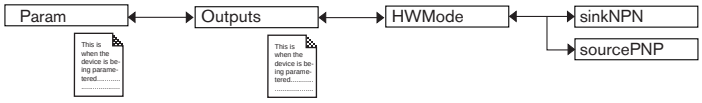
CONTRAST: Choose the display contrast level (as a %).

BACKLIGHT: Choose the light intensity of the display (as a %) on a version with 2 fixed connectors only.

These settings only affect the display module. They are not factored in during 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 Figure 21.

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.

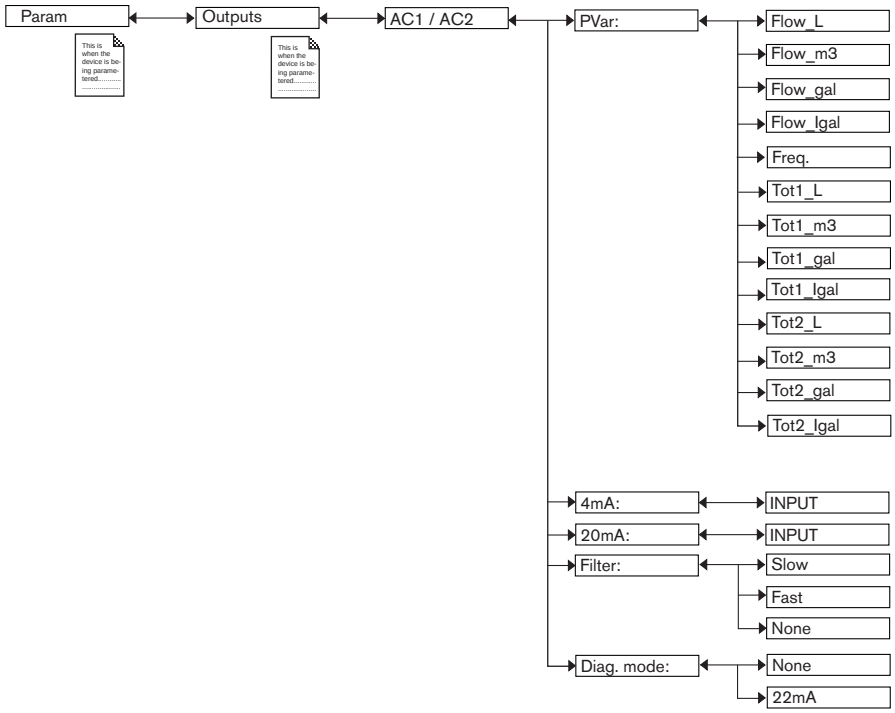
If you choose "source PNP", the current outputs must be wired in sourcing mode and the transistor outputs in PNP mode.

See the wiring for the outputs in chap. 8.3.

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.

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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: P_1 may be greater than P_2 : if this is the case, the signal is inverted and range P_1-P_2 corresponds to the range for the 20-4 mA current.

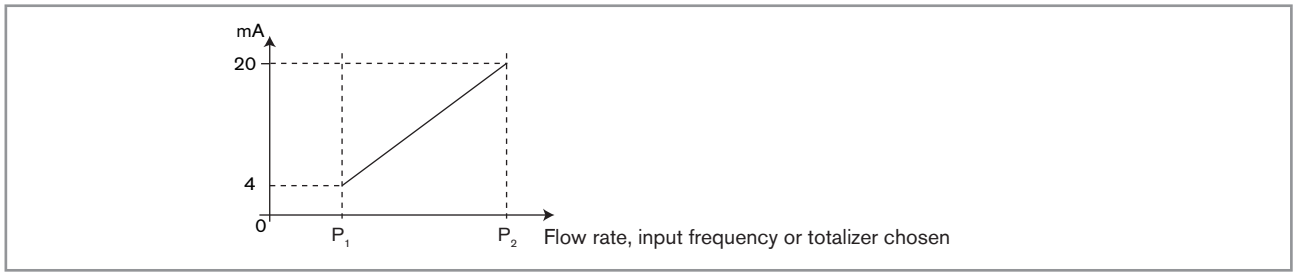


Figure 40 : 4-20 mA current according to the chosen physical parameter or totalizer

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. See “Current output parameters”, next page.

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. See “Current output parameters”, next page.

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

The damping for the current outputs is similar to the damping of the display. See Figure 39.

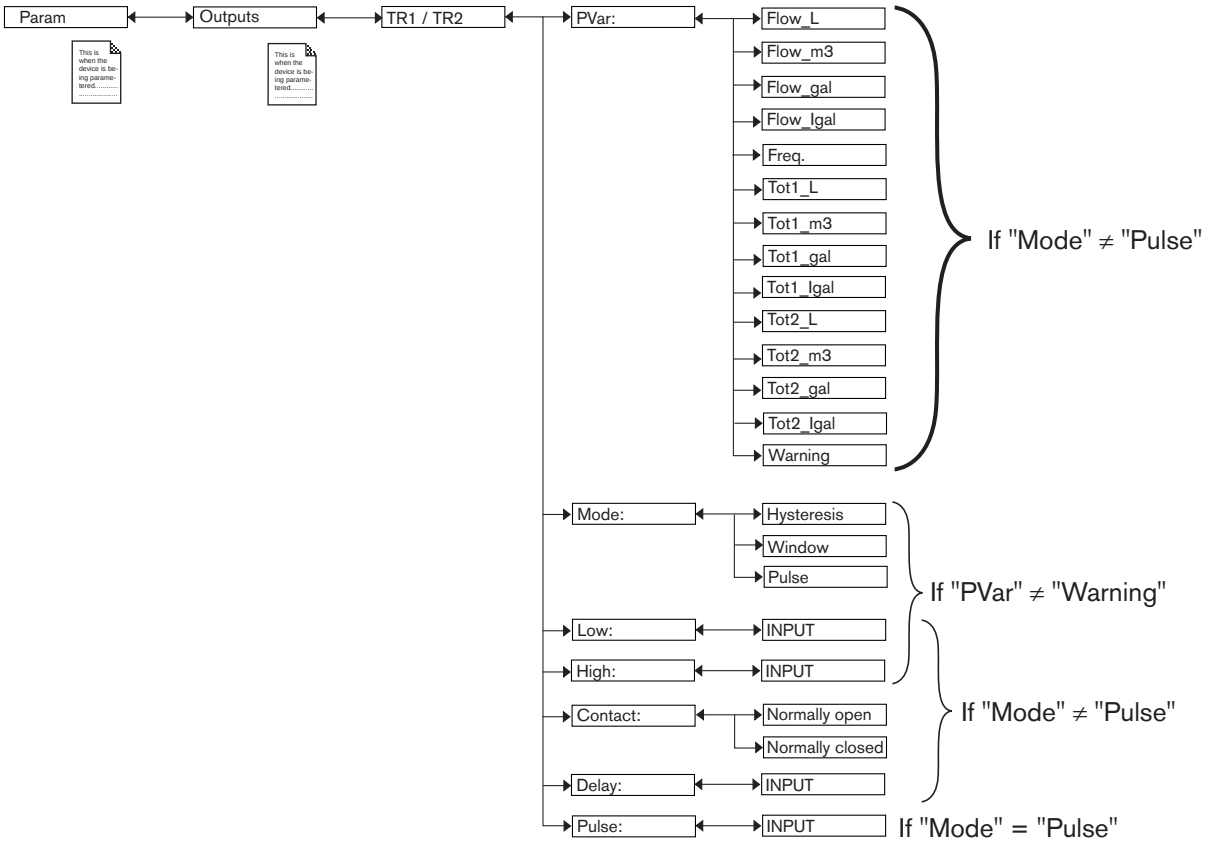
DIAG MODE: choose to emit a current of 22 mA on the current output selected when an "error" event related to diagnostics (see chap. 9.14.2 and) is generated by the device or allow the current output to operate normally (choose "none").

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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 transistor output 1 or transistor output 2 respectively or associate the “warning” event (see chap. 9.14.2) with transistor output 1 or transistor output 2 respectively. 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.

MODE: Choose either the hysteresis or window operating mode, for transistor output 1 or transistor output 2, or operating on pulse mode (choice “Pulse”) for transistor output 1 or transistor output 2.

LOW: enter the low switching threshold value for transistor output 1 or transistor output 2, as well as the flow rate time unit. See details on next page.

HIGH: enter the high switching threshold value for transistor output 1 or transistor output 2, as well as the flow rate time unit. See details on next page.

CONTACT: choose the type of off-position (normally open, NO, or normally closed, NC) for transistor output 1 or transistor output 2. See details on next page.

DELAY: choose the value of 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.

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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 transistor output 1 or transistor output 2 respectively.

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.

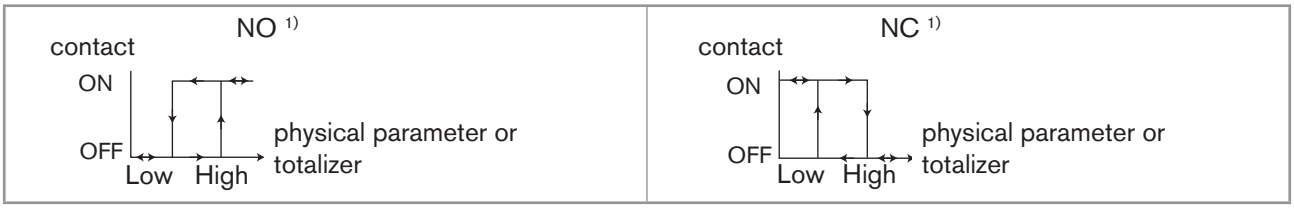


Figure 41 : Hysteresis operating

NO = Normally open ; NC = Normally closed

Window operating (choice "Window"):

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



Figure 42 : Window operating

1) NO = Normally open ; NC = Normally closed

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

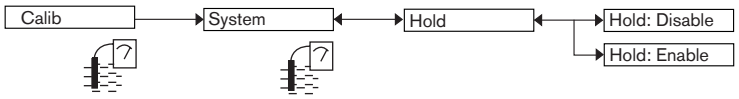
- A “Warning” event is emitted and the message “W:TRnPu too big” is displayed when the volume entered multiplied by the K factor of the device > 1000000.
- A “Warning” event is emitted and the message “W:TRnPu 1:1:set” is displayed when the volume entered multiplied by the K factor of the device < 1. In this case, the pulse frequency is forced to the value of the input frequency.

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9.13. Calibration menu

9.13.1. Activating/deactivating the Hold function

See chap. 9.10 to access the Calib menu.



The Hold mode is automatically deactivated when the device restarts after a power interruption, if the Hold mode was activated at the moment of the power cut-off.

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

To activate the HOLD mode:

→ access the "HOLD" function;

→ choose "enabled";

→ confirm by "OK".

In practice, when the device is in Hold mode:

- the HOLD 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.

To deactivate the HOLD mode:

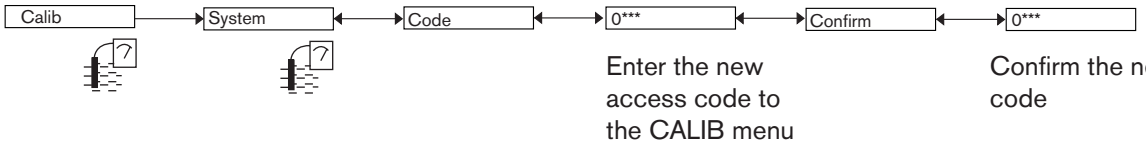
→ access the "HOLD" function;

→ choose "disabled";

→ confirm by "OK".

9.13.2. Modifying the Calibration menu access code

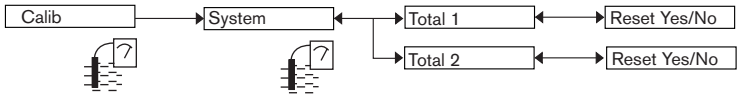
See chap. 9.10 to access the Calib menu. The default access code is "0000".



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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.

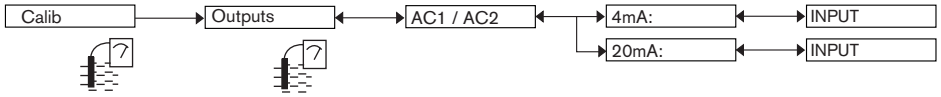
9.13.4. Adjusting the current outputs

WARNING

Risk of injury due to wrong adjustment.

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

See chap. 9.10 to access the Calib menu.



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".

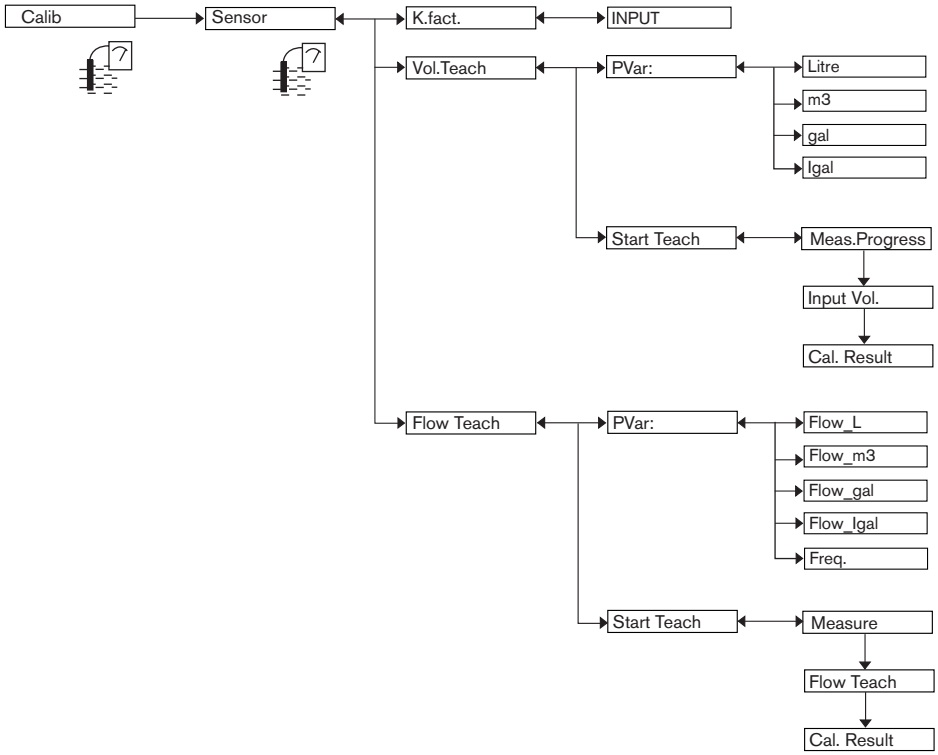
20mA: Adjust the span of current output 1 or current output 2.

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".

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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.

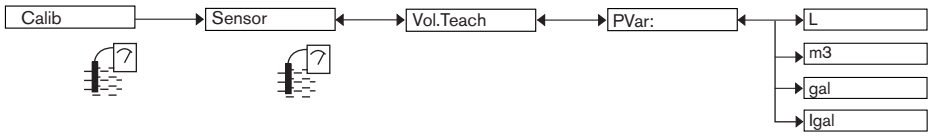
VOL.TEACH: Determine the fitting K factor using a teach-in procedure depending on a volume. See details of the procedure below.

FLOW TEACH: Determine the fitting K factor using a teach-in procedure depending on the flow rate. See details of the procedure on page 59

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

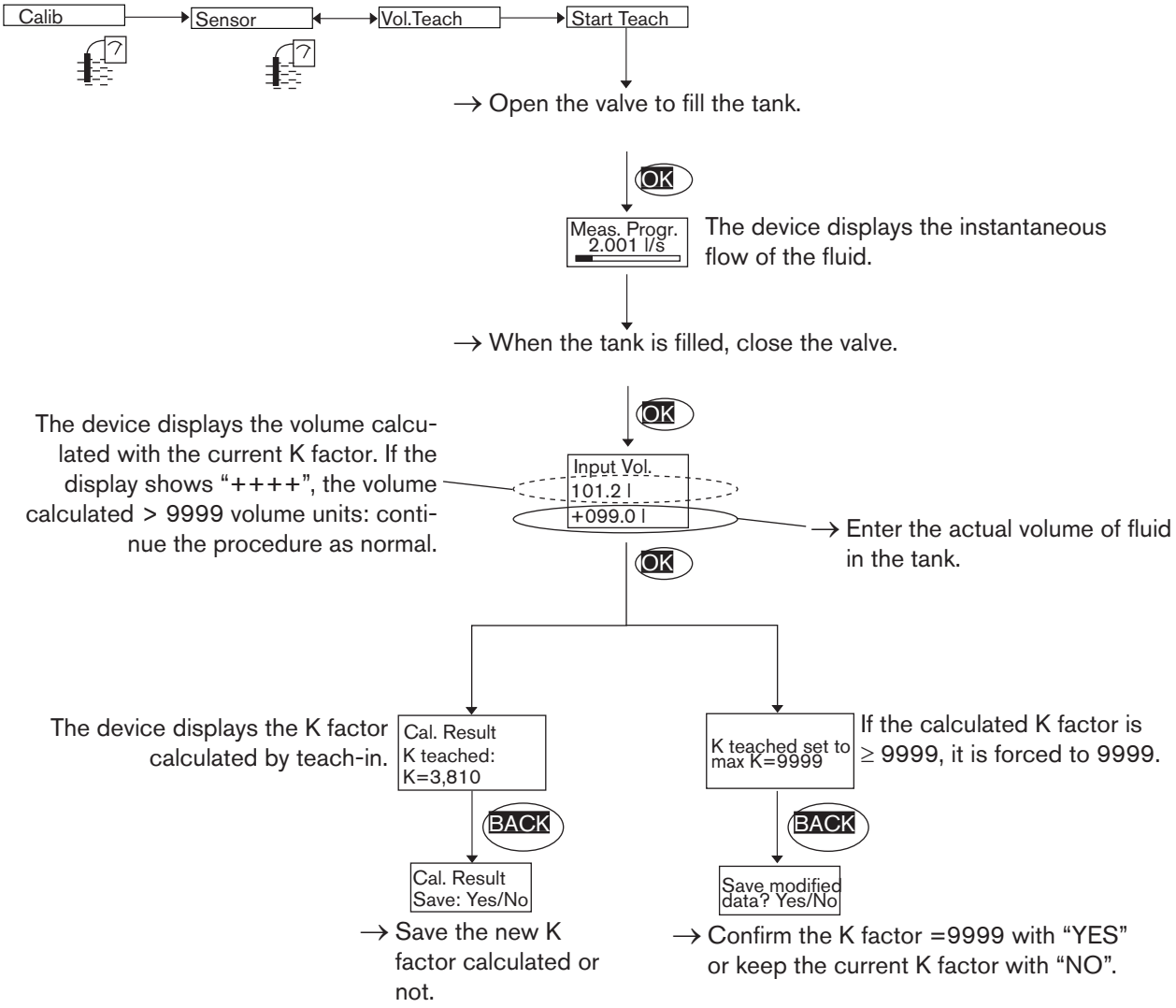
→ Prepare a tank capable of containing 100 litres, for example.

→ Choose the volume unit in which the teach-in is run:



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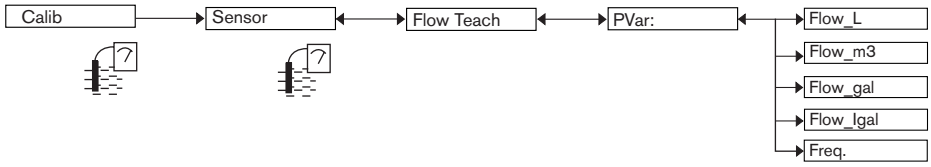
→ Run the teach-in:



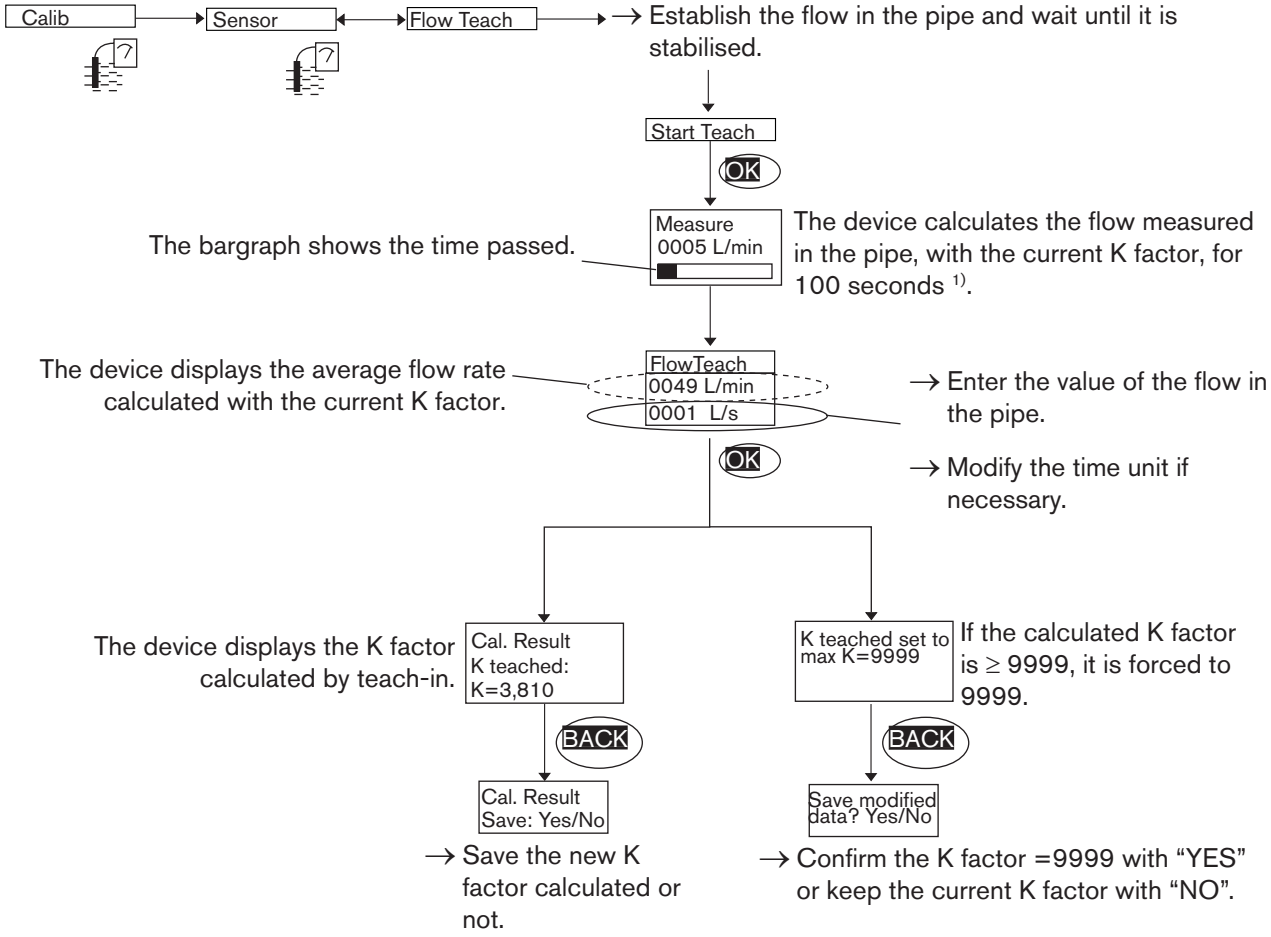
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Detailed procedure of a Teach-in by flow rate ("Flow.Teach" function in the "Sensor" menu)

→ Choose the volume unit in which the teach-in is run:



→ Run the teach-in:



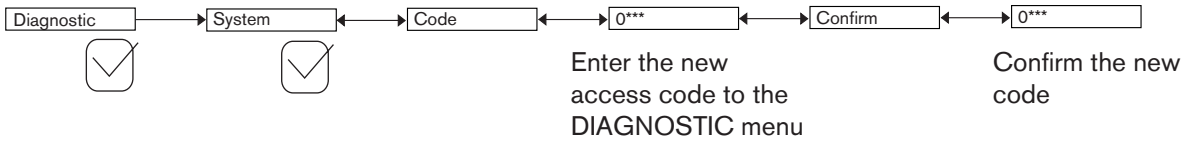
1) Measurement can be suspended at any time by selecting "OK".

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9.14. Diagnostic menu

9.14.1. Modifying the Diagnostic menu access code

See chap. 9.10 to access the Diagnostic menu. The default access code is "0000".



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.

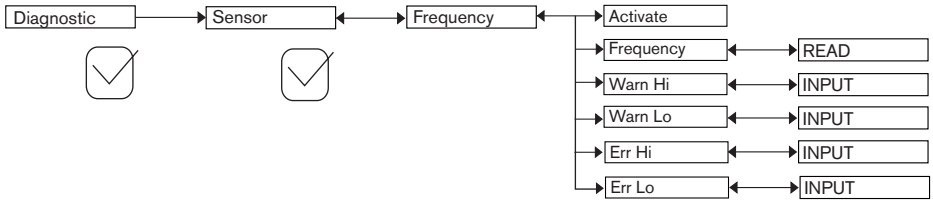
The sensor input frequency f is used to determine the flow Q in the pipes using the formula f = KQ (the K factor being expressed in pulses/s and the flow rate Q in l/s).

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.

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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 Diagnostic menu to read the measured input frequency.

→ if necessary, clean the paddle or the oval gears.

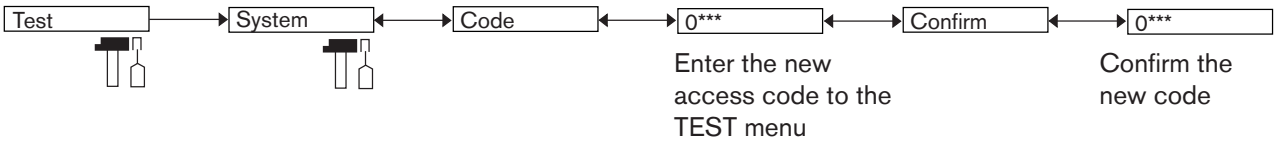
→ if necessary, check the process.

- The "warning" event may also be associated with one or other 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 other 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. Test menu

9.15.1. Modifying the Test menu access code

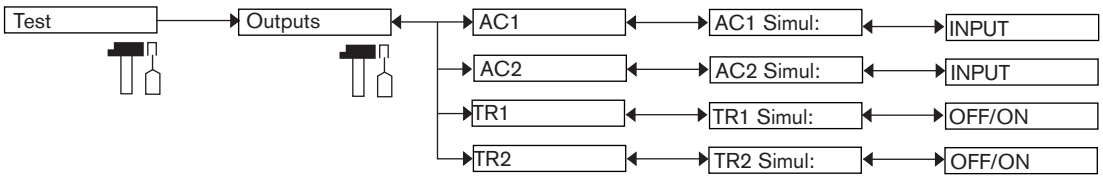
See chap. 9.10 to access the Test menu. The default access code is "0000".



9.15.2. Checking the outputs functions

See chap. 9.10 to access the Test menu.

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".

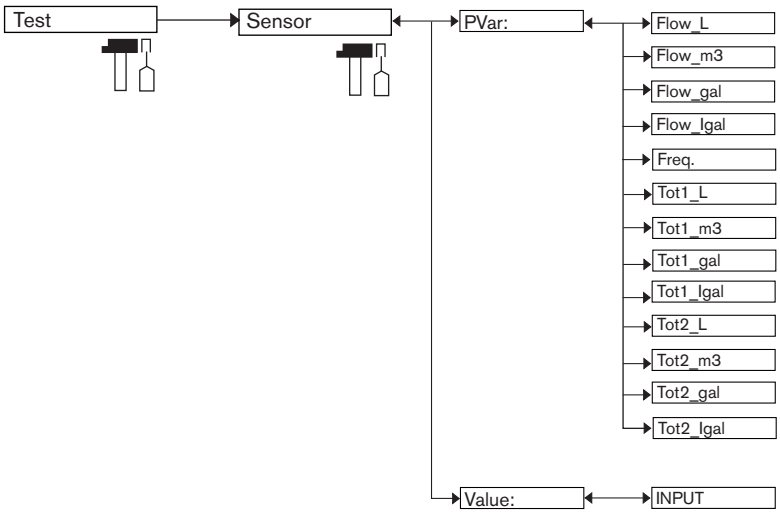
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9.15.3. Checking the outputs behaviour

See chap. 9.10 to access the Test menu.

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

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.

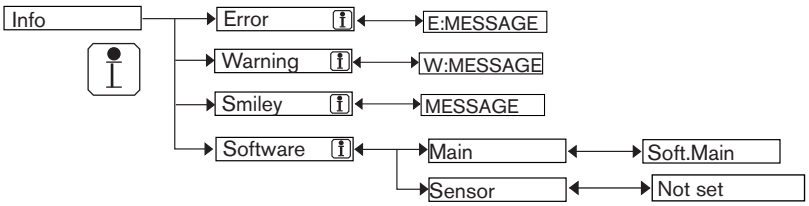


PVAR: choose the physical parameter or the totalizer to be tested.

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. Information Menu

See chap. 9.10 to access the Info menu.



This menu makes it possible 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
- the software version (function “SOFTWARE”) of the acquisition/conversion board for the physical parameters measured.

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

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.

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

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.

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. If you encounter problems

Red LED	Current output	Transistor output	Icon	Message displayed in the Info menu	Possible cause	Recommended action
ON	22 mA [1)]	depending on thresholds	ERR +	"Sensor not found"	The connection to the measurement module is interrupted.	→ Switch the power supply off then on again. → If the error persists, return the device to Bürkert.

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Red LED	Current output	Transistor output	Icon	Message displayed in the Info menu	Possible cause	Recommended action
ON	22 mA [1]	depending on thresholds	ERR + ☺	"TR EE Fact Read" "TR EE User Read"	Parameter reading error.	→ 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 [1]	depending on thresholds	ERR + ☺	"TR EE UserWrite"	Parameter saving error.	→ 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	ERR + ☹	"E:Frequency"	The input frequency is out of range. 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).	→ 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:Frequency"	The input frequency is out of range. This message is displayed if monitoring of the input frequency is activated, depending on the set 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.

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Red LED	Current output	Transistor output	Icon	Message displayed in the Info menu	Possible cause	Recommended action
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.

[1] if the DIAG MODE 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.

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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	552111
Snap ring	619205
Nut	619204

Accessory	Order code
Display module	559168
Black blank cover with EPDM seal	560948
Black blank cover with EPDM seal	561843
Transparent cover with EPDM seal	560948
5-pin female M12 female connector, moulded on shielded cable (2 m)	438680
5-pin male M12 connector, to be wired	560946
5-pin male M12 connector, moulded on shielded cable (2 m)	559177

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

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14. DISPOSAL OF THE PRODUCT

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

NOTE

Damage to the environment caused by products contaminated by fluids.

- Keep to the existing provisions on the subject of waste disposal and environmental protection.

note

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

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