

# REMOTE FLOW RATE CONTROLLER



**8032**

Instruction Manual



## Table of contents

<b>1</b>	<b>SAFETY RECOMMENDATIONS .....</b>	<b>4</b>
1.1	Utilisation.....	4
1.2	Precautions at installation and commissioning.....	5
1.3	Conformity to standards .....	5
<b>2</b>	<b>DESCRIPTION.....</b>	<b>6</b>
2.1	Design.....	6
2.2	Measuring principle .....	7
<b>3</b>	<b>TECHNICAL DATA.....</b>	<b>8</b>
<b>4</b>	<b>INSTALLATION.....</b>	<b>12</b>
4.1	General recommendations .....	12
4.2	Mounting of the wall-mounted version.....	12
4.3	Mounting of the panel-mounted version .....	14
4.4	Electrical connection .....	16
4.4.1	Cable plugs (wall-mounted version only).....	18
4.4.2	Wiring of the wall-mounted version.....	18
4.4.3	Wiring of the panel-mounted version.....	20

<b>5</b>	<b>PROGRAMMING.....</b>	<b>22</b>
5.1	General recommendations .....	22
5.2	Functionalities.....	22
5.3	Programming keys .....	23
5.4	Default Configuration.....	23
5.5	Normal Mode .....	24
5.6	Possible switching modes of the 8032 .....	25
5.7	Calibration Mode.....	26
5.8	Simulation Mode .....	29
<b>6</b>	<b>MAINTENANCE.....</b>	<b>30</b>
6.1	Cleaning .....	30
6.2	Error messages.....	30
6.3	Accessories for the wall-mounted 8032 .....	31
6.4	Order codes of remote sensors 8032 .....	31
<b>7</b>	<b>ANNEX .....</b>	<b>32</b>
7.1	Connection example with a 8032 in the wall-mounted version .....	32
7.2	Connection example with a 8032 in the panel-mounted version .....	33
7.3	Description of the label of the wall-mounted 8032.....	34
7.4	Description of the label of the panel-mounted 8032.....	35



**Always respect the safety instructions marked by the symbol opposite as well as those included in the manual.**

### 1.1 Utilisation

The controller 8032 has only been designed to measure the flow rate of liquids.

There will be no manufacturer warranty for damages caused by unexpected handling or wrong usage of the device. The warranty on the device becomes invalid if any modification or change is made on the device.



**The device should only be installed and repaired by specialist staff. If any difficulties may occur with the product during installation, please contact your nearest Bürkert sales office for assistance.**

## **1.2 Precautions at installation and commissioning**

- When the device is powered and the cover of the wall-mounted version is open, protection against electric shocks is not ensured.
- To clean the device, only use chemically compatible products.
- Always protect the device from electromagnetic perturbations, ultraviolet radiations and, when installed outside, from the effects of climatic conditions.

## **1.3 Conformity to standards**

EMC: EN 50 081-1, 50 082-2

Security: EN 61 010-1

Vibration: EN 60068-2-6

Shock: EN 60068-2-27

## 2.1 Design

The remote flow rate controller 8032 is an electronic module available in a wall-mounted or a panel-mounted version. It may switch a solenoid valve, activate an alarm or establish a control loop.

The switching point can be adjusted by means of the three keys located under the display.

It has to be associated to a remote measuring element.

### Wall-mounted version

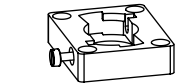
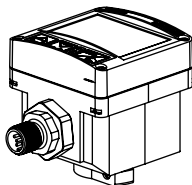
The wall-mounted version is made up of an electronic module and a wall-mounted holder.

The electrical connection is carried out via a steerable 5-pin M12 male connector and a 4-pin M12 female connector.

### Panel-mounted version

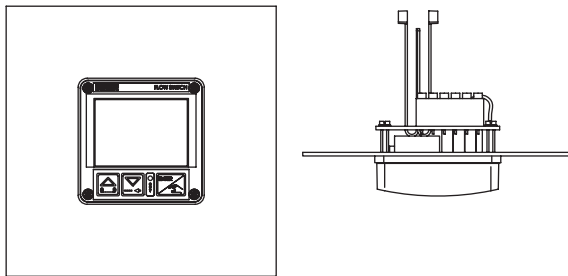
The panel-mounted version is made up of an electronic module and a protection plate.

The electrical connection is carried out via terminal strips located on the protection plate.



8032, wall-mounted version

8032, panel-mounted version



## 2.2 Measuring principle

The remote controller 8032 must be connected to a remote flow rate measuring element with an NPN transistor output or a push-pull output. The controller 8032 detects the pulses sent by the remote measuring device. The pulse frequency is proportional to the flow rate ( $f = K \cdot Q$ , where  $f$  is the frequency in Hz,  $K$  the  $K$  factor specific to each measuring device in pulses/l and  $Q$  the flow rate in l/s).

### 3 TECHNICAL DATA

## Remote flow rate controller 8032

#### General features

Medium data

depends on the measuring device

Measuring range

depends on the measuring device

Repeatability

0.4% of measured value

Protection rating

- wall-mounted version
- panel-mounted version

IP 65, with cable plugs plugged-in and tightened

IP 54, for the front plate

IP 20, for the rear side, inside the cabinet

Panel thickness

(panel-mounted version)

min. 1 mm, max. 3 mm

#### Electrical features

Installation class

(overvoltage class)

2

Insulating strength

2300 VAC

Power supply

12-30 VDC, depends on the measuring device data as well

Remote sensor	Supply voltage
8041	18-30 VDC
8020	12-30 VDC
8030	12-30 VDC
other	min. 12 VDC max. 30 VDC

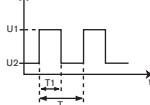


Current consumption

Pulse input

max. 750 mA + consumption of the measuring device, if output PNP is connected  
 max. 50 mA + consumption of the measuring device, if output PNP is not connected  
 frequency range: 2 to 400 Hz; Input impedance: 10 k $\Omega$   
 to be connected to an NPN transistor output or a push-pull output

Pulse input



$$4,5 \text{ V} < U1 < 5 \text{ V}$$

$$0 \text{ V} < U2 < 0,5 \text{ V}$$

Protection against  
 polarity reversal  
 Transistor output

yes  
 NPN and PNP, 700 mA max.  
 NPN output: 30 VDC max.  
 PNP output: controller voltage supply

Protection against  
 short-circuits  
 Recommended cable type  
 Power supply

yes for the transistor output

Wall-mounted version: shielded, section between 0,14 and 0,5 mm<sup>2</sup>  
 Panel-mounted version: shielded, 2,5 mm<sup>2</sup> max. section for single wires or  
 1,5 mm<sup>2</sup> max. section for stranded wires with sleeves  
 max. distance: 10 m, 0,5 mm<sup>2</sup> max. section

Measuring device

## Electrical connection

Wall-mounted version  
 Panel-mounted version

5-pin M12 female cable plug and 4-pin M12 male cable plug (not supplied)  
 Terminal strips

### 3 TECHNICAL DATA

### Remote flow rate controller 8032

#### Materials

Housing  
Front plate  
Wall-mounted armature

polycarbonate, fiber glass reinforced  
polyester  
PVC

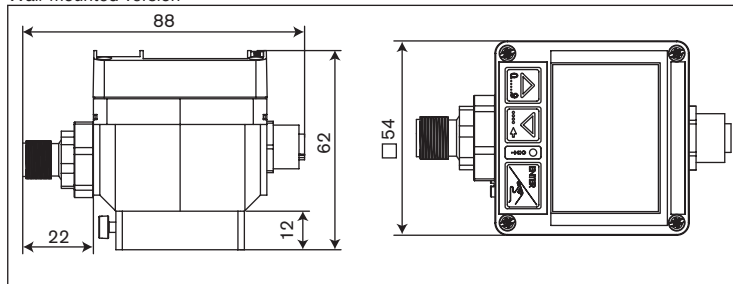
#### Environment

Ambient temperature  
Relative humidity

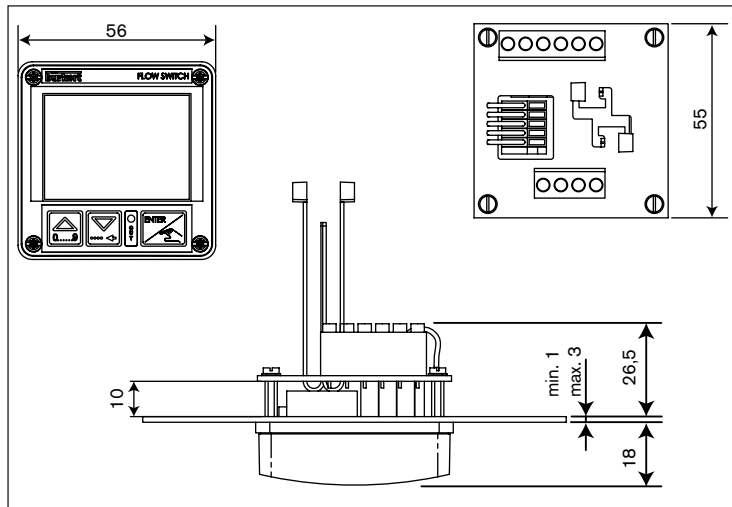
0 to +60 °C  
< 80%, non condensated

#### Dimensions (mm)

Wall-mounted version



Panel-mounted version



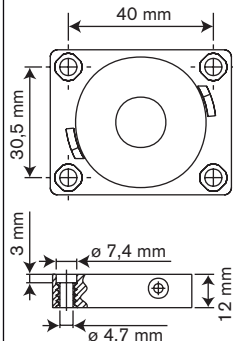


#### 4.1 General recommendations

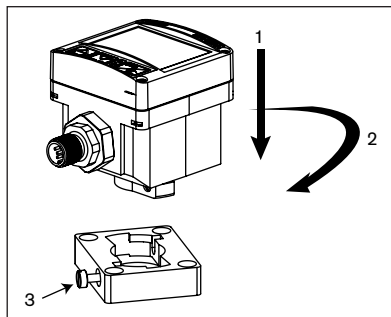
Always check the chemical compatibility of the materials the controller is made of with the products it may be in contact with, for instance: alcohols, strong or concentrated acids, aldehydes, bases, esters, aliphatics, aromatics, ketones, aromatics or halogenated hydrocarbons, oxidizing agents and chlorinated products. For more information, please contact your Bürkert sales office.

#### 4.2 Mounting of the wall-mounted version

1. Select the location of the holder on a wall, then drill 4 holes by respecting the hole-to-hole distances indicated on the opposite schematic and mount the holder using 4 screws.



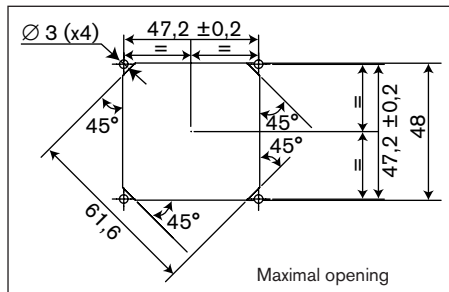
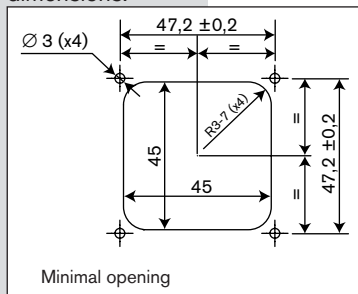
2. Insert the controller in the holder as shown in the figure below.



3. Fasten screw [3].

## 4.3 Mounting of the panel-mounted version

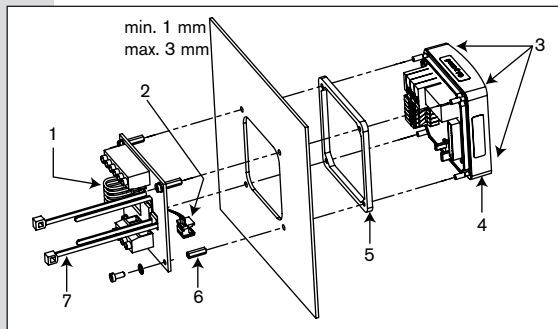
1. Cut away, according to one of the drilling jig hereafter, the opening in the panel (thickness between 1 and 3 mm) of the switch cabinet. Make sure to scrupulously respect the indicated dimensions.



2. On the rear face of the electronic board, disconnect the 5 wires [1] by pressing the orange locking levers with a screwdriver, then pull out flat cable [2].
3. Unfasten the 4 screws [3] on the front face [4].
4. Set front face [4] with seal [5] onto the opening, the electronic board facing the inside of the cabinet.
5. On the rear side of the device, connect flat cable [2] back by maintaining the front face and

the seal onto the opening. Then, set the connection board onto the opening by inserting the 4 distance sleeves [6] onto the 4 screws of the front face.

6. Screw in an alternating pattern the 4 screws [3] of the front face into the distance sleeves [6] of the connection board.
7. Connect the 5 wires [1] back successively by pressing the orange locking levers with a screwdriver.
8. Wire according pin assignment described in paragr. 4.4.3 by respecting the instructions described in paragr. 4.4.
9. Use the supplied cable clips [7] to fit the cables to the connection plate.



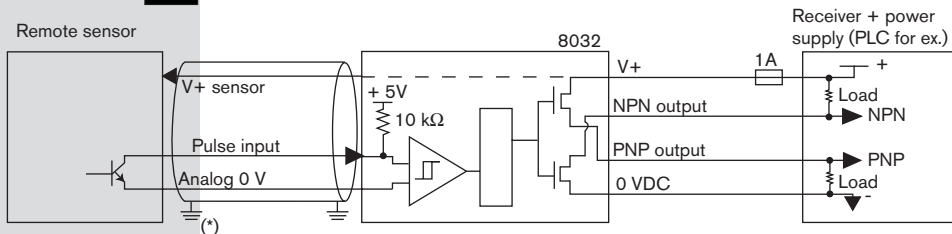
#### 4.4 Electrical connection

Always ensure the power supply is switched off before working on the device. All the cable plugs of the wall-mounted version must be pulled out. Use:

- a shielded cable with an operating temperature  $> +80\text{ }^{\circ}\text{C}$ .
- a high quality voltage supply (filtered and regulated).

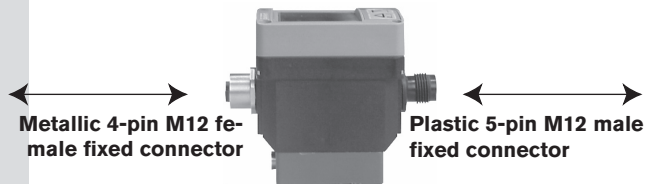
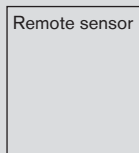


**A 1-A fuse must be used for the power supply.**

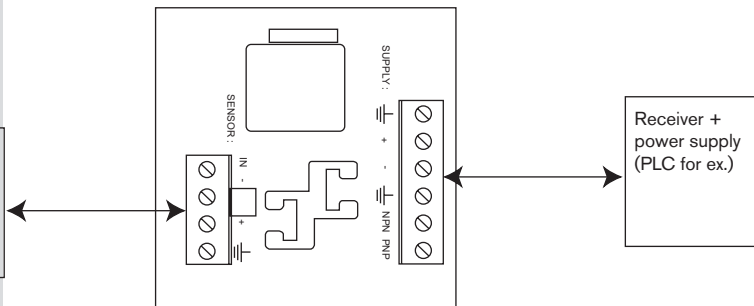
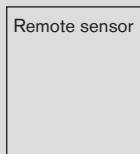


(\*) By electromagnetic perturbations use a shielded cable to connect the remote sensor to the controller and connect the cable at both ends to an earth with the same potential.



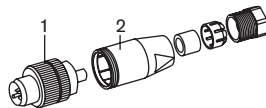
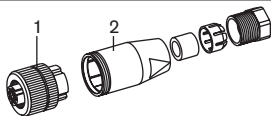


**8032, wall-mounted version**



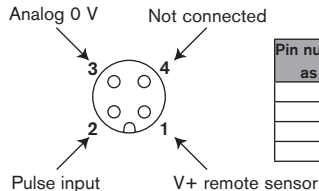
**8032, panel-mounted version**

## 4.4.1 Cable plugs (wall-mounted version only)

**Multipin M12 cable plugs (not supplied, see ordering table for accessories)**

- Loosen threaded ring [1]
- Remove part [2] from the connector.
- Wire according to pin assignment (see 4.4.2)

## 4.4.2 Wiring of the wall-mounted version



**NPN / PNP wiring of the 4-pin  
M12 metallic fixed connector**

Pin number of the 4-pin M12 cable available as an accessory (order code 448857)	Wire colour
1	brown
2	white
3	blue
4	black

**NPN/PNP wiring of the plastic  
5-pin M12 fixed connector**

Pin number of the 5-pin M12 cable available as an accessory (order code 438680)	Wire colour
1	brown
2	white
3	blue
4	black
5	grey

The controller is fitted with a steerable 5-pin M12 fixed connector:  
Unfasten counternut. Turn the fixed connector to the right position, but by max. 360° to avoid twisting of the cables inside the housing. Fasten counternut using the appropriate tool while maintaining the fixed connector in the right position.

(\*) Functional earth

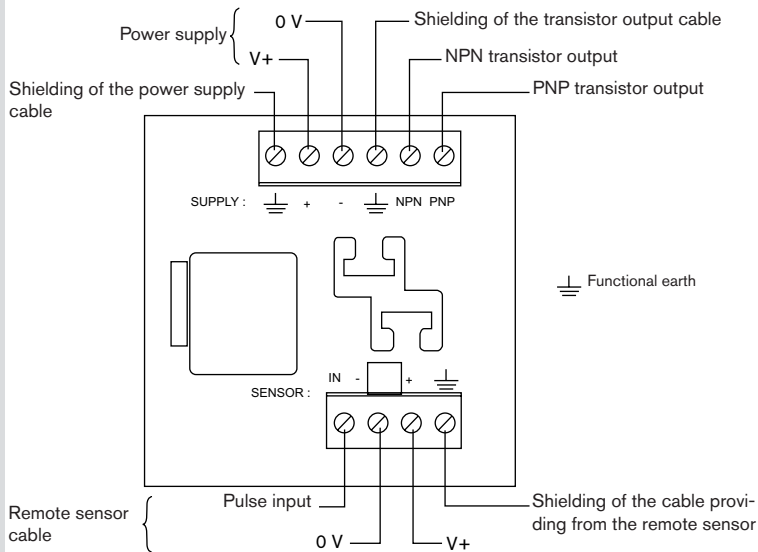


### Operating safety

When the cable plugs are not correctly plugged-in and tightened, there is a risk to electrocute yourself.

Always check all the cable plugs before powering the device to ensure the good operating of the device.

## 4.4.3 Wiring of the panel-mounted version



ENGLISH

ENGLISH

8032

21

**bürkert**



### 5.1 General recommendations

Keep in mind that the process may be influenced by all the parameter settings you make. Fill-in the table on page 28 with your settings of the controller.

### 5.2 Functionalities

The device has three operating modes :

#### **Normal Mode**

Display of the measured flow rate and the switching thresholds programmed. From the Normal mode, you can access the Calibration and Simulation modes.

#### **Calibration Mode**

Access to the programming of all the parameters (unit, K-factor, calibration through the „Teach-in“ feature, output, filter, bargraph). From the Calibration Mode, you can go back to the Normal Mode.

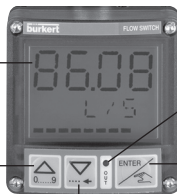
#### **Simulation Mode**

Entering a theoretical flow rate value to test the configuration programmed in the Calibration Mode. From the Simulation Mode, you can go back to the Normal Mode.

### 5.3 Programming keys

To display the measured value and the configuration (8 characters: 4 numeric et 4 alphanumeric characters)

Modifies the displayed value (0...9) ;  
To go to the previous function.



To indicate the status of the switching output (red LED)

To validate a function;  
To validate the entered data.

To select the character;  
To go to the next function.

### 5.4 Default Configuration

At the first powering up, the configuration of the controller 8032 is as follows:

Flow rate unit:	l/s
K factor:	1
Output:	hysteresis, inverted
OLO:	0
OHI:	0
DEL:	0 s
Filtre:	2
BGLO:	0
BGHI:	0
Extension board:	no (feature not used)

## 5.5 Normal Mode

Display of the measured flow rate.

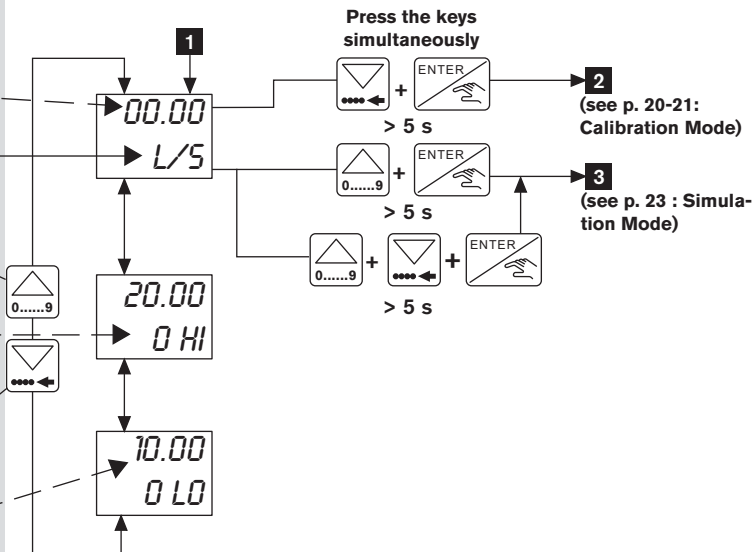
Unit of the measured flow rate.

To go back to the previous function.

To display the high threshold value (O HI).

To go to the next function.

To display the low threshold value (O LO).

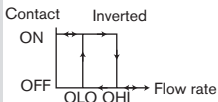
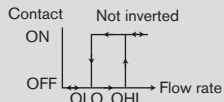




## 5.6 Possible switching modes of the 8032

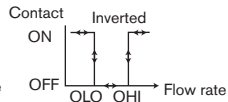
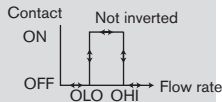
### Hysteresis Mode

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

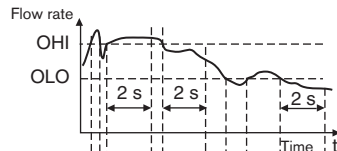


### Window Mode

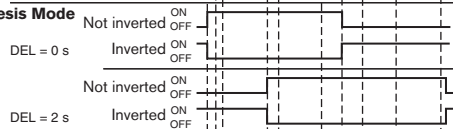
The change of state occurs when any threshold is detected.



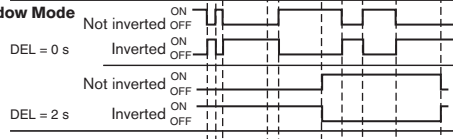
The delay (DEL) is set for the both switching thresholds. The switching only occurs when either threshold value (OHI - OLO) is exceeded for a duration higher than the DEL delay.



#### Hysteresis Mode



#### Window Mode



Switching examples of the 8032 depending on the flow rate and the switching mode chosen

## 5.7 Calibration Mode

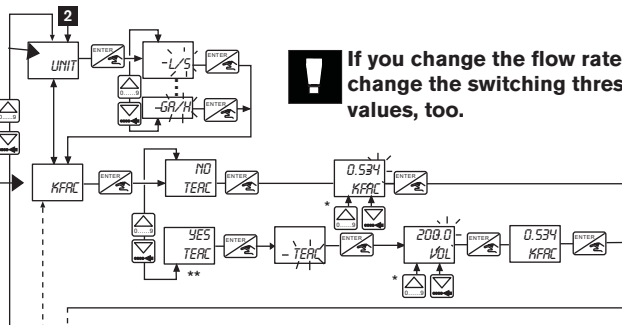
**To choose** the flow rate unit (l/s, l/min, l/h, m<sup>3</sup>/min, m<sup>3</sup>/h, Ga/s, Ga/min, Ga/h).

**To go back** to the previous feature.

**To go to** the next function.

**To enter** the K-factor of the measuring device or have it calculated through the Teach-in feature\*\*.

K is the multiplication coefficient between the frequency transmitted by the remote sensor and the flow rate to be measured.



**!** If you change the flow rate unit, change the switching threshold values, too.

\* To move the decimal point, press simultaneously keys and

\*\* To use the «Teach-In» feature, connect the 8032 controller to a valve which makes it possible to fill a tank with a capacity of x litres (200 litres for instance).

When the display shows «YES TEAC», press the «ENTER» key and open the valve: The «TEAC» message flashes.

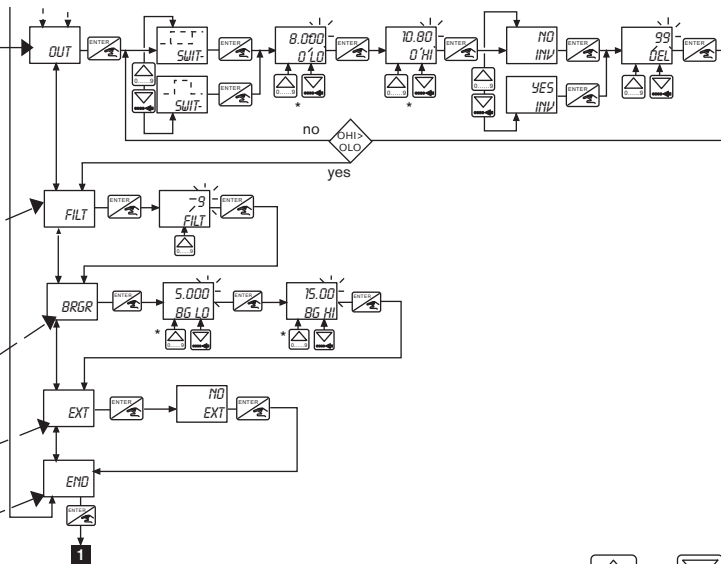
When the tank is full (200 litres), press «ENTER» again. By means of keys and enter the volume of fluid which circulated through the circuit (200 litres): the controller calculates the K factor and displays it.

- the switching mode of the output (Hysteresis or Window, see p. 25)
- the low (O LO) and high (O HI) switching thresholds
- whether the switching mode is inverted or not (INV, see p. 25)
- the delay before switching (DEL, in seconds)

**To define** the min. (BG LO) and max. (BG HI) values of the bargraph at the bottom of the display.

Feature EXT not used.

**To return (END) to the display of the flow rate in the Normal mode.**



\* To move the decimal point, press simultaneously keys



## 5 PROGRAMMING

## Remote flow rate controller 8032

**Configuration of the 8032: Fill-in the table with the parameters set in the Calibration mode.**

Unit	K factor	Switching mode		Thresholds		Inverted		Delay	Filtre	Bargraph		Datum	Signature
UNIT	K FAC	Hyst. <sup>1)</sup>	Win. <sup>2)</sup>	O LO	O HI	YES	NO	DEL (s)	FILT	BG LO	BG HI		

**1) Hysteresis mode:**



**2) Window mode:**



## 5.8 Simulation Mode

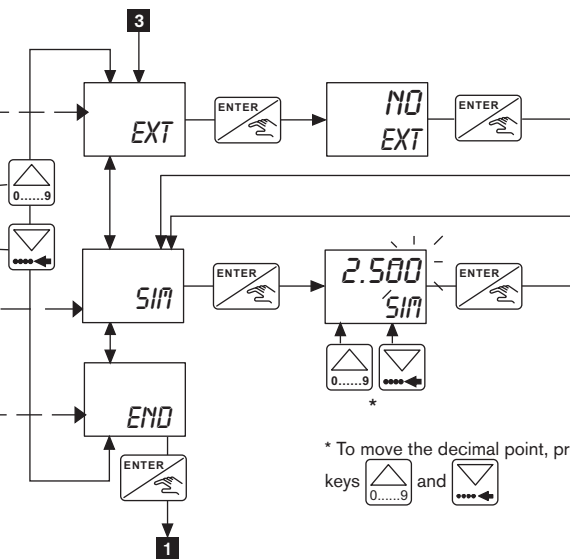
Feature EXT not used.

To go back to the previous feature.

To go to the next function.

To test the switching thresholds after entering a flow rate value (SIM) and PRESSING THE ENTER KEY.

To return (END) to the display of the flow rate in the Normal mode.



### 6.1 Cleaning

The controller 8032 can be cleaned with water or any solution compatible with the materials the device is made of.

For more information, please contact your Bürkert sales office.

### 6.2 Error messages

Displayed message	Signification	What to do
ERR 0	Calibration data is lost. Reading error: the process is stopped.	Press the ENTER key to go back to the Normal mode. The device has returned to its default configuration: the device must be calibrated again. If the message appears frequently, send the device back to your Bürkert sales office.
ERR 1	Calibration data cannot be saved. Write error: the process is stopped.	Press the ENTER key to go back to the Normal mode. The device displays the configured data; BUT this data has not been saved: the device must be calibrated again. If the message appears frequently, send the device back to your Bürkert sales office.
ERR 2	The calibration parameters cannot be accessed. Menu reading error: the process goes on operating.	Press the UP and DOWN keys under the display to scroll through the menus. If the message appears frequently, send the device back to your Bürkert sales office.

### 6.3 Accessories for the wall-mounted 8032

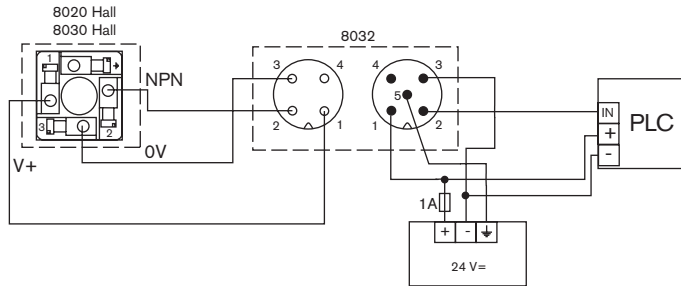
Accessory	Order code
5-pin M12 female cable plug, to be wired	917116
5-pin M12 female cable plug, moulded on a shielded cable (2 m)	438680
4-pin M12 male cable plug, to be wired	448856
4-pin M12 male cable plug, moulded on a shielded cable (2 m)	448857

### 6.4 Order codes of remote sensors 8032

Version	Supply voltage	Input	Output	Electrical connection	Order code
Wall-mounted	12-30 VDC	Pulse	Transistor NPN and PNP	5-pin M12 male fixed connector and 4-pin M12 female fixed connector	448861
Panel-mounted	12-30 VDC	Pulse	Transistor NPN and PNP	Terminal strips	558181

### 7.1 Connection example with a 8032 in the wall-mounted version

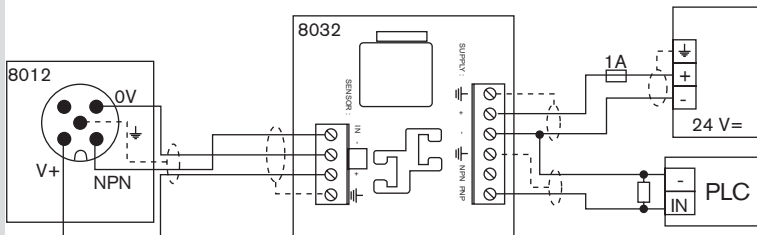
Connection of the wall-mounted 8032 to the remote sensor 8020 or 8030 in the Hall version and to a PLC.





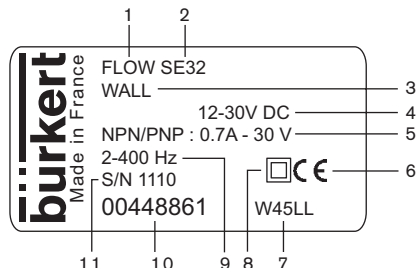
## 7.2 Connection example with a 8032 in the panel-mounted version

PNP connection of the panel-mounted 8032 to a remote sensor 8012 with M12 fixed connector and NPN output on one hand and to a PLC on the other hand.



### 7.3 Description of the label of the wall-mounted 8032

1. Measured quantity
2. Type of controller
3. Version of the controller
4. Power supply
5. Output characteristics
6. CE mark
7. Manufacturer code
8. Protection class : protective insulation
9. Measuring range
10. Order code
11. Serial number



## 7.4 Description of the label of the panel-mounted 8032

1. Measured quantity
2. Type of controller
3. Version of the controller
4. CE mark
5. Protection class : protective insulation
6. Power supply
7. Measuring range
8. Order code
9. Manufacturer code
10. Serial number
11. Output characteristics

