bürkert
FLUID CONTROL SYSTEMS

Type 8032 / SE32

Flowmeter / Flow transmitter / Flow threshold detector
Durchflussmesser / Durchflusstransmitter / Durchflussschwellendetektor
Débitmètre / Transmetteur de débit / Détecteur à seuil du débit

Operating Instructions

Bedienungsanleitung
Manuel d'utilisation

MAN 1000307483 EN Version: FStatus: RL (released | freigegeben) printed: 27.10.2023

Operating Instructions 2310/07_EU-ML 00560375 / Original_EN

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1 ABOUT THESE OPERATING INSTRUCTIONS

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

These Operating Instructions contain important safety information.

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

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

1.1 Symbols used

DANGER

Warns against an imminent danger.

- Failure to observe this warning will 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.

CAUTION

Warns against a possible risk.

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

NOTE

Warns against material damage.

indicates additional information, advice or important recommendations.

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

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

→ Indicates a procedure to be carried out.

1.2 Definition of the word "device"

The word "device" used within these Operating Instructions refers to:

- the flowmeter / the flow threshold detector type 8032
  or
- the flow transmitter / the flow threshold detector type SE32.

2 INTENDED USE

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

The flowmeter / flow threshold detector type 8032 or the flow transmitter / flow threshold detector type SE32 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 Operating Instructions.
- Never use this device for security applications.
- Protect the device from electromagnetic perturbations, ultraviolet radiations and, when installed outside, from the effects of climatic conditions.
- Requirements for safe and proper operation are proper transport, storage and installation as well as careful operation and maintenance.
- Only operate a device in perfect working order.

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 product.

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

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 high fluid temperatures.

- 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 electrical voltage.

- If a 12...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.
- Do not unscrew the cover of a powered device.
- 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.

Various dangerous situations

To avoid injury:

- Do not use the device in explosive atmospheres.
- Do not use the device in an environment incompatible with the materials it is made of.
- Do not use fluid that is incompatible with the materials the device is made of.
- Do not make any modifications to the device.
- Do not subject the device to mechanical loads.
- Prevent any unintentional power supply switch-on.
- Use the device only if in perfect working order and in compliance with the instructions provided in the Operating Instructions.
- Only qualified and skilled staff can carry out the installation and maintenance work.
- Guarantee a defined or controlled restarting of the process, after a power supply interruption.
- Observe the general technical rules.

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 them (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: country.burkert.com.

4.2 Warranty conditions

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

4.3 Information on the Internet

You can find the Operating Instructions and technical data sheets regarding the type 8032 and the type SE32 at: country.burkert.com.

5 DESCRIPTION

5.1 Construction of the SE32

The SE32 is a flow transmitter / flow threshold detector with display.

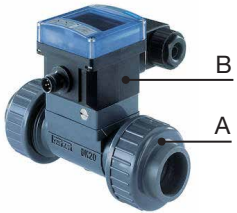
In a flow transmitter version, the SE32 has:

- 1 current output and 1 relay output or
- 1 current output

In a threshold detector version, the SE32 has 1 or 2 on/off outputs, i.e.:

- 1 or 2 transistor output(s) NPN/PNP or
- 1 relay output

5.2 Construction of the 8032

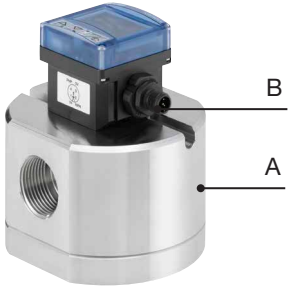


A: Sensor-fitting type S030 including the paddle-wheel flow sensor.

Operating Instructions for the S030 sensor-fitting are available under country.burkert.com.

B: Flow transmitter / flow threshold detector type SE32 (see chapter 5.1).

5.3 Construction of the SE32 with sensor-fitting S077

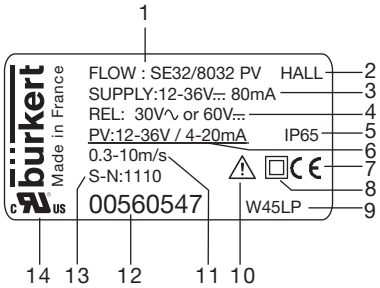


A: Sensor-fitting type S077 including the flow sensor with oval gears.

Operating Instructions for the S077 sensor-fitting are available under country.burkert.com.

B: Flow transmitter / flow threshold detector type SE32 (see chapter 5.1).

5.4 Description of the rating plate



1. Measured process value and type of the device
2. Type of sensor
3. Power supply with maximum current consumption
4. Data of the on/off output
5. Protection class of the device
6. Data of the current output
7. Conformity marking
8. Symbol showing that the system is protected with a double insulation or a reinforced insulation
9. Manufacturing code
10. Warning:
    Before using the device, take into account the technical specifications given in the Operating Instructions
11. Measurement range of the flow rate
12. Article number
13. Serial number
14. Certification

Fig. 1: Rating plate (example)

5.5 Symbols on the device

Symbol	Description
	Direct current
	Alternating current
	Earth terminal
	Protective conductor terminal

6 TECHNICAL DATA

6.1 Technical data of the SE32

6.1.1 Conditions of use

Ambient temperature (in operation)	–10 °C...+60 °C
Air humidity	< 80 %, non condensated
Height above sea level	2000 m max.
Operating conditions	Continuous
Equipment mobility	Fixed
Use	Indoor and outdoor (Protect the device against electro-magnetic interference, ultraviolet rays and, when installed outdoors, against the effects of climatic conditions)
Installation category	Category I according to UL 61010-1 (UL device)
	Category II according to EN 61010-1 (non UL device)
Degree of pollution	Degree 2 according to UL/EN 61010-1
Protection class according to IEC/ EN 60529	IP65 [1], device wired and connectors plugged-in and tightened or sealed

[1] not evaluated by UL

6.1.2 Standards and directives

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

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

UL-Certification

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

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

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

6.1.3 Dimensions

→ Please refer to the technical data sheet regarding the type SE32, available at: country.burkert.com

6.1.4 Material data

Part	Material
Housing / cover	PC, glass fiber reinforced
Front panel folio / Screws	Polyester / stainless steel
Cable plug / M12 connector	PA / PA or CuZn, nickel-plated
Rating plate	Polyester

6.1.5 Electrical data

Power supply	• 12...36 V DC • Filtered and regulated • Oscillation rate: ±10 % • The device must be connected permanently to a Safety Extra-Low Voltage circuit (SELV circuit) or Protective Extra Low Voltage (PELV circuit).
Specifications of the power source (not supplied)	• Energize the device through a Limited Power Source (LPS) according to standards UL/EN 62368-1 or through a limited-energy circuit according to standards UL/EN 61010-1, Paragraph 9.4.

Maximum current consumption	
• Version with transistor output	• 50 mA
• Version with 1 single relay output	• 70 mA
• Version with 1 single current output	• 70 mA
• Version with 1 relay and 1 current outputs	• 80 mA
Protection against polarity reversal	Yes
Transistor output	• NPN and/or PNP, 700 mA max., operation and thresholds can be parametered - NPN output: 0.2...36 V DC - PNP output: supply voltage • protection against short circuits

Relay output (non UL device)	
• Single	• 3 A / 250 V AC or 3 A / 30 V DC, operation and thresholds can be parametered
• Relay output + 4...20 mA current output	• 3 A / 48 V AC or 3 A / 30 V DC, operation and thresholds can be parametered
Relay output (UL device)	3 A / 30 V AC / 42 Vpeak or 1 A / 60 V DC, operation and thresholds can be parametered To use the relay outputs in a wet location, observe the following safety instruction.

DANGER

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

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

4...20-mA-current output (for flow transmitter version)	
• Accuracy	• ±0.5 %
• Wiring	• 4 wires
• Loop resistance	• 1300 Ω at 36 V DC, 1000 Ω at 30 V DC, 700 Ω at 24 V DC, 450 Ω at 18 V DC, 200 Ω at 12 V DC
• Galvanically insulated	• Yes
• 4 mA adjustment	• 3...5 mA
• 20 mA adjustment	• 18.5...21.5 mA
• Response time (10 % up to 90 %)	• 3 s with filter 2 (default setting)

6.2 Technical data of the 8032

6.2.1 Conditions of use

→ See conditions of use of the SE32, chapter 6.1.1, page 11.

6.2.2 Standards and directives

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

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

Conformity to the Pressure Equipment Directive

→ Make sure that the device materials are compatible with the fluid.

→ Make sure that the pipe DN is adapted for the device.

→ Observe the fluid nominal pressure (PN) for the device. The nominal pressure (PN) is given by the device manufacturer.

The device conforms to Article 4, Paragraph 1 of the Pressure Equipment Directive 2014/68/EU under the following conditions:

- Device used on a pipe (PS = maximum admissible pressure, in bar; DN = nominal dimension of the pipe, in mm)

Type of fluid	Conditions
Fluid group 1, Article 4, Paragraph 1.c.i	DN ≤ 25
Fluid group 2, Article 4, Paragraph 1.c.i	DN ≤ 32 or PSxDN ≤ 1000
Fluid group 1, Article 4, Paragraph 1.c.ii	DN ≤ 25 or PSxDN ≤ 2000
Fluid group 2, Article 4, Paragraph 1.c.ii	DN ≤ 200 or PS ≤ 10 or PSxDN ≤ 5000

UL-Certification

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

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

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

6.2.3 Dimensions

→ Please refer to the technical data sheets regarding the type 8032, available at: country.burkert.com

6.2.4 Material data

Part in contact with the medium	Material
• Sensor-fitting	• Refer to the Operating Instructions of the related sensor-fitting (S030)

→ Also see the material data of the type SE32, chapter 6.1.4, page 12.

6.2.5 Electrical data of the 8032

→ See electrical data of the SE32, chapter 6.1.5, page 12.

6.2.6 Fluid data

Pipe diameter	Depends on the sensor-fitting used. The appropriate diameter of an S030 sensor-fitting is determined using the flow/DN/fluid velocity diagrams in chapter 7.2.1.
Type of fluid	Refer to the Operating Instructions of the related sensor-fitting (S030)
Rate of solid particles	max. 1 %
Fluid temperature (see Fig. 2)	
• with S030 sensor-fitting in PVC	• 0 °C...+50 °C
• with S030 sensor-fitting in PP	• 0 °C...+80 °C
• with S030 sensor-fitting in stainless steel, brass or PVDF	• –15 °C...+100 °C
Fluid pressure	
• with S030 sensor-fitting in metal	• PN16 [1] max.
• with S030 sensor-fitting in plastic	• PN10 [1] max.

Flow rate measurement	
• Measuring range	• 0.3...10 m/s,
• Measurement deviation	
- with standard K-factor of the S030 sensor-fitting	- ±3 % of the measured value [2]
- with K-factor determined with a Teach-In procedure	- ±1 % of the measured value [2] (at the value of the Teach-In flow rate)
• Linearity [2]	• ±0.5 % of the full scale
• Repeatability [2]	• ±0.4 % of the measured value

[1] not evaluated by UL

[2] These values were determined in the following reference conditions: medium = water, water and ambient temperatures 20 °C, min. upstream and downstream distances respected, appropriate pipe dimensions

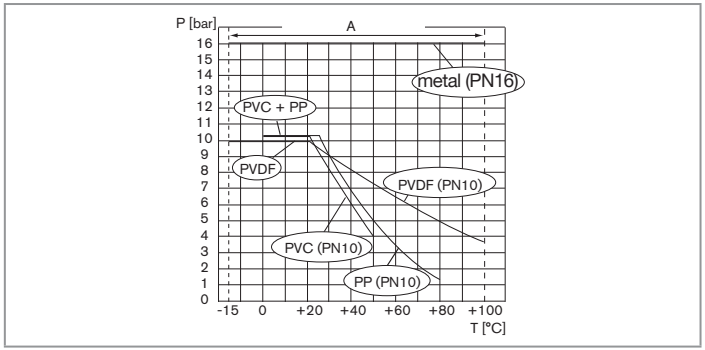


Fig. 2: Fluid temperature / pressure dependency of the 8032, depending on the material the S030 sensor-fitting is made of

6.3 Technical data of the SE32 with S077 sensor-fitting

6.3.1 Conditions of use

→ See conditions of use of the SE32, chapter 6.1.1, page 11.

6.3.2 Standards and directives

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

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

Conformity to the Pressure Equipment Directive

→ Make sure the device materials are compatible with the fluid.

→ Make sure the pipe DN is adapted for the device.

The device conforms to Article 4, Paragraph 1 of the Pressure Equipment Directive 2014/68/EU under the following conditions:

- Device used on a pipe (PS = maximum admissible pressure, in bar; DN = nominal diameter of the pipe, in mm)

Type of fluid	Conditions
Fluid group 1, Article 4, Paragraph 1.c.i	DN ≤ 25
Fluid group 2, Article 4, Paragraph 1.c.i	DN ≤ 32 or PSxDN ≤ 1000

Type of fluid	Conditions
Fluid group 1, Article 4, Paragraph 1.c.ii	DN ≤ 25 or PSxDN ≤ 2000
Fluid group 2, Article 4, Paragraph 1.c.ii	DN ≤ 200 or PS ≤ 10 or PSxDN ≤ 5000

6.3.3 Dimensions

→ Please refer to the technical data sheets regarding the type SE32 associated with S077 sensor-fitting, available at: country.burkert.com

6.3.4 Material data

Part in contact with the medium	Material
• Sensor-fitting	• Refer to the Operating Instructions of the related sensor-fitting (S077)

→ Also see the material data of the type SE32, chapter 6.1.4, page 12.

6.3.5 Electrical data

→ See electrical data of the SE32, chapter 6.1.5, page 12.

6.3.6 Fluid data

Type of fluid	Refer to the Operating Instructions of the related sensor-fitting (S077)
Fluid temperature	
• with S077 sensor-fitting in aluminium	• –20 °C...+80 °C
• with S077 sensor-fitting in stainless steel	• –20 °C...+120 °C
Max. fluid pressure	
• DN15	• 55 bar [1] (threaded process connection)
• DN25	• 55 bar [1] (or in accordance to the value of the used flanges)
• DN40 or DN50	• 18 bar [1]
• DN80	• 12 bar [1]
• DN100	• 10 bar [1]
Flow rate measurement	
• Measuring range	
- viscosity > 5 mPa.s	- 2...1200 l/min
- viscosity < 5 mPa.s	- 3...616 l/min
• Measurement deviation	
- if "specific" K-factor is used (engraved on the sensor-fitting)	- ±0.5 % of the measured value
- if "standard" K-factor is used	- ±1 % of the measured value
• Repeatability	• ±0.03 % of the measured value

[1] not evaluated by UL

7 INSTALLATION AND WIRING

7.1 Safety information

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 high fluid temperatures.

- 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 electrical voltage.

- If a 12...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.
- Do not unscrew the cover of a powered device.
- 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.

DANGER

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

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

WARNING

Risk of injury due to nonconforming 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 sensor-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.

Make sure that the device runs correctly, plug in and tighten the connectors.

7.2 Fluid installation of the 8032

The 8032 is inserted into an S030 sensor-fitting mounted on the pipe. The SE32 is assembled on the S030 sensor-fitting by a quarter-turn rotation system:

1. Install the S030 sensor-fitting on the pipe,
2. Assemble the SE32 with the S030 sensor-fitting,
3. Finalise the installation of the 8032.

7.2.1 Install the S030 sensor-fitting on the pipe

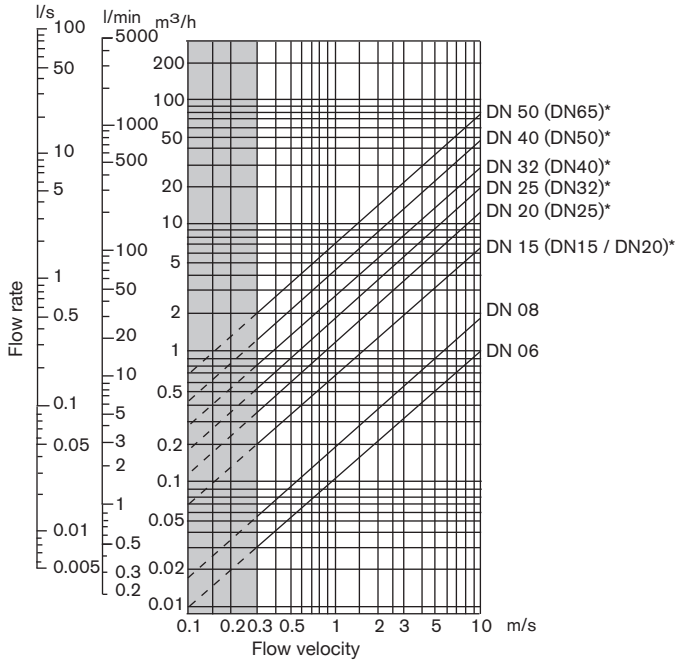
→ Select an S030 sensor-fitting suitable for the fluid in the pipes.

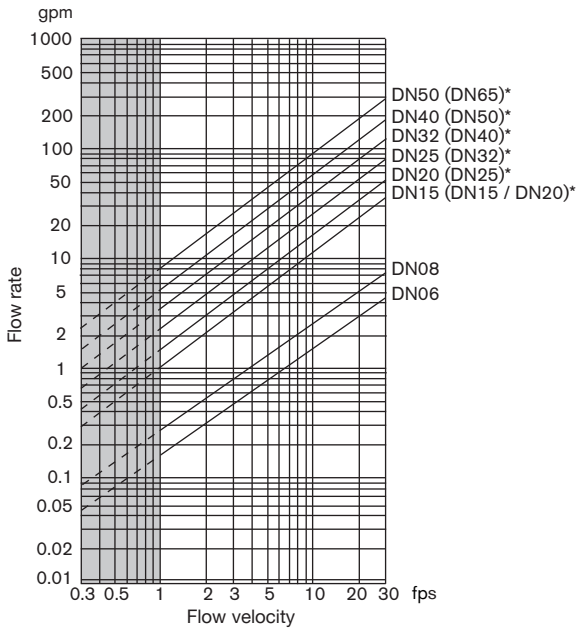
→ For thus, refer to the calculation tables page 20.

These calculation tables are used to determine the DN of the sensor-fitting S030 appropriate to the application, according to the fluid velocity and the flow rate.

The names of the following norms have changed in the Operating Instructions:

- for the welding ends, norm BS 4825 is renamed BS 4825-1;
- for the clamp connections:
  - norme BS 4825 is renamed BS 4825-3
  - norm DIN 32676 is renamed DIN 32676 series A

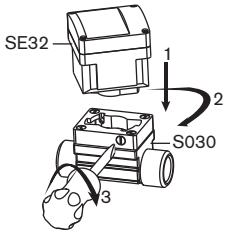




* for the following fittings:

- with external threads according to SMS 1145
- with weld ends according to SMS 3008, DIN 11866 series C / BS 4825-1 / ASME BPE, DIN 11850 series 2 / DIN 11866 series A / EN 10357 series A
- with clamp connections according to SMS 3017, BS 4825-3 / ASME BPE, DIN 32676 series A

7.2.2 Assemble the SE32 with the S030 sensor-fitting



→ Install the SE32 in the S030 sensor-fitting.

→ Turn the SE32 by a quarter turn.

→ Tighten the lateral screw(s) to lock SE32 in place on the sensor-fitting. (tightening torque max. 1 Nm, i.e. 0.74 lbf·ft).

Fig. 3: Installation of the SE32 in the S030 sensor-fitting

7.2.3 Finalise the installation of the 8032

→ Wire the device and switch it on (see chapter 7.4).

→ Set the K-factor or determine it with Teach-In (see chapter 9.5.2)

7.3 Fluid installation of the SE32 with an S077 sensor-fitting

The SE32 is inserted into an S077 sensor-fitting mounted on the pipe. The SE32 is assembled on the S077 sensor-fitting by a quarter-turn rotation system:

1. Install the S077 sensor-fitting on the pipe.
2. Assemble the SE32 with the S077 sensor-fitting.
3. Finalise the installation.

7.3.1 Install the S077 sensor-fitting on the pipe

→ Select an S077 sensor-fitting adapted to the viscosity of the fluid in the pipe.

To select a sensor-fitting, refer to the technical data sheet for the relevant sensor-fitting.

CAUTION

Risk of damage when installing the sensor-fitting.

▸ Follow the installation instructions given in the Operating Instructions for the sensor-fitting.

→ Install the sensor-fitting S077 on the pipe in such a way that:

- the spindles of the oval gears are set horizontally, as shown in Fig. 4.
- the installation instructions given in the Operating Instructions of the sensor-fitting used are respected.

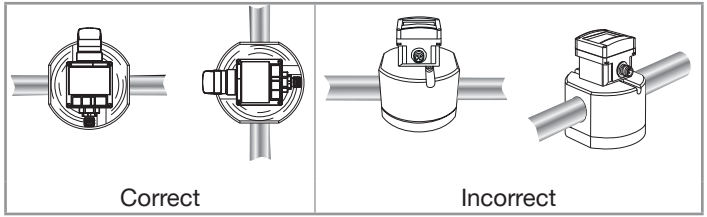


Fig. 4: The spindles of the oval gears must be horizontal

7.3.2 Assemble the SE32 with the S077 sensor-fitting

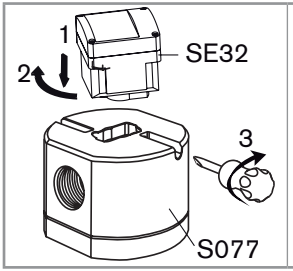
The SE32 only detects one rotation direction of the oval gears of a S077 sensor-fitting.

- If the combination SE32 with sensor-fitting S077 does not run properly, once assembled and energized, do the following:

→ Remove the SE32 from the S077 sensor-fitting,

→ Turn the SE32 by 180°,

→ Insert the SE32 back into the S077.



→ Insert the SE32 in the S077 sensor-fitting.

→ Turn the SE32 by a quarter turn.

→ Tighten the lateral screws to lock the SE32 in place on the S077 sensor-fitting (tightening torque max. 1 Nm, i.e. 0.74 lbf·ft).

Fig. 5: Installation of the SE32 in the S077 sensor-fitting

7.3.3 Finalise the installation of the SE32 with S077 sensor-fitting

→ Wire the device and switch it on (see chapter 7.4).

→ Set the K-factor or determine it with Teach-In (see chapter 9.5.2)

7.4 Wiring

DANGER

Risk of injury due to electrical voltage

- If a 12...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.

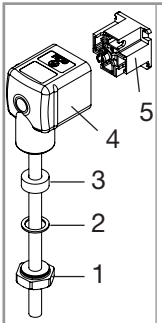
- Use shielded cables with a temperature limit of 80 °C minimum.
- Use a high quality electrical power supply, filtered and regulated.
- Protect the power supply by means of a 1 A fuse and a switch.
- Protect the power supply of each transistor by means of a 125 mA fuse.
- Protect the relays by means of a max. 3 A fuse, 250 V AC voltage and 1500 A breaking capacity, and a circuit breaker (depending on the process).
- Do not apply both a dangerous voltage and a safety extra-low voltage to the relays.

7.4.1 Data of the cables and wires

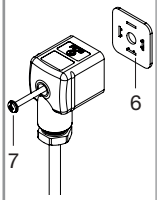
Version	Type of connector
Detector with NPN transistor output	EN 175301-803 female connector (type 2518, supplied)
Detector with PNP transistor output	EN 175301-803 female connector (type 2518, supplied)
Detector with NPN/PNP transistor output	Female 5-pins M12 connector (not supplied)
Detector with relay output	EN 175301-803 female connector (type 2518, supplied) and female 5-pin M12 connector (not supplied)
Flowmeter with relay output	EN 175301-803 female connectors (type 2518 supplied) and female 8-pins M12 connector (not supplied) or female 5-pins M12 connector (not supplied)
Flowmeter without relay output	Female 5-pin M12 connector (not supplied)

Type of connector	Cable type
Female 5-pins M12 connector (article number **917 116**)	• Shielded • External diameter of wire: 3...6.5 mm • Cross section of wires: max. 0.75 mm^2
Female 8-pins M12 connector (article number **444 799**)	• Shielded • External diameter of wire: 5.9 mm • Cross section of wires: 0.25 mm^2
Type 2518 (article number **572 264**)	• Shielded • External diameter of wire: 6...7 mm • Cross section of wires: 0.25...1.5 mm^2

7.4.2 Assembling the connectors

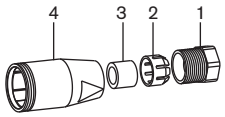


→ Unscrew the pressure screw [1] and remove the pressure ring [2] and the seal [3].
→ Remove contact holder [5] from the cover [4].
→ Insert the cable into pressure screw [1], through the pressure ring [2], through the seal [3] and finally through the cover [4].
→ Connect the wires on the contact holder [5]. The stripped length of the electrical wires must be 5 mm maximum.
→ Position the contact holder [5] in steps of 90° then put it back into cover [4], pulling gently on the cable so that the wires do not clutter the housing.
→ Tighten the pressure screw [1] (1.5...2 Nm).

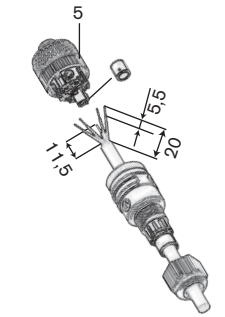


→ Place the seal [6] between the connector and the fixed connector on the device and then plug the type 2518 connector into the fixed connector.
→ Insert and tighten the central screw [7] (0.5...0.6 Nm) to ensure tightness and correct electrical contact.

Fig. 6: Assembling the female connector type 2518 (supplied)



→ 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].



→ 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 chapters 7.4.4 to 7.4.8).
→ Screw the terminal block [5] once wired to the body [4].
→ Tighten the connector nut [1].

Fig. 7: Assembling an female M12 connector (not supplied)

7.4.3 Wiring a version with transistor output and EN 175301-803 male fixed connector

DANGER

Risk of injury due to electrical voltage

- Always plug in and tighten the connectors correctly.

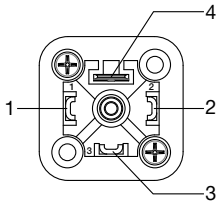
The device is not tight when the EN 175301-803 fixed connector is not wired:

→ Unscrew the nut [1] (see Fig. 6) on the female connector type 2518 supplied with the device.

→ Insert the plug with article number **444 509**, supplied with the device, into the cable gland.

→ Screw the nut again.

→ Plug the sealed type 2518 connector onto the EN 175301-803 fixed connector.



1. V+ (12...36 V DC)
2. Transistor output (NPN or PNP)
3. 0 V DC
4. Not connected

Fig. 8: Pin assignment of the EN 175301-803 fixed connector

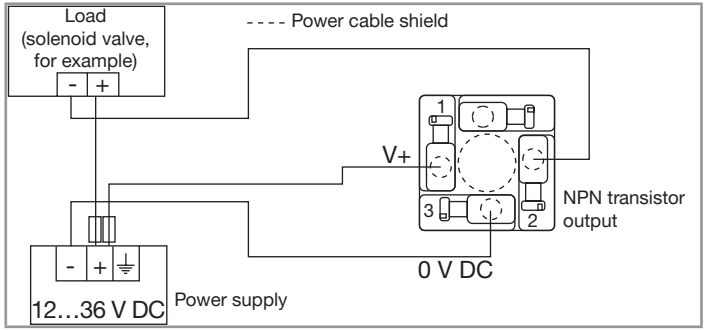


Fig. 9: NPN wiring of the transistor output of a version with EN 175301-803 fixed connector

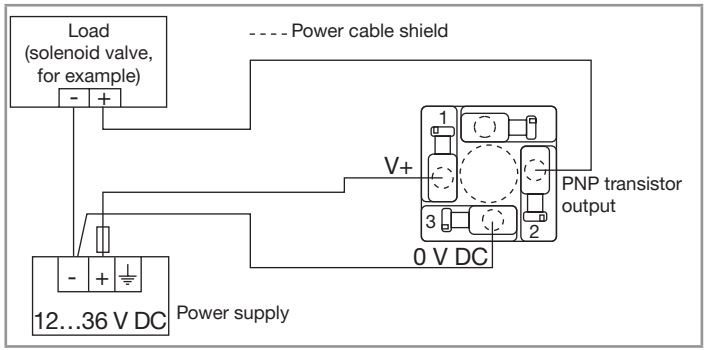


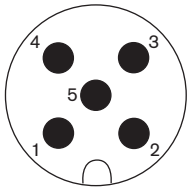
Fig. 10: PNP wiring of the transistor output of a version with EN 175301-803 fixed connector

7.4.4 Wiring a version with 2 transistor outputs and a 5-pin M12 male fixed connector

DANGER

Risk of injury due to electrical voltage

- Always plug in and tighten the connectors correctly.



1. V+ (12...36 V DC)
2. NPN transistor output
3. 0 V DC
4. PNP transistor output
5. Functional earth

→ The position of the 5-pin M12 fixed connector is adjustable:
→ Unscrew the locknut.
→ Turn the fixed connector to the desired position, by 360° max. to prevent the cables from twisting inside the housing.
→ Tighten the locknut using a spanner, while keeping the fixed connector in the desired position.

Fig. 11: Allocation of the pins on the 5-pin M12 male fixed connector

Pin of the M12 female cable available as accessory equipment (article number 438 680)	Colour of the wire (signal)
1	Brown (12...36 V DC)
2	White (NPN transistor output)
3	Blue (0 V DC)
4	Black (PNP transistor output)
5	Green/yellow or grey (functional earth)

When both transistor outputs are wired, they operate with the same settings made within the OUT function.

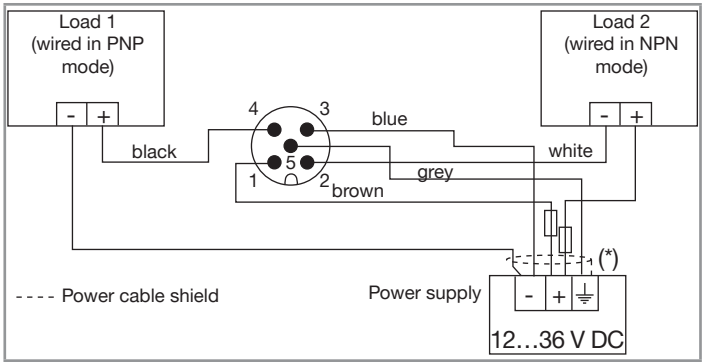


Fig. 12: Wiring both transistor outputs on a version with a 5-pin M12 male fixed connector

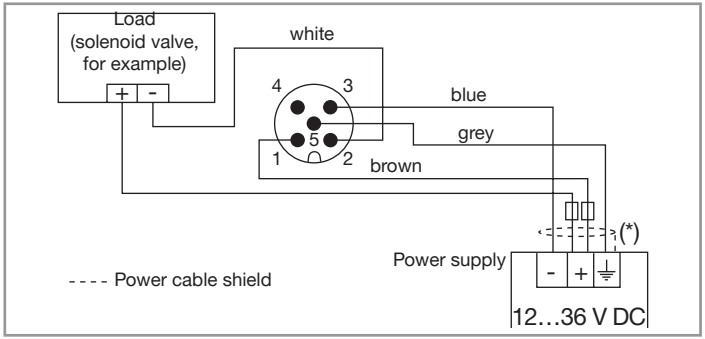


Fig. 13: Wiring of the NPN transistor output of a version with a 5-pin M12 male fixed connector

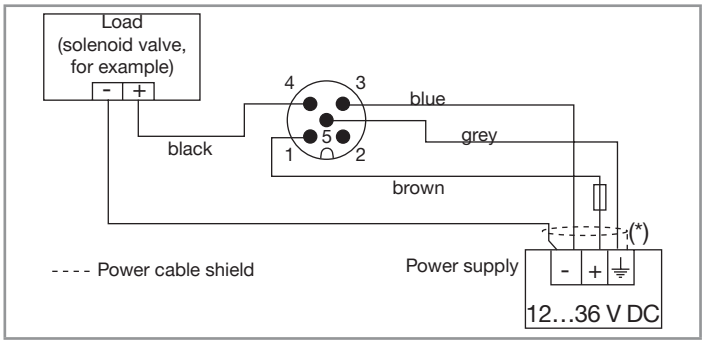


Fig. 14: Wiring of the PNP transistor output of a version with a 5-pin M12 male fixed connector

(*) Functional earth

7.4.5 Wiring of the version with a single relay output

DANGER

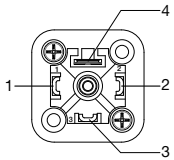
Danger due to the operation of the relay outputs of a UL device in a wet location.

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

WARNING

Shock hazard due to the voltage at the relay terminals, which is higher than 48 V.

- Before powering the device, always check that the connectors are correctly plugged-in and tightened.



1. Common
2. Relay, normally closed (NC)
3. Relay, normally open (NO)
4. Not connected

Fig. 15: Pin assignment on the EN 175301-803 fixed connector

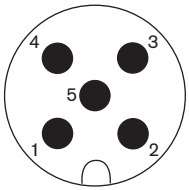
The device is not tight when the EN 175301-803 fixed connector is not wired:

→ Unscrew the nut [1] (see Fig. 6) on the female connector type 2518 supplied with the device.

→ Insert the plug with article number **444 509**, supplied with the device, into the cable gland.

→ Screw the nut back.

→ Plug the sealed type 2518 connector onto the EN 175301-803 fixed connector.



1. V+ (12...36 V DC)
2. Not connected
3. 0 V DC
4. Not connected
5. Functional earth

The position of the 5-pin M12 male fixed connector is adjustable:

→ Unscrew the locknut.

→ Turn the fixed connector to the desired position, by 360° max. to prevent the cables from twisting inside the housing.

→ Tighten the locknut using a spanner, while keeping the fixed connector in the desired position.

Fig. 16: Pin assignment of the 5-pin M12 male fixed connector

Pin of the M12 female cable available as accessory equipment (article number 438 680)	Colour of the wire (signal)
1	Brown (V+)
2	Not connected
3	Blue (0 V DC)
4	Not connected
5	Green/yellow or grey (functional earth)

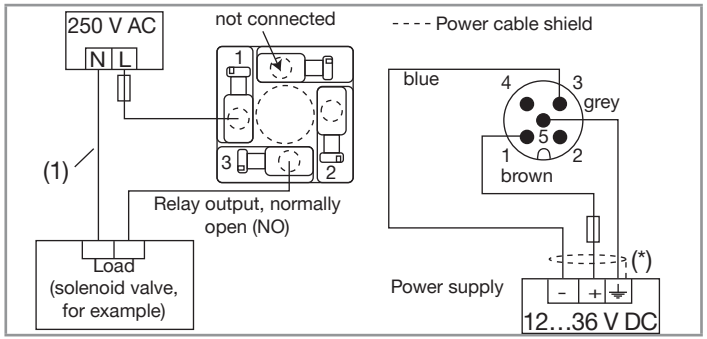


Fig. 17: NO wiring of the relay output of a version with one 5-pin M12 and one EN 175301-803 fixed connectors

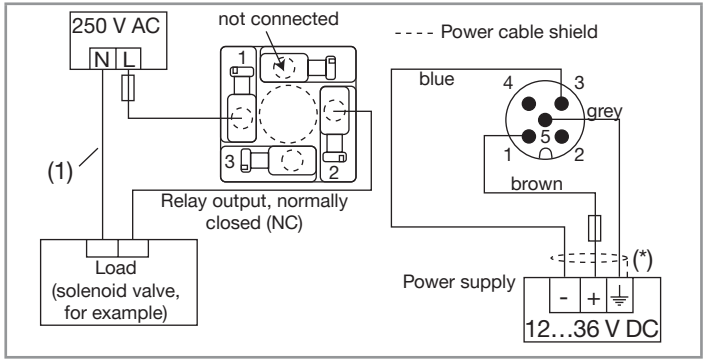
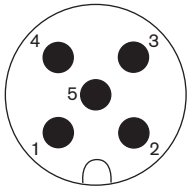


Fig. 18: NC wiring of the relay output of a version with one 5-pin M12 and one EN 175301-803 fixed connectors

(1) Use a voltage limiter depending on the load selected, e.g. for the solenoid valve, an EN 175301-803 fixed connector with integrated varistor.

(*) Functional earth

7.4.6 Wiring of the version with a single current output



1. V+ (12...36 V DC)
2. Negative 4...20 mA output
3. 0 V DC
4. Positive 4...20 mA output
5. Functional earth

The position of the 5-pin M12 male fixed connector is adjustable:

→ Unscrew the locknut.

→ Turn the fixed connector to the desired position, by 360° max. to prevent the cables from twisting inside the housing.

→ Tighten the locknut using a spanner, while keeping the fixed connector in the desired position.

Fig. 19: Pin assignment of the 5-pin M12 male fixed connector

Pin of the M12 female cable available as accessory equipment (article number 438 680)	Colour of the wire (signal)
1	Brown (V+)
2	White (negative 4...20 mA output)
3	Blue (0 V DC)
4	Black (positive 4...20 mA output)
5	Green/yellow or grey (functional earth)

The current output can be connected in either sourcing or sinking mode.

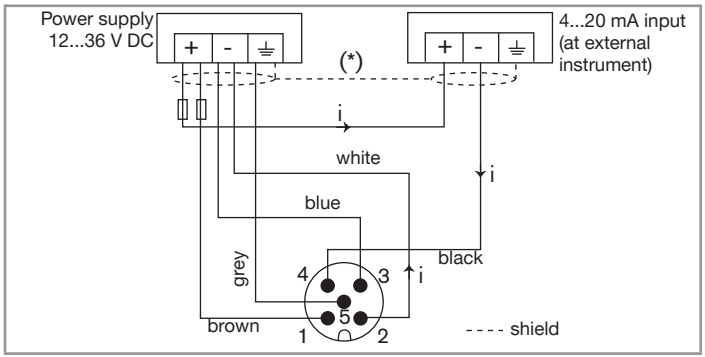


Fig. 20: Wiring of the current output, in sinking mode, of a version with a single 5-pin M12 fixed connector

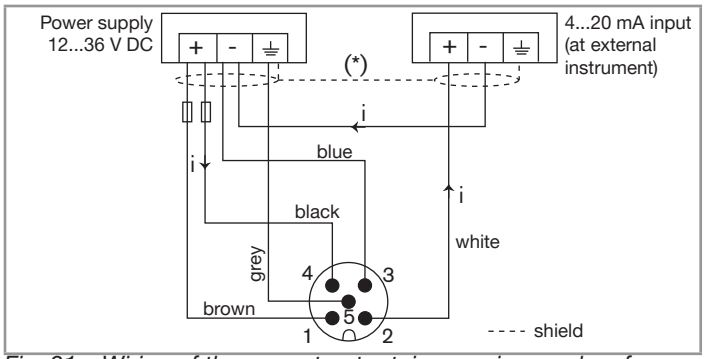


Fig. 21: Wiring of the current output, in sourcing mode, of a version with a single 5-pin M12 male fixed connector

(*) Functional earth

7.4.7 Wiring the version with both relay and current outputs (5-pin M12 male fixed connector)

DANGER

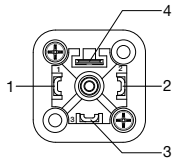
Danger due to the operation of the relay outputs of a UL device in a wet location.

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

WARNING

Shock hazard due to the voltage at the relay terminals, which is higher than 48 V.

- Before powering the device, always check that the connectors are correctly plugged-in and tightened.



1. Common
2. Relay, normally closed (NC)
3. Relay, normally open (NO)
4. Not connected

Fig. 22: Pin assignment on the EN 175301-803 fixed connector

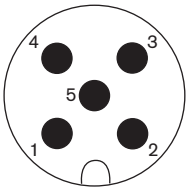
The device is not tight when the EN 175301-803 fixed connector is not wired:

→ Unscrew the nut [1] (see Fig. 6) on the female connector type 2518 supplied with the device.

→ Insert the plug with article number **444 509**, supplied with the device, into the cable gland.

→ Screw the nut back.

→ Plug the sealed type 2518 connector onto the EN 175301-803 fixed connector.



1: V+ (12...36 V DC)

2: Negative 4...20 mA output

3: 0 V DC

4: Positive 4...20 mA output

5: Functional earth

The position of the 5-pin M12 male fixed connector is adjustable:

→ Unscrew the locknut.

→ Turn the fixed connector to the desired position, by 360° max. to prevent the cables from twisting inside the housing.

→ Tighten the locknut using a spanner, while keeping the fixed connector in the desired position.

Fig. 23: Pin assignment of the 5-pin M12 male fixed connector

The current output can be connected in either sourcing or sinking mode.
See Fig. 26 and Fig. 27 for the related wiring charts.

7.4.8 Wiring the version with both relay and current outputs (8-pin M12 fixed connector)

DANGER

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

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

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

WARNING

Shock hazard due to the voltage at the relay terminals, which is higher than 48 V.

▸ Before powering the device, always check that the connectors are correctly plugged-in and tightened.

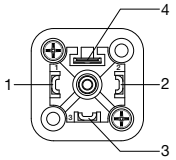
The device is not tight when the EN 175301-803 fixed connector is not wired:

→ Unscrew the nut [1] (see Fig. 6) on the female connector type 2518 supplied with the device.

→ Insert the plug with article number **444 509**, supplied with the device, into the cable gland.

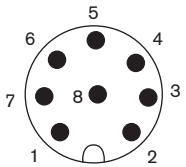
→ Screw the nut back.

→ Plug the sealed type 2518 connector onto the EN 175301-803 fixed connector.



1. Common
2. Relay, normally closed (NC)
3. Relay, normally open (NO)
4. Not connected

Fig. 24: Pin assignment on the EN 175301-803 fixed connector



1. V+ (12...36 V DC)
2. Not connected
3. 0 V DC
4. Positive 4...20 mA output
5. Not connected
6. Negative 4...20 mA output
7. Not connected
8. Functional earth

Fig. 25: Allocation of the pins on the M12, 8-pin fixed connector

Pin of the 8-pin M12 female cable available as an accessory equipment (article number 444 800)	Colour of the wire (signal)
1	White (12...36 V DC)
2	Not connected
3	Green (0 V DC)
4	Yellow (positive 4...20 mA output)
5	Not connected
6	Pink (negative 4...20 mA output)
7	Not connected
8	Grey (functional earth)

The current output can be connected in either sourcing or sinking mode.

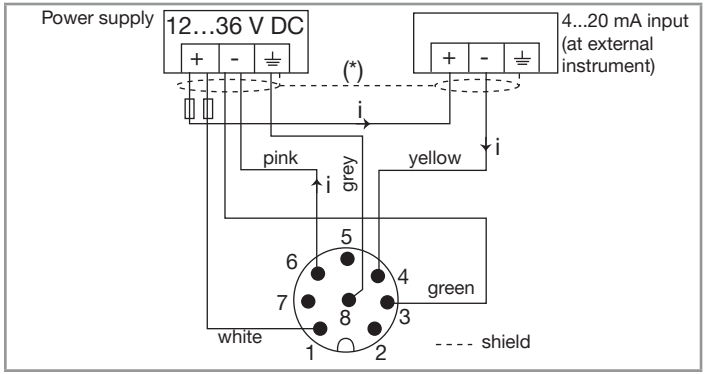


Fig. 26: Wiring of the current output, in sinking mode, of a version with an 8-pin M12 fixed connector

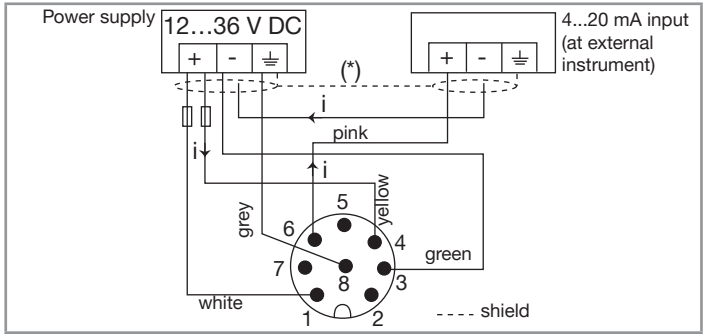


Fig. 27: Wiring of the current output, in sourcing mode, of a version with an 8-pin M12 fixed connector

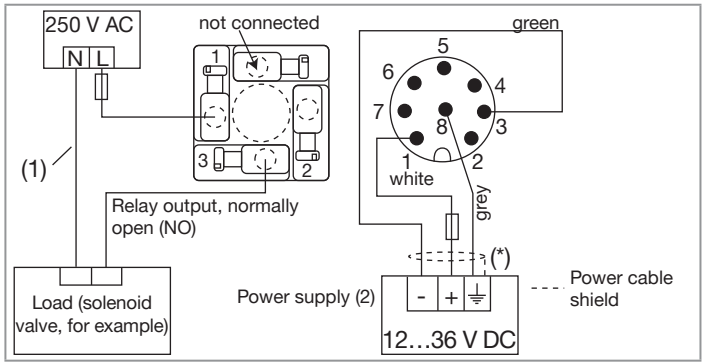


Fig. 28: NO wiring of the relay output of a version with an 8-pin M12 fixed connector

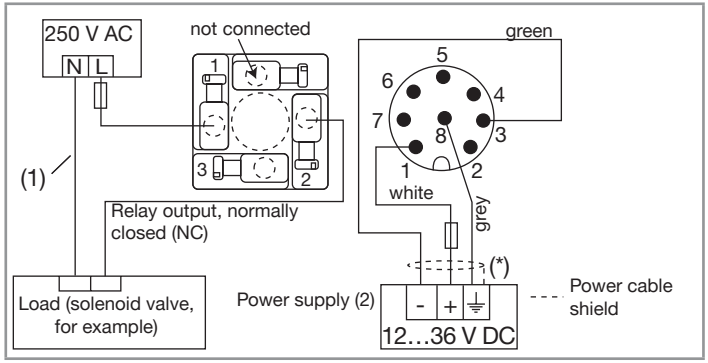


Fig. 29: NC wiring of the relay output of a version with an 8-pin M12 fixed connector

(*) Functional earth

(1) Use a voltage limiter depending on the load selected, e.g. for the solenoid valve, an EN 175301-803 fixed connector with integrated varistor.

(2) If the current output is needed, wire the 8-pin M12 connector acc. to Fig. 26 if the current output is wired in sinking mode, or acc. to Fig. 27 if the current ouput is wired in sourcing mode.

8 COMMISSIONING

8.1 Safety information

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/installation must only be commissioned by suitably trained staff.
- ▸ Before commissioning the device, enter the K-factor of the fitting used. See chapter 9.4 and 9.5.

NOTE

Risk of damage to the device due to the environment

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

- When the device is switched on and the cover is open, protection against electric shock is no longer guaranteed.
- Check the chemical compatibility between the fluid to be measured and the materials from which the device is made exposed to it.

9 ADJUSTMENT AND FUNCTIONS

9.1 Safety information

DANGER

Risk of injury due to electrical voltage

- If a 12...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.
- Observe all applicable accident protection and safety guidelines for electrical equipment.

WARNING

Risk of injury due to nonconforming adjustment.

Nonconforming adjustment 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.

9.2 Operating levels

All settings may influence the correct running of the process.

- Note the values of the parameters set in the table at chapter 9.8.

The device has 2 operating levels:

- the Process level,
- the Configuration level.

The Configuration level comprises the Parameters and Test menus.

Operating level	Functions
Process	• To read out: - the measured flow rate - the switching thresholds - the value of the 4...20 mA output (flowmeter only) • To access the Parameters and Test menus of the Configuration level

Operating level	Functions
Configuration - Parameters menu	• To make the settings needed for operation: - Flow rate unit, - Transistor or relay output, - Filter, - Bar graph, - K-factor, - 4...20-mA-current output (flowmeter only). • To make the following additional settings: - Backlighting - Access code to the Parameters and Test menus
Configuration - Test menu	• To test the configuration made in the Parameters menu with entering of a theoretical value. • To read the frequency of the measured signal. • To adjust the 4...20 mA output.

9.3 Description of the display and the operating keys

The display is used for the following:

- To read the value of certain parameters such as the measured flow rate;
- To parameterize the device by means of 3 keys;
- To read the configuration of the device;
- To get notification of some events.

	 *Back* key	• To change the value (0...9) of the selected digit; • To go back to the previous function.
	 *Next* key	• To select the digit at the left; • To go to the next function.
	 *Confirm* key	• To confirm the function displayed; • To confirm the parameters set.
	■■■■■■■■■■	Bar graph running in each mode, except during a Teach-In procedure.

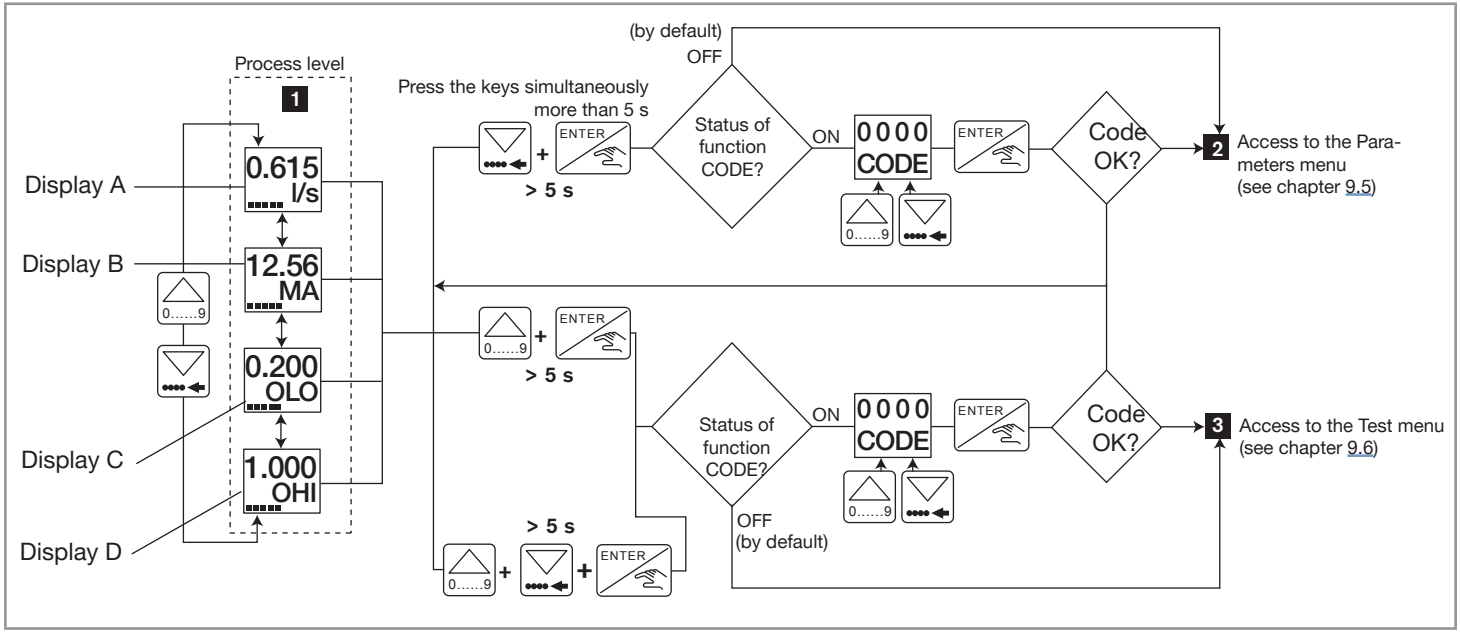
		Shows the status of the on/off output (red LED).
		Shows if the relay is open or closed.
	1 *or* 2	Indicates whether the NPN and PNP transistor outputs are switched or not
		Means that the access to the Parameters and Test menus is protected through a code.

Fig. 30: Description of the keys and icons

9.4 Process level

The use and setting of the access code to the Parameters and Test menus are defined within the Parameters menu.

Display	displays...
Display A	...the measured flow rate
Display B (only flowmeters)	...the value of the 4...20 mA output.
Display C	...the value of the low switching threshold (O LO).
Display D	...the value of the high switching threshold (O HI).


Process level
1
Display A
Display B
Display C
Display D
0.615 l/s
12.56 MA
0.200 OLO
1.000 OHI
Press the keys simultaneously more than 5 s
ENTER
> 5 s
Status of function CODE?
(by default) OFF
ON
0000 CODE
Code OK?
2
Access to the Parameters menu (see chapter 9.5)
3
Access to the Test menu (see chapter 9.6)
OFF (by default)

9.5 Configuration level – Parameters menu

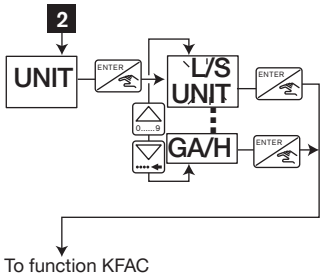
All settings may influence the correct running of the process.
→ Note the values of the parameters set in the table at chapter 9.8.

Function	Description of the function
UNIT (see chapter 9.5.1)	To select the unit of the flow rate.
KFAC (see chapter 9.5.2)	To enter the K-factor of the sensor-fitting used or have it determined. The K-factor is specific to each sensor-fitting. It is used by the device to convert the measured signal into a flow rate.
OUT (see chapter 9.5.3)	• To select: - the operation of the transistor or relay output (Hysteresis or Window); - whether the operation is inverted or not. • To set: - the high (**O HI**) and low (**O LO**) switching thresholds; - the time delay before switching in seconds (**DEL**).
mA (see chapter 9.5.4)	To set the flow rate range associated to the 4...20 mA output.
FILT (see chapter 9.5.5)	• To choose the filter of the displayed flow rate. Filter 0 means that flow rate variations are displayed. Filter 9 means that flow rate variations are attenuated to the maximum.
BRGR (see chapter 9.5.6)	To enter the flow rate range, minimum (**BG LO**) and maximum (**BG HI**) values, associated to the bar graph.
BKLG (see chapter 9.5.7)	To deactivate the backlighting of the display, or adjust its intensity and set the time-out after which it goes off.
CODE (see chapter 9.5.8)	To activate the use of the access code to the Parameters and Test menus. By default, the access code is not requested.
END (see chapter 9.5.9)	To go back to the Process level by saving or not the settings made.

9.5.1 Selecting the unit of the flow rate

WARNING

If the flow rate unit is modified, also modify the transistor or relay switching thresholds (function OUT), the threshold values of the bar graph (function BRGR) and the flow rate range associated to the current output (function mA).

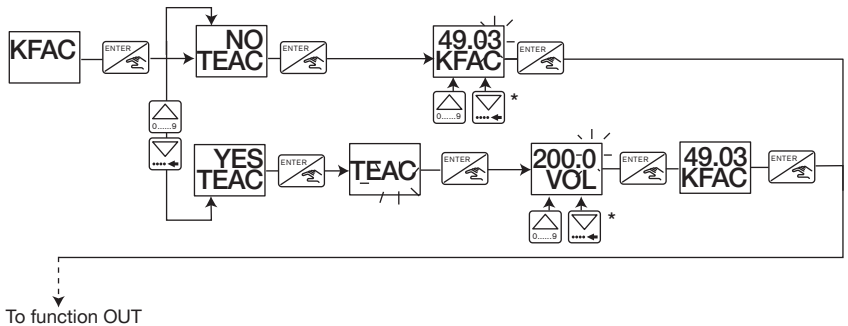


2 Refer to chapter 9.4 to access the Parameters menu.

→ Select the desired unit of the flow rate.

9.5.2 Entering the K-factor or having it determined by Teach-In

During the whole Teach-In procedure, the outputs are frozen to the status they had at the start of the Teach-In.



* to move the decimal point, simultaneously press keys and

- Entering the K-factor of the sensor-fitting used:

→ Select "NO TEAC",

→ Press key "ENTER",

→ In the KFAC parameter, enter the K-factor of the sensor-fitting used, in pulse/litre (value between 0.001 and 9999). Find the K-factor within the Operating Instructions of the sensor-fitting.

- Determining the K-factor by means of a Teach-In procedure:

→ Install the device in series with a valve, for instance, then

→ Fill a tank with x litres capacity (200 litres for example).

→ Select "YES TEAC",

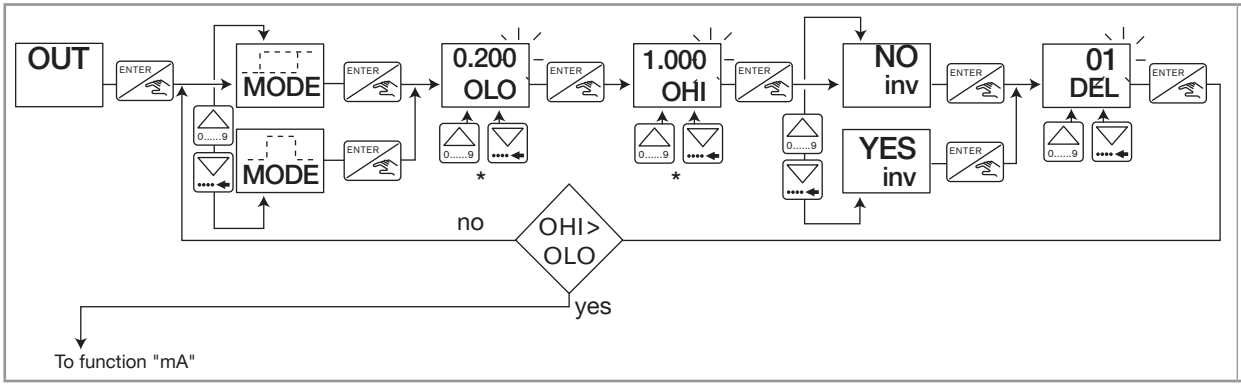
→ Press key "ENTER",

→ Open the valve: message "TEAC" blinks.

→ When the tank if full, press again key "ENTER".

→ Enter the volume of liquid that has passed through the circuit (in the unit displayed alternately with the message "VOL"): the device calculates the K-factor and displays it.

9.5.3 Configuring the relay or transistor output



Hysteresis operation

The change of state is done when a threshold is detected (increasing flow rate:high threshold (OHI) to be detected, decreasing flow rate: low threshold (OLO) to be detected).

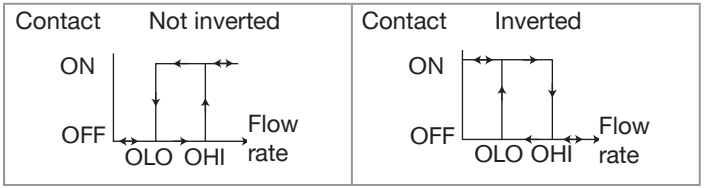


Fig. 31: Hysteresis operation of the transistor output

Window operation

The change of state is done whenever one of the thresholds is detected.

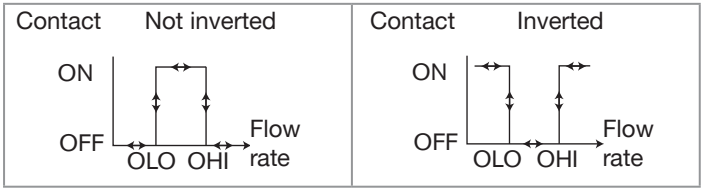


Fig. 32: Window operation of the transistor output

The time delay (DEL) is valid for both output thresholds. switching is only done if one of the thresholds (OHI - OLO) is exceeded for a duration longer than this time delay.

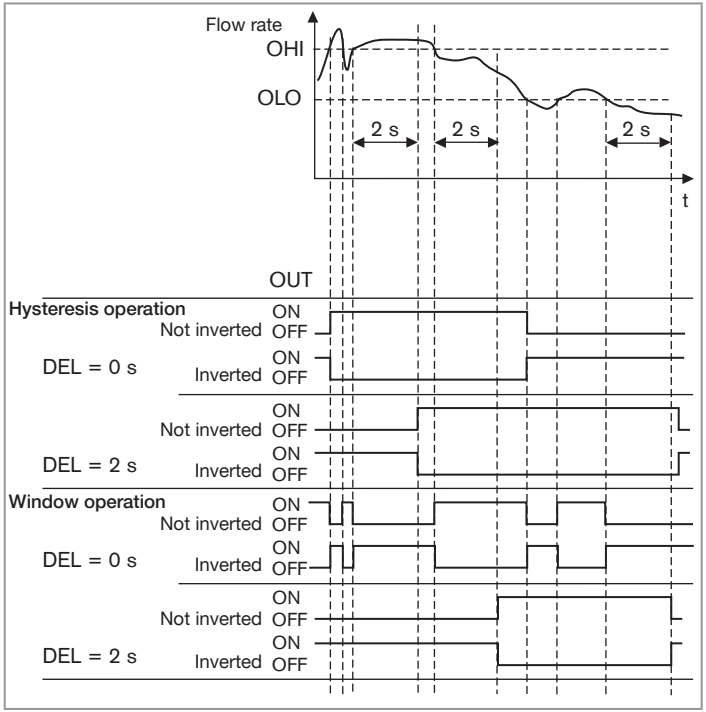


Fig. 33: Examples for the behaviour of the transistor or relay output of a 8032 or a SE32 with S077, depending on the flow rate and the operation chosen.

9.5.4 Setting the flow rate range associated to the 4...20 mA output

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

- The signal may be inverted, i.e. the flow rate value associated to the 20-mA-current is lower than the one associated to the 4-mA-current.
- The current output gives a 22-mA-current when the device shows an operating error.

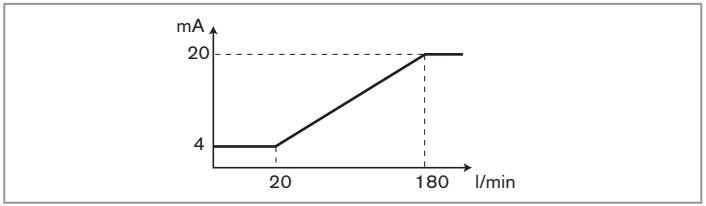
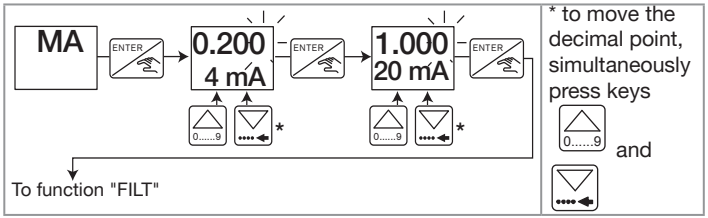
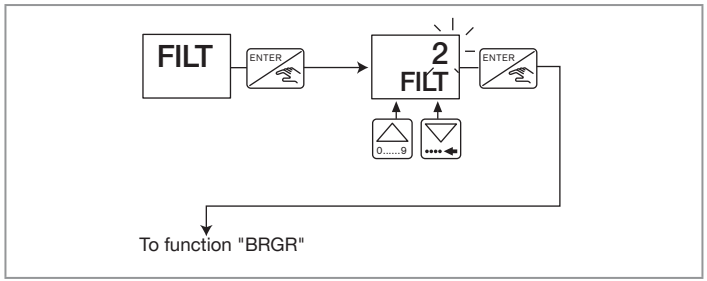


Fig. 34: Example of relation between the measuring range and the current output



→ Enter the flow rate values, in the unit that has been chosen in the UNIT parameter, related to the 4...20-mA-current range.

9.5.5 Choosing the filter of the flow rate



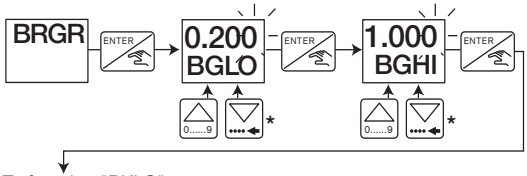
The "Filter" function is used to attenuate the display and 4...20 mA output, if any, fluctuations when the flow rate varies in the process.

Ten attenuation levels, from 0 (means no attenuation) to 9 (maximum attenuation of the fluctuations) are available.

Tab. 1: Response times of the current output and the display depending on the filter chosen

Filter N°	Response time (10 %...90 %)
0	300 ms
1	1.5 s
2	3 s
3 (by default)	5 s
4	7 s
5	11 s
6	20 s
7	38 s
8	100 s
9	200 s

9.5.6 Entering the flow rate range related to the bar graph

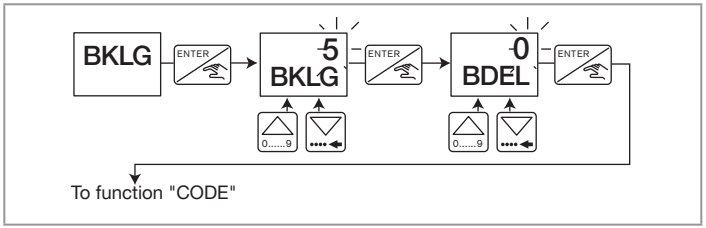


* to move the decimal point, simultaneously press keys 0.....9 and

Set the min. and max. flow rate values, in the unit chosen within the "UNIT" function, related to the bar graph:

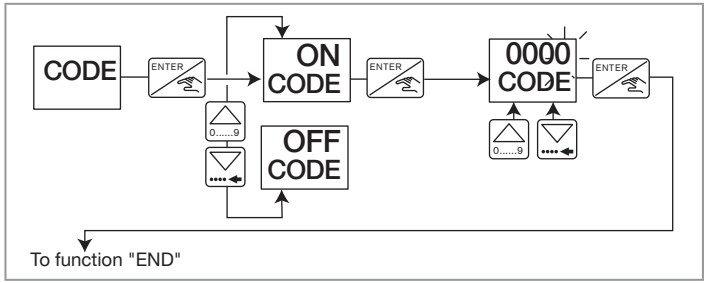
- BGLO is related to the flow rate value for which all the bar graph segments are out.
- BGHI is related to the flow rate value for which all the bar graph segments are on.

9.5.7 Adjusting the brightness of the backlight or deactivating the backlight



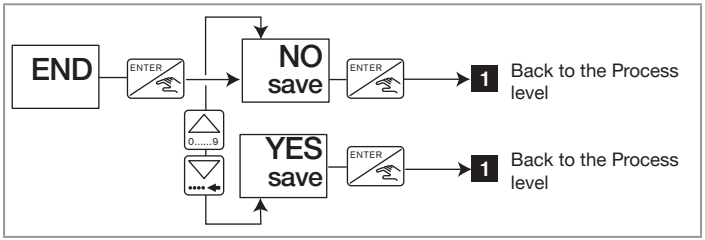
- Function "BKLG": to deactivate the backlight (choice "0") or to choose its intensity (choice "1" to "9").
- Function "BDEL": to have the backlight permanently activated (choice "00") or have it on for a constant duration (between "01" and "99" seconds) after a key press.

9.5.8 Activating and defining the access code to the Configuration level



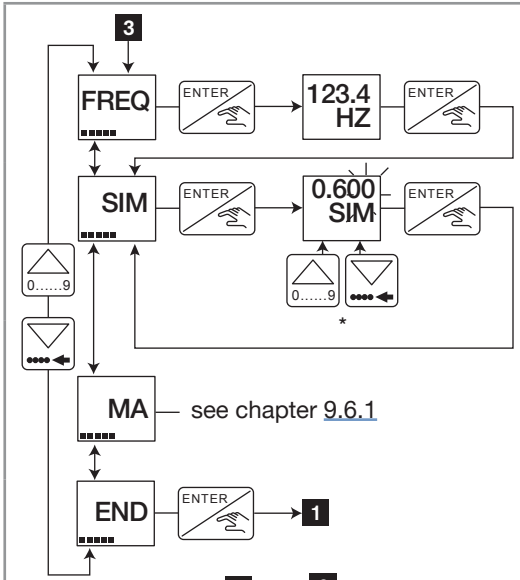
- Function "CODE ON": the access code to the Parameters and Test menus is required. Enter a 4-digit code.
- Function "CODE OFF": the access code to the Parameters and Test menus is not required.

9.5.9 Saving the modified parameters



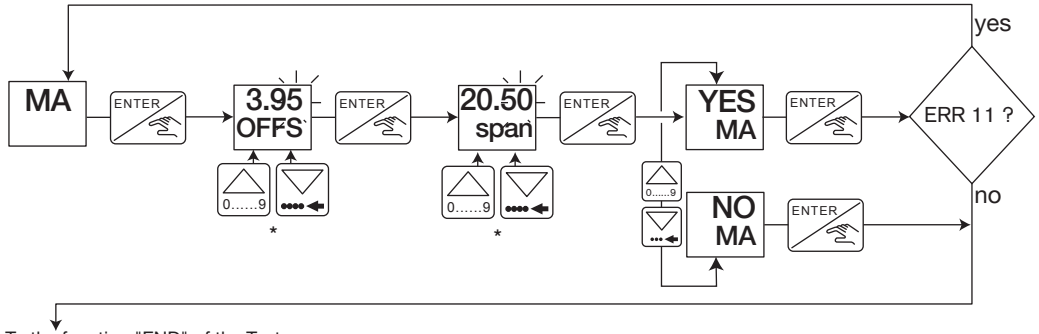
- Function "SAVE NO": the changes made within the Parameters menu are not saved. Is only displayed if any parameter has been changed.
- Function "SAVE YES": the changes made within the Parameters menu are saved. Is only displayed if any parameter has been changed.

9.6 Configuration level – Test menu



FREQ	To read the frequency of the measured signal.
SIM	To test the switching thresholds set for the transistor output or the relay output and/or the conversion of the flow rate into mA, by entering a flow rate value.
MA	To adjust the 4...20 mA output.
END	To go back to the Process level and display the flow rate measured.

9.6.1 Adjusting the 4...20 mA output



* to move the decimal point, simultaneously press keys 0.....9 and

- When the function "OFFS" is displayed, the device gives a 4-mA-current.
→ Measure the current given on the 4...20 mA output using a multimeter.
→ Enter this value in the function **OFFS**. The permitted offset range is 3...5 mA.
→ Press ENTER to confirm.

- When the function "SPAN" is displayed, the device gives a 20-mA-current.
→ Measure the current given on the 4...20 mA output using a multimeter.
→ Enter this value in the function **SPAN**. The permitted span range is 18.5...21.5 mA.
→ Confirm or do not confirm the values entered by choosing "**YES MA**" or "**NO MA**". When the message "ERR11" is displayed, at least one of the values entered is outside the permitted range: see chapter 10.3.

9.7 Default settings

At first power-up of the device, the configuration of the 8032 or the SE32 with S077 is the following:

Flow rate unit	K-factor	Relay or transistor output				Current output		Filter	Bar graph		Backlighting		Code
UNIT	KFAC	Operation	OLO threshold	OHI threshold	DEL	4 mA	20 mA	FILTER	BG LO	BG HI	BKLG	BDEL	CODE
l/s	1	Hysteresis, inverted	0 [1]	0 [1]	0 s	0 [1]	100 [1]	2	0 [1]	0 [1]	3	0 s	0000 [2]

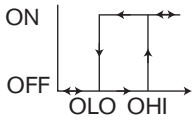
[1] In the unit set within the UNIT function (l/s, by default).

[2] By default, the access code is not requested (CODE=OFF).

9.8 Your settings for the 8032 / the SE32 with S077

Flow rate unit	K-factor	Relay or transistor output				Current output		Filter	Bar graph		Backlighting		Code
UNIT	KFAC	Operation	OLO threshold	OHI threshold	DEL	4 mA	20 mA	FILTER	BG LO	BG HI	BKLG	BDEL	CODE

[1] **Hysteresis operation:**



[2] **Window operation:**

10 MAINTENANCE AND TROUBLESHOOTING

10.1 Safety information

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 the electrical power source of all the conductors and isolate it before carrying out work on the system.
- Observe all applicable accident protection and safety guidelines for electrical equipment.

Risk of injury due to high fluid temperatures

- Use safety gloves to handle the device.
- Stop the circulation of fluid and drain the pipe before loosening the process connections.
- Keep all easily flammable material and fluid away from the device.

Risk of injury due to the nature of the fluid

- Respect the 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.
- Guarantee a defined or controlled restarting of the process subsequent to any intervention on the device.

10.2 Maintenance and cleaning

NOTE

The device may be damaged by the cleaning product.

- Clean the device with a cloth slightly dampened with water or a cleaning liquid compatible with the materials the device is made of.

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

10.3 If you encounter problems

Message displayed	4...20 mA output, if present	Meaning	Recommended action
ERR 2	22 mA	Loss of user settings and reset to the factory configuration.	→ Press the ENTER key to acknowledge the message. → If the failure occurs regularly, contact your retailer.
ERR 11	-	The span and/or offset values entered during adjustment of the 4...20 mA output are out of range: offset < 3 mA or > 5 mA and/or span < 18.5 mA or > 21.5 mA	→ Press the ENTER key to go back to the Test menu. The device operates with the previous adjustment values.

11 SPARE PARTS AND ACCESSORIES

CAUTION

Risk of injury and/or damage by the use of incorrect parts

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

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

Spare part	Article number
Complete unit [1] with NPN and PNP transistor outputs	563 103
Complete unit [1] with a single relay output	563 104
Complete unit [1] with a single current output	563 105
Complete unit [1] with both relay and 4...20 mA current outputs	563 106

[1] Complete unit = cover, display and electronic board

Accessory	Article number
5-pin M12 female connector, to be wired	917 116
5-pin M12 female connector, moulded on shielded cable (2 m)	438 680
EN175301-803 female connector (type 2518) with cable gland	572 264
Plug for the cable gland of the type 2518 female connector	444 509
EN175301-803 female connector (type 2509) with NPT ½" reduction	162 673
8-pin M12 female connector, to be wired	444 799
8-pin M12 female connector, moulded on shielded cable (2 m)	444 800

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.
- Avoid the effects of heat and cold, which could cause the storage temperature range to be exceeded.
- 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.
- Ambient storage temperature: –10 °C...+60 °C.

14 DISPOSAL

Environmentally friendly disposal

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

Further information: country.burkert.com.

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FLUID CONTROL SYSTEMS

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MAN 1000307483 EN Version: FStatus: RL (released | freigegeben) printed: 27.10.2023