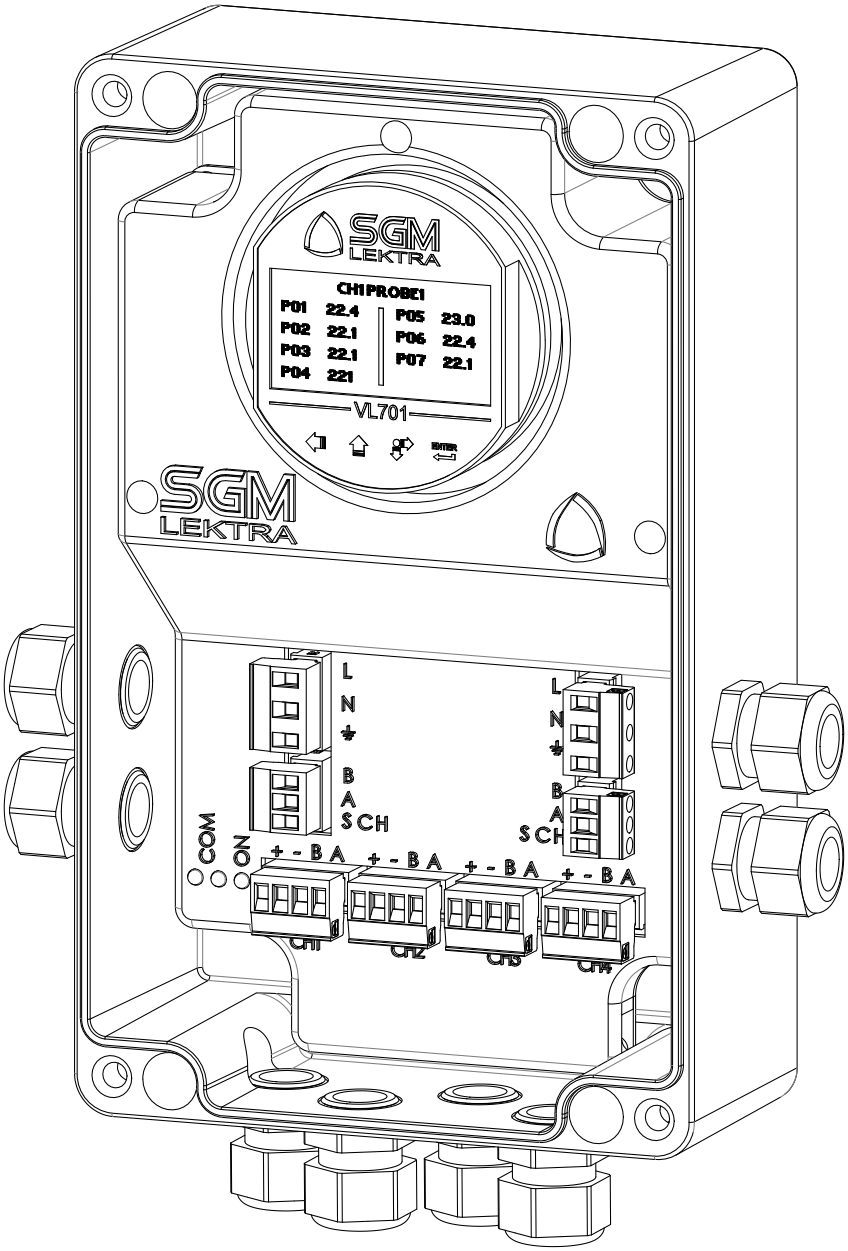
MUXM

multiplexer concentrator for TM and TU (pending) probes



technical documentation EN Rev. of 30/11/2023

sgm lektra

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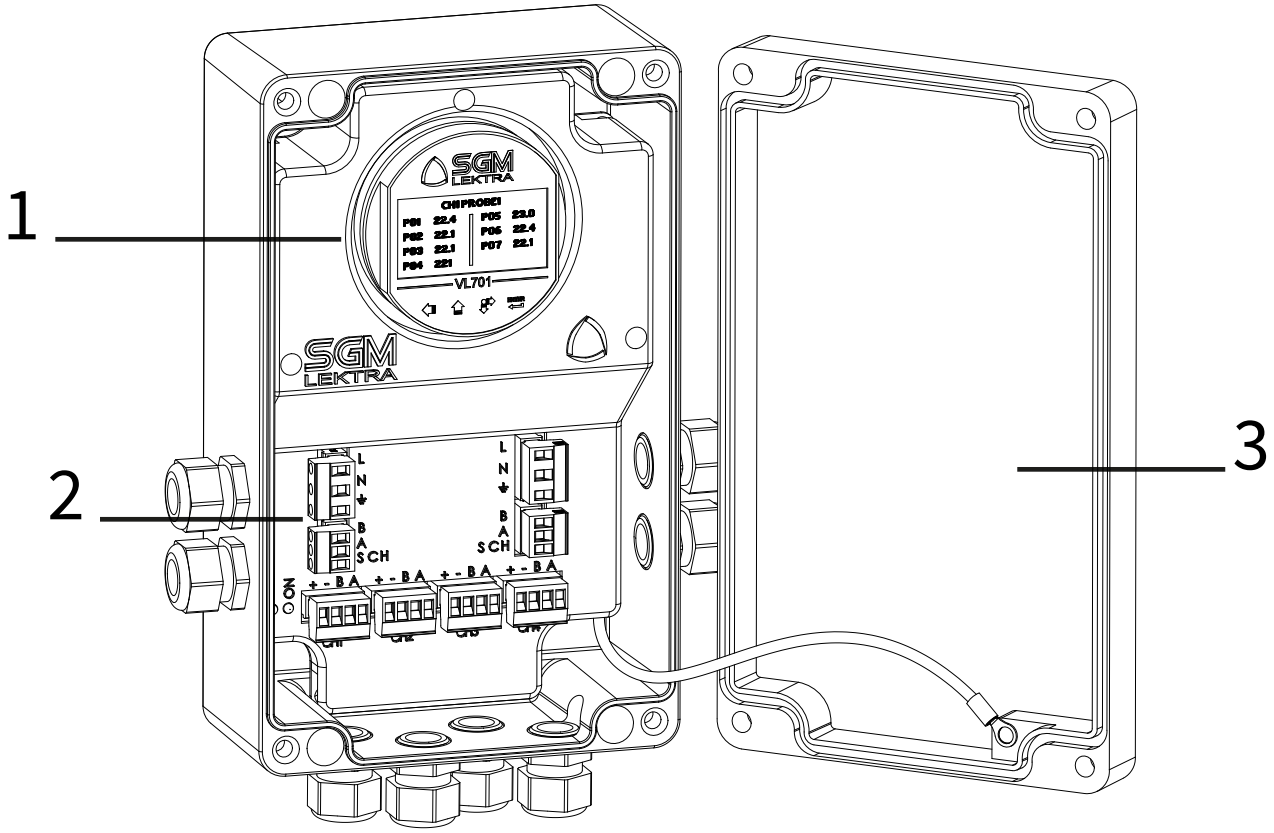
1-WARRANTY

Products supplied by SGM LEKTRA are guaranteed for a period of 12 (twelve) months from delivery date according to the conditions specifi ed in our sale conditions document.
SGM LEKTRA can choose to repair or replace the Product.
If the Product is repaired it will maintain the original term of guarantee, whereas if the Product is replaced it will have 12 (twelve) months of guarantee.
The warranty will be null if the Client modifi es, repair or uses the Products for other purposes than the normal conditions foreseen by instructions or Contract.
In no circumstances shall SGM LEKTRA be liable for direct, indirect or consequential or other loss or damage whether caused by negligence on the part of the company or its employees or otherwise howsoever arising out of defective goods

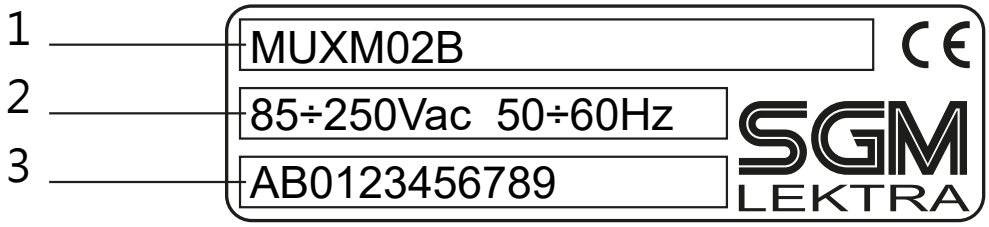
2-PRODUCT



1. “VL701” extractable module (optional) for displaying and programming
2. Terminals
3. Closing cover

2.1 - IDENTIFICATION

Each instrument has an adhesive identification plate on which are the meter main data.
The following picture describes the information and data on the identification plate.



1. Product code
2. Power supply
3. Serial number

3-FEATURES

MUXM
Concentrator for TM temperature probes and TU humidity probes (pending).
Up to max. 32 TU+TM probes can be connected to each MUXM.
With 32 connected TM probes, and each probe with 50 temperature measuring points (highest possible option), the total is 1600 controllable points.
The electrical connection between the probe and the MUXM is made with a screened cable, while the connection between the MUXM and the AGRITHERM-50 control unit is made with screened bipolar cable for data communication via MODBUS RTU.
The MUXM and the connected probes configuration is made via the VL701 removable module and operations are displayed by the O-LED display. Up to 63 “MUXM” can be connected by MODBUS serial network.

Housing material
Aluminium

Installation
Wall mounting

Programming
Via VL701 removable module with display and 4 buttons (opt.)

Display
OLED display 57 x 30 digit alphanumeric

Electrical connections
4 removable terminals 4-pole probes for TM or TU
2 terminal. extr. 3-pin connection for Modbus
2 terminal. extr. 3-pin for supply voltage

Power supply
85 ÷ 250Vac 50 to 60Hz

Consumption
3.5 VA

Measuring inputs
No. 4 x 8 TM or TU probes

Conversion Resolution
0.1° C

Maximum expansion system
No. 63 MUXM

TM probes per MUXM unit
No. 32 maximum

Digital communications
MODBUS RTU

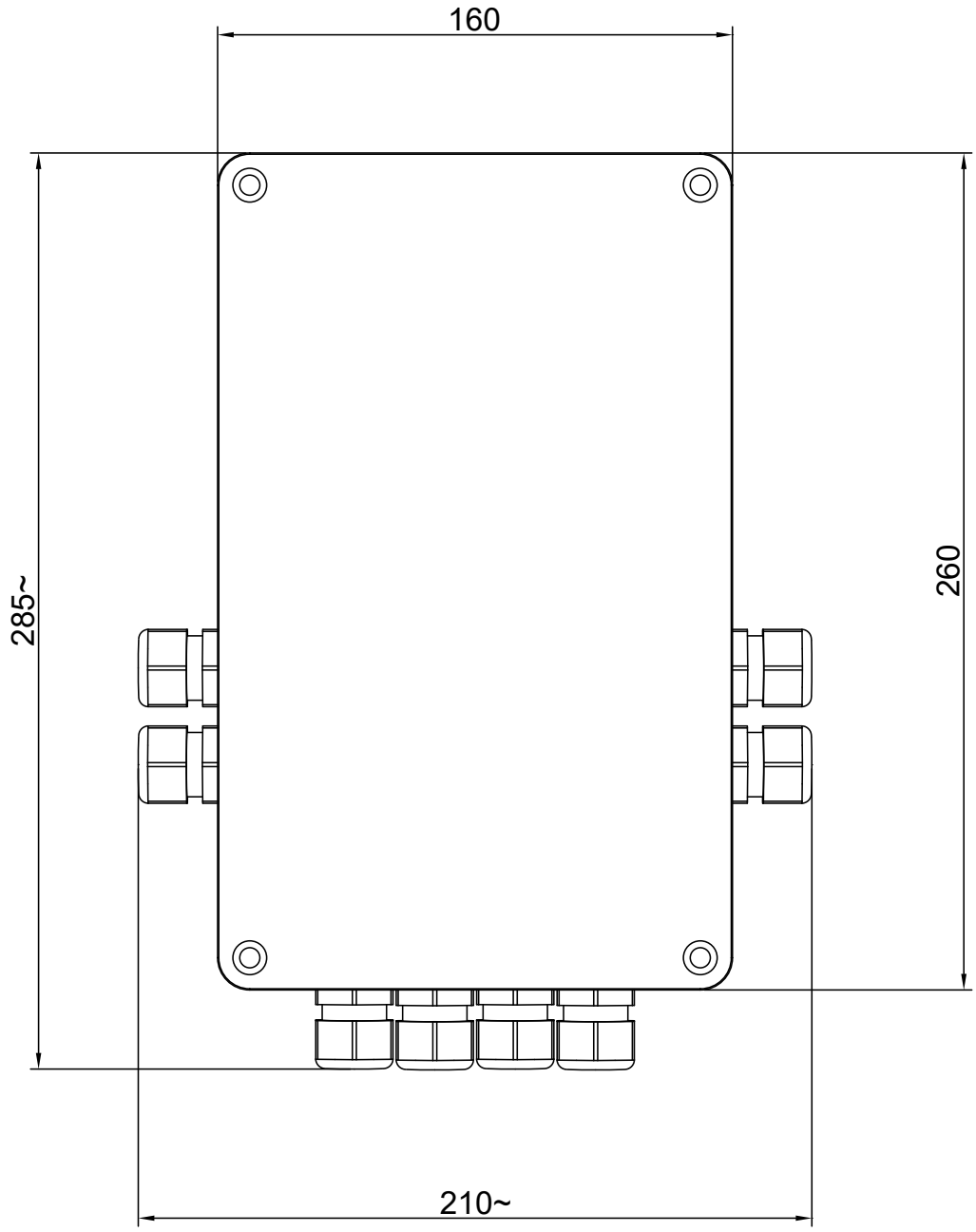
Operating temperature
-20 ° C to + 70 ° C

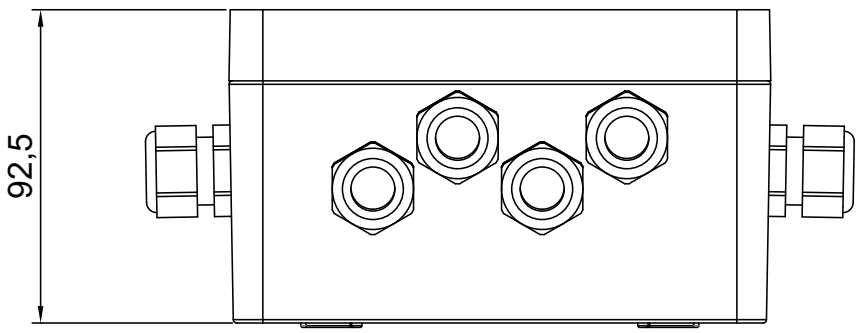
Ip rating
IP66

Ex-proof
ATEX Zone 22 **self certification**

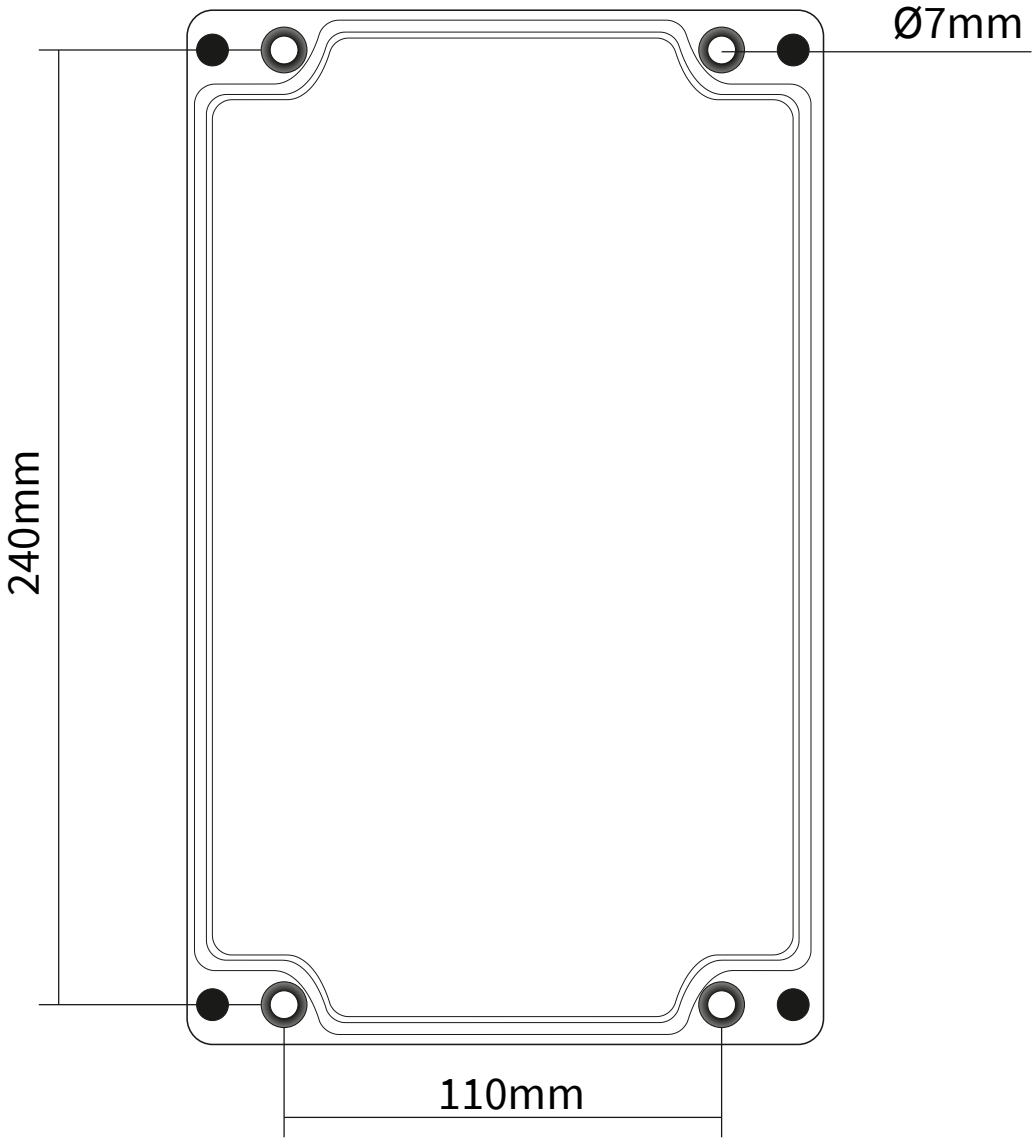
4-DIMENSIONS

4.1 - MECHANICAL DIMENSIONS





4.2 - WALL MOUNTING



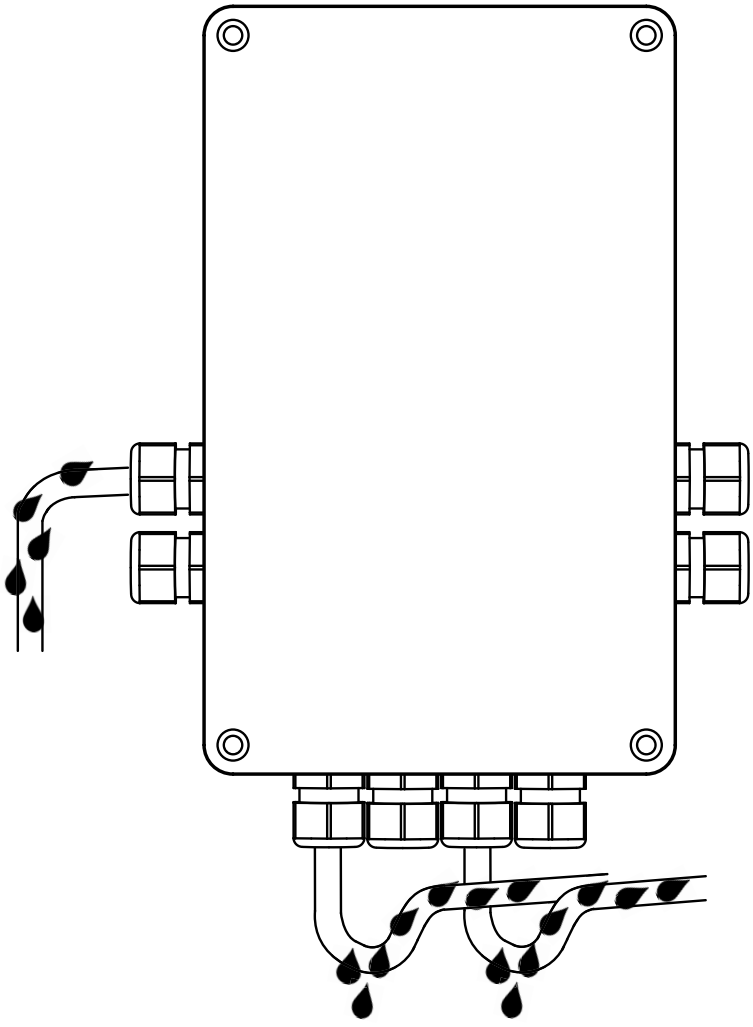
5-ELECTRICAL CONNECTIONS

5.1 - INSTALLATION PRECAUTIONS

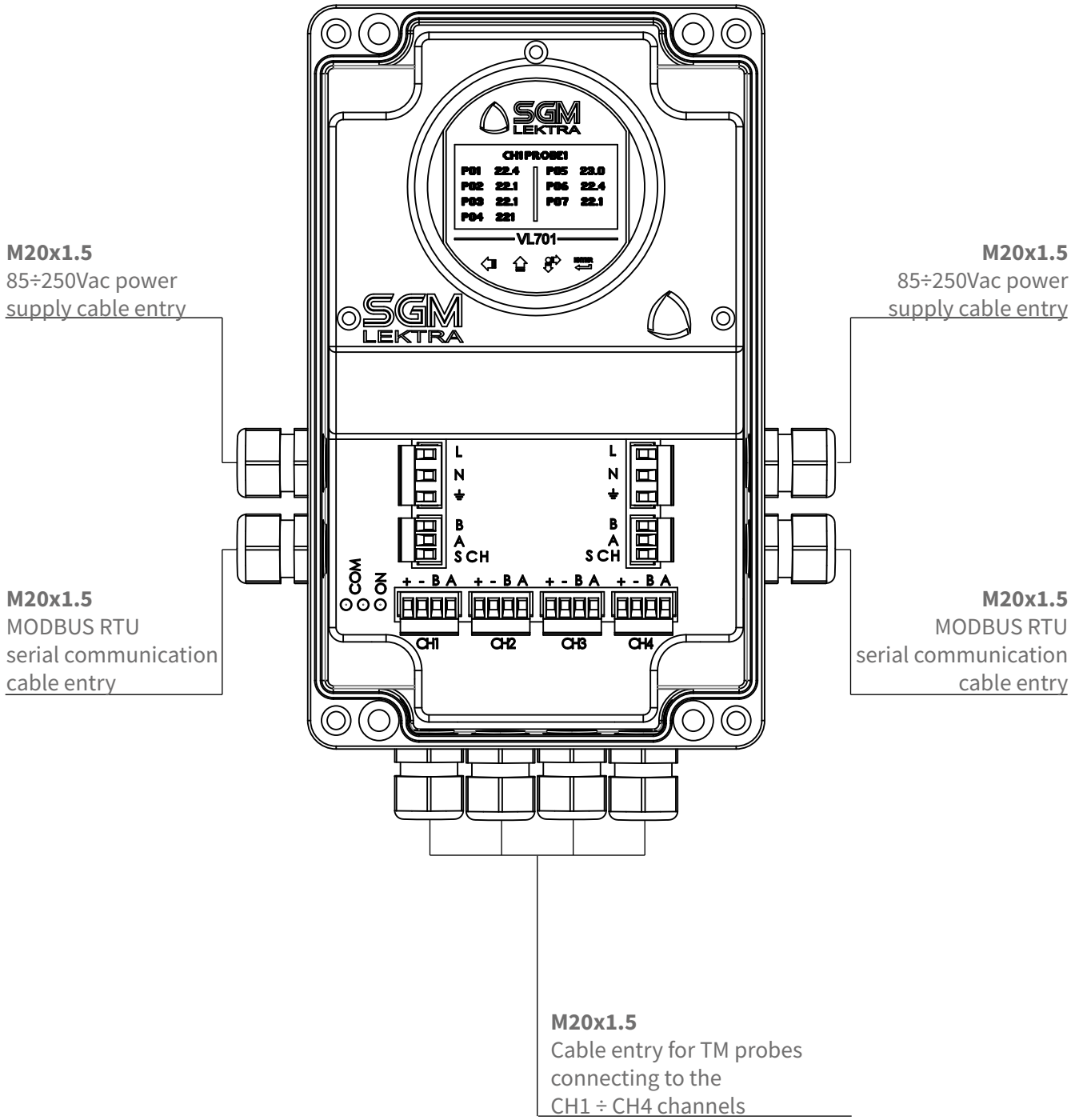
- Installation shall only be performed by qualifi ed personnel and in accordance with local governing regulations.
- Make sure that the working temperature is between -20 and +70°C.
- Install the concentrator in a its physical characteristics and housing construction materials compatible environment.
- The concentrator must be used safety warnings observance.
- Improper transmitter use would cause serious damage to people, to the product and connected equipment.
- Do not open the housing in the presence of potentially explosive dust.

5.2 - ADVICE FOR EXTERNAL MOUNTING

- for electrical connections, use a cable with a 6÷12mm outer diameter and fully tighten the M20x1.5 cable gland.
- correctly close the cover, and fully tighten the screws.
- For connections between MUXM and TM use probes FUTP2PR AWG624/1 CAT. 5E cable.
- position the cable so that it forms a downward curve at the cable glands output; in this way the condensation and/or rain water will tend to drip from the bottom curve (as shown below).



5.2.1 - CABLES ENTRY/EXIT

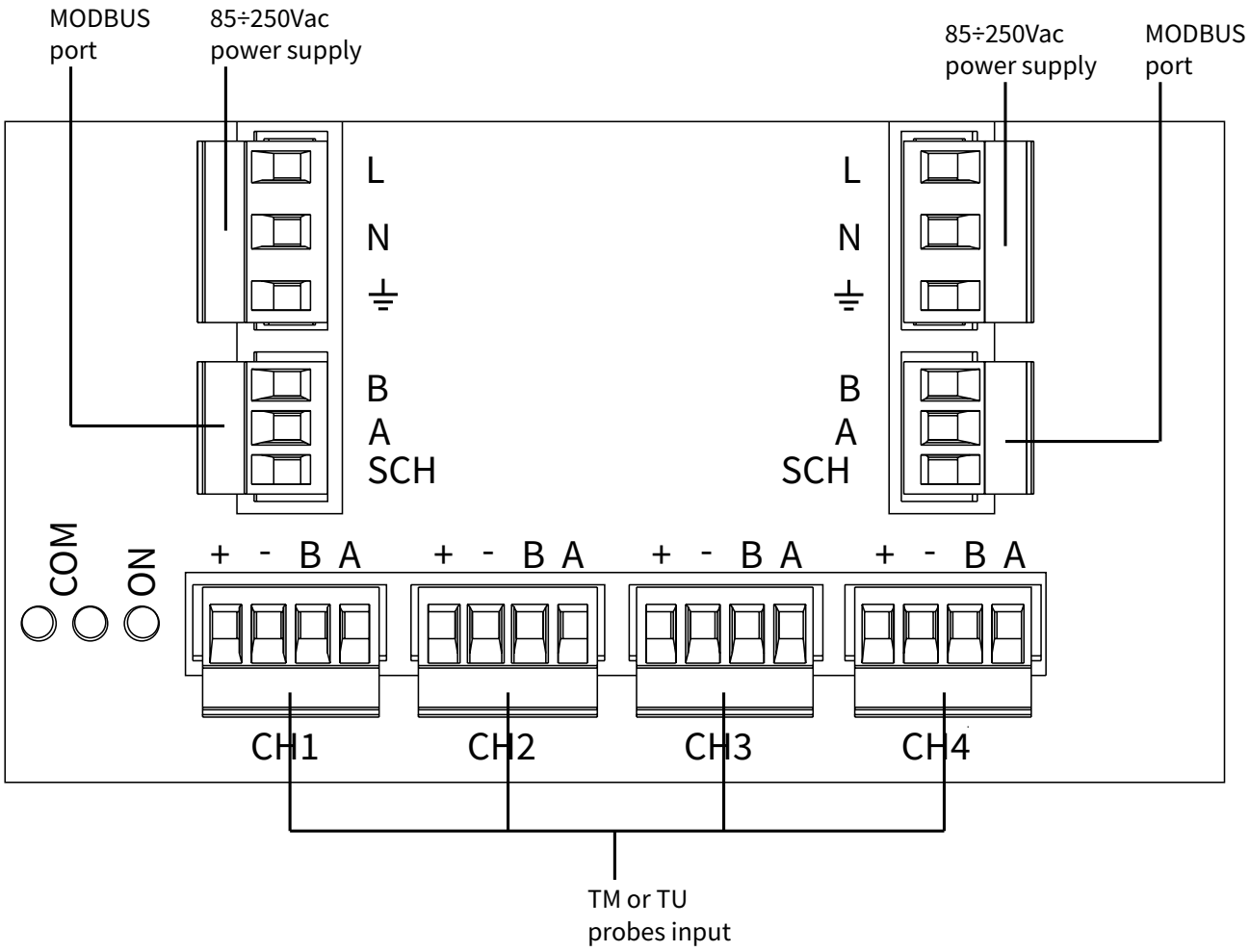


5.2.1.1 - Cable technical specifications for the TM probes and MODBUS connection

FUTP2PR AWG6 24/1 CAT. 5E cable	
Conductors	copper rigid wire, Ø 0,50mm
Insulations	Polyethylene, Ø 1,00mm +-0,1
Conductors Colours	2 white-green-brown
Wires twisted in pairs	Green/white-brown/white
Twisting	Twisted pairs between them
Shielding	Polyester tape + tinned copper continuous wire + Mylar tape
Sheath	BLUE PVC RZ RAL 5015 Ø 5,90mm+-0,50
Marking	SGM-LEKTRA-525B025A-F UTP 2PR AWG 6 24/1 CAT 5E+metric mark
Operating temperature	-25°C+70°C (fixed installation)
Test voltage	1,5KV V.c.a.
Working voltage	300/300V
Curvature radius	8 times the diameter
Reference Standards	CEI 20-35 - IEC 332.1 – CEI 20-37 ROHS 2011/65/UE(ROHS 2)

5.3 - CONNECTIONS

- Remove the cover by unscrewing the 4 screws and the caps from the cable glands used for connection.
- Insert the power cable, the Modbus communication cable and the TM/TU probes cable by passing them through the cable glands.
- Connect the cables to the appropriate terminals, as the following paragraphs.
- Fully tighten the cable gland and tightly close the MUXM cover to ensure the IP66 protection .



5.3.1 - Two or more (max.32) TM multipoint temperature probe Connection

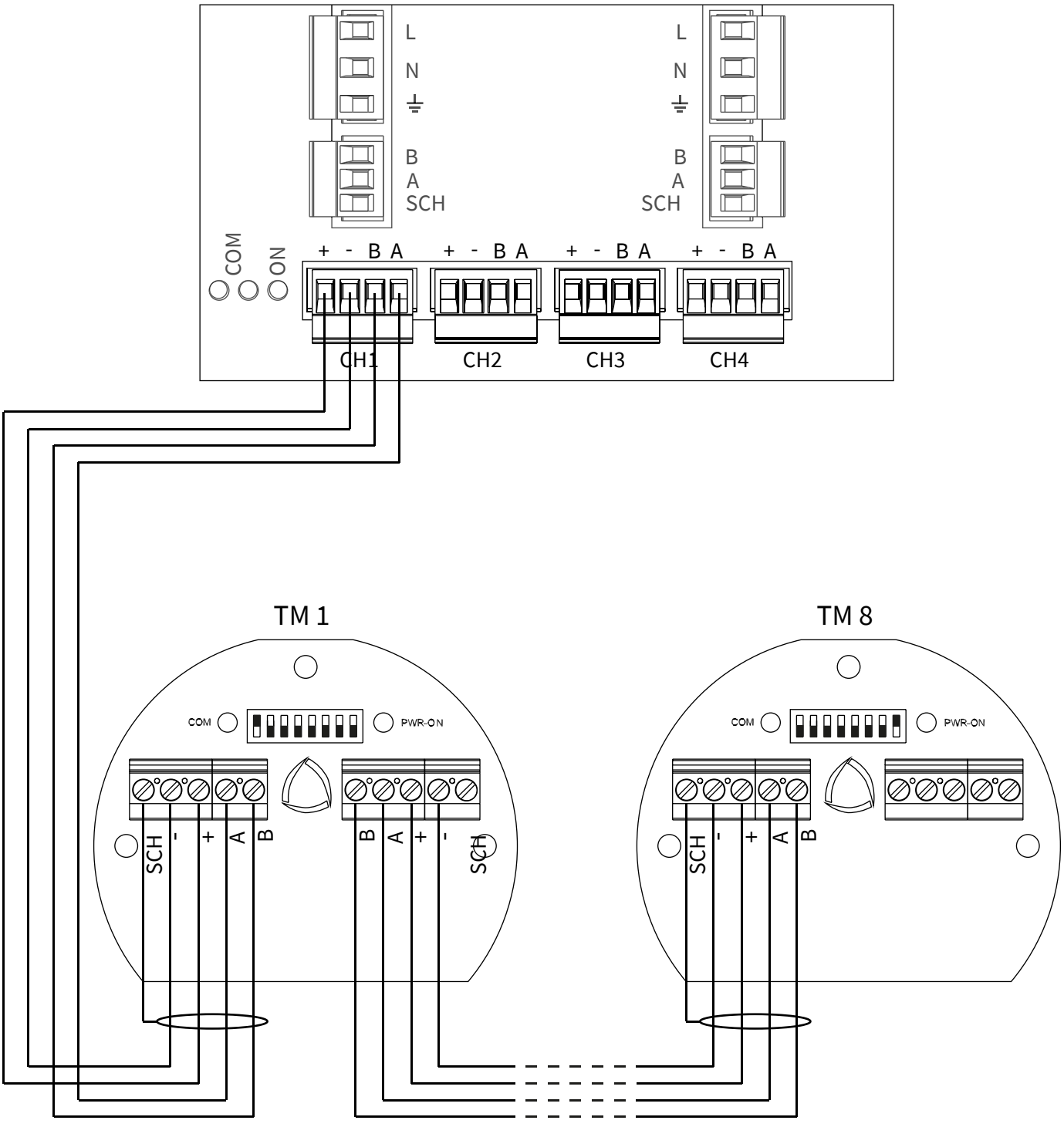
For the electrical connection between the MUXM and TM temperature probe use the FUTP2PR AWG624/1 CAT.5E cable (ns. Cod. 525B025A), or equivalent, suitable for data transmission.
The cable shield must only be connected to the next TM probe side; eg .: the shield of the connecting cable between the TM2 probe and the TM3 probe should only be connected to the SCH terminal of the TM3 probe.

At the work end:

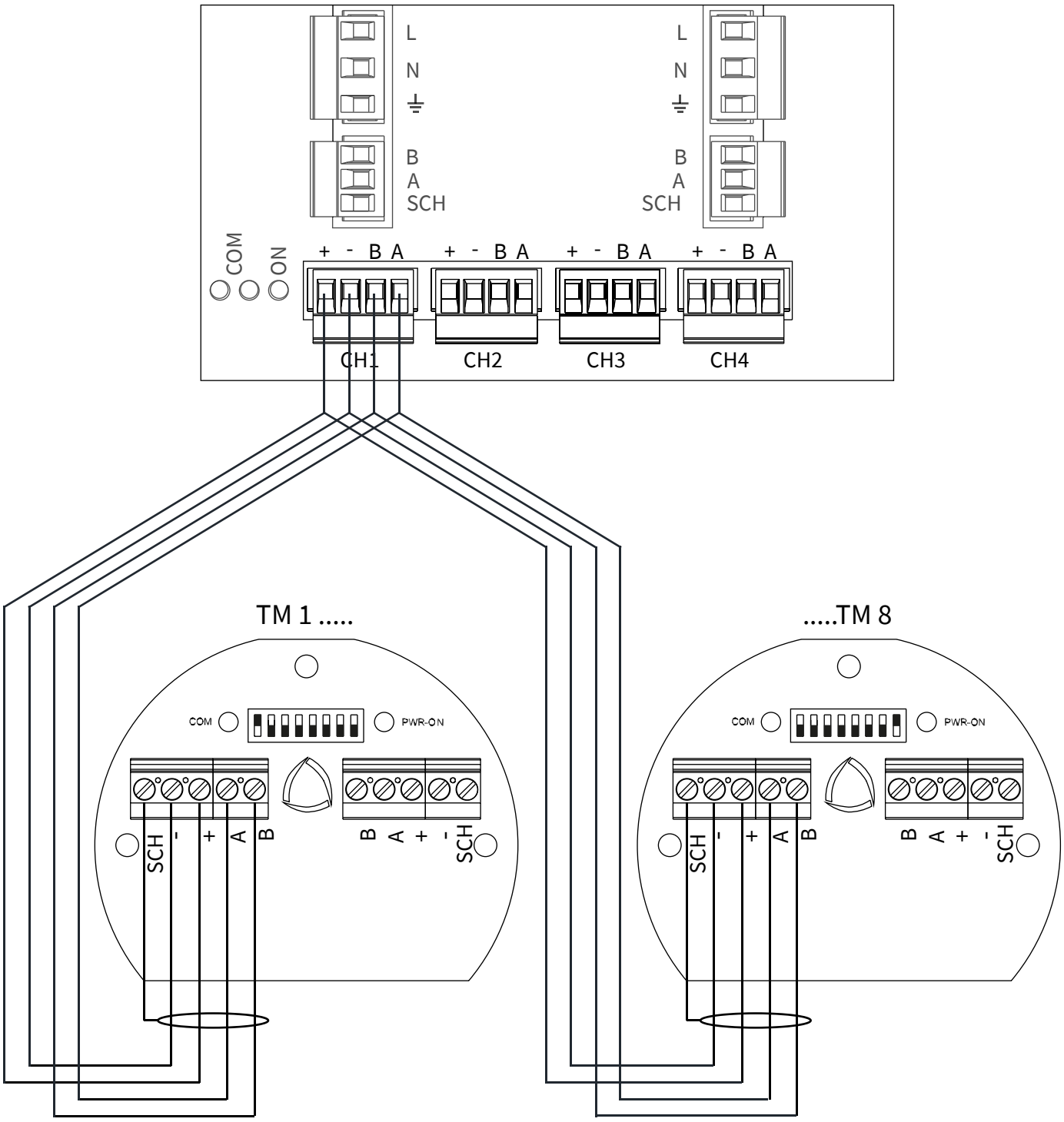
a) Tighten all cable glands to ensure IP66 protection, for the concentrator MUXM, and IP67 for TM probe.

b) Perform the procedure described in paragraph 7.6.3 (AUTO SETUP).

5.3.1.1 - Series connection (max. cable length 1200mt)



5.3.1.2 - Star connection (Probe cable length max. 100mt)

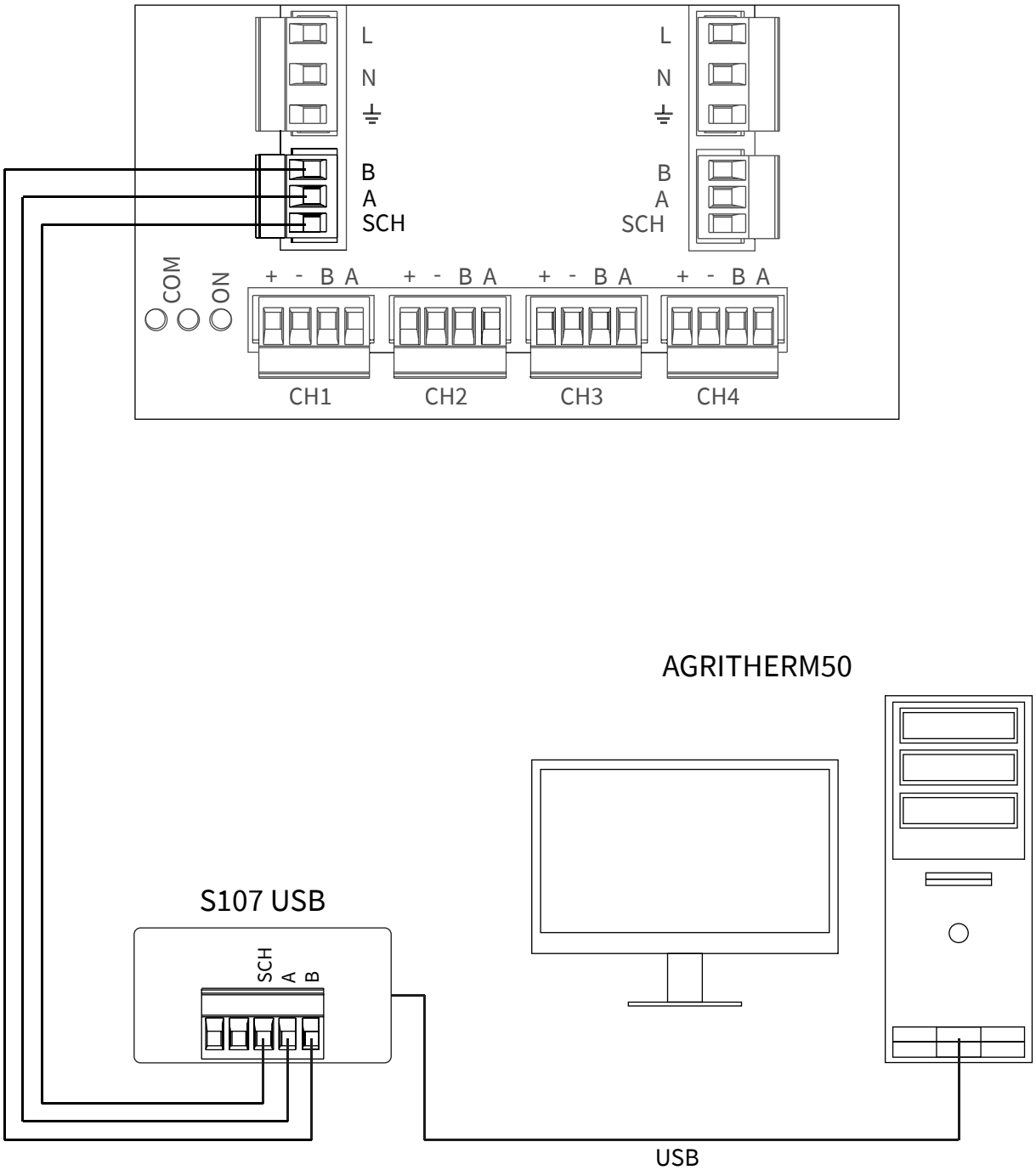


5.3.3 - Connection to AGRITHERM50 (PC) via MODBUS

For the electrical connection between the MUXM and RS485/USB conversion module use the FUTP2PR AWG624/1 CAT.5E cable (ns. Cod. 525B025A), or equivalent, suitable for serial data transmission.

At the work end:

a) Tighten all cable glands to ensure IP66 protection.

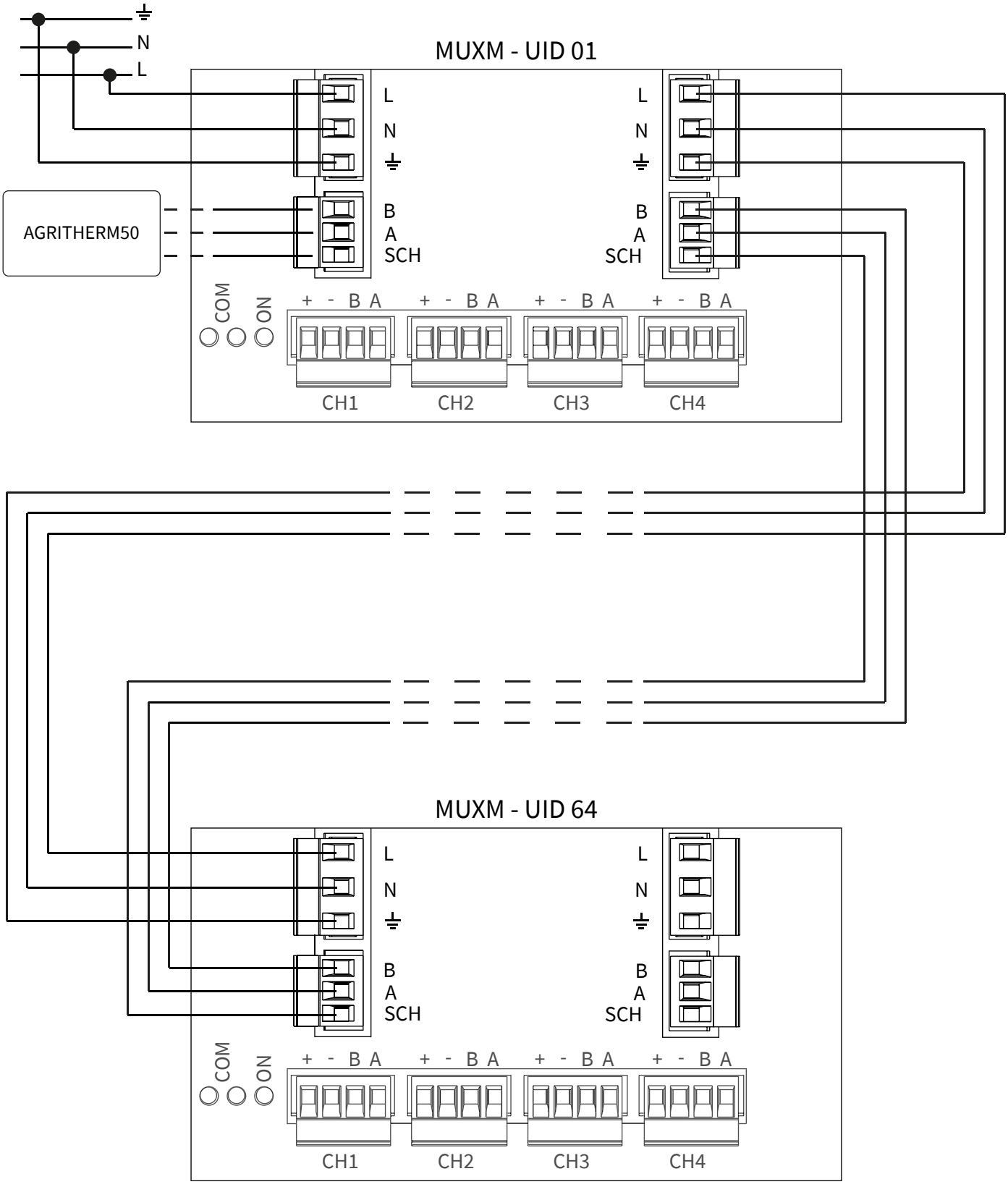


5.3.4 - Connection of two or more “MUXM” in a single MODBUS RTU network

For the electrical connection between the “MUXM” of a MODBUS network use the FUTP2PR AWG624/1 CAT.5E cable (ns. Cod. 525B025A), or equivalent, suitable for via RS485 data transmission

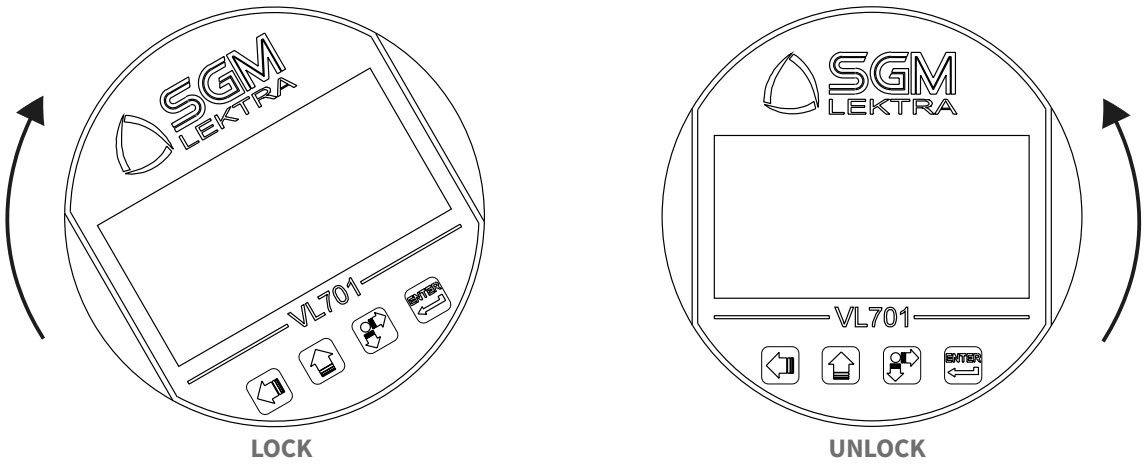
At the work end:

a) Tighten all cable glands to ensure IP66 protection



6-VL701

The VL701 display module is required to configure the MUXM. The VL701 module inserting or removing does not affect the MUXM operation. The module VL701 can be inserted (through a clockwise rotation until it clicks) or removed (via counter-clockwise rotation) as shown in below figure. The VL701 module mounts an OLED display, navigable by four buttons.



6.1 - VIA VL701 CONFIGURATION

The VL701 program module has 4 buttons which allow to perform all operational, control and programming instrument functions.
In the configuration menus, is possible:

a) Submenus and parameters access; press to select and press ENTER to access.

b) Parameter options choice: Press to select the option and press ENTER to store the option. Press to exit without saving.

c) Configure the parameter values; in some parameters the configuration is done by setting a value (eg., in the NETWORK ID parameter is possible to change the number): press to select the digit to be modified (the digit is highlighted in inverse), press to change the highlighted digits number, press, ENTER to save the set value and exit automatically. Press to exit without saving

- Exit configuration
- Back to previous menu

- Parameters values modification

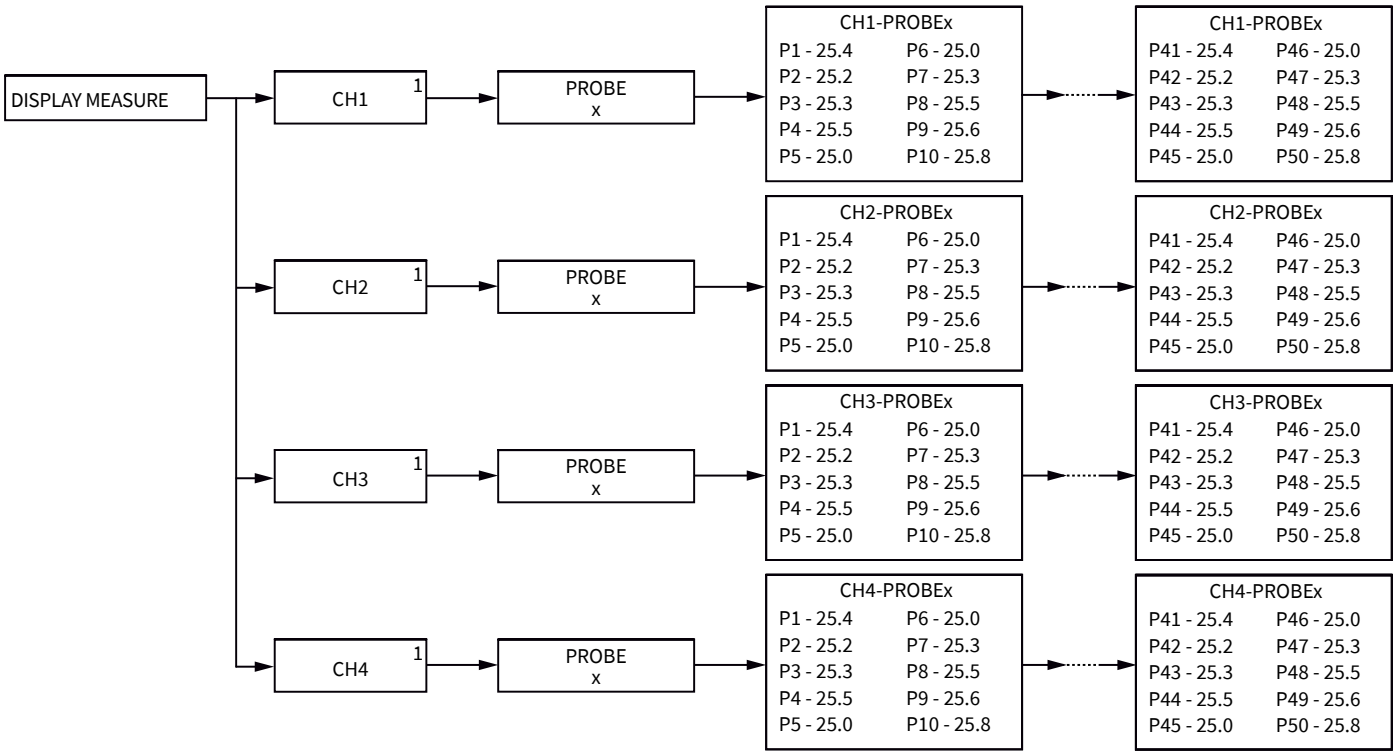
- Scroll cursor (to the right)
- Scroll parameters

ENTER
- Configuration access
- Options confirmation
- Parameters values confirmation

7-CONFIGURATION

7.1 - MENÙ - DISPLAY MEASURE

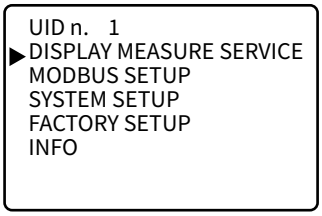
7.1.1 - Menu structure



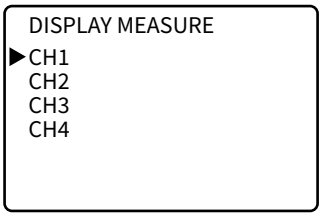
7.1.2 - DISPLAY MEASURE - Configuration Details

To enter the menu DISPLAY MEASURE press ENTER.

The temperature read by the individual measuring points of individual probes TM can be displayed in this menu.

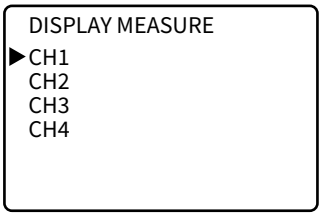


Select the parameters by moving the cursor with and confirm with ENTER.

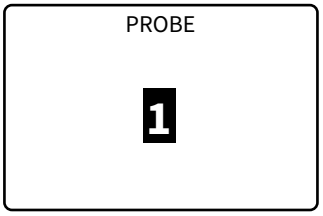


7.1.3 - CH1÷4

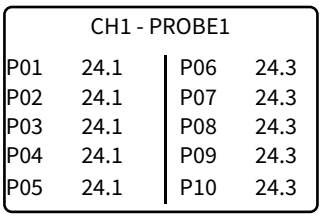
Position the ▶ sul canale (CH1 ÷ CH4) cursor to the channel (CH1 ÷ CH4) where the probes are connected and press ENTER

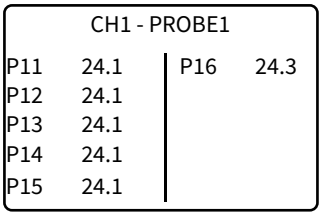


Press to select the “TM” probe number to be monitored and press ENTER to display the measured temperatures by the individual measuring points



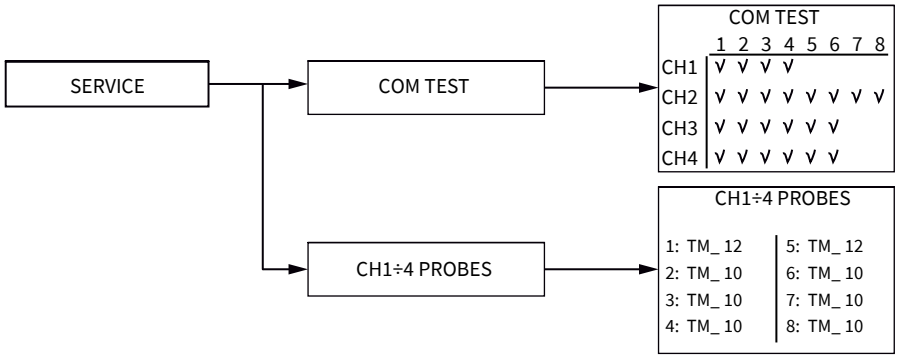
The temperatures measured by the first ten measurement points of the selected sensor are displayed.
The number one measuring point (P01) is always positioned near the head of the TM probe.
Push to pass to the next page (only available when the TM probe has more than 10 points) and view points from 11 to 20, from 21 to 30, etc.
Press to exit.





7.2 - MENÙ - SERVICE

7.2.1 - Menu structure



7.2.2 - SERVICE - Configuration details

Position the cursor on SERVICE with , press ENTER to enter.

```
UID n.  1
DISPLAY MEASURE SERVICE
▶MODBUS SETUP
SYSTEM SETUP
FACTORY SETUP
INFO
```

Select the function by moving the cursor with “S” and confirm with ENTER.

```
SERVICE
▶COM TEST
CH1
CH2
CH3
CH4
```

7.2.3 - COM TEST

Position the cursor on COM TEST with , press ENTER to enter.

```
SERVICE
▶COM TEST
CH1
CH2
CH3
CH4
```

The page displays how many probes are connected and communicate to the individual CHx channels.
The complete view of the data communication status between MUXM and TM probes is possible with the “TEST COM”; see the next example: 8 TM probes are connected to the CH3 channel, but the TM4 probe does not communicate.

```
COM TEST
     1 2 3 4 5 6 7 8
CH1  √ √ √ √
CH2  √ √ √ √ √ √
CH3  √ √ √ x √ √ √ √
CH4  √ √ √ √ √
```

Press to exit.

7.2.4 - CH1 ÷ 4

Position the cursor on CHx and press ENTER.

```
SERVICE
COM TEST
▶CH1
CH2
CH3
CH4
```

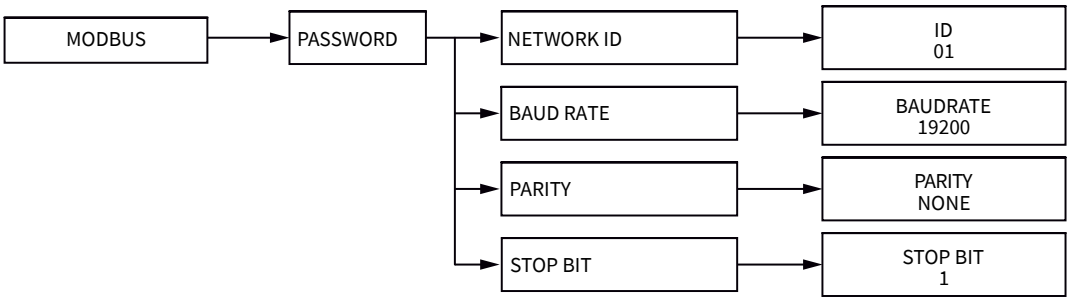
The probes configured with the parameter “AUTO SETUP” (see par. 6.4.3) is displayed, for each individual channel CHx, with their number of measurement points; see eg. next: in the CH1 channel are configured 8 TM probes; the message “1: TM_12” means that the number 1 TM probe has 12 measuring points; the message “2: TM_10” means that the number 2 TM probe has 10 measuring points, etc.

```
CH1 PROBES
1:  TM_12     5:  TM_10
2:  TM_10     6:  TM_10
3:  TM_10     7:  TM_10
4:  TM_10     8:  TM_12
```

Press to exit.

7.3MENÙ - MODBUS

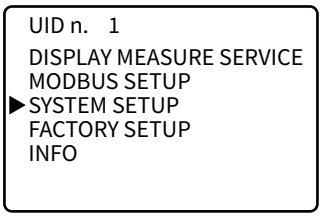
7.3.1 - Menu structure



7.3.2 - MODBUS - Configuration details

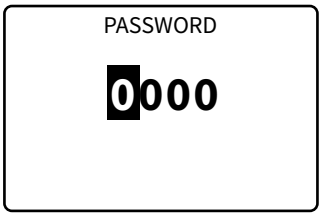
Position the cursor on MODBUS SETUP with , press ENTER to enter.

The security password is required to access the settings.



Use and to modify the value. Press ENTER to confirm. to exit without changes.

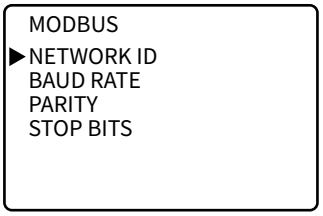
Default password: 1000 After password confirming, access to the MODBUS port parameters configuration is possible.



7.3.3 - NETWORK ID

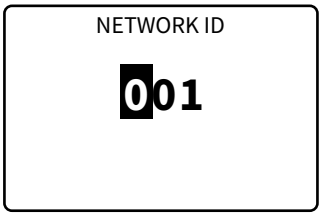
Position the cursor on NETWORK ID with , press ENTER to enter.

This parameter gives the UID address for data communication in a MODBUS RTU network.



Use and to modify the value.

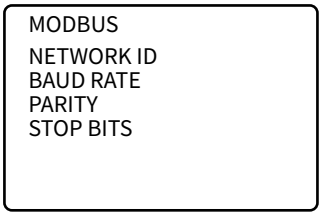
Press ENTER to confirm. to exit without changes.



7.3.4 - BAUD RATE

Position the cursor on BAUD RATE with , press ENTER to enter.

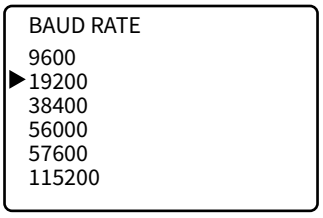
This parameter sets the MODBUS port baud rate.



With select the boud rate value.

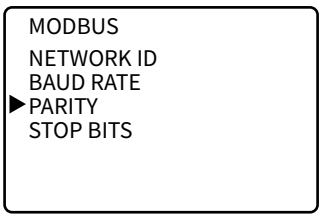
Press ENTER to confirm. to exit without changes.

Default value: 19200



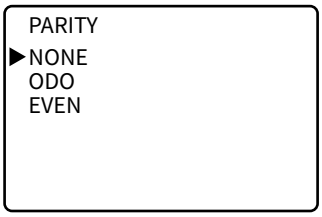
7.3.5 - PARITY

Position the cursor on PARITY with , press ENTER to enter.



This parameter sets the parity.

With select the parity mode.

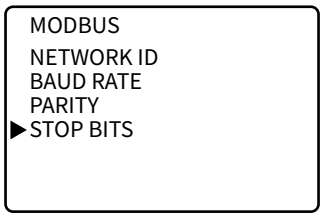


Press ENTER to confirm. to exit without changes.

Default value: NONE

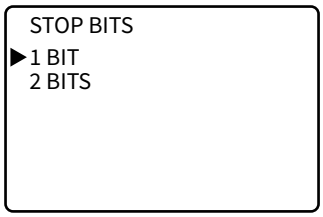
7.3.6 - STOP BITS

Position the cursor on STOP BITS with , press ENTER to enter.



This parameter sets the stop bits.

With select the parity mode.

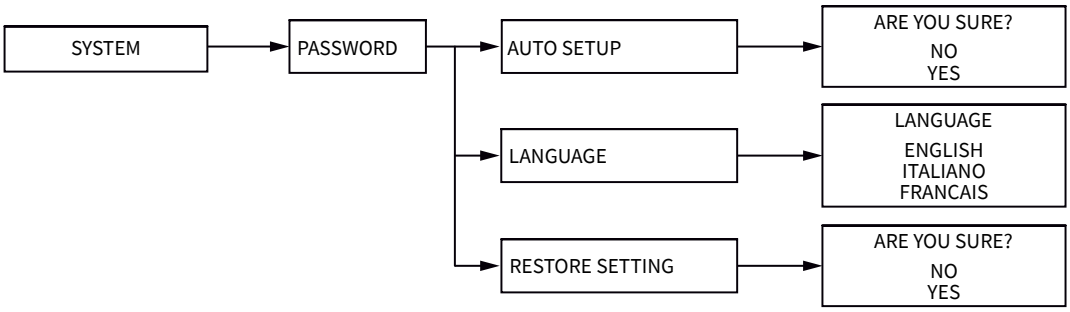


Press ENTER to confirm. to exit without changes.

Default value: 1 BIT

7.4MENÙ - SYSTEM

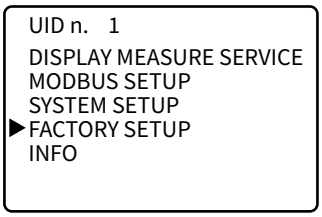
7.4.1 - Menu structure



7.4.2 - SYSTEM - Configuration details

Position the cursor on SYSTEM with , press ENTER to enter.

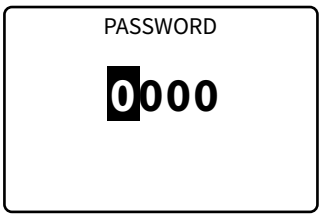
The security password is required to access the settings.



Press and to chang the value. Press ENTER to confirm. Press to exit.

Default password: 1000

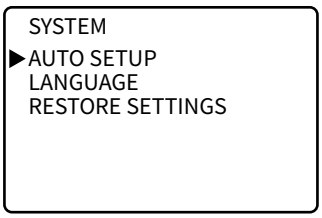
After password confirming, access to the SYSTEM SETUP parameters configuration is possible



7.4.3 - AUTO SETUP

Position the cursor on AUTO SETUP with , press ENTER to enter.

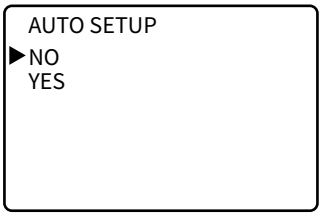
This parameter performs the self-configuration of the MUX-M. The auto configuration operation is required during the first start of the MUX-M, with all probes already connected, or whenever a new TM probe will be connected to a CHx channel of the MUX-M.



Press to choose your selection.

Press ENTER to confirm . to exit without changes.

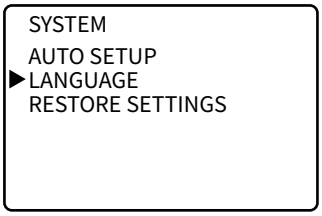
Default value: NO



7.4.4 - LANGUAGE

Position the cursor on LANGUAGE with , press ENTER to enter.

This parameter selects the menu language



Press to choose the language.

Press ENTER to confirm . to exit without changes..

Default value: ENGLISH

7.4.5 - RESTORE SETTINGS

Position the cursor on RESTORE SETTINGS with , press ENTER to enter.

This parameter load the default configurations of all the programming parameters.

```
SYSTEM
AUTO SETUP
LANGUAGE
▶RESTORE SETTINGS
```

Press to choose the language.

Press ENTER to confirm. to exit without changes.

Default value: NO

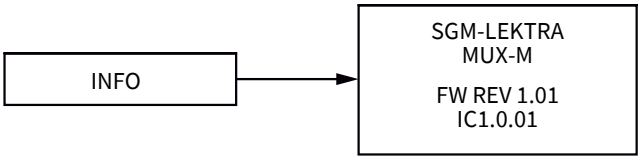
```
RESTORE SETTINGS
▶NO
YES
```

7.5 - MENÙ - FACTORY SETUP

Not available.

7.6 - MENÙ - INFO

7.6.1 - Menu structure



7.6.2 - INFO - Configuration Details

Position the cursor on INFO with , press ENTER to enter.

```
UID n.  1
DISPLAY MEASURE SERVICE
MODBUS SETUP
SYSTEM SETUP
FACTORY SETUP
INFO
▶
```

In addition to information about the manufacturer, are displayed the firmware revision and the configuration index.

Press to exit.

```
SGM-LEKTRA
MUXM

FW REV 1.01
IC1.0.01
```

8-FACTORY TEST AND QUALITY CERTIFICATE

CE

In conformity to the company and check procedures I certify that the equipment:

MUXM ..... serial n°: .....

is conform to the technical requirements on Technical Data and it is made in conformity to the procedure

Quality Control Manager: ..... Production and check date: .....

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