bürkert
FLUID CONTROL SYSTEMS

Type SE58 L

Transmitter

Operating Instructions

CE

DE

Ausführliche Informationen finden Sie in der Bedienungsanleitung
unter der Internetadresse:
country.burkert.com > SE58
oder
scannen Sie folgenden QR-Code ein:

EN

Detailed information can be found in the operating instructions
at the Internet address:
country.burkert.com > SE58
or
scan the following QR code:

FR

Vous trouverez des informations détaillées dans le mode d'emploi
à l'adresse Internet suivante :
country.burkert.com > SE58
ou
scannez le code QR suivant :

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(*) Any changes using MCP are not recommended, unless:
- after receiving corresponding training by burkert,
- done by professional,
- agreed by the end user, and done inline with the MCP manual

INTRODUCTION

- These operating instructions and description of device functions are provided as part of the scope of supply.
- They could be modified without prior notice. The improper use, possible tampering of the device or parts of it and substitutions of any components not original, renders the warranty automatically void.
- The flowmeter realizes a measure with liquids of conductivity greater than 5µS/cm in closed conduits, and is composed of a transmitter (described in this manual) and a sensor (refer to the specific manual).
- The transmitter could be coupled directly on the sensor (compact version) or coupled to the sensor by cable supplied with it (remote version).

TRANSMITTER

SENSOR
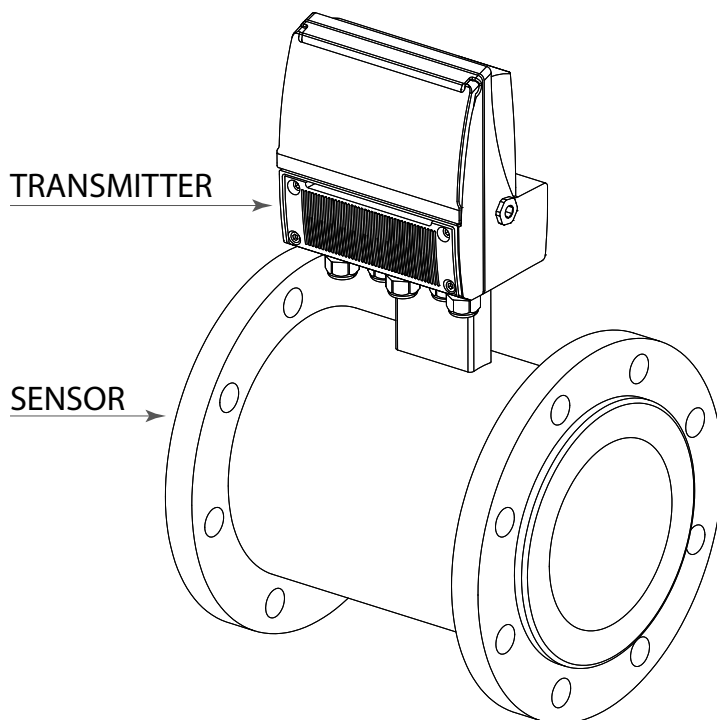
SAFETY INFORMATION

Any use other than described in this manual affects the protection provided by the manufacturer and compromises the safety of people and the entire measuring system and is, therefore, not permitted. The manufacturer is not liable for damaged caused by improper or non-designated use.

- Transport the measuring device to the measuring point in the original packaging. Do not remove covers or caps before starting installation. In case of cartons packaging it is possible to place one above the other but no more than three cartons. In case of wooden packaging do not place one above the other.
- Disposal of this product or parts of it must be carried out according to the local public or private waste collection service regulations.
- The transmitter must only be installed, connected and maintained by qualified and authorized specialists (e.g. electrical technicians) in full compliance with the instructions in this Operating Instruction, the applicable norms, legal regulations and certificates (depending on the application).

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• The specialists must have read and understood these Operating Instructions and must follow the instructions it contains. The Operating Instructions provide detailed information about the transmitter. If you are unclear on anything in these Operating Instructions, you must call the Bürkert service department.

• The transmitter should only be installed after have verified technical data provided in these operating instructions and on the data plate.

• Specialists must take care during installation and use personal protective equipment as provided by any related security plan or risk assessment.

• Never mount or wire the transmitter while it is connected to the power supply and avoid any liquid contact with the device's internal components. To connect remove the terminals from the terminal block.

• Each part of the instrument must be examined or supplied exclusively by the manufacturer or his representative

• Before connecting the power supply check the functionality of the safety equipment.

• Repairs may only be performed if a genuine spare parts kit is available and this repair work is expressly permitted.

• For the cleaning of the device use only a damp cloth and for the maintenance/repairs contact the service center.

• If the instrument is used in a another way than the one specified by the manufacturer, the protection provided by the device may be compromised.

Before starting up the equipment please verify the following:

• Power supply voltage must correspond to that specified on the data plate
• Electric connections must be completed as described
• Ground (earth) connections must be completed as specified

Verify periodically (every 3-4 months):

• The power supply cables integrity, wiring and other connected electrical parts
• The transmitter housing integrity
• The suitable tightness of the sealing elements
• The front panel integrity (display and keyboard)
• The mechanical fixing of the transmitter to the pipe or wall stand

SAFETY CONVENTION

DANGER ELECTRIC SHOCK   WARNING   PRECAUTIONS   ATTENTION

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TECHNICAL CHARACTERISTICS

Electrical Characteristic

Converter classification: class I,

IP67 (where: 6 = totally protected against dust, 7 = Protected against the effects of temporary immersion) /

IP68 (where: 6 = totally protected against dust, 8 = continuous immersion 1.5 m; 1 h)

for aluminum and PA6 housing, installation category (overvoltage) II, rated pollution degree 2.

Power supply versions	Power supply voltage	Power supply frequency	Min Power	Max power
HV	100-240V~	45-66HZ	1,5 W (Sensor only)	12 W (all Loads)
LV	24-36V ⎓	//		
	24-36V~	45-66HZ		
LLV	12-48V ⎓	//		

- Voltage variations must not exceed ±10% of the nominal one.
- Input/output insulated
- The output 4-20mA (optional) is electrically connected to the ON/OFF outputs and the output power supply (24V ⎓).
- Version LV/LLV : inrush current < 20A
  Version HV : inrush current < 25A

Note: The devices powered at 24-36 V and 12-48 V must only be powered with power supplies compliant with the IEC61010 standard

Environmental Use Conditions

The transmitter can be installed internally or externally
Altitude: untill 4000m
Humidity range: 0-100%

AMBIENT TEMPERATURE				
	Aluminium		Reinf. Nylon	
	Min*	Max	Min*	Max
°C	-20	+ 60	-10	+ 50
°F	-4	+140	+14	+122

ATTENTION

The battery will not be charged outside the below limits:
T board SE58 L < 0 °C
T board SE58 L > 50 °C

If the transmitter is supplied in compact version (transmitter over the sensor), consider the ambient temperatures more restrictive, otherwise refer to the relevant manuals.
* For discontinuous use, a thermostat heat source installation may be necessary.

Data Plate

The device label contain the following information:

Transmitter model	**Type**	**SE58 L (B0A1C2B1A4A0)**
Transmitter serial number	**S/N**	**ANZ000001**
Identification code	**ID**	**XXXXXX**
	Power	**100-240VAC 5VA** 44-66 Hz	Min-Max supply voltage range-supply voltage type-max. power consumption
Maximum ambient operation temperature	**MaxTa**	**50°C** S/N-S **04Z000002**	Sensor serial number

CE Y 21 MADE IN ITALY
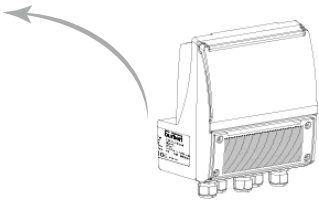
Maintenance

⚠ **ATTENTION**

In case of the maintenance involving the change of SE58 transmitter or sensor, an additional measurement deviation can occur.
To ensure the original accuracy announced in the datasheet, a flow calibration of the full instrument must be performed by Burkert.

TORQUES

To guarantee the housing's IP degree the following torques are required:

HOUSING MATERIAL	Housing screws (1)	Screws Terminal block cover (2)	Screws for display frame	PCB Screws	Version Cap (3)	Cable Glands (4)	Cap USB-B (5)
ALUMINIUM HOUSING	6 Nm	5.5 Nm	3 Nm	0.8 Nm	8 Nm	4 Nm	4 Nm
PLASTIC HOUSING	2 Nm	2 Nm	2.5 Nm	0.8 Nm	7 Nm	4 Nm	4 Nm

MAN 1000527802 EN Version: A Status: RL (released | freigegeben) printed: 01.04.2022
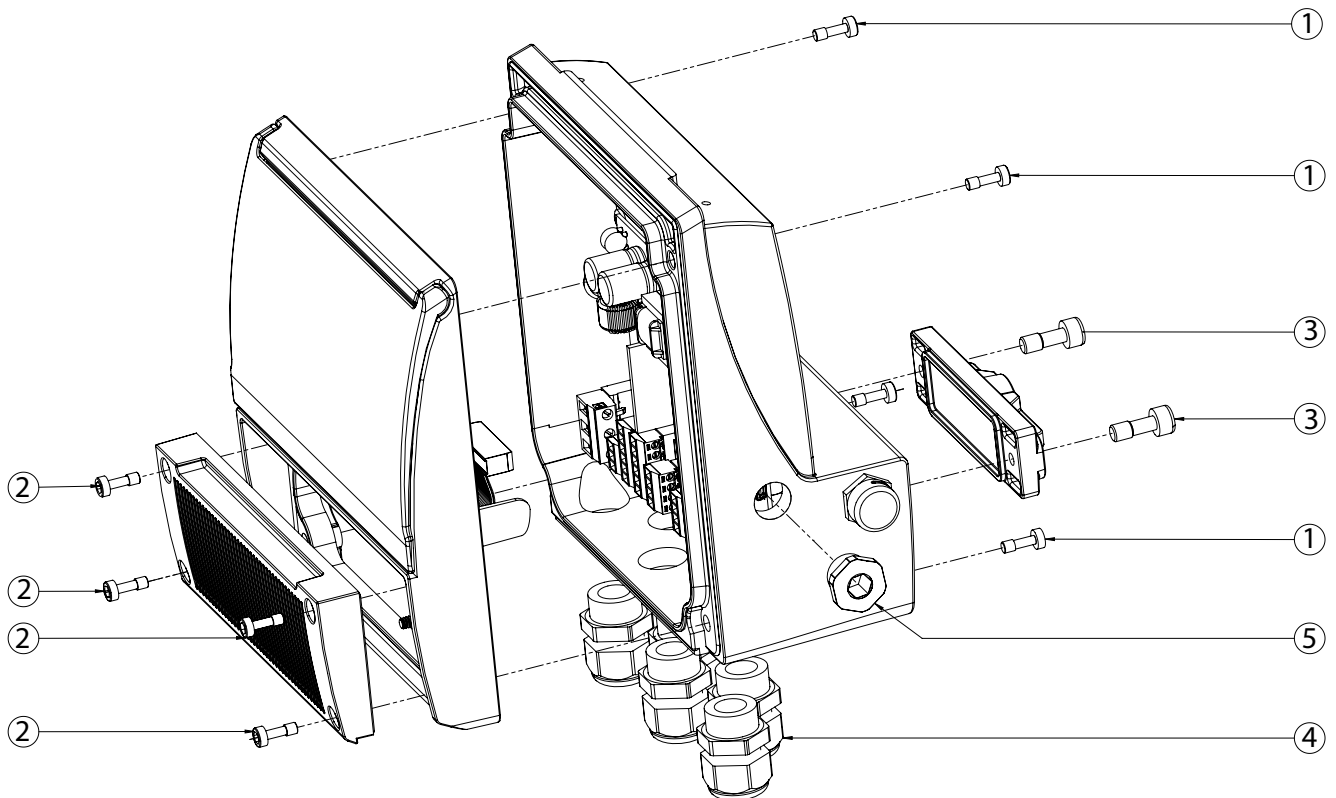
Stainless steel housing

| HOUSING MATERIAL	Housing screws (1)	PCB Screws (2)	Cable Glands (4)	Cap USB-B (5)
Stainless steel HOUSING	2.5 Nm	0.8 Nm	4 Nm	2.5 Nm
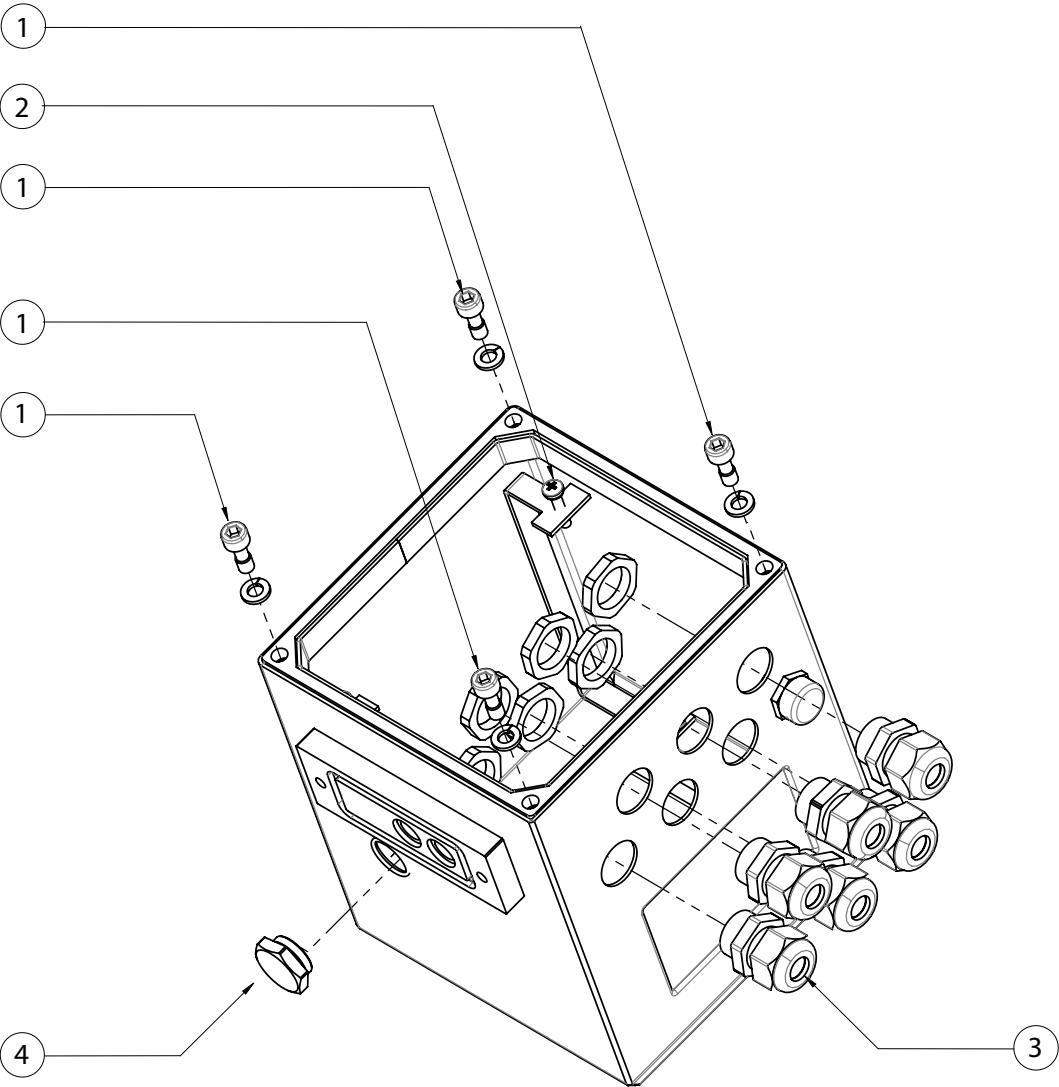
MAN 1000527802 EN Version: A Status: RL (released | freigegeben) printed: 01.04.2022

ELECTRICAL CONNECTION AND GROUNDING INSTRUCTIONS

Always ensure that the transmitter and the sensor are grounded (earthed) correctly. The grounding of the sensor and transmitter must ensure that the device and liquid are equipotential.
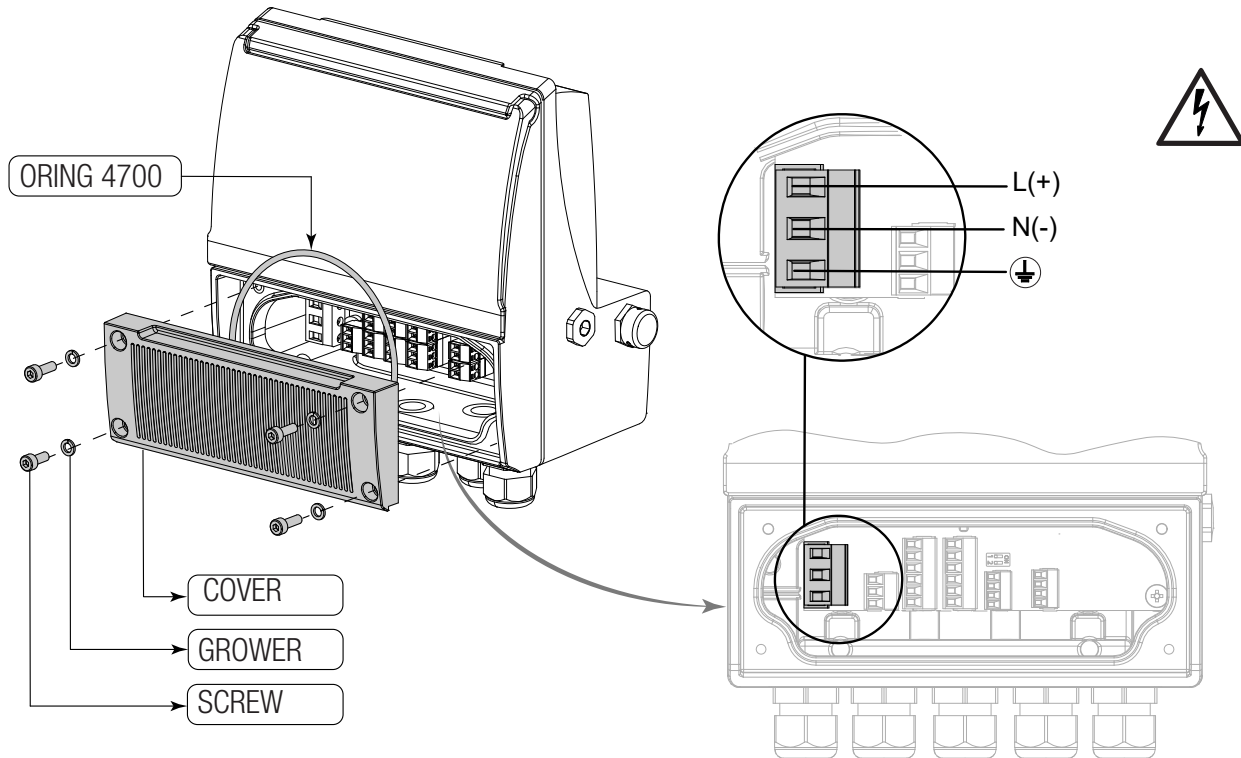
- Before connecting the power supply, verify that the main voltage is within the limits indicated on data plate.
- For the connections use only approved conductor, with fire-proof properties, whose section varies from 0.25 mm^2 to 1.50 mm^2, based on distance/power; additionally fix the power supply wires with an additional fastening system located close to the terminal.
- The power supply line must be equipped with an external protection for overload current (fuse or automatic line breaker).
- Provide in close proximity of the transmitter a magnetothermic circuit breaker easily accessible for the operator and clearly identified; whose symbols must conform to the electrical safety and local electrical requirements.
- Ensure that the component complies with the requirements of the standard for electrical safety distance.
- Check chemical compatibility of materials used in the connection security systems in order to minimize electrochemical corrosion. With aluminum housing should avoid direct contact between the ground connection cable and the aluminum housing. It is therefore recommended to connect the safety ground cable, by placing it between the washer and the metal bracket on the related terminal or use an eyelet terminal crimped on the ground protection cable.
- Sensor's hardwired inputs and outputs are connected to the transmitter through terminal blocks located inside the transmitter.
- To locate the terminal block loosen the 4 screws on the terminal block cover. When the front cover is lifted, the terminal block is visible. The terminal block is the hardwire connection of the transmitter to external equipment, including the sensor.
- The following pages give informations on the terminal block numbering, and the respective connecting of the sensor cables, and inputs/outputs.
- The mains power cables must have adequate values for the maximum current of the appliance, and the cable used must house the standards of the IEC 60227 standard or the IEC 60245 standard.
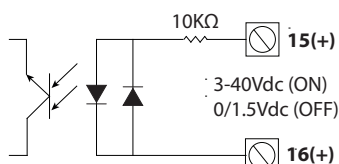
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ELECTRICAL CONNECTION TRANSMITTER- SENSOR

Sudden movements of the electrodes cable could introduce noise.
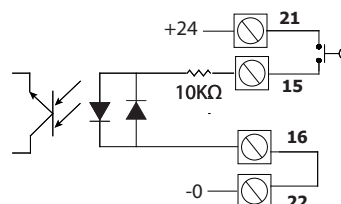
SH = SHIELD OF CABLE internally connected to ground.

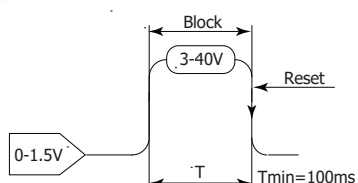MAN 1000527802 EN Version: A Status: RL (released | freigegeben) printed: 01.04.2022

ELECTRODES
E1
E2
C
SH
1 2 3 4

RS485
B
A
0V
SH
29 28 27 26

4-20 OUTPUTS
OUT2 (+) 4-20
OUT1 (+) 4-20*
OUT1-2 (-) 4-20
SH
25 24 23 22 21 20

OUTPUT
+24V
0V

* If the option HART is enable

HART REGISTERED

DIGITAL OUTPUTS
OUT2 C
OUT1 C
OUT 1-2 E
SH
19 18 17 16 15 14

DIGITAL INPUTS
IN1 +
IN1 -

COILS
C1
C2
SH
13 12 11

POWER SUPPLY
L (+)
N(-)

10
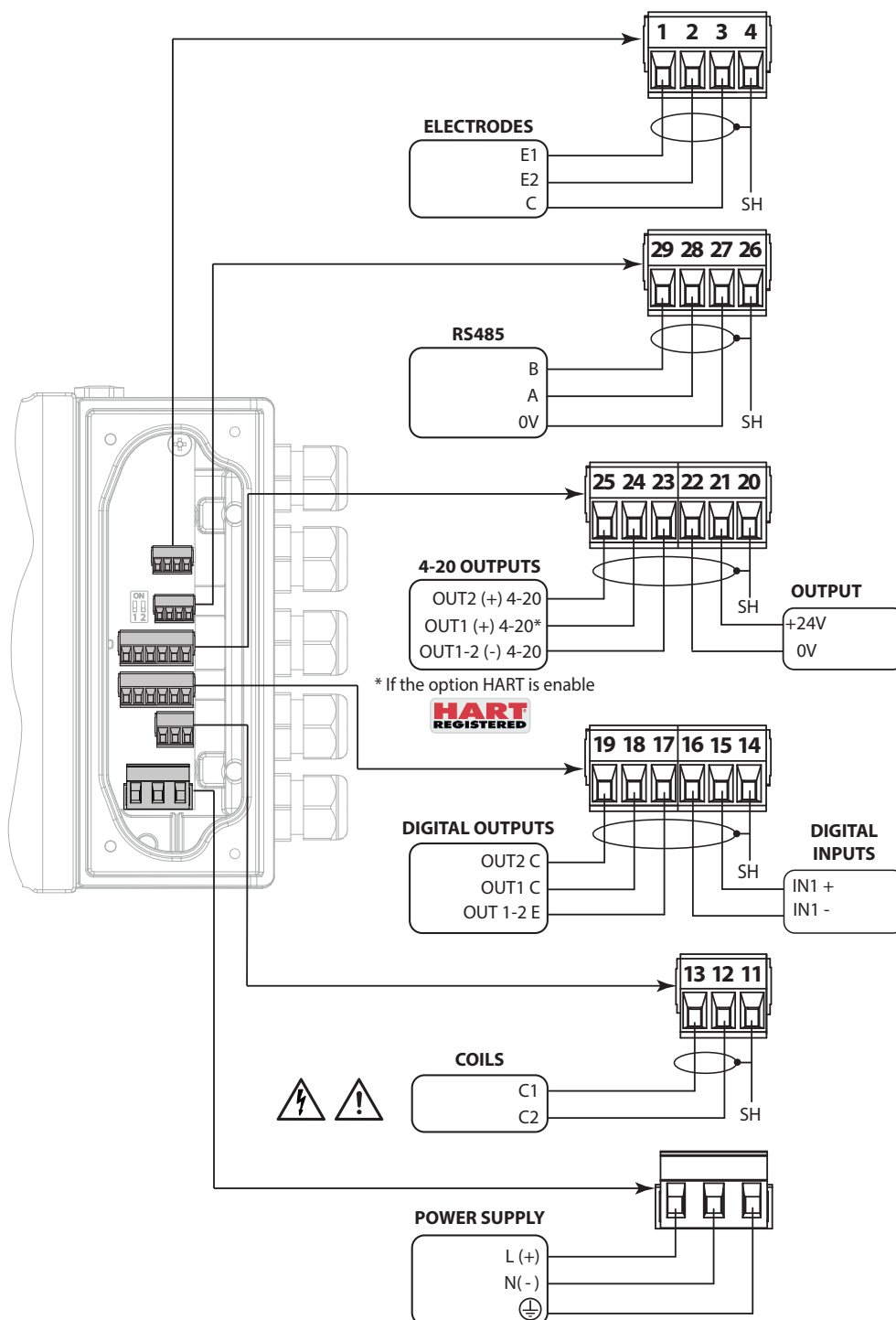
DIGITAL INPUT ON/OFF OPERATION

EXTERNAL POWER SUPPLY **INTERNAL POWER SUPPLY**

10KΩ
15(+)
3-40Vdc (ON)
0/1.5Vdc (OFF)
16(+)

+24   21
10KΩ   15
16
-0   22

RESET TOTALIZERS

Block
3-40V
Reset
0-1.5V
T   Tmin=100ms

Necessary conditions for enabling the function
- POS. 6.1 (T+; total positive set on)
- POS. 6.2 (P+; partial positive set on)
- POS. 6.3 (T-; total negative set on)
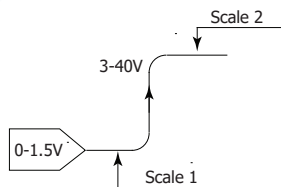- POS. 6.4 (P-; partial negative set on)

BLOCK TOTALIZERS

Block Totalizers
3-40V
0-1.5V
Totalizers Active
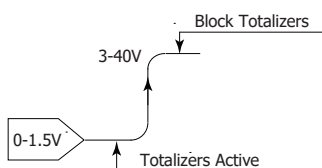
Necessary conditions for enabling the function
- POS. 6.5 (Totalizer counting lock command set on)

RANGE CHANGE

Scale 2
3-40V
0-1.5V
Scale 1

Necessary conditions for enabling the function
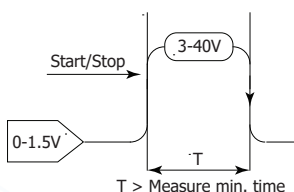- POS. 6.8 (Range change set on)

MEASURE LOCK

Measure blocked
18-30V
<18v
Measure
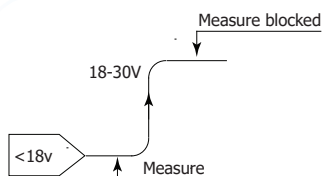
Necessary conditions for enabling the function

- POS. 6.6 (Totalizer counting lock command set on)

BATCHING

Start/Stop
3-40V
0-1.5V
T
T > Measure min. time

Necessary conditions for enabling the function
- POS. 7.1   Output 1 functions, Set to BATCHING

Measure freq.	T MIN
50HZ	20ms
10HZ	100ms
5HZ	200ms
2HZ	500ms

MUST BE
T > Tmin

# OUTPUTS WIRING

Digital outputs

18 OUT 1(+)
19 OUT 2(+)

17 (COM. OUT 1-2)
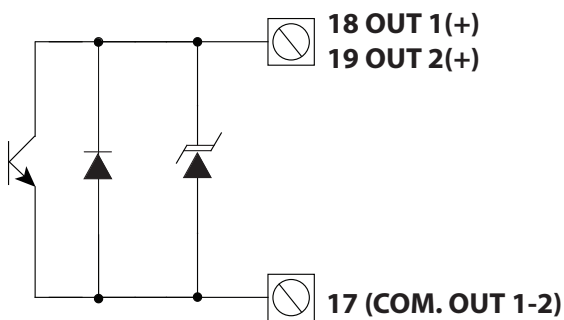
- Opto-insulated output with floating collector and emitter terminals freely connectable
- Maximum switching voltage: 30V ⎓
- Maximum switching current: 100mA
- Maximum saturation voltage between collector and emitter @100mA: 1.2V
- Maximum switching frequency (load on the collector or emitter, RL=470 Ohm, VOUT=24V ⎓): 1250Hz
- Maximum reverse current bearable on the input during and accidental polarity reversion (VEC): 100mA
- Insulation from other secondary circuits: 500 V ⎓

Analog outputs

mA

24 OUT 1(+)
25 OUT 2(+)

23 (COM. 4-20 OUT 1-2)
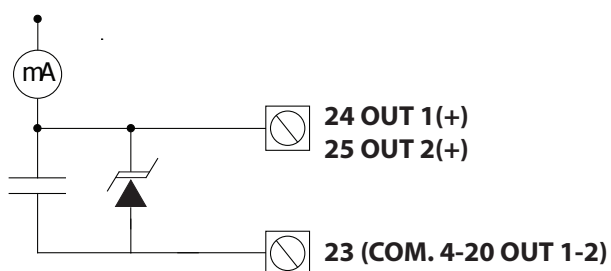
- Opto-insulated output
- Maximum load: 1000Ω
- Maximum voltage without load: 27V ⎓
- Refresh frequency is the same of the sample frequency of the connected sensor
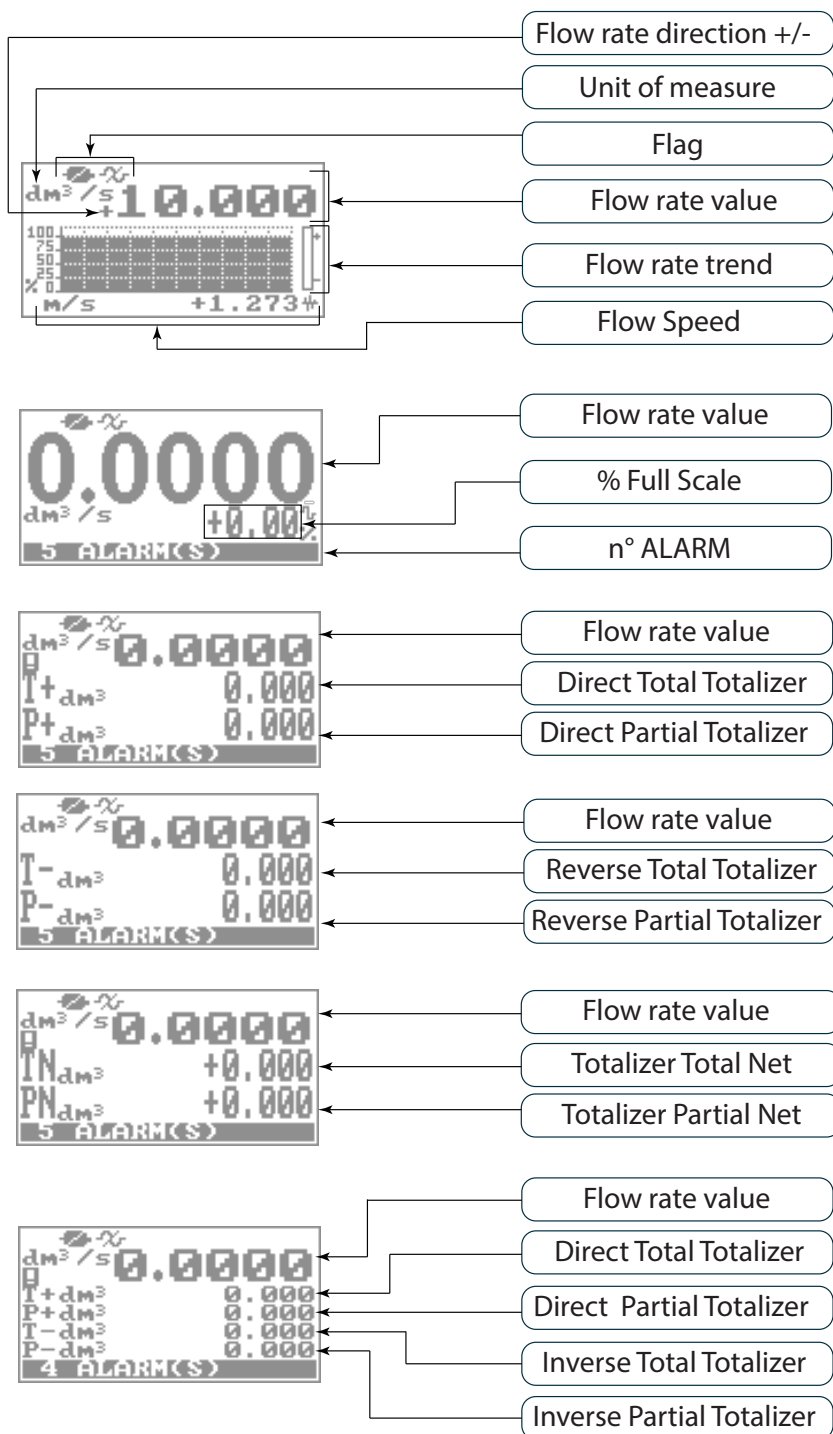- Protected against persistent over voltages to maximum 30V ⎓

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START VISUALIZATION PAGES

The direct exposure of the transmitter to the solar rays, could damage the liquid crystal display. The visualization pages can be changed according to device's setup.
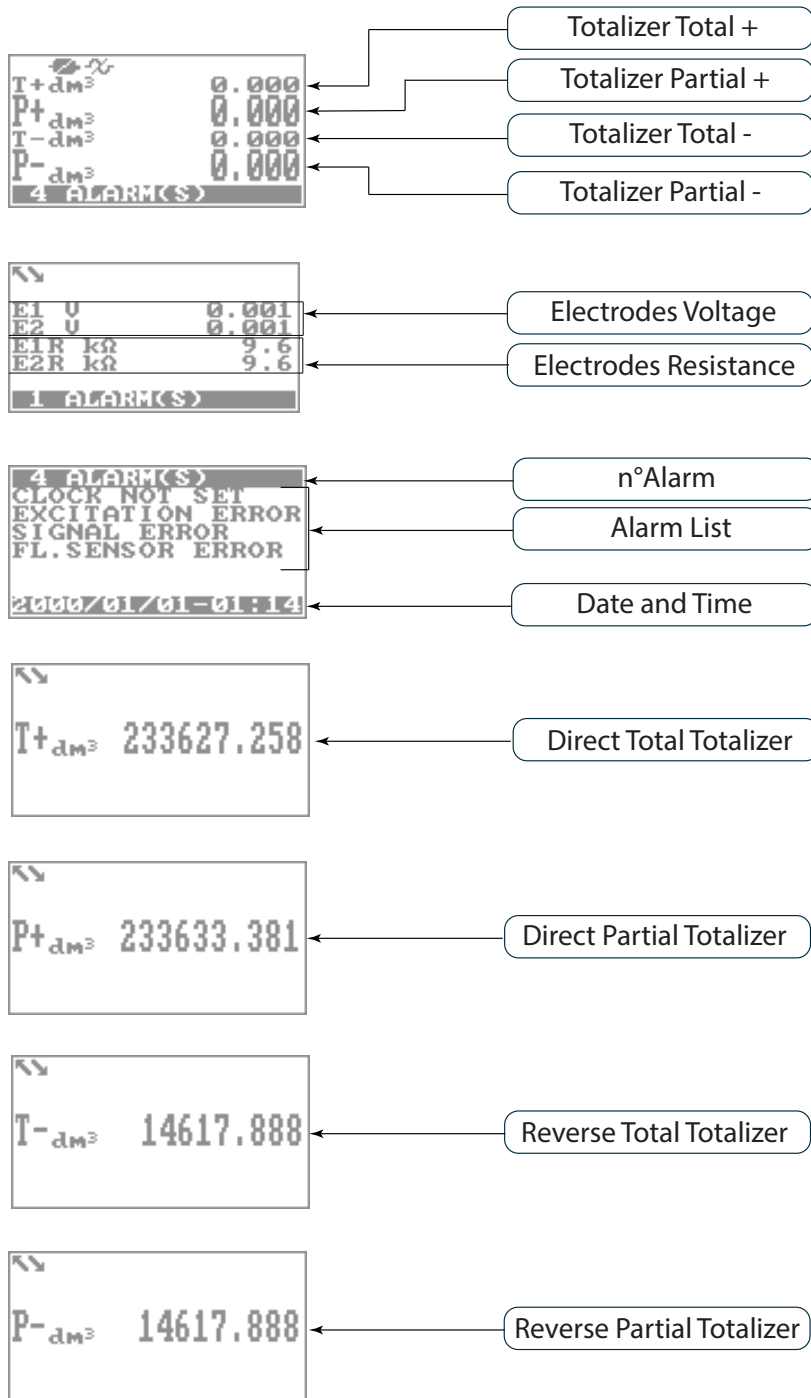
◀▶ Push to change visualization

|	
	Flow rate direction +/-
	Unit of measure
	Flag
	Flow rate value
	Flow rate trend
	Flow Speed

	Flow rate value
	% Full Scale
	n° ALARM

	Flow rate value
	Direct Total Totalizer
	Direct Partial Totalizer

	Flow rate value
	Reverse Total Totalizer
	Reverse Partial Totalizer

	Flow rate value
	Totalizer Total Net
	Totalizer Partial Net

	Flow rate value
	Direct Total Totalizer
	Direct Partial Totalizer
	Inverse Total Totalizer
	Inverse Partial Totalizer

13

◀▶ Push to change visualization

Totalizer Total +

Totalizer Partial +

Totalizer Total -

Totalizer Partial -

```
T+dm³      0.000
P+dm³      0.000
T-dm³      0.000
P-dm³      0.000
  4 ALARM(S)
```

Electrodes Voltage

Electrodes Resistance

```
E1  V      0.001
E2  V      0.001
E1R kΩ       9.6
E2R kΩ       9.6
  1 ALARM(S)
```

n°Alarm

Alarm List

Date and Time

```
  4 ALARM(S)
CLOCK NOT SET
EXCITATION ERROR
SIGNAL ERROR
FL.SENSOR ERROR

2000/01/01-01:14
```

Direct Total Totalizer

```
T+dm³ 233627.258
```

Direct Partial Totalizer

```
P+dm³ 233633.381
```

Reverse Total Totalizer

```
T-dm³  14617.888
```

Reverse Partial Totalizer

```
P-dm³  14617.888
```

ACCESS TO THE CONFIGURATION MENU

The configuration can be done in two different ways:
• By keypad of transmitter
• By MCP interface (Virtual display of device)

Access Via Keypad
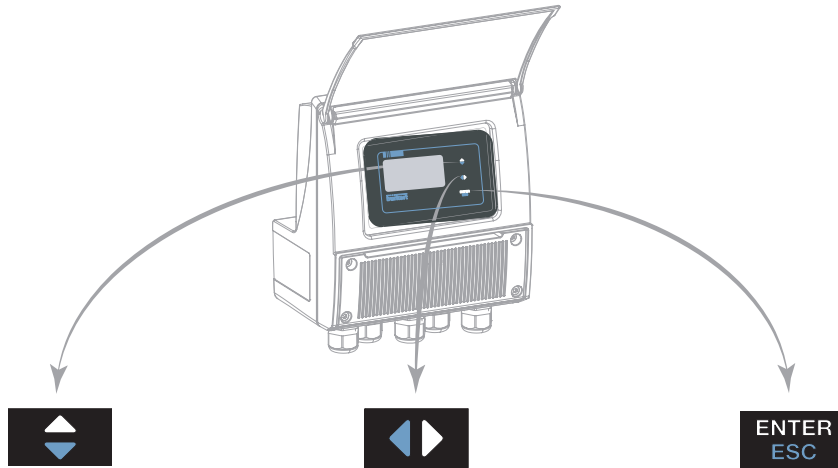
SHORT PRESSING (< 1 SECOND): Increases the numeric figure or the parameter selected by the cursor Returns to the previous subject on the menu.
LONG PRESSING (> 1 SECOND): Decreases the numeric figure or the parameter selected by the cursor. Proceeds to the next subject on the menu.

SHORT PRESSING (< 1 SECOND): Moves/positions the cursor rightward on the input field. Proceeds to the following subject of the menu. Change the display of the process data
LONG PRESSING (> 1 SECOND): Moves/positions the cursor leftward on the input field. Returns to the previous subject on the menu

SHORT PRESSING (< 1 SECOND): Enter /leave the selected function Enables the main menu for the device configuration Cancels the selected function under progress
LONG PRESSING (> 1 SECOND): Leaves the current menu Enables the totalizer reset request (when enabled) Confirms the selected function.

Access Via Mcp interface (Virtual Display)

You can access the device configuration menu by MCP.
MCP is a software that can be installed on Microsoft Windows® and allows you to set all the functions of the transmtter and customize the menu. To use the MCP interface, see its own manual.

However any changes using MCP are not recommended, unless:
• after receiving corresponding training by burkert,
• done by professional,
• agreed by the end user, and done inline with the MCP manual

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USB Position for PA6 and aluminium version

PG9 CAP

USB CABLE

MCP INTERFACE

USB mini B

USB A type
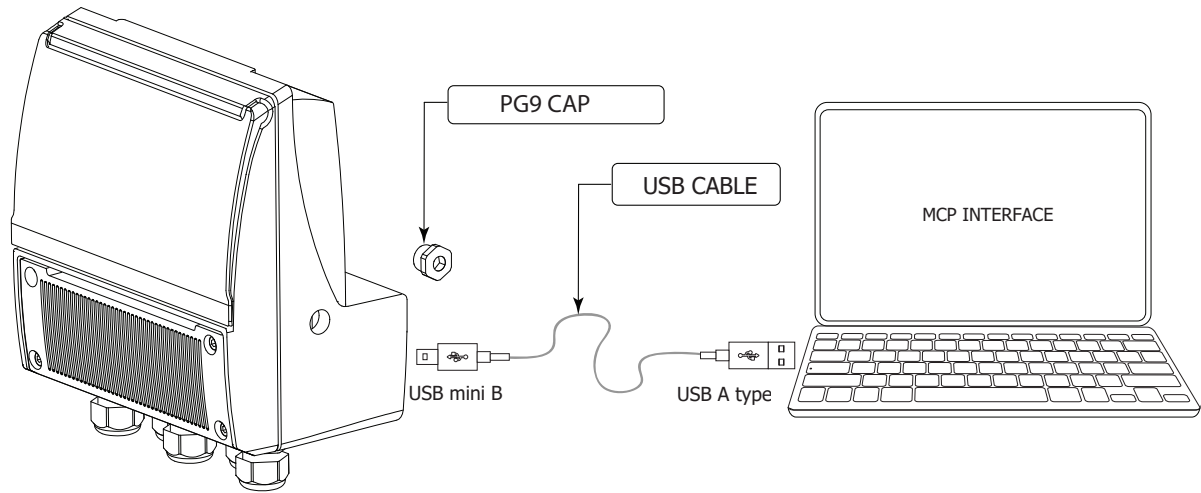
USB Position for stainless steel version

M18X0.75 CAP

MCP INTERFACE

USB mini B

USB A type

USB CABLE

17
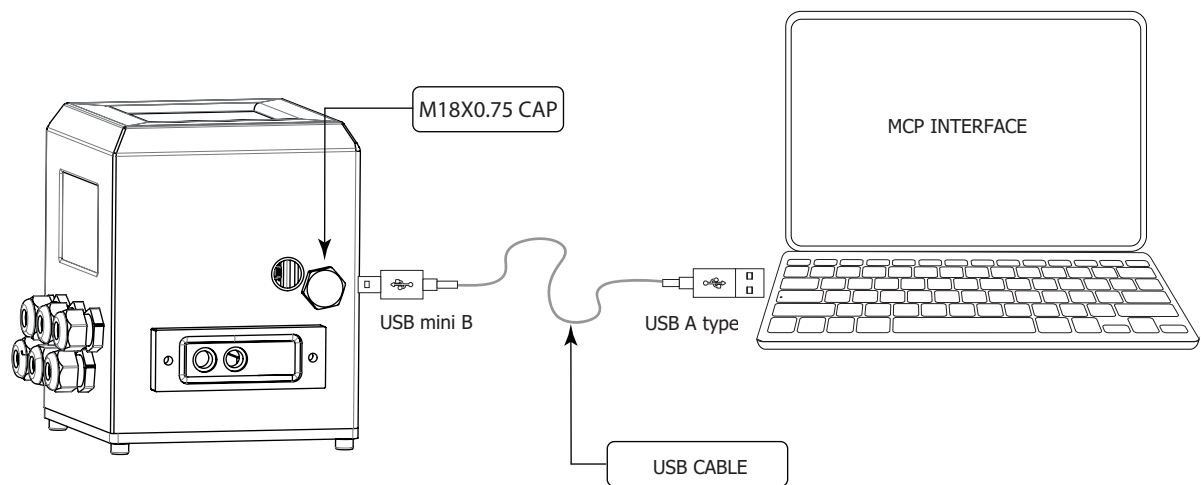
TRANSMITTER ACCESS CODE

The access for programming the device is regulated by six access levels logically grouped.
Every level is protected by a different code.

- Access Level 1-2-3-4 Freely programmable by user

Access Code Set : Menu 13 System

The CODE is Settable by keyboard or MCP interface.
Depending on the level of access different display functions will be visible.
These access levels interact with the "Restricted access"

Restricted Access Set : Menu 13 System

Settable Values

ON

OFF

Restrict = ON: Access permitted only to functions provided for a specific level;
Example: If the operator has a code of access level 3, after having set it, he can change only the functions with level 3 access.

Restrict = OFF: It enables to change functions for the selected level and ALL the functions with lower access level.
Example: If the operator has the code of level 3, after having set it, he can change all the functions at level 3 and those at lower levels.

⚠ * **WARNING:** take careful note of the customized code, since there is no way for the user to retrieve or reset it if lost.

Factory preset access codes:
- L1: 10000000
- L2: 20000000
- L3: 30000000
- L4: 40000000

The following example shows how to change the full scale by Quick Start menu; the second illustrates how to change the function by the Main menu.

EXAMPLE: modifying the full scale value from 4dm^3/s to 5dm^3/s, from the "Quick start menu"

1

Press the ENTER button to access the Quick Start menu
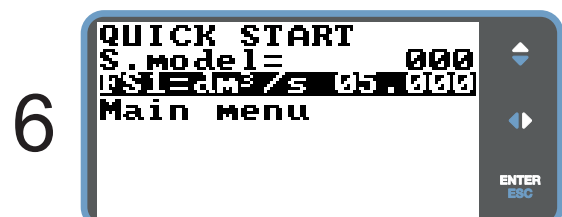
2
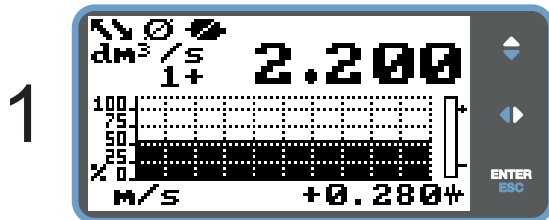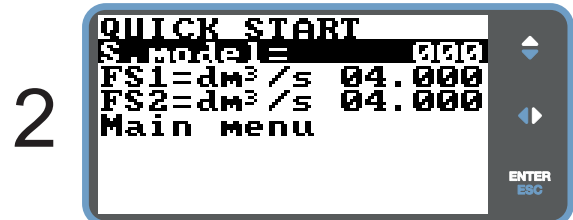
Select this function in the list to be edited
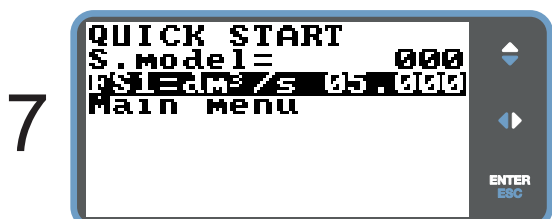
3
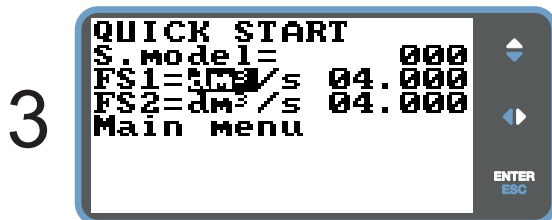
Press the ENTER button to select the function.
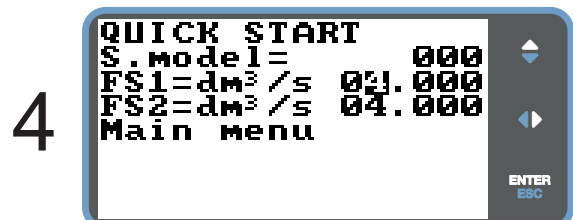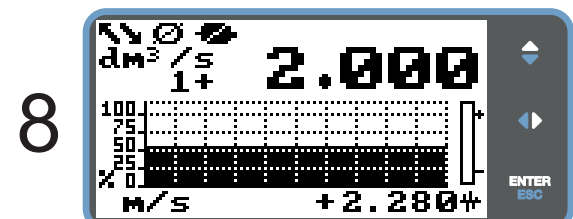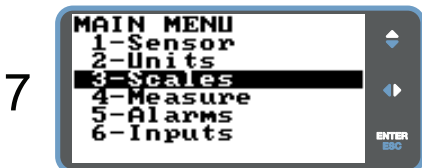
4

Select the value to be changed

5

Change the value

6

Confirm the new value

7

Long Push

8
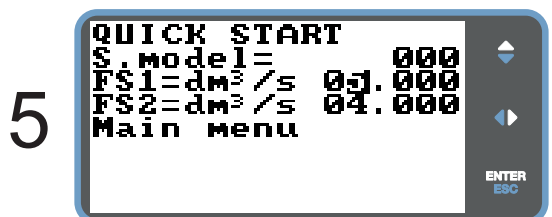
Main Page

EXAMPLE: modifying the full scale value from 4dm³/s to 5dm³/s, from the "Main Menu" (quick start menu enabled)

1
Press the ENTER button to access the Quick Start menu

2
Press arrow keys to select the cell in which to insert the number of the access code.
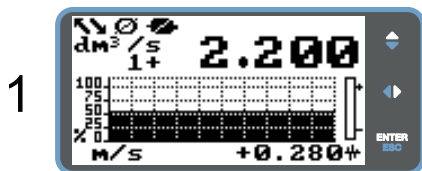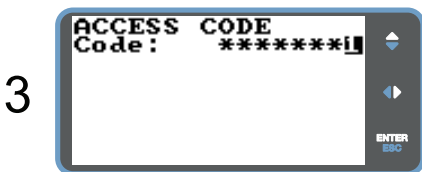
3
Press ENTER button to confirm value.

4
Select "Main Menu"

5
Press the ENTER button to access the Main Menu

6
Select function

7
Press the ENTER button to access the "Scale Menu"

8
Press the ENTER button to access the "Fs1"
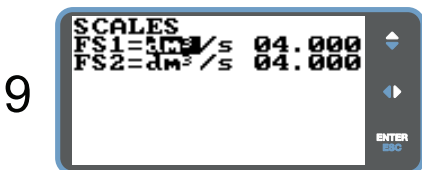
9
Select the value to be changed

10
Change the value
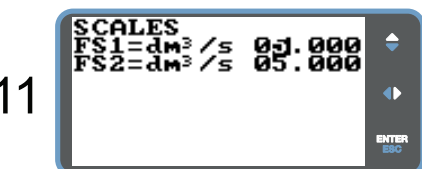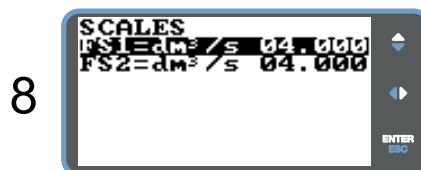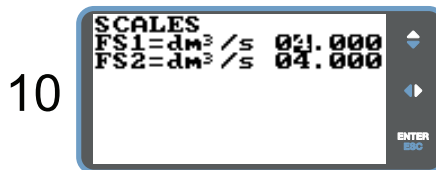
11
Press the ENTER button
Confirm the new value

12
Press Esc
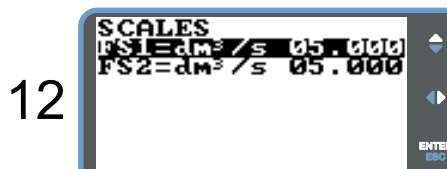
13
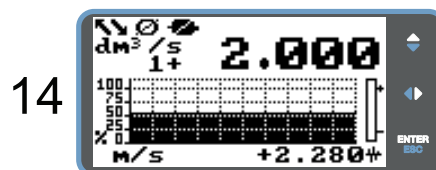Press Esc

14
Main page

20

At the end of its lifetime, this product shall be disposed of in full compliance with the environmental regulations of the state in which it is located.

MANUAL VERSION

VERSION	DATE	DESCRIPTION
SE58L_EN_BURKERT_R00_1.02.XXXX	07/04/2021	FIRST EDITION
SE58L_EN_BURKERT_R01_1.04.XXXX	18/08/2021	Update for electrical safety certification. Firmware update.
SE58L_EN_BURKERT_R04_1.04.XXXX	26/02/2022	Added notes for MCP and made some corrections on texts

MAN 1000527802 EN Version: A Status: RL (released | freigegeben) printed: 01.04.2022

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

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