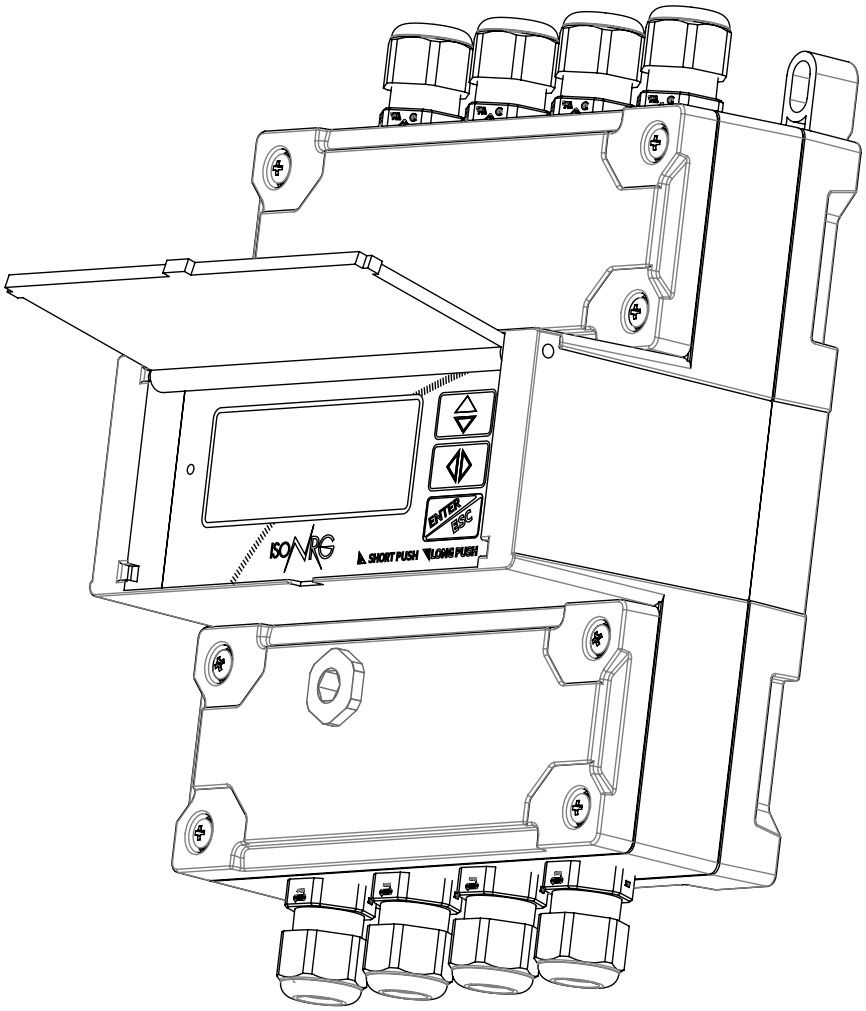
OPERATING AND MAINTENANCE MANUAL



MV311

CE

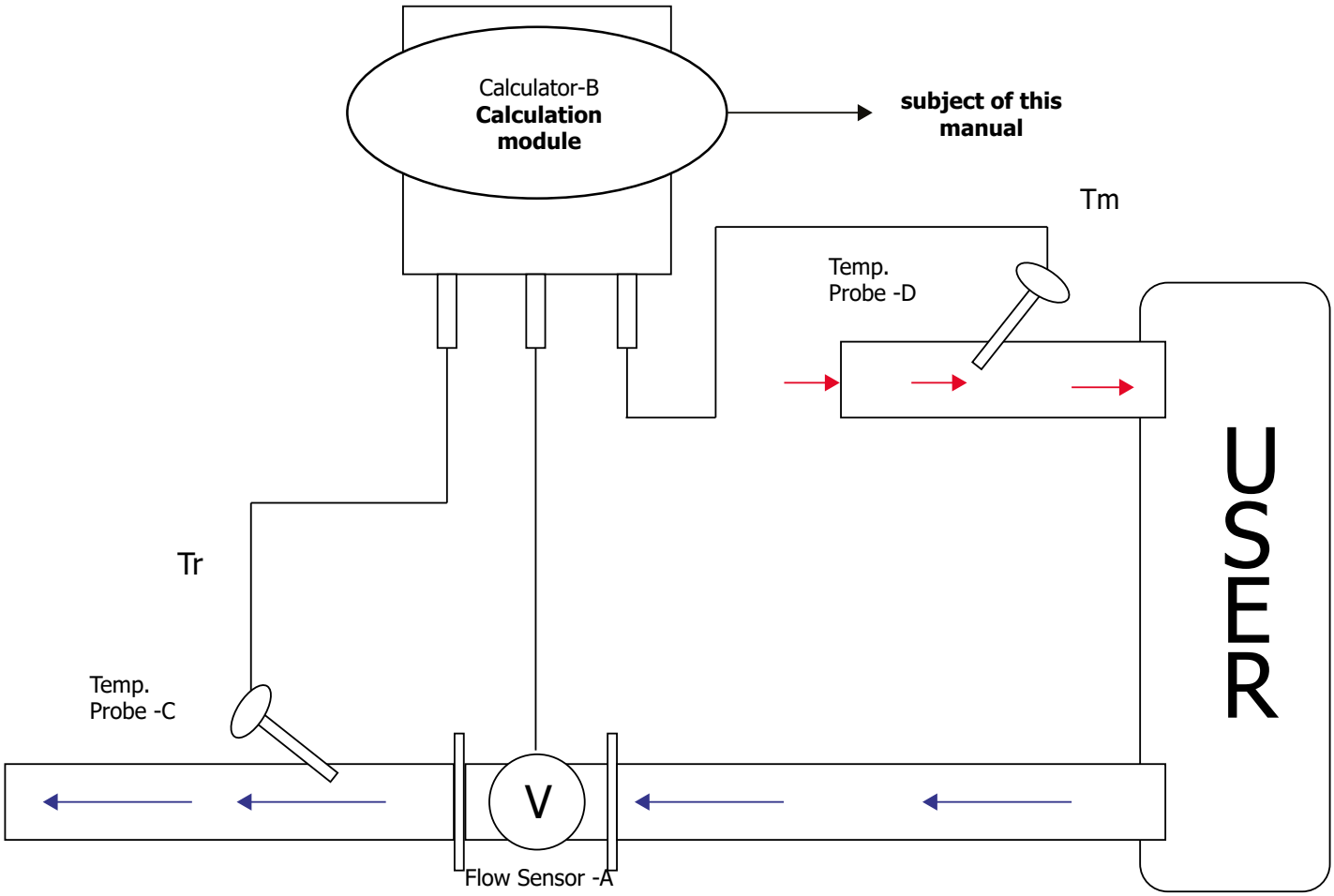
Release number: **311_IT_EN_IS_R1_1.04.0X** -

The characters of file name in bolt type indicate the software version which the manual refers to; it is visualized at the instrument start up, or by specific function on DIAGNOSTIC menu.

INDEX

INTRODUCTION

These operating instructions and description of device functions are provided as part of the supply's scope. They could be modified without prior notice. The improper use, possible tampering of the instrument or parts of it and substitutions of any components not original, makes the warranty automatically void.
The calculator may be regarded as a sub-unit of a heat meter designed for residential, commercial and light industry. The calculator is inserted into the scheme of a heat meter as shown below.



Schematic of a thermal Energy meter
composed by A+B+C+D

Tm / T1: inlet temperature
Tr / T2: outlet temperature

SAFETY INFORMATIONS

The calculator must be used for the use for which it was built. The improper use, possible tampering of the instrument, of its parts and substitutions of some non-original components, will automatically void the warranty and also the CE mark, if it's provided with. Therefore it is recommended to use only qualified staff.

- ❑ Transport the measuring device to the measuring point into the original packaging.
- ❑ Disposal of this product, or parts of it, must be carried out according to the local public or private waste collection service regulations.
- ❑ The calculator must only be installed, connected, commissioned and maintained by qualified and authorized specialists (e.g. electrical technicians) in full compliance with the instructions in these Operating Instructions, the applicable norms, legal regulations and certificates (depending on the application).
- ❑ The specialists must have read and understood these Operating Instructions and must to follow the instructions they contain. The Operating Instructions provide detailed information on the calculator. If something in these Operating Instructions isn't clear to you, you can call the ISOIL service department.
- ❑ Repairs can only be performed if a genuine spare parts kit is available and if this repair work is expressly permitted.
- ❑ During assembly, pay attention to possible risks that the installer may incur, therefore use suitable PPE (personal protective equipment), as required by the installer's risk assessment safety plan.
- ❑ In case of display damage, avoid any kind of direct accidental contact and call the service center for possible replacement. Always comply with local regulations regarding the disposal of electrical LCD devices.
- ❑ Always make the electrical connections and installation of the instrument in voltage absence, especially if live electrical parts are directly accessible. For a better ease of wiring it should be noted that the terminal covers are removable. Make sure that the internal parts do not come into contact with liquids during wiring so as not to compromise the instrument from a functional and safety point of view.
- ❑ The supply voltage must correspond to that specified on the data plate
- ❑ To clean the device, use only a cloth, while for maintenance / repairs contact the service center (see the last page).
- ❑ For the transport and the yield of the product use (photocopying) the form present at the end of this manual taking care to fill it in all its parts.

Before the instrument first start verify that:

- ❑ The supply voltage corresponds to that one indicated on the data plate.
- ❑ The electrical connections are carried out in compliance with the indications in this manual.

Verify periodically (3-4 months):

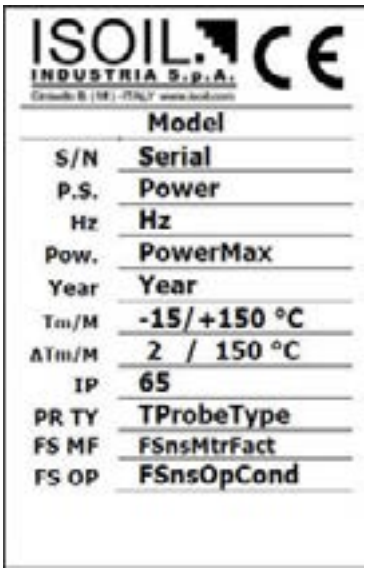
- ❑ The power supply cables integrity, wiring and other connected electrical parts
- ❑ The calculator housing integrity
- ❑ The front panel integrity (display and keyboard)
- ❑ The mechanical fixing of the calculator to the wall stand.

SAFETY CONVENTION

 DANGER ELECTRIC SHOCK	 WARNING	 PRECAUTIONS	 ATTENTION

DATA PLATE

La targa dati permette di identificare i dati relativi a:



- ❑ **MODEL:** model of calculator
- ❑ **S/N:** serial number of calculator
- ❑ **P.S.:** power supply
- ❑ **Hz:** frequency power supply
- ❑ **Pow:** power consumption
- ❑ **Year:** manufacture year
- ❑ **Tm/M:** Minimim/Maximum measurable temperature
- ❑ **ΔTm/M:** Minimim/Maximum differential measurable temperature
- ❑ **IP:** protection category
- ❑ **PR TY:** type of temperature probe
- ❑ **FS MF:** meter factor for the flow sensor
- ❑ **FS OP:** Flow sensor operative condition

ELECTRIC CHARACTERISTIC

Instrument classification: class I, IP65, overvoltage category II, rated pollution degree 2.

Power supply versions	Power supply voltage	Frequency supply voltage	Pmax	Max current
HV	100-240V~	45-66HZ	1.6W (Only Caculator)	6VA (With all the loads)
LV	24-36V ⎓	//		6W (With all the loads)
	24-36V~	45-66HZ		
LLV	12-48V ⎓	//		
LLV (+POE)	12-48V ⎓	//		

- ❑ The variations in the mains voltage must not exceed ± 10% of the nominal voltage.
- ❑ Inputs and outputs are insulated up to 500V *.
- ❑ ** The 4-20mA output (optional) is electrically connected to the outputs ON / OFF and to the supply voltage (24V ⎓) of the outputs).
- ❑ Version LV/LLV : inrush current < 20A
  Version HV : inrush current < 25A

* Isolation on the digital inputs is excluded using the battery power supply.
** The 4-20mA outputs (optional) are electrically connected with the ON / OFF outputs, with the supply voltage (24V) of the outputs and with the power supply of the RS485 network (where present).

INPUTS / OUTPUTS INSULATION

Inputs * and outputs are isolated from each other up to 500V. The 4-20mA outputs, the digital outputs and the RS485 bus share the same 24V references (they are not isolated from each other). Note *: 3V power supply for using the battery inputs is not isolated.

ENVIRONMENTAL USE CONDITIONS

- ❑ The instrument can be installed inside or outside buildings
- ❑ Altitude: from –200 to 5000m (from -656 to 6560 feet)
- ❑ Humidity range: 0-90% without condensation (IP65)

TEMPERATURES

OPERATIVE		
	Min*	Max
°C	5	55
°F	41	131

MEASURABLE		
	Min*	Max
°C	-30	200*
°F	-22	392*

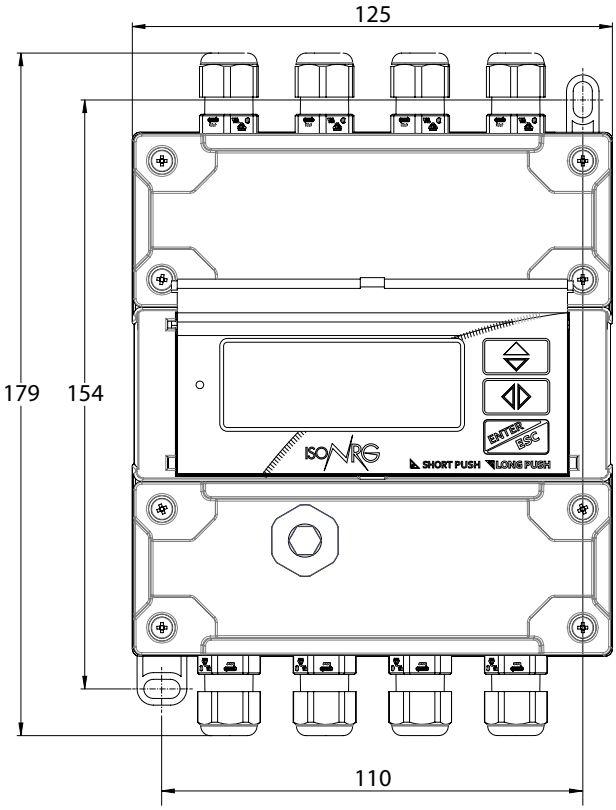
*150°C (302 °F) for MID version
The operative temperature is the environmental one where the device is installed, while the measurable one is that of the liquid measured.

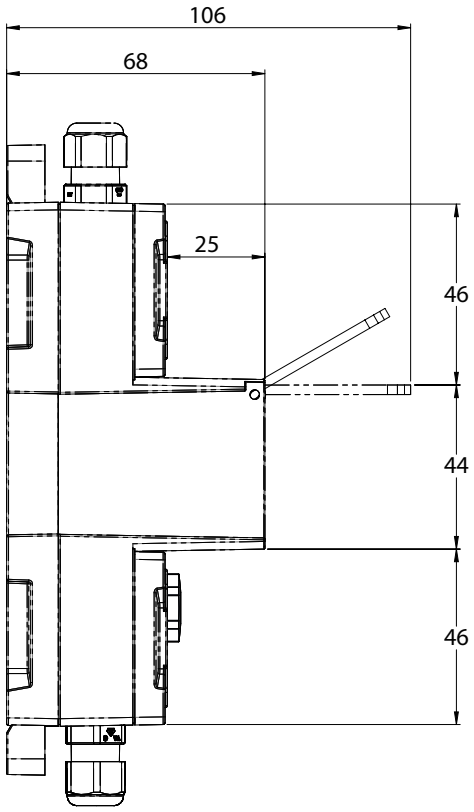
HARDWARE CHARACTERISTICS

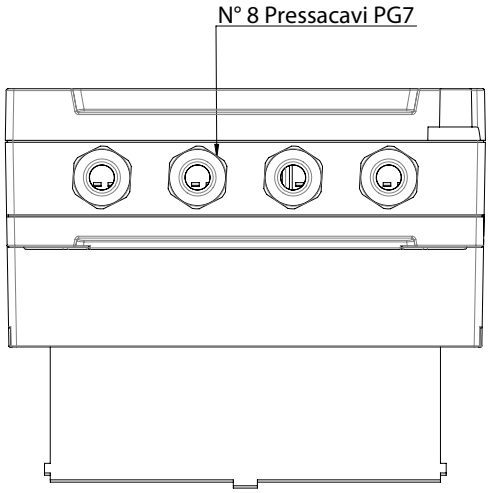
- ❑ N ° 4 ON / OFF inputs for pulses: minimum> 0.003Hz and maximum 1kHz
- ❑ N ° 1 ON / OFF input for programmable functions (as an alternative to the fourth pulse input)
- ❑ N ° 2 ON / OFF outputs for alarms or pulses (energy / volume)
- ❑ N ° 1 4-20mA input for thermovector fluid flow measurement (optional)
- ❑ N° 2 inputs for reading temperature sensors PT100, PT500, PT1000
- ❑ N° 2 4-20mA outputs for thermal power and carrier fluid flow (optional)
- ❑ N° 1 RS485 communication bus with multiple protocols (optional): BACNet, Modbus
- ❑ N° 1 MBUS communication bus (optional)
- ❑ N° 1 communication bus on Ethernet (optional)
- ❑ N° 1 measurement of internal temperature of the board and CPU temperature
- ❑ N° 1 keyboard with 3 multi-function keys and a graphic display (128 x 48 dots backlit, height of characters 7.2 / 3.6mm)
- ❑ N° 1 USB socket for MCP interface.

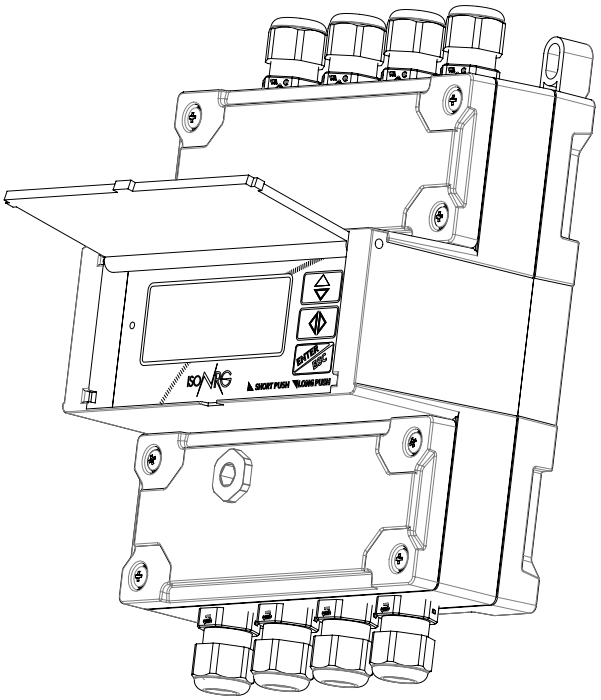
OVERALL DIMENSIONS

Weight 0.5 kg, MV311 can be installed in any orientation on a DIN rail or fixed to the wall through the appropriate fixing slots.

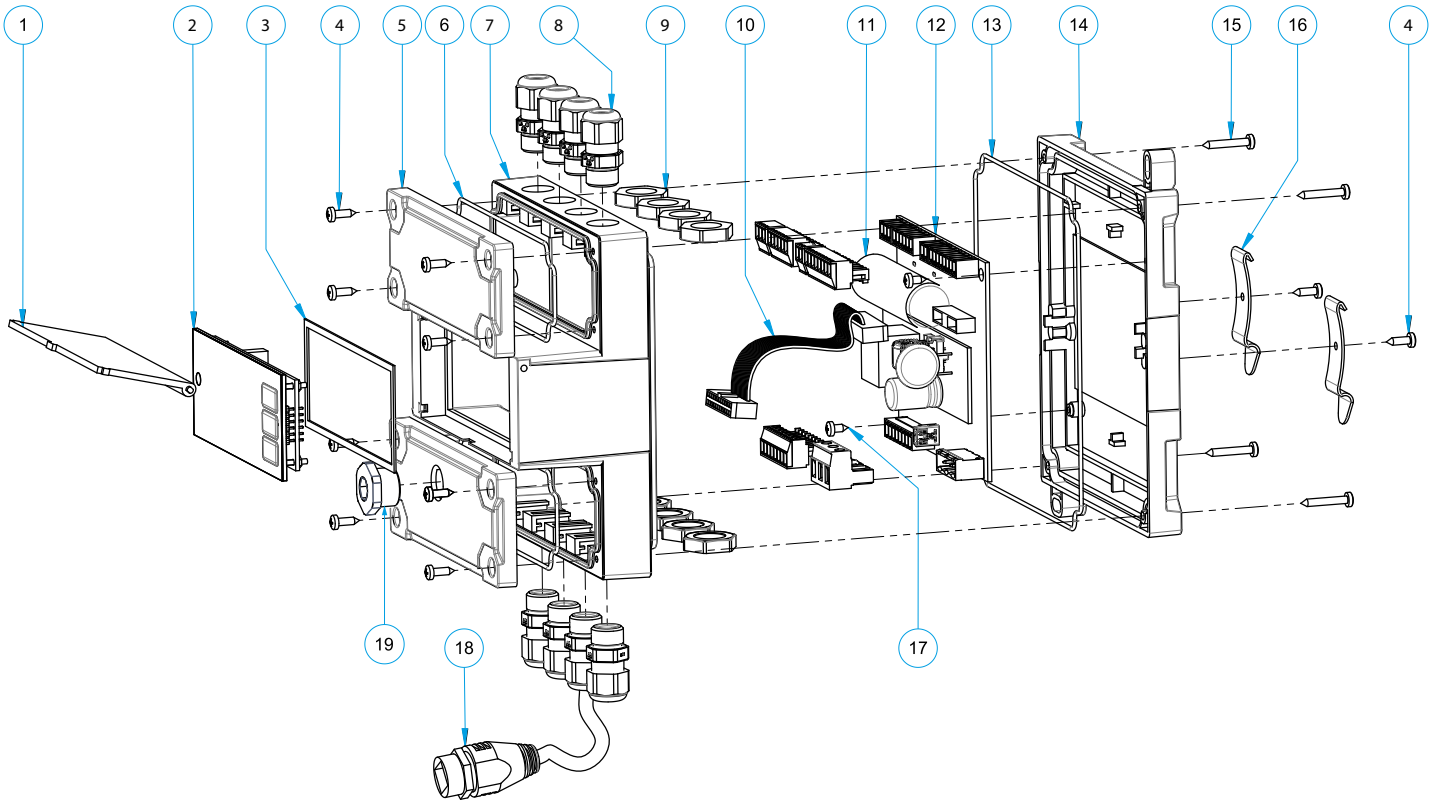








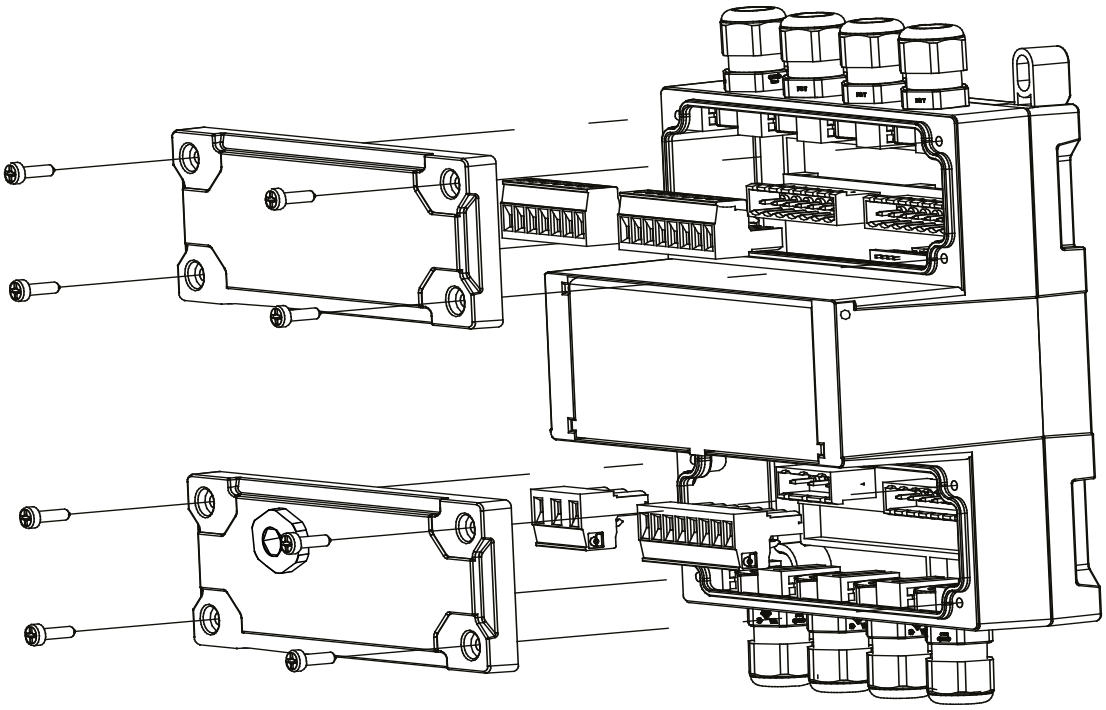
MV311 LAYOUT



POS.	DESCRIPTION	QT.
1	PROTECTION GLASS	1
2	MV311 DISPLAY	1
3	ADHESIVE GASKET	1
4	SELF-TAPPING SCREW 2.9X9.5	10
5	TERMINAL BLOCK COVER	1
6	O-RING TERMINAL BLOCK COVER	2
7	MAIN HOUSING	2
8	CABLE GLAND PG7 COMPLETE WITH O-RING	8
9	CABLE GLAND RING PG7	8
10	FLAT CABLE 20 VIE	1
11	MV311 BATTERY	1
12	MV311 PCB	1
13	O-RING BACK COVER	1
14	REAR COVER	4
15	SELF-TAPPING SCREW 2.9X19	2
16	DIN RAIL CONNECTIONS	2
17	SELF-TAPPING SCREW 2.9X6.5	1
18	OPTIONAL ETHERNET CONNECTOR (P.O.E. ON ORDER)	1
19	PG9 CAP	1

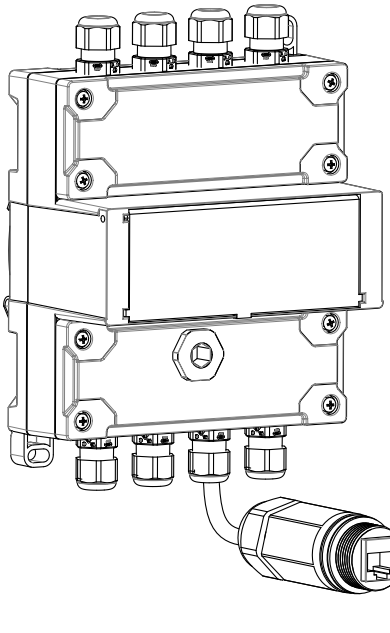
ACCESS TO THE TERMINAL BLOCKS

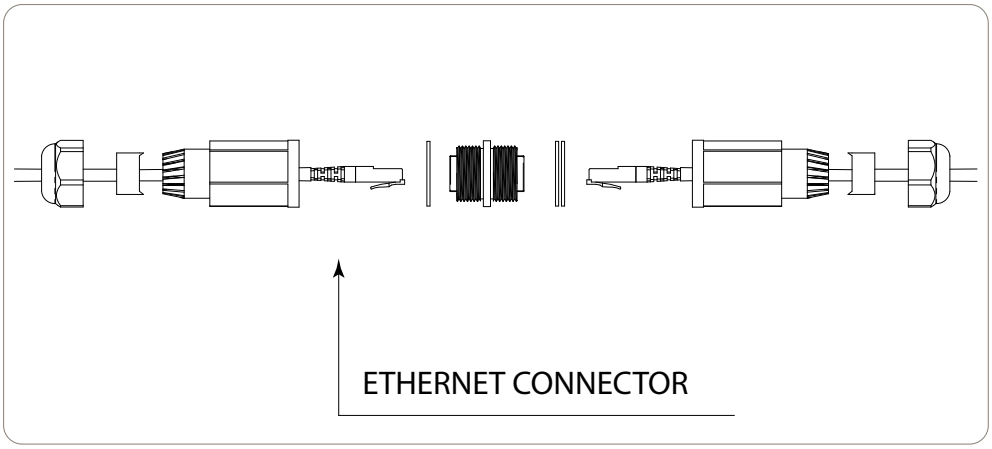
To access to the terminal blocks remove the covers.
NOTE : Only qualified operators shall remove the terminal covers.



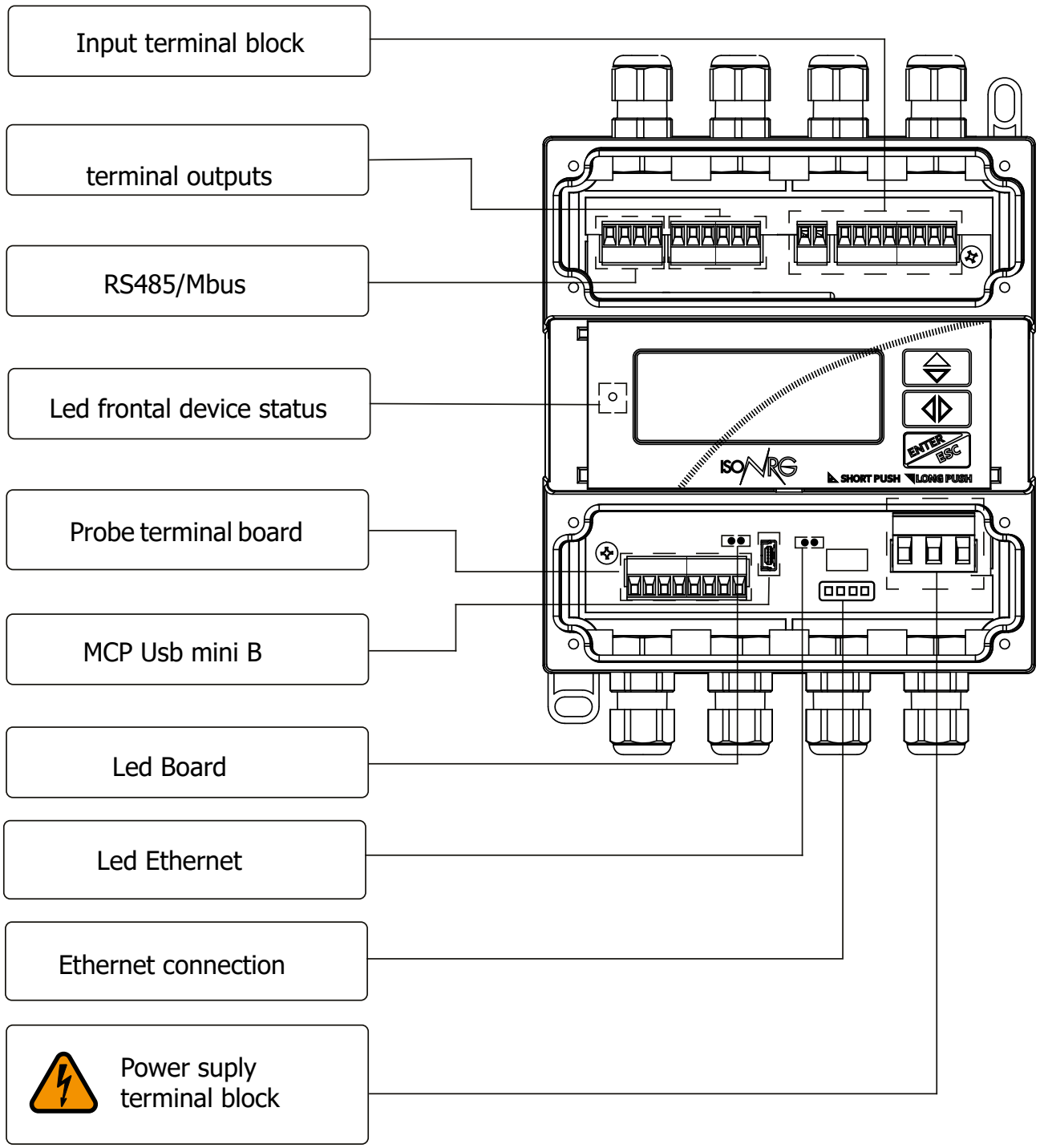
Torques Nm	
Screws	0.8
Cable glands	1.5

ETHERNET CONNECTION





CALCULATOR FRONTAL VIEW



All cables used for the connections must be of a shielded type; the shield must be grounded

Cables lenght must be between 3m and 30m.

Flow measurement can be done in 2 ways:

- ❑ analog: through a 4-20mA signal
- ❑ factorized volume pulsesi

Temperature is measured by a pair of PT thermoresistances (RTD), preferably with 4 wires (MANDATORY version for MID instruments); the selectable values are: PT100, PT500 and PT1000.

LED INTERPRETATION

A multicolour LED Front Panel Color shows the status of the device; this LED emits short flashes during battery power to indicate the "On" status of the device, keeping the display off. The front LED of the display is not available in the blind version.

FRONT LED

To check status and settings of the LEDs, see functions from MENU 8

COLOR	FLASHING	MEANING OF THE LED STATE
NETWORK POWER SUPPLY		
GREEN	Fixed	Heating mode ; Absence PV flow or energy storage not active
GREEN	Flashing	Heating mode; Detected PV Flow or Active Energy Accumulation
BLUE	Fixed	Cooling mode; Absence PV flow or energy storage not active.
BLUE	Flashing	Cooling mode; Detected PV Flow and Active Energy Accumulation
YELLOW	Flashing	Hot Water Flow Detected
CAN	Flashing	Detected Cold Water Flow
WHITE	Flashing	Communication in progress
RED	Fixed	HP Alarm Condition (High Priority)
RED	Flashing	Generic Alarm Condition (Low Priority)
BATTERY SUPPLY		
GREEN	1Hz, Short	Battery operation; all other colors are excluded
RED	1Hz, Short	Alarm Condition in Battery Operation (instead of Green)

LED BOARD

2 LEDs (Green and Red) near the USB connector to indicate the health of the device.

COLOR	FLASHING	MEANING OF THE LED STATE
NETWORK POWER SUPPLY		
GREEN	Flashing	Regular software execution
RED	Fixed	Allarm condition
NETWORK POWER SUPPLY		
GREEN	1Hz, Short	Regular battery operation (instead of red)
RED	1Hz, Short	Alarm condition in operation. Battery-operated (instead of Green)

LED ETHERNET

COLOR	FLASHING	MEANING OF THE LED STATE
GREEN	Flashing	ON= Connected data pass / OFF= Offline
YELLOW	Fixed	OFF=10 M / ON=100M

The expected colors vary from the display menu settings as follows:

- Op. Mode LED = Determines whether the color of the LED changes according to the Operating Mode (Heating / Cooling) or not.
- **OFF** No change (green only, no blue).
- **SIG** Change according to the sign of the detected power (Green Heating, Blue Cooling).
- **CTR** Change according to the set command (Green Heating, Blue Cooling).
- **Lamp. LED FV** Determines whether the Green or Blue / Green color flashes only when the detected carrier fluid flow rate and active energy storage or if it is always flashing..
- **Lamp. LED AC** Activates the generation of a yellow blink in the presence of the detected flow of the Hot Water inlet.
- **Lamp. LED AF** Activates the generation of a flash of Cyan color in the presence of the detected flow of the Cold Water inlet.
- **Lamp. LED Com** Activates the generation of a brief flashing of white in the presence of active communication.
- **OFF** No flashing.
- **MCP** Flashing only on MCP (USB) communication.
- **BUS** Flashing only on communication with the BUS (BACnet, ModBus, M-Bus).
- **ALL** Flashing in the presence of any communication.

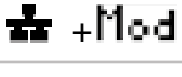
NOTE : For a better comprehensibility of the flashes it's advisable to activate only the really significant ones.

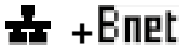
CONVERTER KEYBOARD

DEVICE KEYS		KEYS MCP	DISPLAY ALARMS [0]	MENU E SUB MENU	CHANGE THE PARAMETERS
	SHORT PUSH	↑	Scroll the alarms displayed upwards.	Scrolls upwards.	Increment of the numerical digit or of the parameter indicated by the cursor.
	LONG PUSH	↓	Scroll the alarms displayed downwards.	Scrolls the entries downward.	Decrease of the numerical digit or of the parameter indicated by the cursor.
	SHORT PUSH	→	Scroll through the screens in the order 0, 1, 2, 3, 4, 5, 6, 7, 8, 0, …	Scrolls the entries downward.	Move to the right of the cursor.
	LONG PUSH	←	Scroll through the screens in the order 8, 7, 6, 5, 4, 3, 2, 1, 0, 8, …	Flows voices towards the High.	Move to the left of the cursor.
	SHORT PUSH	**Enter**	Access the Menus.	Accesses the submenu / accesses the modification of the value or execution of the function.	Move to the left of the cursor.
	LONG PUSH	**Esc/Del**	Inactive.	Exit the Submenu / return to the Work screens.	Cancel the entered / selected value.

MEANING OF FLAGS

NOTE: Icons in the same category (eg Power, MCP connection, ...) are displayed alternatively in the same position.

SYMBOL	DESCRIPTION
	FLASHING ALARMS
	HP Alarm (High Priority); in the presence of this alarm the main function of the device does not work!
	Generic Alarm (Low Priority); all other alarms that do not inhibit the main function of the device (see alarm list for details); this alarm may not be present if there is a specific icon for each active alarm.
	Temperature sensor disconnected.
	Temperature sensors driving error
	Temperature sensor resistance error.
	4-20mA input disconnected or malfunctioning (invalid values).
	Rechargeable battery disconnected or broken.
	Overflow or Impulse input error 1.
	Overflow or Error on impulsive input 2.
	Overflow or Error on impulsive input 3.
	Overflow or Error on impulsive input 4.
	Overflow or Impulse output error 1
	Overflow or Impulse output error 2
	Overflow value (see alarm list for details).
	Communication error on FIELDbus (MODbus RTU/ BACnet -MSTP/ METERbus), check settings.
	ETHERNET COMMUNICATION
	Ethernet connected to 10M
	Ethernet connected to 100M.
	alternating CMODbus-TCP connected.
	alternating MODbus-TCP; communication with MV311 in progress.
	alternating MODbus-TCP; Communication error.

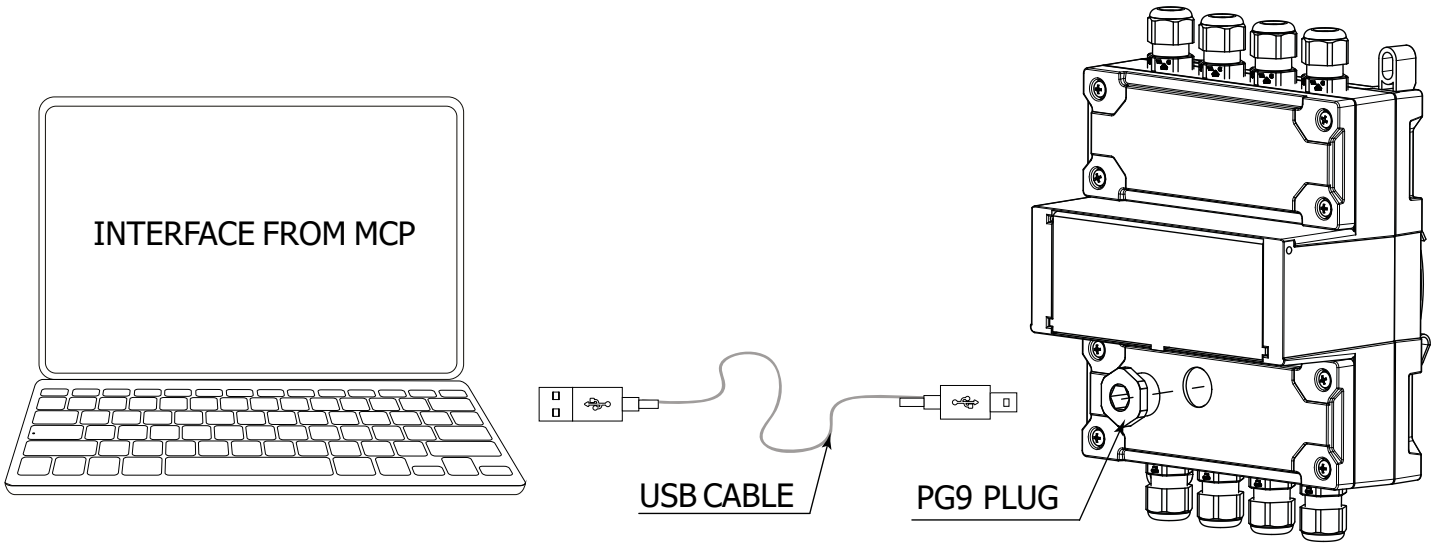
	alternating BACnet-IP recent connection.
	alternating BACnet-IP; communication with MV311 in progress (Generates white LED flashing if enabled).
	alternating BACnet-IP; Communication error.
SYMBOL	**DESCRIPTION**
VARIOUS	
	Simulation mode activated.
	Function of blocking of totalizers (Total or Partial) active.
POWER	
	Main power presence; if the device has the battery, it also indicates that the battery has finished charging.
	Powered by USB (does not charge the battery).
	Battery charging from main power.
	Battery operation, 100% battery.
	Battery operation, 80% battery.
	Battery operation, 50% battery.
	Battery operation, 20% battery.
	Battery operation, low battery (it will switch off).
FIELD BUS COMMUNICATION	
	MODbus RTU connected and detected
	MODbus RTU communication with MV311 in progress (Generates white LED flashes if active).
	BACnet-MSTP connected and detected; MV311 in IDLE
	BACnet-MSTP connected and detected; MV311 ACTIVE.
	BACnet-MSTP communication with MV311 in progress (Generates white LED flashes when active).
	METERbus connected and detected
	METERbus communication with MV311 in progress (Generates white LED flashes when active).
	Communication error on FIELDbus (MODbus-RTU/ BACnet-MSTP/ METERbus), check settings

SYMBOL	DESCRIPTION
	MCP CONECT
	MCP connection active.
	Download MCP file.
	Loading MCP files.

CONNECTION WITH MCP INTERFACE

MCP is a Windows® software that allows you to set all the functions of the converter and tocustomize the menu. To use the MCP interface, refer to the relative manual.

To maintain the degree of protection (IP65), make sure to close the PG9 cap to ensure the seal.



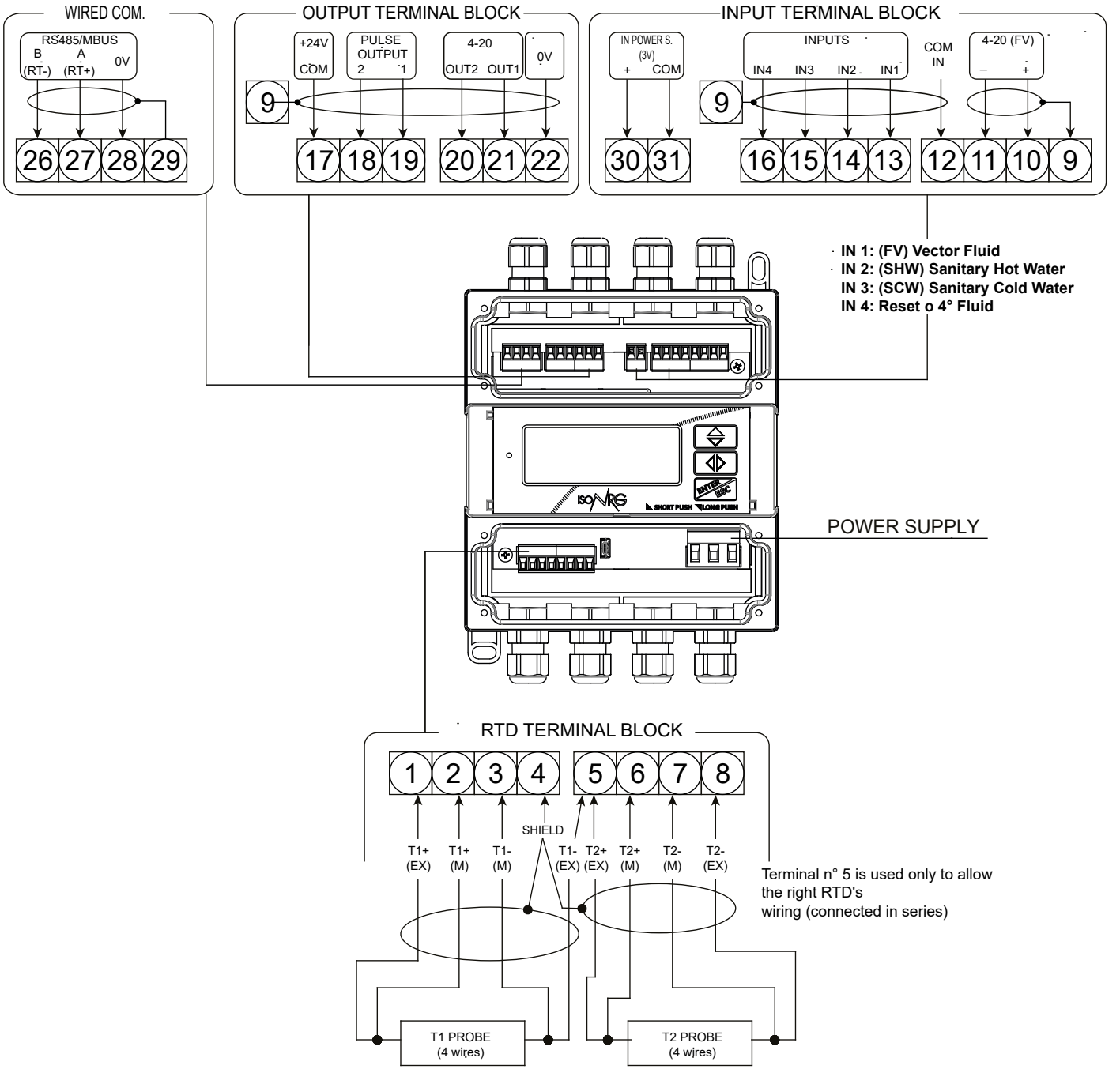
The physical connection between the PC and the computer is made using the USB cable (TypeA-MiniB) not supplied with the converter.

RS485 TERMINATION SWITCH

This mechanical switch is present on the RS485 board only if it is installed. For more details, refer to the communication manual.

ELECTRICAL CONNECTIONS : OVERVIEW

WARNING: secure the cables with an additional fastening system placed near the clamp.



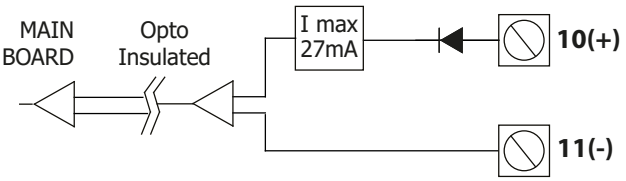
To connect 2 wire probe:
T1: connect the probe to terminal block 2 and 3, bridge on 1-2 and 3-5
T2: connect the probe to terminal block 6 and 7, bridge on 5-6 and 7-8

Cable gland PG7: Allowed diameter cables 3-6.5 mm.

- ❑ IN1 heat transfer fluid flow
- ❑ IN2 hot water totalizer
- ❑ IN3 cold water totalizer
- ❑ IN4 programmable function

INPUTS ELECTRICAL DIAGRAMS

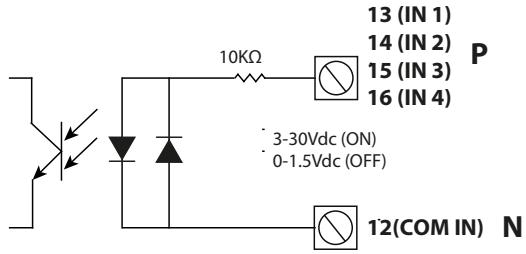
INPUT 4-20mA



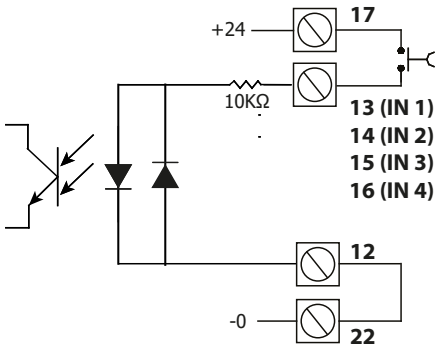
- Minimum voltage: 8.5V
- Maximum continuous voltage: 30V
- Maximum input current: 27mA

CONNECTIONS WITH POLARITY 'TYPE "P" (POSITIVE)

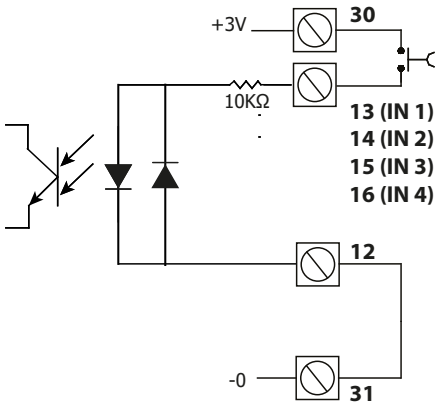
ISOLATED DIGITAL INPUT WITH EXTERNAL POWER SUPPLY



ISOLATED DIGITAL INPUT WITH + 24V INTERNAL POWER SUPPLY

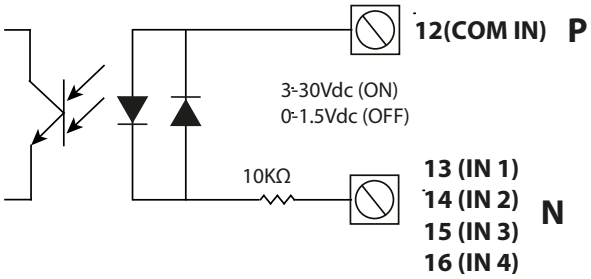


NON-ISOLATED DIGITAL INPUT WITH INTERNAL BATTERY POWER SUPPLY

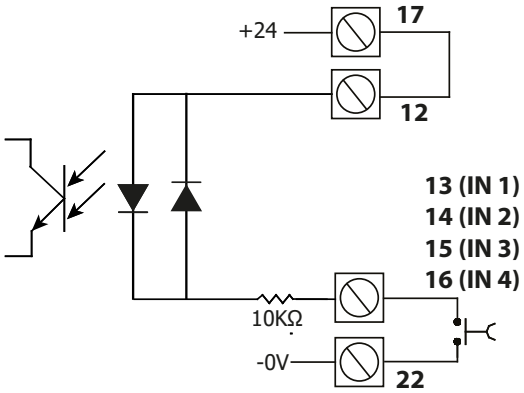


CONNECTIONS WITH POLARITY 'TYPE "N" (NEGATIVE)

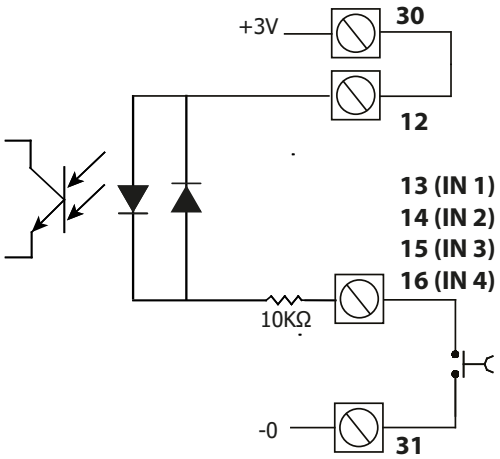
❑ ISOLATED DIGITAL INPUT WITH EXTERNAL POWER SUPPLY



❑ DIGITAL INPUT WITH + 24V INTERNAL POWER SUPPLY

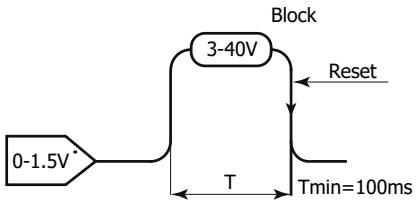


❑ NON-ISOLATED DIGITAL INPUT WITH INTERNAL BATTERY POWER SUPPLY



RESET / BLOCK TOTALIZERS (RESERVED TO ENTRY 4)

RESET TOTALIZERS

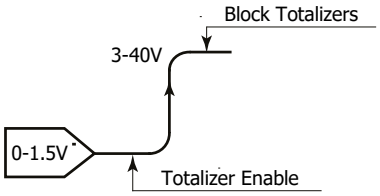


Conditions necessary for the function activation.

- ❑ POS. 5.1- 5.6; 5.8- 5.13 ENABLED at least one
- ❑ POS. 3.6 = OFF
- ❑ POS. 3.13 = AUT o REM (no LOC!)

N.B. Totalizer reset occurs only with Lock function enabled.

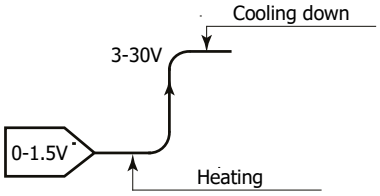
BLOCK TOTALIZERS



Conditions necessary for the function activation.

- ❑ POS. 5.7, 5.14 ENABLED at least one
- ❑ POS. 3.6 = OFF.
- ❑ POS 3.13 = AUT o REM (no LOC !).

LOCAL CONTROL SYSTEM TYPE (RESERVED TO INPUT 4) "

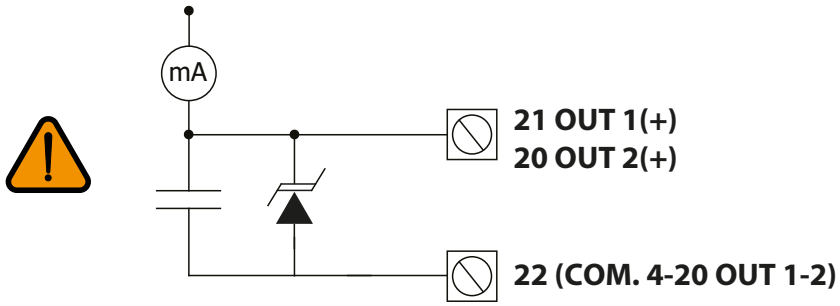


Conditions necessary for the function activation

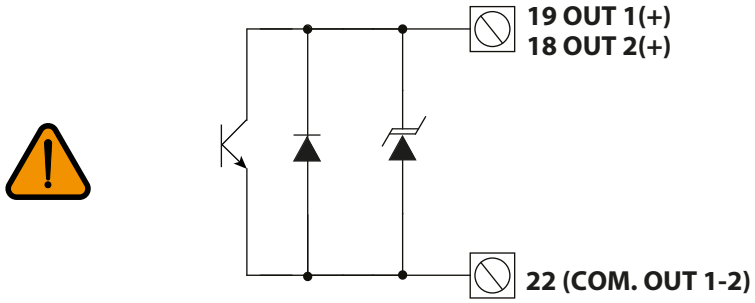
- ❑ POS. 3.6 = OFF.
- ❑ POS 3.13 = LOC

The local control will then decide, via input, on which counter to totalize the energy. Note: If the selection made through input will be inconsistent with the sign of Power, the relative alarm will appear.

ELECTRICAL SCHEME OUTPUTS



- Opto-isolated output; terminal no. 22 is connected to the ground of -24V
- Maximum switch able voltage: 30V ⎓
- Maximum switch able current: 100mA
- Maximum saturation voltage between collector and emitter at 100mA: 1.2V
- Maximum reverse current applicable at the input during accidental polarity inversion (VEC): 100mA
- Isolation of the other secondary circuits: 500V ⎓

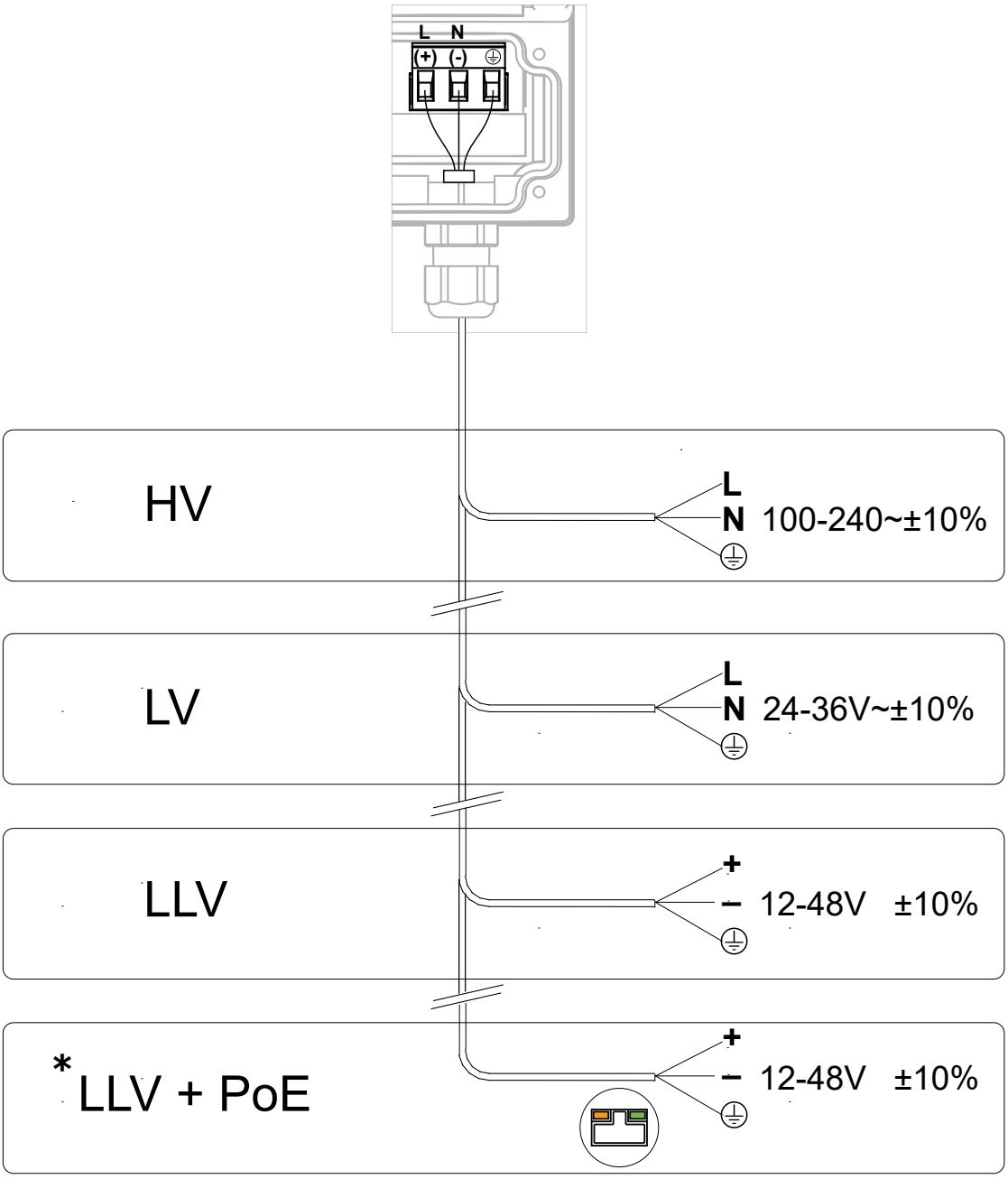


- Opto-isolated output
- Maximum load 1000Ω
- Maximum vacuum voltage 27V ⎓
- Protected against persistent overvoltages up to 30V ⎓

ELECTRICAL CONNECTIONS

POWER SUPPLY

- ❑ Before connecting the power supply, check that the power supply voltage is within the limits indicated on the nameplate.
- ❑ For the connection use only approved cables with fireproof properties.
- ❑ The power supply line must be equipped with an external protection against over currents (fuse or magnetothermal).
- ❑ In close proximity to the instrument, install an easily accessible and clearly identified switch to cut off the power supply.



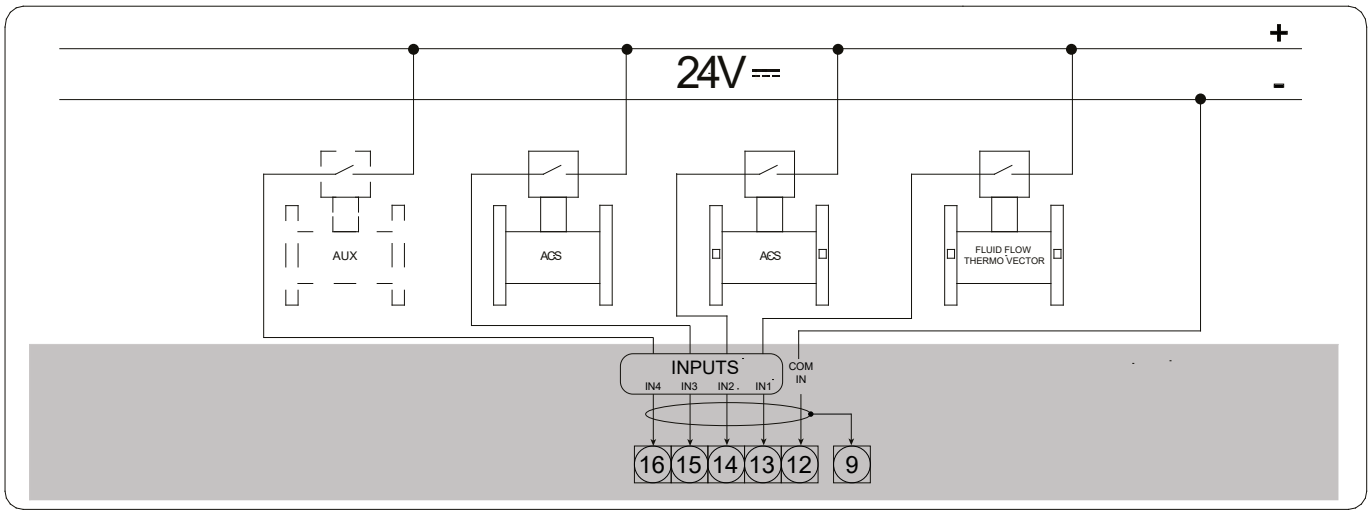
* in case of PoE power supply version, it must have a minimum 1500 Vac insulation compared to the earth and any other connection, to guarantee the insulation required by the IEEE for ethernet.co

The options above are also available with a rechargeable backup battery

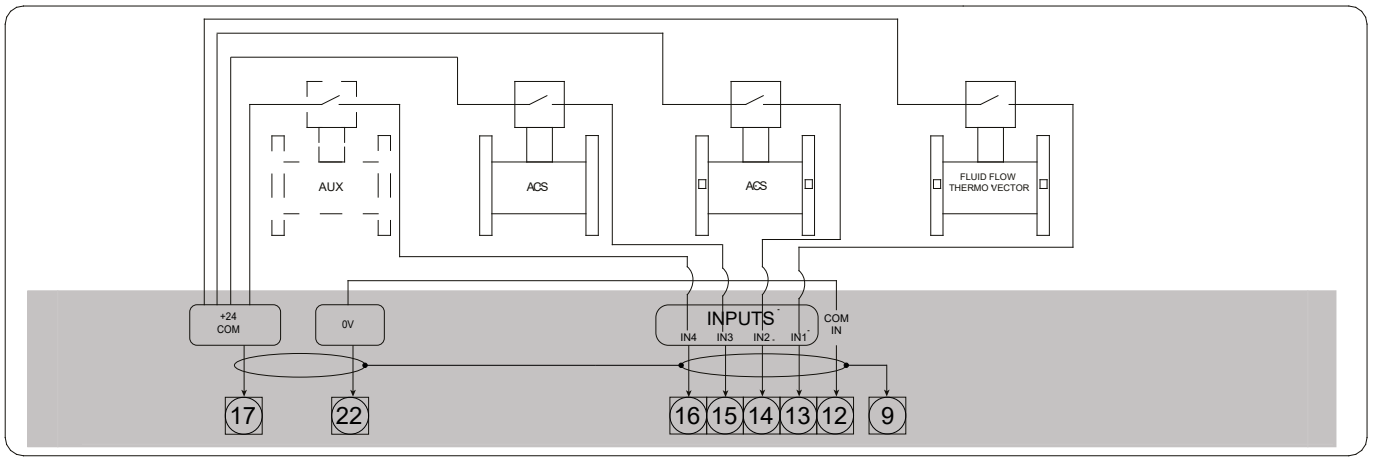
CONNECTIONS TO EXTERNAL DEVICES WITH POLARITY 'TYPE "P"

Isolated digital input with external power supply.
NOTE: The 4th meter is optional for the auxiliary fluid. To activate the auxiliary fluid measurement, set POS 3.6 = ON.

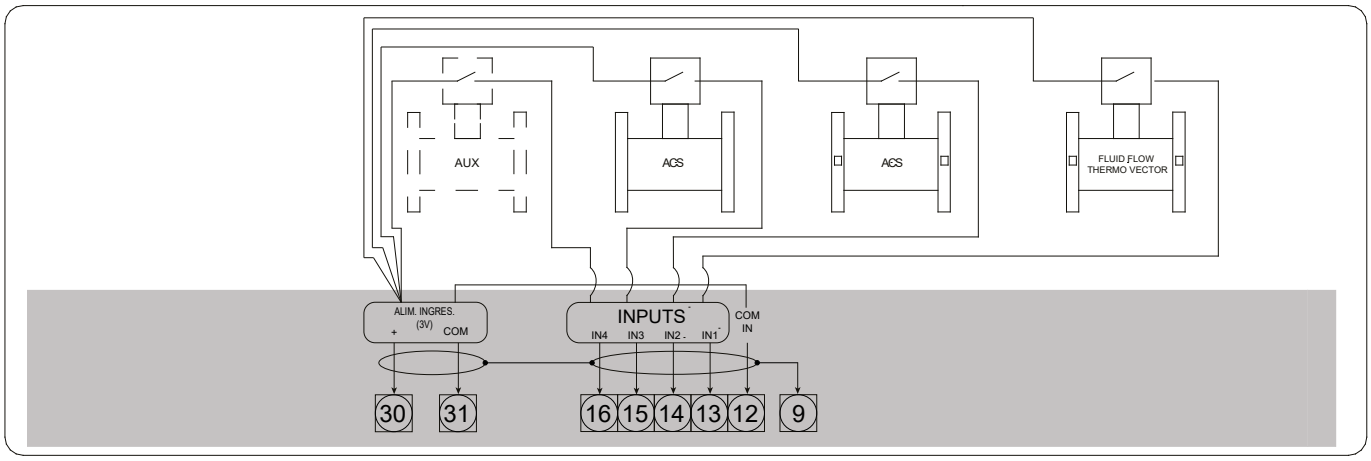
❑ ISOLATED DIGITAL INPUT WITH EXTERNAL POWER SUPPLY



❑ ISOLATED DIGITAL INPUT WITH + 24V INTERNAL POWER SUPPLY



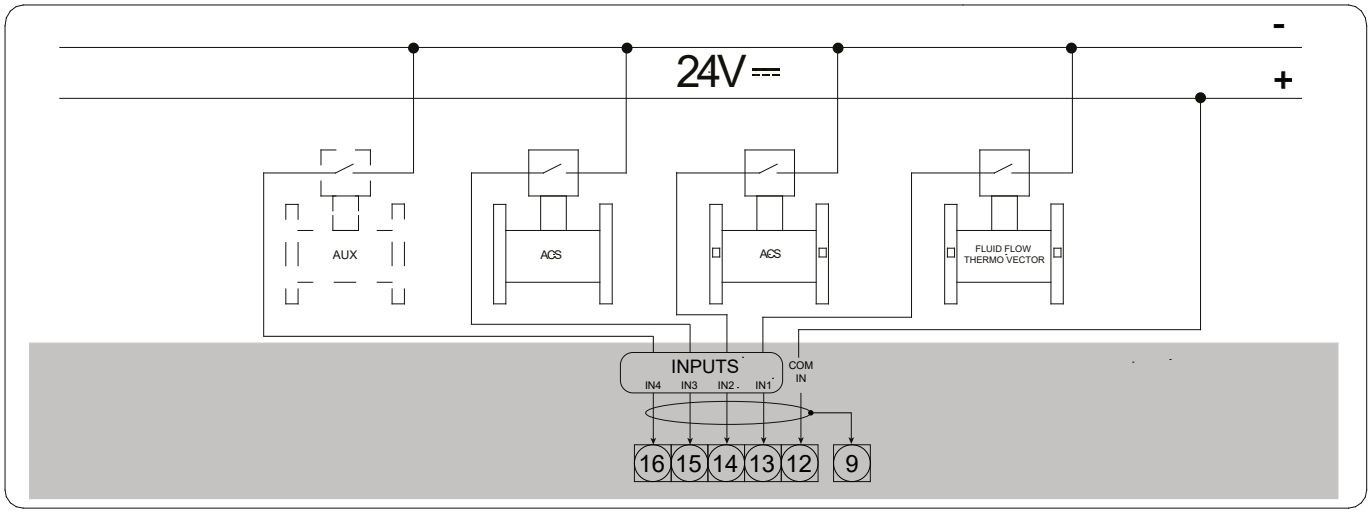
❑ NON-ISOLATED DIGITAL INPUT WITH INTERNAL BATTERY POWER SUPPLY



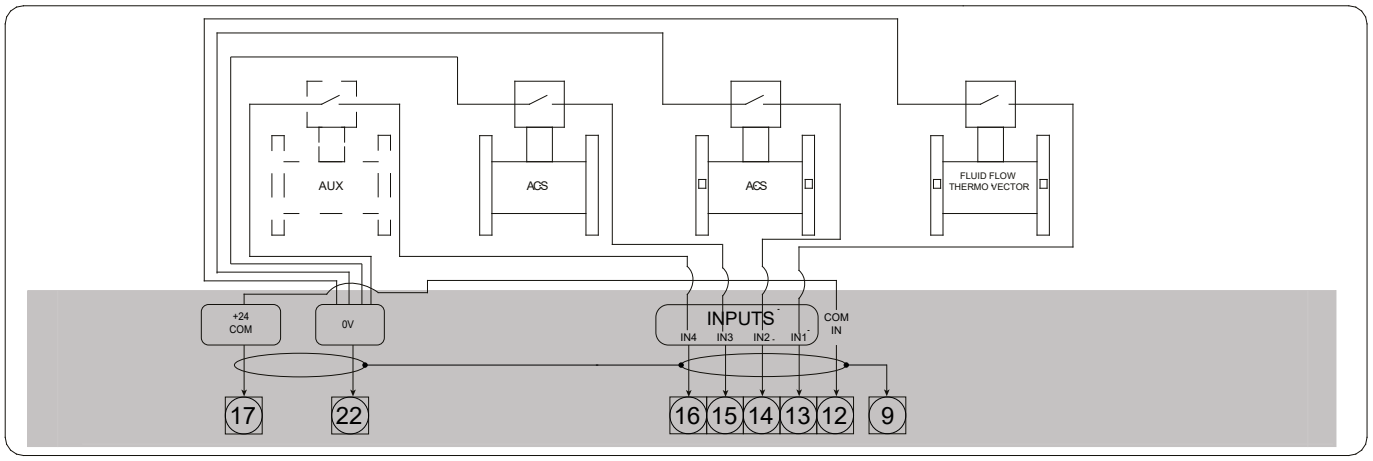
CONNECTIONS TO EXTERNAL DEVICES WITH POLARITY 'TYPE "N"

Isolated digital input with external power supply.
NOTE: The 4th meter is optional for the auxiliary fluid. To activate the auxiliary fluid measurement, set POS 3.6 = ON.

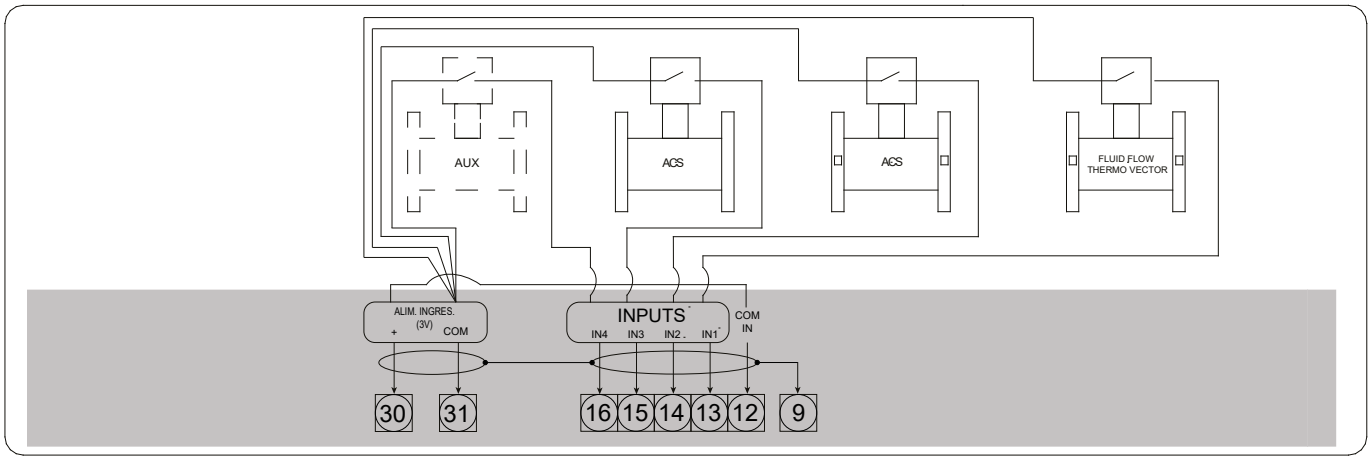
❑ ISOLATED DIGITAL INPUT WITH EXTERNAL POWER SUPPLY



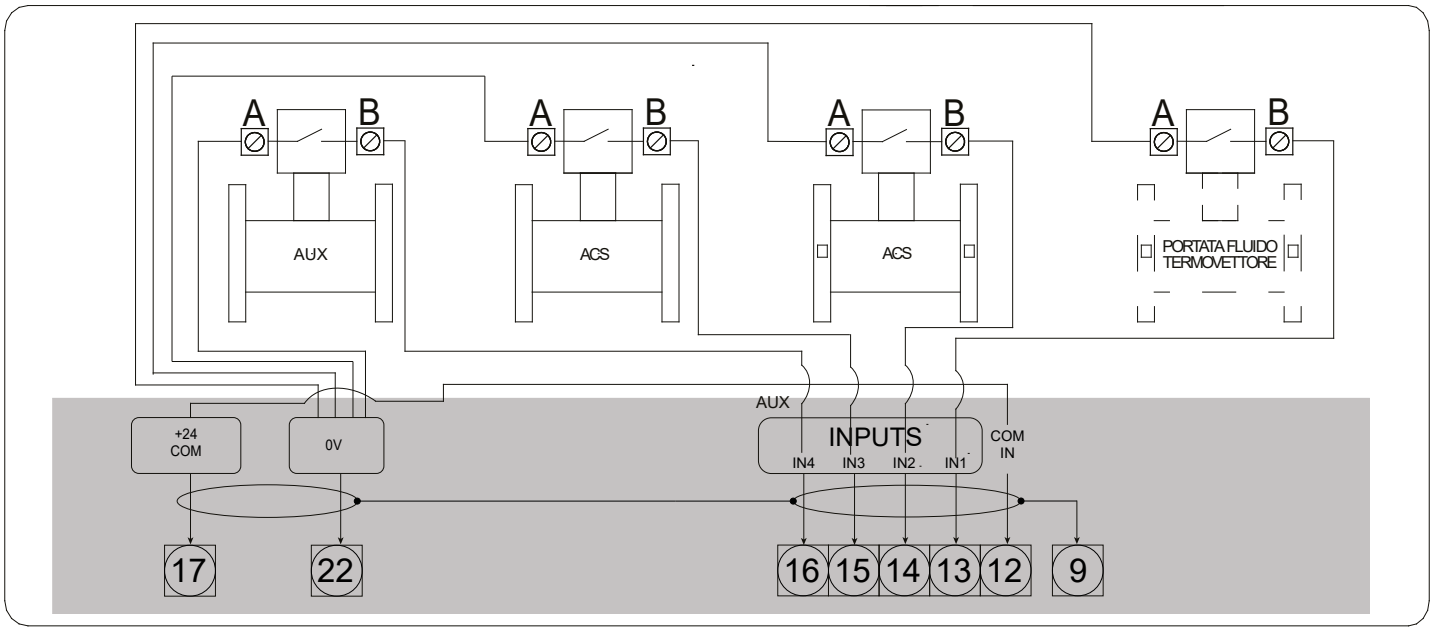
❑ ISOLATED DIGITAL INPUT WITH + 24V INTERNAL POWER SUPPLY



❑ NON-ISOLATED DIGITAL INPUT WITH INTERNAL BATTERY POWER SUPPLY

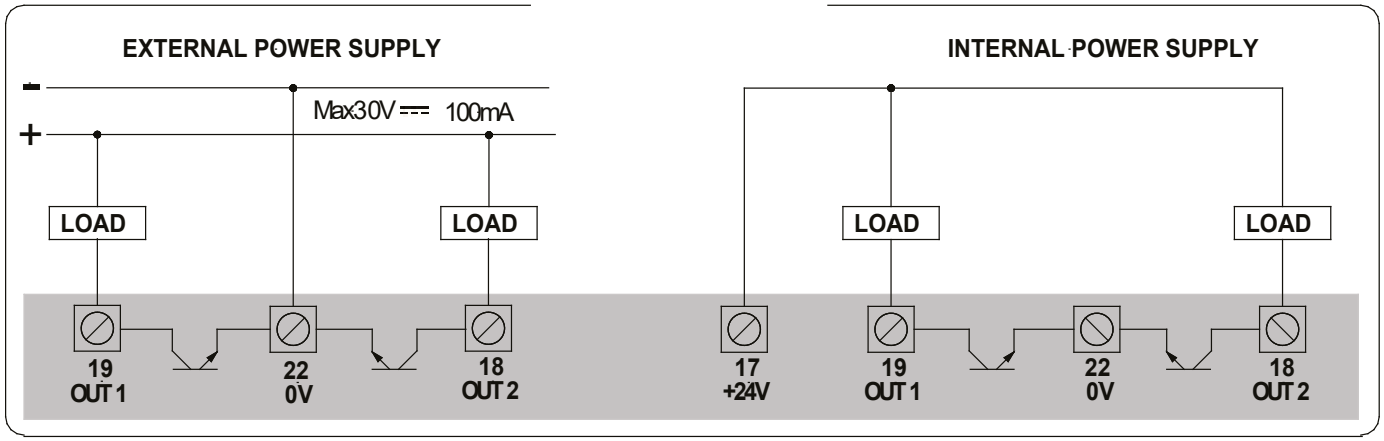


CONNECTIONS TO MV SERIES CONVERTERS

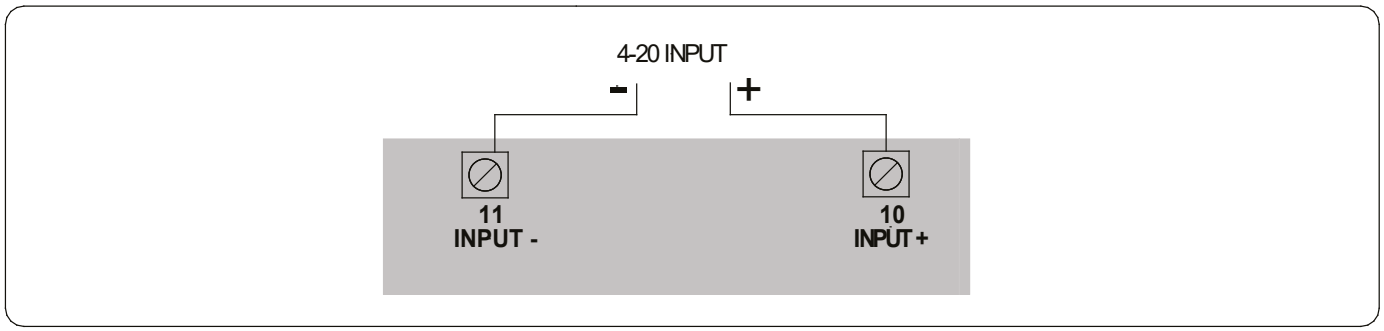


CONVERTER	TERMINAL BLOCK CONNECTION	
	A	B
MV110	17 – common outputs 1/2	18 – outputs 1 19 – outputs 2
MV110W	17 – common outputs	18 – outputs 1
MV800	5 – common outputs 1/2	
ML4F1	18 – output 1 22 – output 2	
ML110 ML210 ML211	17 – output 1 19 – output 2	16 – output 1 18 – output 2
ML145	19 – common outputs 1/2	18 – output 1 17 – output 2
ML155	12 – common outputs 1/2	13 – output 1 14 – output 2
ML255	17 – common outputs 1/2	15 – output 1 16 – output 2
CS3795 CS3900 CS8100	5 – common outputs 1/2	2 – output 1 3 – output 2 (opt.)
CS3820 PP3+/ MV252	B (Cyan) – common outputs 1/2	C (white) – output 1 D (lack) – output 2

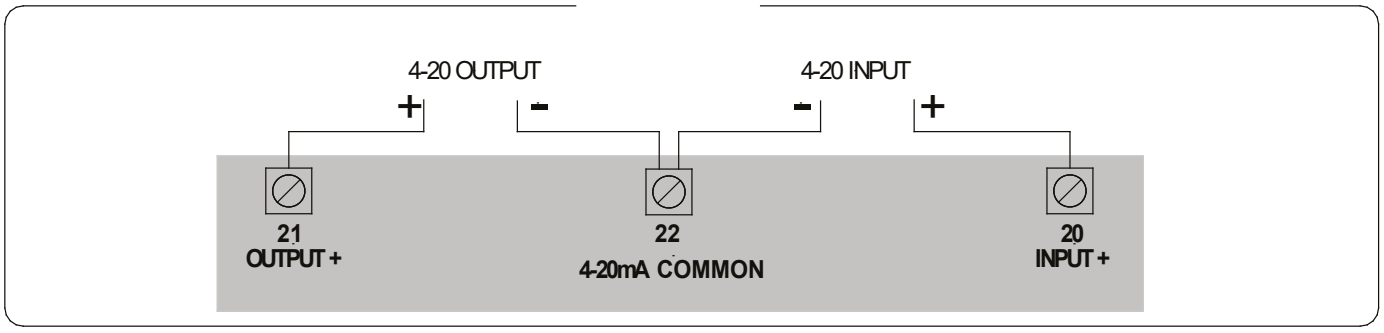
IMPULSE OUTPUTS



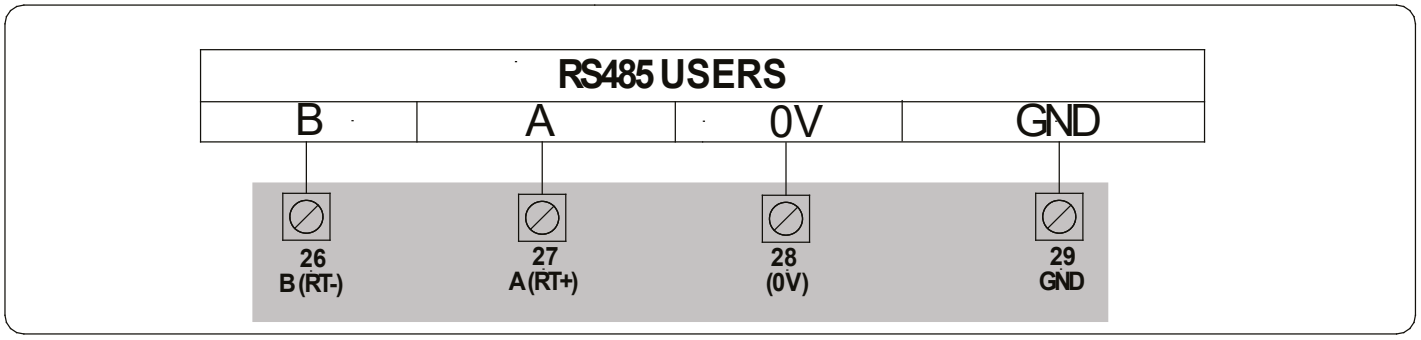
4-20mA INPUT



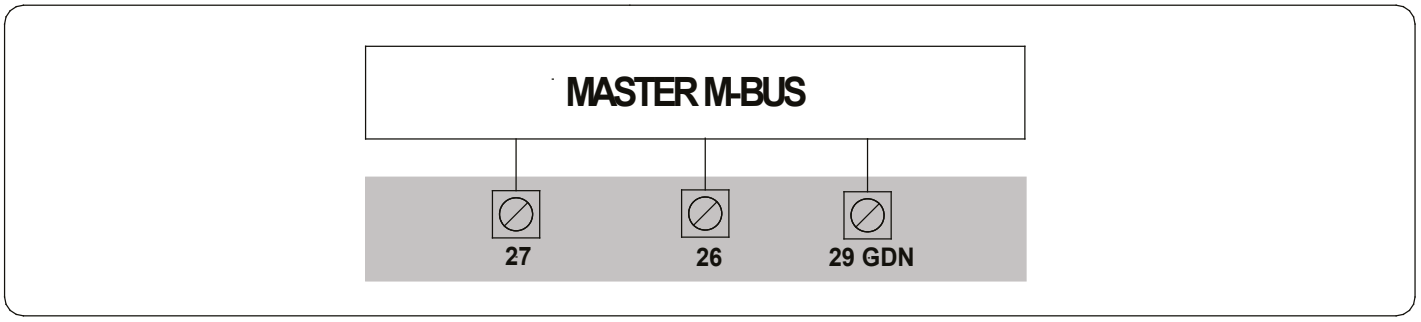
4-20mA OUTPUT



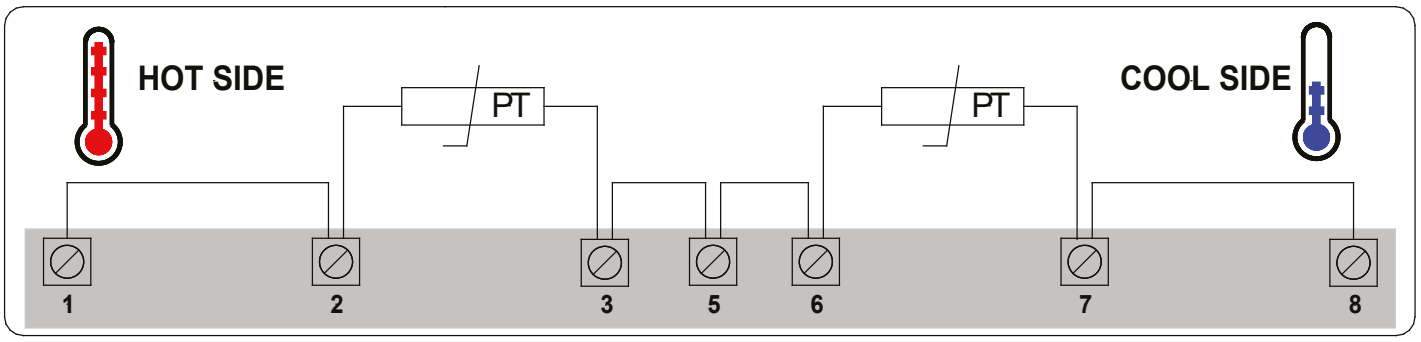
RS485 PORT



M-BUS

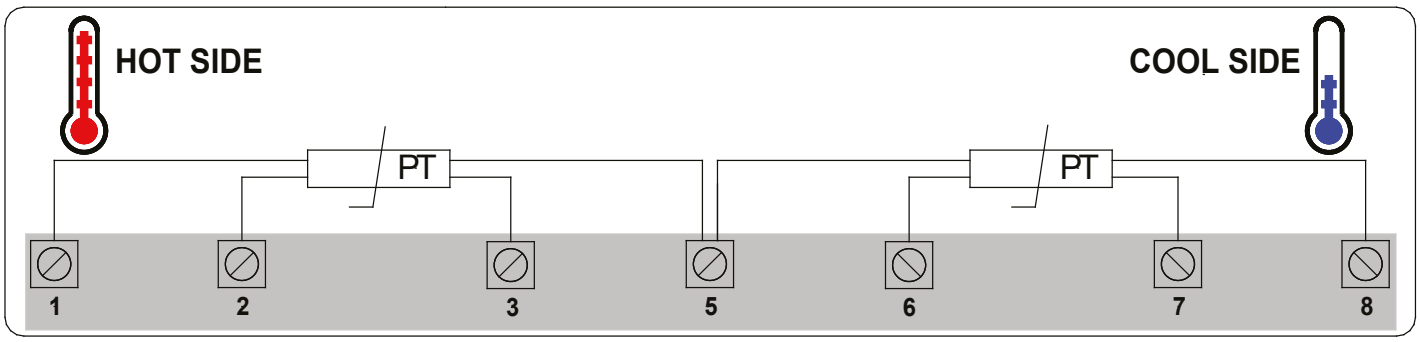


2 WIRE TEMPERATURE PROBES



SHIELD 4 ⊘

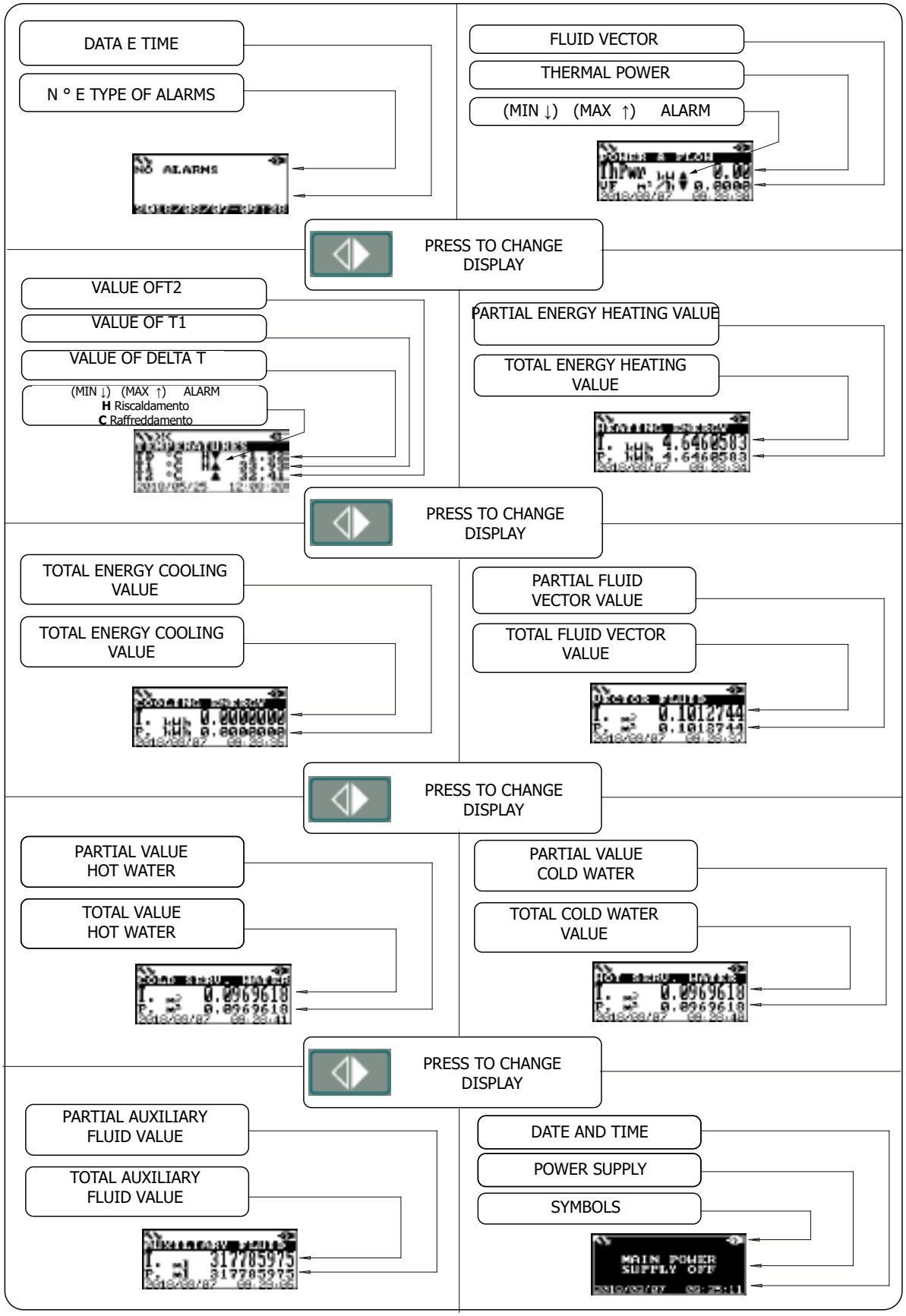
4 WIRE TEMPERATURE PROBES



SHIELD 4 ⊘

ACCESS TO THE INSTRUMENT FUNCTIONS

The direct exposure of the calculator to the solar rays, could damage the liquid crystal display.



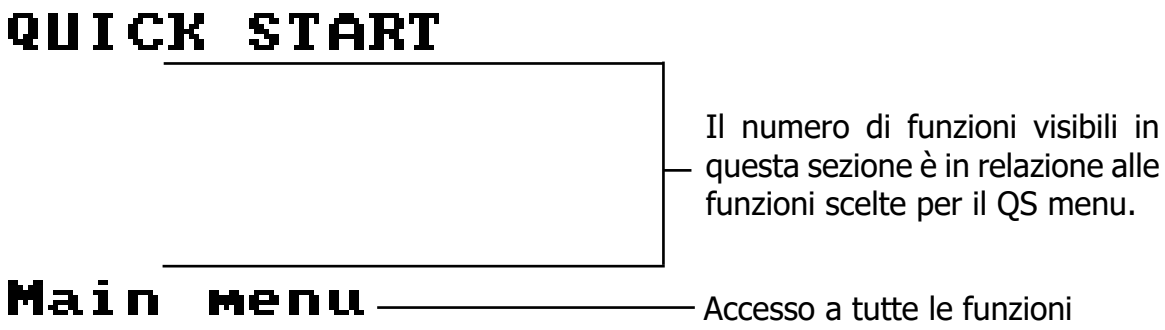
The maximum number that can be represented by the totalizers is (9) 999999999 regardless of the number of decimals selected. When this value is reached, the counters are reset.

QUICK START MENU

The QUICK START MENU allows the immediate access to the frequently used functions.
When enabled, It's possible to access to "Quick start menu" in two different ways:

1. ***Access to the quick start menu from the visualizzation pages***

- ❑ ***Function 8.13 set on DIR***
- ❑ ***Press enter from the visualization pages***



Il numero di funzioni visibili in questa sezione è in relazione alle funzioni scelte per il QS menu.

Accesso a tutte le funzioni

2. ***Access to the quick start menu from the main menu***

- ❑ ***Function 8.13 set on MENU***
- ❑ ***Press enter from the visualization pages***

- ❑ ***In the main menu press enter on "Quick start"***

The "Quick start menu" can be activated via function 8.13 (display menu); the loaded functions are displayed and editable according to the access level entered. The "Main Menu" function allows access to all functions in relation to the access code entered

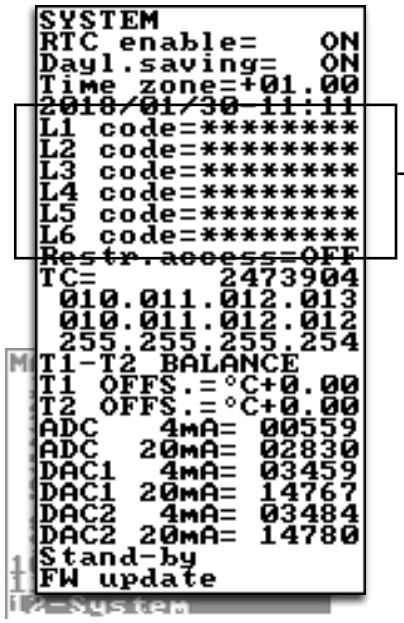
To make the "Quick start menu" suitable for the specific application, it is possible to customize it through the MCP software

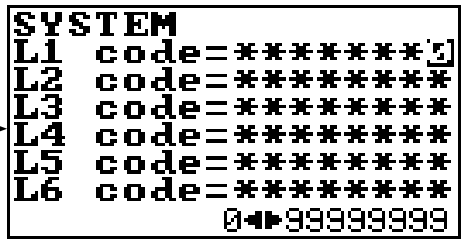
CONVERTER ACCESS CODE

The access to the instrument programming 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*

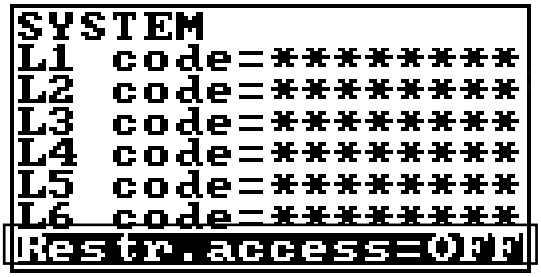
Access Code Set : Menu 12 System





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

Restricted Access Set : Menu 12 System



Settable Values

ON

OFF

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

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

* WARNING: take note carefully of the **customized code**, because there is no way for the user to retrieve or reset it if he lost it. Factory preset access codes:

- ❑ **L1: 10000000**
- ❑ **L2: 20000000**
- ❑ **L3: 30000000**
- ❑ **L4: 40000000**

code **00000000** allows access to level 0 functions only

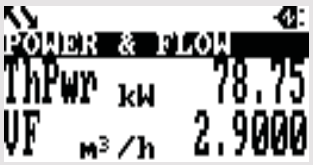
ACCESS TO CONFIGURATION MENU

you can acces to the configuration menus in two different ways:

- through the "Quick Start Menu" where you can access some of the main functions;
- through the "Main Menu" where it is possible to access all the functions allowed by the assigned level code.

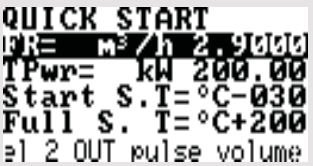
Below there are some examples of value change in the "Fs" function.
EXAMPLE: change the full scale value from 2.9m³ / h to 3m³ / h, from the "Quick start menu" in DIR mode

1



Access the "Quick start menu"

2

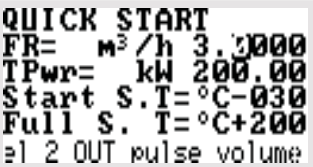


Access the "FR" function

3

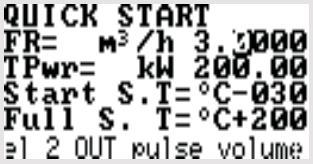
Press repeatedly 4 times

4



Change the value

5

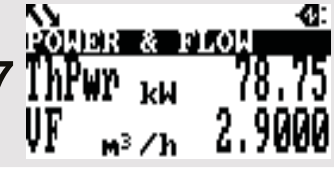


Confirm the change

6

Press Esc or wait for the timeout

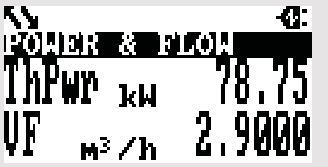
7



home page

EXAMPLE: CHANGE THE VALUE OF THE FULL SCALE FROM 2.9M³ / H TO 3M³ / H, FROM THE "MAIN MENU" (QUICK START MENU NOT ENABLED)

1



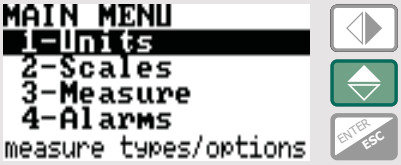
Access the "Quick start menu"

2

X 8 VOLTE

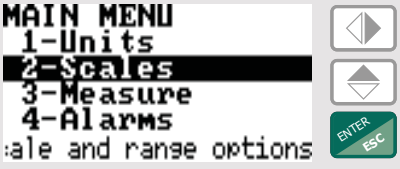
3

4



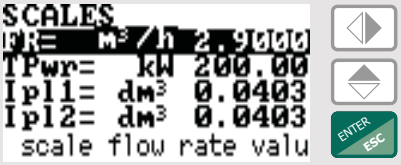
Select "scales" menu

5



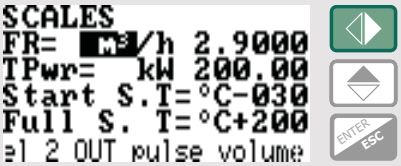
Enter to "scale" menu

6



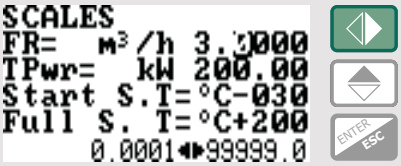
modify the value

7



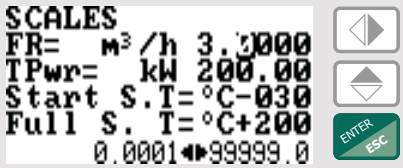
press repeatedly

8



modify the value

9

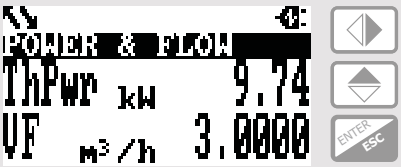


confirm the modification

10

long press the ESC button

11



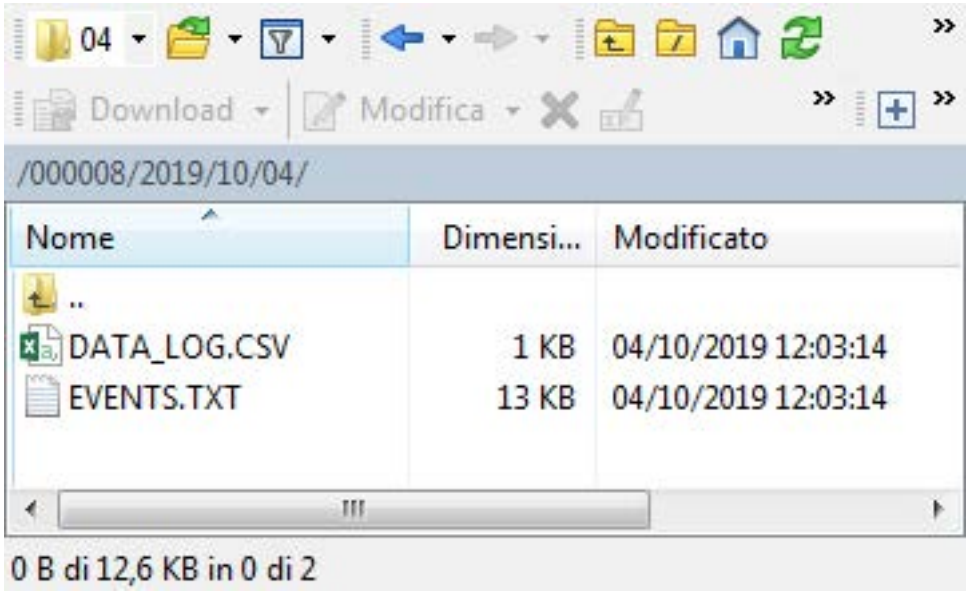
home page

ETHERNET

The connection allowed also the following services, in addition to optional protocols (BACnet-IP, MODbus-TCP):

FTP SERVER ON ETHERNET

Read-only, it allows the view of DataLogger and EventLogger files on the SD card:



If you use SSL / TLS encryption, set the connection as "explicit encryption".

SNTP CLIENT ON ETHERNET

Clock synchronization:

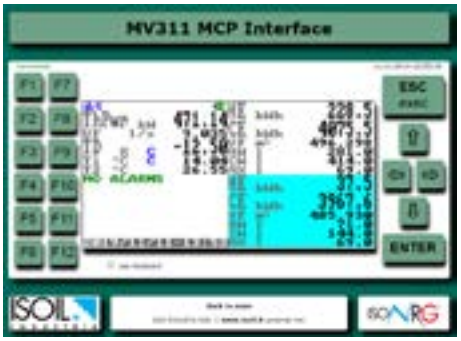
Through the NTP server it's possible to synchronize the internal clock with the reference server every hour; the reference server can be set as "name" or as "IP address". *"7.13 NTP time server name / address" page 39*

WEBSERVER ETHERNET

Virtual Display:

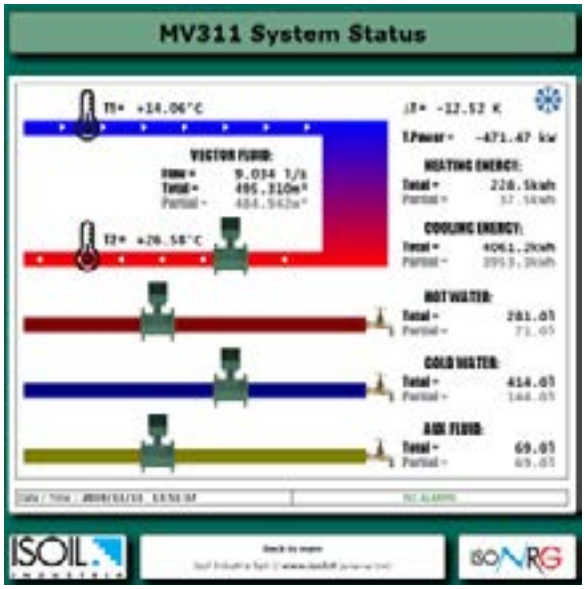
The virtual display can be disabled (OFF), enabled in Exclusive mode (ON) or enabled simultaneously with the MCP section (ON + MON).

With the exception of the "ON + MON" mode (where the Virtual Display session is displayed simultaneously on MCP and on the WEB interface), only one Virtual Display session can be performed; the other web accesses will indicate the busy interface with the occupant's reference, the MCP connection takes precedence. *"8.14 Virtual display web interface enable" page 39*



SYSTEM STATUS

The following view contains all the informations that can be viewed on the display pages; including Date, Time and Alarms.



AUTHENTICATION

Access to the pages (WebServer) and files (FtpServer) can be protected by a password; to activate the protection, just set the password in the function *"7.14 Network access password" page 39*.

To disable the protection, you just set an EMPTY password.

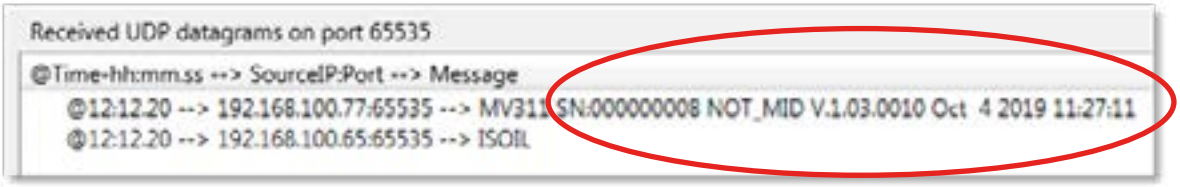
The login credentials have these features:

WebServer	FtpServer
Username: MV311_SSSSSS (SSSSSS is the SerialNumber of the device).	
Password: set on the function *"7.14 Network access password" page 39*.	
	ftp://Username:Password@Address **Also accessible with:** ftp://anonymous:dontcare@Address if the password is disabled.

UDP DISCOVERY FUNCTION

UDP search on port 65535:

By sending the ISOIL message in UDP Broadcast mode, on port 65535, all MV311 on the Ethernet network reply with the message:



it shows the identification information of the device, as well as displaying the network address.

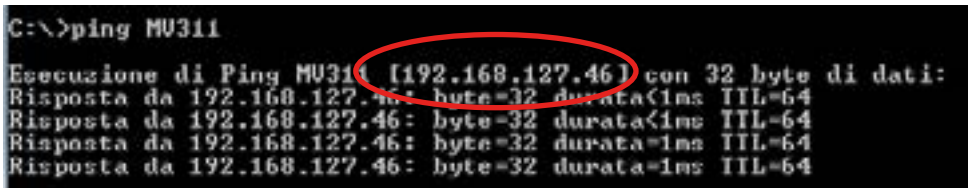
MDNS SERVICE

The mDNS service with the following names is also active on MV311:

- MV311_SSSSSS (where SSSSSS is the SerialNumber of the device).
- MV311 (limited to cases where there is only one MV311 on the network).

In operating systems that support mDNS, the device can also be reached using its name instead of its IP address.

Below is an example with "ping" which also displays the IP address of the device.



where supported the name can also be used for access to WebServer, FtpServer,...

ENCRYPTION

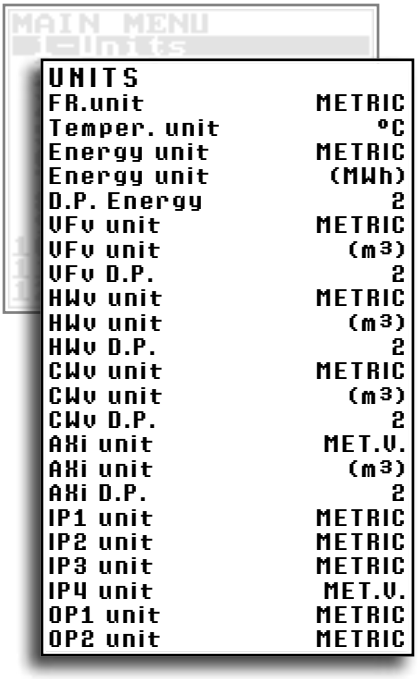
An encrypted connection (TLS1.2) is also available for access to the FTP (file transfer) and HTTP (web pages) servers of the MV311: FTPs and HTTPs; *"Network security (SSL-TLS) enable" pag39*

NOTE: The encrypted connection is slower than the unencrypted because it involves real-time data encryption by the MV311.

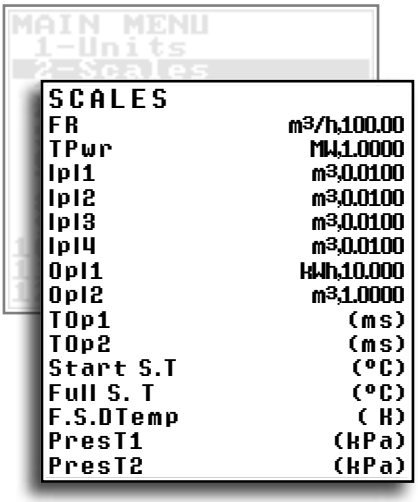
WARNING: The HTTPs FTPs clients (browsers and file explorers) generate a connection security warning which must be accepted in order to continue. This notice doesn't refer to data encryption (as can be seen in detail), but only to the client's inability to verify the identity of the MV311 server with a certified authority. Since the MV311 server is for internal networks, it doesn't have a public name and its IP address is configurable/editable by the user. Therefore the pre-installed certificate in the firmware has an exclusive key functionality for encrypting data transiting in the indicated services.

FUNCTIONS MENU

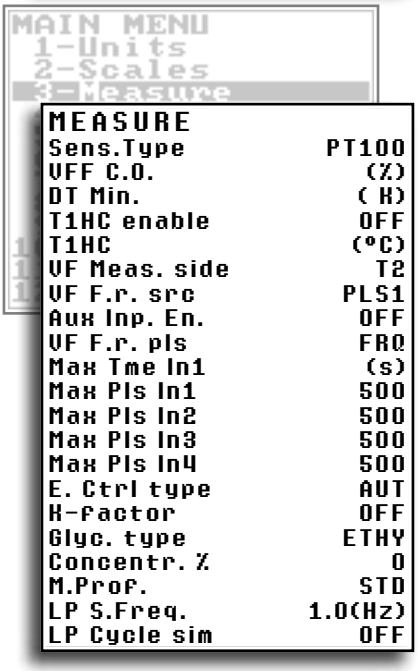
The grey functions, here below, are displayed only with other functions active, or with optional modules.



1.1	Flow rate unit of measure type
1.2	Temperature unit of measure
1.3	Energy totalizer unit of measure type
1.4	Energy totalizer unit of measure
1.5	Energy totalizer Decimal point position
1.6	VF volume totalizer unit of measure type
1.7	VF volume totalizer unit of measure
1.8	VF volume total. decimal point position
1.9	HW volume totalizer unit of measure type
1.10	HW volume totalizer unit of measure
1.11	HW volume total. decimal point position
1.12	CW volume totalizer unit of measure type
1.13	CW volume totalizer unit of measure
1.14	CW volume total. decimal point position
1.15	AUX input totalizer unit of measure type
1.16	AUX input totalizer unit of measure
1.17	AUX input total. decimal point position
1.18	In Pulse 1 unit of measure type
1.19	In Pulse 2 unit of measure type
1.20	In Pulse 3 unit of measure type
1.21	In Pulse 4 unit of measure type
1.22	Out Pulse 1 unit of measure type
1.23	Out Pulse 2 unit of measure type

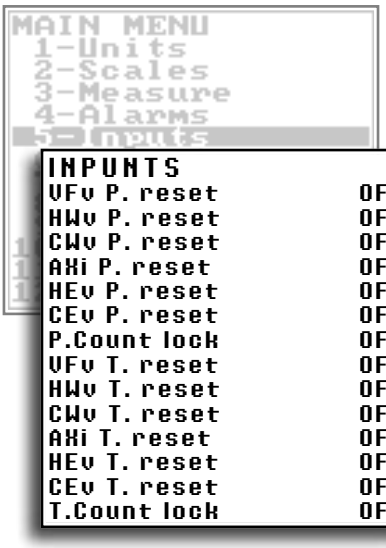


2.1	Full scale flow rate value
2.2	Full scale thermal power value
2.3	Channel 1 IN pulse volume value
2.4	Channel 2 IN pulse volume value
2.5	Channel 3 IN pulse volume value
2.6	Channel 4 IN pulse volume value
2.7	Channel 1 OUT pulse energy value
2.8	Channel 2 OUT pulse volume value
2.9	Channel 1 OUT pulse time value
2.10	Channel 2 OUT pulse time value
2.11	Start scale temperature (Min)
2.12	Full scale temperature (Max)
2.13	Full scale temperature Delta
2.14	Pressure at T1 point
2.15	Pressure at T2 point

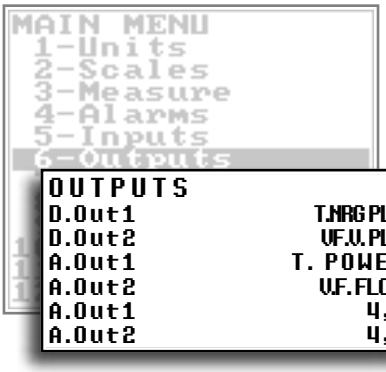


3.1	Temperature sensor type
3.2	Vector fluid flow cut-off threshold
3.3	Temperature delta cut-off threshold
3.4	T1 Heating-Cooling threshold enable
3.5	T1 Heating-Cooling threshold value
3.6	Vector fluid measurement side
3.7	Vector Fluid flow rate source
3.8	Aux nput enable
3.9	Vector Fluid f. rate pulse type
3.10	Max Time Period for Input
3.11	Max Pulses per second for Input
3.12	Max Pulses per second for Input
3.13	Max Pulses per second for Input
3.14	Max Pulses per second for Input
3.15	Energy counter control type enable
3.16	Enable Table of Kfactor Coeff.
3.17	Kfactor Coeff. Substance Type
3.18	Kfactor Substance Concentration
3.19	Measure acquisition profile
3.20	Low power sampling frequency
3.21	Low power m.cycle simulation

4.1	VF Max. flow rate alarm threshold
4.2	VF min. flow rate alarm threshold
4.3	Max. thermal power alarm threshold
4.4	min. thermal power alarm threshold
4.5	Max. temperature delta alarm threshold
4.6	Min. temperature delta alarm threshold
4.7	Max. temperature alarm threshold
4.8	min. temperature alarm threshold
4.9	Max. temperature alarm threshold
4.10	min. temperature alarm threshold
4.11	Hysteresis on alarm thresholds
4.12	Out.Current Alarm Condition Val.



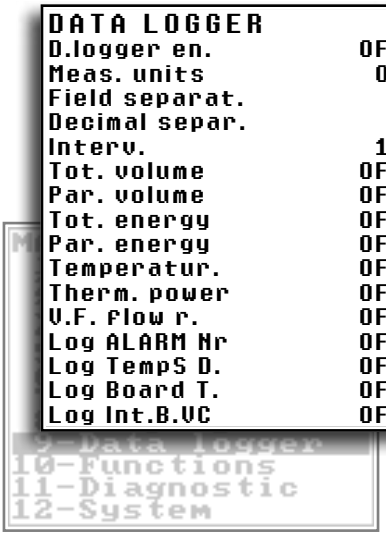
5.1	Vector fluid vol. part. reset input en.
5.2	Hot water vol. partial reset input en.
5.3	Cold water vol. partial reset input en.
5.4	Aux input partial reset input en.
5.5	Heating energy partial reset input en.
5.6	Cooling energy partial reset input en.
5.7	Partial counters lock input enable
5.8	Vector fluid vol. total reset input en.
5.9	Hot water vol. total reset input en.
5.10	Cold water vol. total reset input en.
5.11	Aux input total reset input en.
5.12	Heating energy total reset input en.
5.13	Cooling energy total reset input en.
5.14	Total counters lock input enable



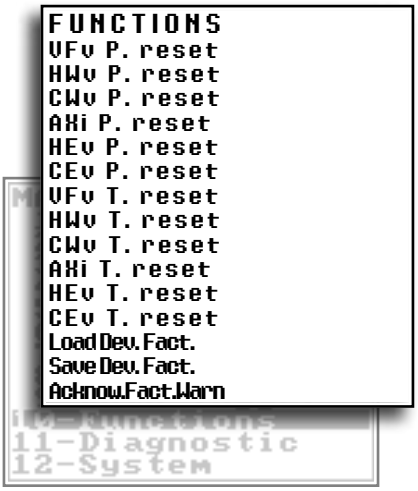
6.1	Digital Out 1 function selection
6.2	Digital Out 2 function selection
6.3	Analog Out 1 function selection
6.4	Analog Out 2 function selection
6.5	Analog Out 1 current range sel.
6.6	Analog Out 2 current range sel.

COMMUNICATION			
BACnet	IP	7.1	BACnet Communication Protocol
Modbus	TCP	7.2	Modbus Communication Protocol
M-Bus	ON	7.3	MeterBus Communication Protocol
Dev. Address	1	7.4	Device Communication Address
Com.Speed	9600	7.5	Communication Speed
Parity	NO 1SB	7.6	Communication Parity Bits
Ans. Delay	(ms)	7.7	Communication Answer Delay
ETH DHCP en.	ON	7.8	Ethernet DHCP enable
ETH dev IP addr.	010.138.09..	7.9	Ethernet device IP address
ETH network mask	255.255.25..	7.10	Ethernet network mask
ETH gateway add.	010.138.09..	7.11	Ethernet gateway address
ETH DNS address	010.138.09..	7.12	Ethernet DNS address
NTP time server		7.13	NTP time server name / address
Network password		7.14	Network access password
Net S.En.	ON+OFF	7.15	Network security (SSL-TLS) enable
Bnet max mst	127	7.16	BACnet max master
Bnet ONr	4194302	7.17	BACnet Object Instance Number
Bnet ObjName	MV311_Name	7.18	BACnet Device Object Name
Bnet ObjDescr	MV311_desc.	7.19	BACnet Device Object Description
Bnet ObjLoc	MV311_locat.	7.20	BACnet Device Object Location
Bnet pw	Pa55wOrd	7.21	BACnet Device Managem. Password
Bnet W.E.	OFF	7.22	BACnet Device Object Write Enable
Bnet Port	47808	7.23	BACnet Device Ethernet Port number (47808)
MDB_32	AAAA-BBBB	7.24	Modbus 32 bits registers order
Mbus ID	00985000	7.25	MeterBus Identif. number (Secondary add.)
Mbus Dev.T.	AUTO	7.26	MeterBus Device Type (media)

DISPLAY			
Language	OFF	8.1	Language for all messages
Contrast	OFF	8.2	Display contrast adjustment
Disp.time	OFF	8.3	Display/keyboard inactivity time
Disp. F.Num.	OFF	8.4	Display page function number
Disp. P.Lock	OFF	8.5	Display lock page number
Disp. A.Scrl	OFF	8.6	Display auto-scroll pages bits (0=disab.)
Disp.date	OFF	8.7	Time and date display enable
LED Op. Mode	OFF	8.8	LED Operating Mode color switch
LED VF Blink	OFF	8.9	LED Vector Fluid blink enable
LED HW Blink	OFF	8.10	LED Hot Water blink enable
LED CW Blink	OFF	8.11	LED Cold Water blink enable
LED Comm.Blk	OFF	8.12	LED Communication blink enable
Quick start	OFF	8.13	Quick start menu enable
Web VD En	OFF	8.14	Virtual display web interface enable

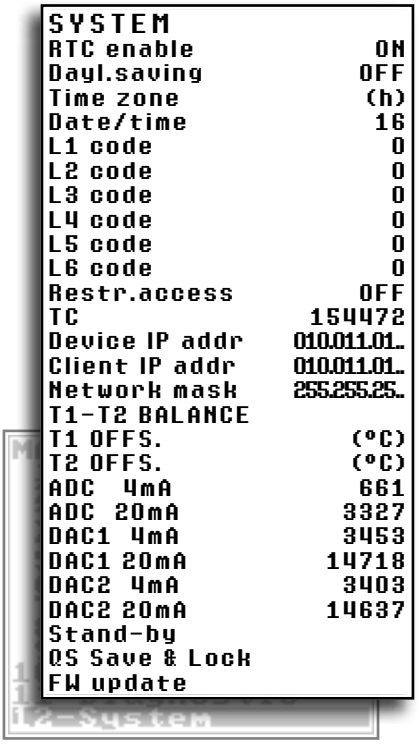


DATA LOGGER			
D.logger en.	OFF	9.1	Data logger sampling enable
Meas. units	ON	9.2	Measure units recording enable
Field separat.	;	9.3	Field separator character
Decimal separ.	.	9.4	Decimal separator character
Interv.	15	9.5	Sampling interval
Tot. volume	OFF	9.6	Enable log of volume total totalizer
Par. volume	OFF	9.7	Enable log of volume partial totalizer
Tot. energy	OFF	9.8	Enable log of energy total totalizer
Par. energy	OFF	9.9	Enable log of energy partial totalizer
Temperatur.	OFF	9.10	Enable log of temperatures
Therm. power	OFF	9.11	Enable log of thermal power
V.F. flow r.	OFF	9.12	Enable log of vector fluid flow rate
Log ALARM Nr	OFF	9.13	Alarm events number logging enable
Log TempS D.	OFF	9.14	Temperature sensor's data logging enable
Log Board T.	OFF	9.15	Board temperatures logging enable
Log Int.B.VC	OFF	9.16	Internal board voltages & curr. log.enable



10.1 Vector fluid vol. part. reset function
10.2 Hot water vol. partial reset function
10.3 Cold water vol. partial reset function
10.4 Aux input partial reset function
10.5 Heating energy partial reset function
10.6 Cooling energy Partial reset function
10.7 Vector fluid vol. total reset function
10.8 Hot water vol. total reset function
10.9 Cold water vol. total reset function
10.10 Aux input total reset function
10.11 Heating energy total reset function
10.12 Cooling energy total reset function
10.13 Load device factory default values
10.14 Save device factory default values
10.15 Acknowledge factory data warning message

11.1 Reboot and execute self test diag. funct.
11.2 Firmware version information
11.3 Quick Setup information
11.4 SD card status information
11.5 Battery information
11.6 Display diagnostic system values
11.7 Ethernet information data
11.8 FieldBus comm.diagnostic values
11.9 Display comm.diagnostic values
11.10 Display internal measured values
11.11 Board serial number (read only)
11.12 Total working time (read only)
11.13 Battery working time (read only)
11.14 Partial counters / L.T.S. life time
11.15 Flow & Temp. simulation function



12.1 Date/Time (Real Time Clock) enable
12.2 Daylight saving time change
12.3 Localized time zone
12.4 System date and time
12.5 Access level 1 code
12.6 Access level 2 code
12.7 Access level 3 code
12.8 Access level 4 code
12.9 Access level 5 code
12.10 Access level 6 code
12.11 Restricted access level
12.12 Total measure cycles
12.13 Device IP network address
12.14 Client IP network address
12.15 Network mask
12.16 Temperature T1 - T2 calibration balance
12.17 Temperature T1 calibration offset
12.18 Temperature T2 calibration offset
12.19 ADC in 4mA calibration point
12.20 ADC in 20mA calibration point
12.21 DAC1 out 4mA calibration point
12.22 DAC1 out 20mA calibration point
12.23 DAC2 out 4mA calibration point
12.24 DAC2 out 20mA calibration point
12.25 System stand-by mode activation (poweroff)
12.26 Quick setup save and lock editing
12.27 Firmware update

FUNCTIONS DESCRIPTION

Here below is shown the explanation of how the menu files are described.

Menu visualized on the converter (from 1 to 13)

MENU 1 - MESURE

(POS. 1.1) ***F.R. Unit of Meas.Type***	**[FR.unit]**	***AL42***	**[FRMUT]**

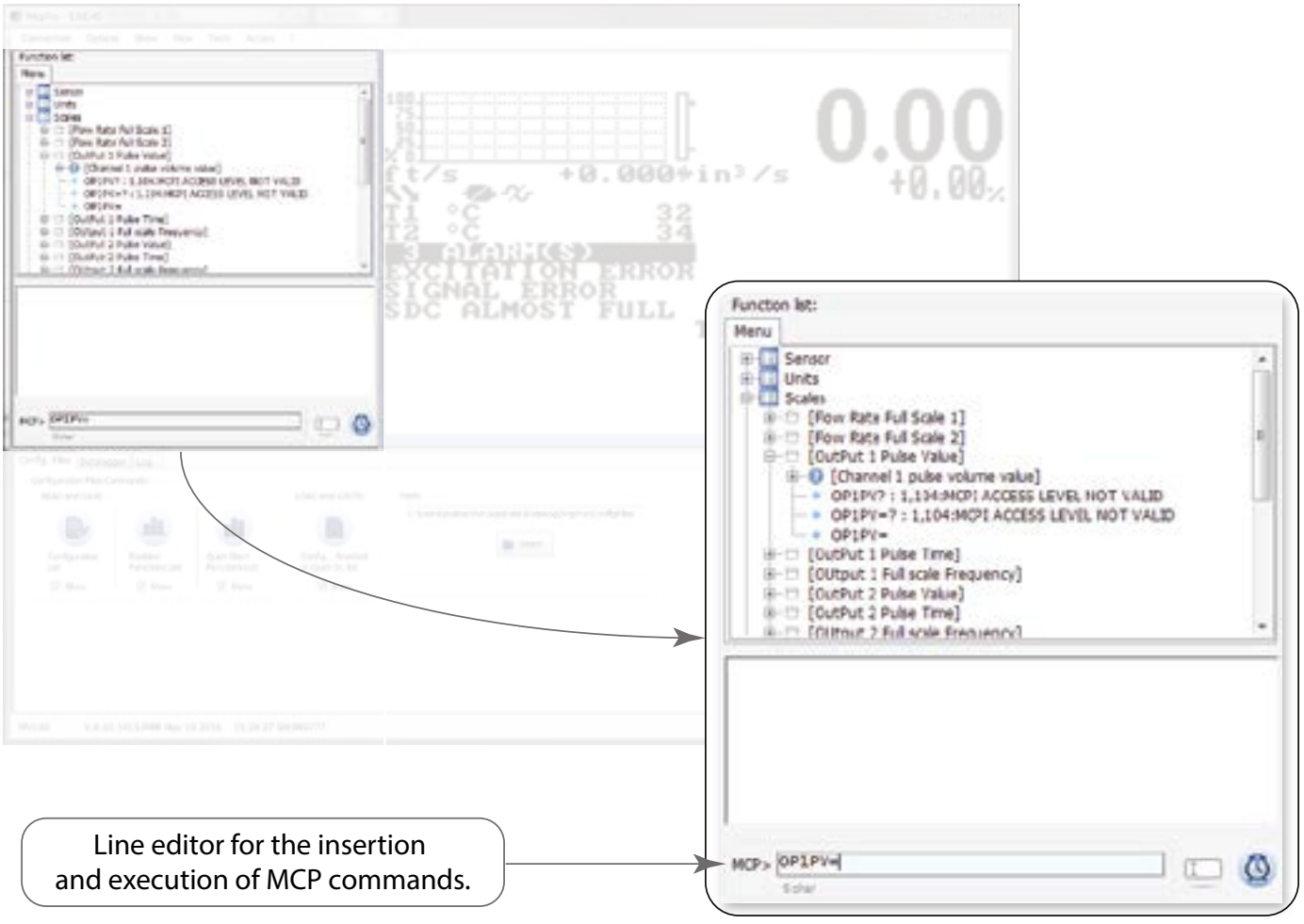
Access level

MCP command

Convert request

Synthetic function description

The following picture describes where you can find the MCP functions' name in the MCP-software.
For more informations, see MCP manual.



MENU 1 - UNITS

(POS. 1.1) ***Flow Rate Unit of Meas.Type*** **[FR.unit]** ***AL2*** **[FRMUT]**

Flow measurement unit. Select metric or non-metric units (British and American units)

(POS. 1.2) ***TeMP. Unit of Measure*** **[Temper. unit]** ***AL2*** **[TMPUM]**

Measurement unit temperature ° C and ° F.

(POS. 1.3) ***Energy tot. unit of measure type*** **[Energy unit]** ***AL2*** **[TTEUM]**

Unit of measure type: metric or not metric

(POS. 1.4) ***Energy tot. unit of measure*** **[Energy unit]** ***AL2*** **[TTEUM]**

Setting the unit of measurement to display the totalizers of the thermal energy; **METRIC units of measure available are:**
J, joule (= Watt·second)
kJ, kilojoule (= 1.000 Joule)
Wh, wattora (= 3.600 Joule)
MJ, megajoule (= 1.000.000 Joule)
kWh, kilowattora (= 1.000 Wattora)
GJ, gigajoule (= 1.000.000.000 Joule)
MWh, megawattora (=1.000.000 Wattora)
GWh, gigawattora (= 1.000.000.000 Wattora)
NOT METRIC units of measure available are:
BTU, British Thermal Unit (= 1055,0559 Joule)
kBT, kilo British Thermal Unit (= 1.000 BTU; = 1055055,9 Joule)
MBT, Mega British Thermal Unit (= 1.000.000 BTU; = 1055055900 Joule)
To change the unit of measurement, move the cursor to the area where the unit of measurement is displayed.

(POS. 1.5) ***En. tot. Decimal point pos.*** **[D.P. Energy]** ***AL2*** **[TTEDP]**

To change the number of decimals used, position yourself on the relative numerical fields and choose one of the possible values: 1/2/3/4/5/6/7.

(POS. 1.6) VF vol. tot. unit of meas. type **[VFv unit]** ***AL2*** **[TT1UT]**

Type of measurement unit for FV volume totalizer (metric and non-metric).

(POS. 1.7) ***VF vol. tot. unit of meas.*** **[Unita'vFV]** ***AL2*** **[TT1UM]**

FV volume totalizer measuring unit. Setting the unit of measurement to display the vector fluid volume totalizers. To change the unit of measure, move the cursor to the field that displays the unit of measurement in progress.
Metrics: "ml", "cm³", "l", "dm³", "dal", "hl", "m³", "Ml";
No Metrics: "in³", "Gal", "IGL", "ft³", "bbl", "BBL", "hf³", "KGL", "IKG", "kf³", "ttG", "Aft", "MGL", "IMG".

(POS. 1.8) VF vol. total. dec. point pos. **[VFv D.P.]** ***AL2*** **[TT1DP]**

Total decimal point position FV volume. To change the number of decimals used, position yourself on the relative numerical fields and choose one of the possible values: 1/2/3/4/5/6/7.

(POS. 1.9)HW vol. tot. unit of meas. type **[HWv unit]** ***AL2*** **[TT2UT]**

Type of measurement unit totalizer AC volume (metric and non-metric).

(POS. 1.10) *HW volume tot. unit of meas.* **[HWv unit]** ***AL2*** **[TT2UM]**

AC volume totalizer measurement unit.
Metrics : "ml", "cm³", "l", "dm³", "dal", "hl", "m³", "Ml";
No metrics : "in³", "Gal", "IGL", "ft³", "bbl", "BBL", "hf³", "KGL", "IKG", "kf³", "ttG", "Aft", "MGL", "IMG".

(POS. 1.11) *HW vol. toal. decimal point pos.* **[HWv D.P.]** ***AL2*** **[TT2DP]**

Total decimal point position AC volume.

(POS. 1.12) CW vol. tot. unit of measure type **[CWv unit]** ***AL2*** **[TT3UT]**

Type of measurement unit totaliz. AF volume (metric and non-metric).

(POS. 1.13) CW vol. tot. unit of meas. **[CWv unit]** ***AL2*** **[TT3UM]**

AF volume totalizer measurement unit.
Metrics : "ml", "cm³", "l", "dm³", "dal", "hl", "m³", "Ml";
No metrics : "in³", "Gal", "IGL", "ft³", "bbl", "BBL", "hf³", "KGL", "IKG", "kf³", "ttG", "Aft", "MGL", "IMG".

(POS. 1.14) CW vol. total. decimal point pos. **[P.D. vAF]** ***AL2*** **[TT3DP]**

Total decimal point position. volume AF

(POS. 1.15) AUX inp tot unit of meas. type **[Axi unit]** ***AL2*** **[TT4UT]**

Type of measurement unit totaliz. AUX volume (metric, not-metric, gas, electric energy).

(POS. 1.16) AUX inp tot unit of meas. **[Axi unit]** ***AL2*** **[TT4UM]**

Volume totalizer measurement unit AUX.
Metrics: "ml", "cm³", "l", "dm³", "dal", "hl", "m³", "Ml";
No metrics: "in³", "Gal", "IGL", "ft³", "bbl", "BBL", "hf³", "KGL", "IKG", "kf³", "ttG", "Aft", "MGL", "IMG".
Gas: Sm³, Nm³
Electric Energy: Wh, KWh, MWh, GWh

(POS. 1.17) AUX vol. total. dec. point pos. **[AXv D.P.]** ***AL2*** **[TT4DP]**

Total decimal point position AUX volume

(POS. 1.18) In Pulse 1 unit of meas. type **[IP1 unit]** ***AL2*** **[PI1UT]**

Type of measurement unit for input pulse volume (In1): Metric and Non-metric.

(POS. 1.19) In Pulse 2 unit of meas. type **[IP2 unit]** ***AL2*** **[PI2UT]**

Type of measurement unit for input pulse volume (In2): Metric and Non-metric.

(POS. 1.20) In Pulse 3 unit of meas. type **[IP3 unit]** ***AL2*** **[PI3UT]**

Type of measurement unit for input pulse volume (In3): Metric and Non-metric.

(POS. 1.21) In Pulse 4 unit of meas. type **[IP4 unit]** ***AL2*** **[PI4UT]**

Type of measurement unit for input pulse volume (In4): (metric, not-metric, gas, electric energy)
N.B.: sono disponibili unità di misura in accordo con la funzione *"(POS. 1.16) AUX inp tot unit of meas." page 43*

(POS. 1.22) Out Pulse 1 unit of meas. type **[OP1 unit]** ***AL2*** **[PO1UT]**

Unit type of volume measurement related to the output pulse (Out1): metric and non-metric.

(POS. 1.23) Out Pulse 2 unit of meas. type **[OP2 unit]** ***AL2*** **[PO2UT]**

Unit type of volume measurement related to the output pulse (Out2): metric and non-metric.

MENU 2 - SCALE

(POS. 2.1) Val.di fondo s. flusso flu. vett. [FR] *AL2* [FRFSV]

Full scale value of fluid flow vector. There are three input fields, from left to right: 1) unit of measure, 2) unit of time and 3) numerical values. The selection is made by positioning the cursor over the field to be modified. The calculator supports English and American volume units as well as metric units; the type of unit is selectable via the POS. 1.1, the instrument is delivered by default set in metric units. The calculator accepts all combinations of units of measurement with numerical field value ≤ 99999. The available units of measure are:

METRIC UNIT	
cm³	cubic centimeter
ml	milliliter
dm³	cubic decimeter
dal	decaliter
hl	hectoliter
m³	cubic meter

ENGLISH OR AMERICAN UNITS	
in³	cubic inch
Gal	american gallon
IGL	british gallon (imperial)
ft³	cubic foot
bbl	standard barrel
BBL	oil barrel
KGL	KAmerican gallon
IKG	KBritish gallon (imperial)
aft	Acre feet
MGL	MAmerican gallon
IMG	MBritish gallon (imperial)

The time units can be selected from the following values: s = second, m = minute, h = hour, d = day. If the function Type por. = 4-20, the full scale value that fits corresponds to 20mA.
The full scale value affects the alarm thresholds, which are calculated as a function of this value (see Alarms menu). Furthermore, the position of the decimal point can be changed in the function itself by selecting the point and moving the up / down arrow keys to change its position.

(POS. 2.2) Full scale thermal power value [TPwr] *AL2* [TPFSV]

Full scale value of thermal power. With this function the full scale value of the thermal power is established; the units are available:

- ❑ W, watt
- ❑ kW, kilowatt (= 1.000 Watt)
- ❑ MW, megawatt (= 1.000.000 Watt)
- ❑ GW, gigawatt (= 1.000.000.000 Watt)

The numeric field can be freely set both as numerical value and as position of the decimal point. ATTENTION: values that are too small or too large may cause errors in the representation of data (excessive or not significant number of digits). For the preparation see previous function. Furthermore, the position of the decimal point can be changed in the function itself by selecting the point and moving the up / down arrow keys to change its position.

(POS. 2.3) Channel 1 IN pulse volume value [Ipl1] *AL2* [IP1PV]

Setting the input 1 pulse volume for the channels and the units of measure of the totalizers. The input fields are: unit of measure and numerical value. The selection is made by positioning the cursor over the field to be modified and the possible units of measure are those described above. Furthermore, the position of the decimal point can be changed in the function itself by selecting the point and moving the up / down arrow keys to change its position. To select the type of measurement unit, see POS.1.17; to see the types of measurement units that can be selected, see table POS2.1

(POS. 2.4) Channel 2 IN pulse volume value [Ipl2] *AL2* [IP2PV]

Setting the input 2 pulse volume for the channels and the units of measure of the totalizers. The input fields are: unit of measure and numerical value. The selection is made by positioning the cursor over the field to be modified and the possible units of measure are those described above. Furthermore, the position of the decimal point can be changed in the function itself by selecting the point and moving the up / down arrow keys to change its position. To select the type of measurement unit, see POS.1.18; to see the types of measurement units that can be selected, see table POS2.1.

(POS. 2.5) Channel 3 IN pulse volume value [Ipl3] *AL2* [IP3PV]

Setting the input 3 pulse volume for the channels and units of the totalizers. The input fields are: unit of measure and numerical value. The selection is made by positioning the cursor over the field to be modified and the possible units of measure are those described above. Furthermore, the position of the decimal point can be changed in the function itself by selecting the point and moving the up / down arrow keys to change its position. To select the type of measurement unit, see POS.1.19; to see the types of measurement units that can be selected, see table POS2.1.

(POS. 2.6) Channel 4 IN pulse volume value [Ipl4] *AL2* [IP4PV]

Setting the input 4 pulse volume for the channels and units of the totalizers. The input fields are: unit of measure and numerical value. The selection is made by positioning the cursor over the field to be modified and the possible units of measure are those described above. Furthermore, the position of the decimal point can be changed in the function itself by selecting the point and moving the up / down arrow keys to change its position. To select the type of measurement unit, see POS.1.20; to see the types of measurement units that can be selected, see table POS2.1.

(POS. 2.7) Channel 1 OUT pulse energy value [Opl1] *AL2* [OP1PV]

Setting the pulse energy for output 1 and the unit of measurement of the totalizers. There are two input fields for this parameter, from left to right: 1) unit of measure, 2) numerical value. The selection is made by positioning the cursor over the field to be modified. The position of the decimal point can be modified in the function itself by selecting the point and moving the up / down arrow keys to change its position. Units are those seen at the POS. 1.3.

(POS. 2.8) Channel 1 OUT pulse energy value [Opl2] *AL2* [OP2PV]

Setting the pulse energy for output 2 and the unit of measurement of the totalizers. There are two input fields for this parameter, from left to right: 1) unit of measure, 2) numerical value. The selection is made by positioning the cursor over the field to be modified. Furthermore, the position of the decimal point can be changed in the function itself by selecting the point and moving the up / down arrow keys to change its position. To select the type of measurement unit, see POS.1.21; to see the types of measurement units that can be selected, see table POS2.1.

(POS. 2.9) Channel 1 OUT pulse time value [Top1] *AL2* [OP1PT]

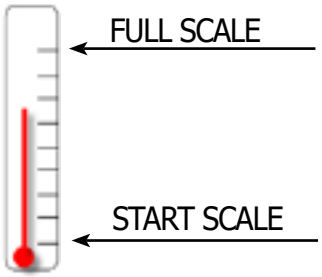
Duration of the single output energy pulse in milliseconds; note: consequently the maximum frequency obtainable at the output depends on this value. The selection is made by positioning the cursor over the field to be modified. The duration of the single output energy pulse in milliseconds; note: the maximum output frequency depends on this value.

(POS. 2.10) Channel 1 OUT pulse time value [Top2] *AL2* [OP2PT]

Duration of the single output volume pulse in milliseconds; note: consequently the maximum frequency obtainable at the output depends on this value. The selection is made by positioning the cursor over the field to be modified. Duration of the single output energy pulse in milliseconds; note: the maximum output frequency depends on this value.

(POS. 2.11) Start scale temperature (Min) [Start S.T] *AL2* [T12SS]

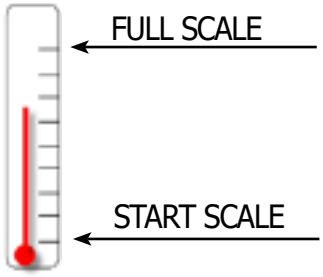
Start of temperature scale (Min) and full scale (max) of temperatures T1 and T2; in these fields you change both the unit of measurement (° C / ° F, which is valid for all the temperatures as set at the POS. 1.2) that the sign +/-.



This scale is also used as a scale for the 0 / 4-20mA output when this is associated with one of the temperatures T1 or T2.

(POS. 2.12) Full scale temperature (Max) [Fondo S.T] *AL2* [T12FS]

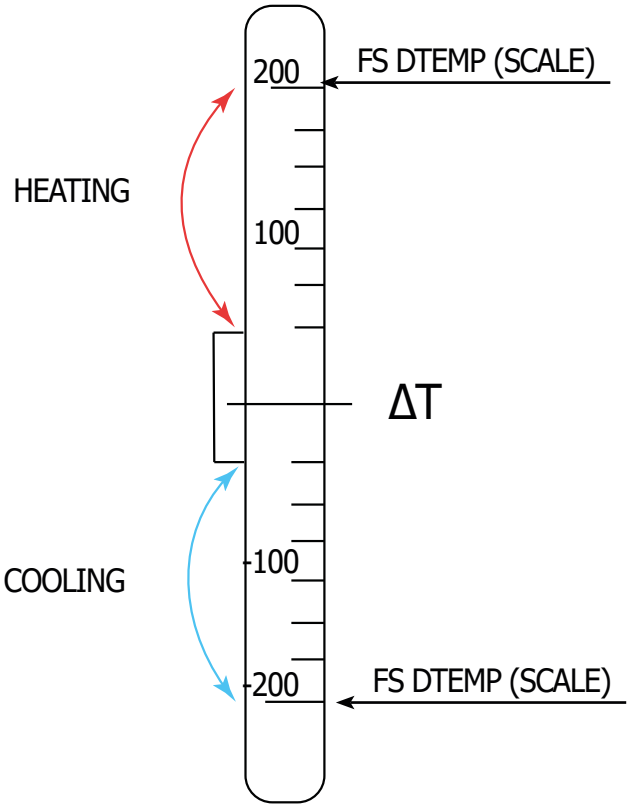
Full scale temperature (Max) and Full scale (min) of temperatures T1 and T2; in these fields you change both the unit of measurement (° C / ° F, which is valid for all the temperatures as set at the POS. 1.2) that the sign +/-.



This scale is also used as a scale for the 0 / 4-20mA output when this is associated with one of the temperatures T1 or T2.

(POS. 2.13) Full scale temperature Delta [F.S.DTemp] *AL2* [TDTFS]

Scale Fund of the Delta T; being the ΔT = T1 - T2, it can be either Positive (in case of Heating or Return Temperature higher than Return) or Negative (in case of Cooling or Return Temperature lower than Return), consequently the Scala Fund set here it is to be intended both positive and negative (the sign can not be set); in this field the unit of measurement (° C / ° F, which applies to all temperatures as set at the POS. 1.2) is also changed.



This scale is also used as a scale for the 0 / 4-20mA output when this is associated with the ΔT.

(POS. 2.14) Pressure at T1 point [PresT1] *AL2* [PAT1P]

This function allows to set the pressure value in bar at the point where the temperature transducer T1 (delivery) is inserted. This value increases the accuracy of the water density calculation; The permissible values range from 0 to 4000 kPa (which corresponds to 0-40 bar).

(POS. 2.15) Pressure at T2 point [PresT2] *AL2* [PAT2P]

This function allows to set the pressure value in bar at the point where the temperature transducer T2 (return) is inserted. This value increases the accuracy of the water density calculation; The permissible values range from 0 to 4000 kPa (which corresponds to 0-40 bar).

MENU 3 - MEASURE

(POS. 3.1) Temperature sensor type **[Sens.Type]** ***AL3*** **[TMPST]**

Temperature sensor type: PT 100, PT500, PT1000.0.

(POS. 3.2) Vector fluid flow cut-off threshold **[VFF C.O.]** ***AL3*** **[MFCUT]**

Threshold in % with respect to the full scale of the carrier fluid flow rate below which the flow rate is set to zero. This function is useful to avoid that near-zero flow rates, due to electrical disturbances or miniscule movements of the flow rate on the analogue input, can determine the increase of the totalizers.

(POS. 3.3) Temp. delta cut-off threshold **[DT Min.]** ***AL3*** **[TDCUT]**

This function is similar to the cut-off threshold: when the difference between temperature T1 and T2 (delta T) goes below the set value, delta T will be set to zero. This function is used to avoid the thermal energy accounting when the system operating conditions aren't in the usual application area . The minimum vale for MID version is 3°K (5.4°F).

(POS. 3.4) T1 Heat. - Cool. threshold enable **[T1HC enable]** ***AL3*** **[T1HCE]**

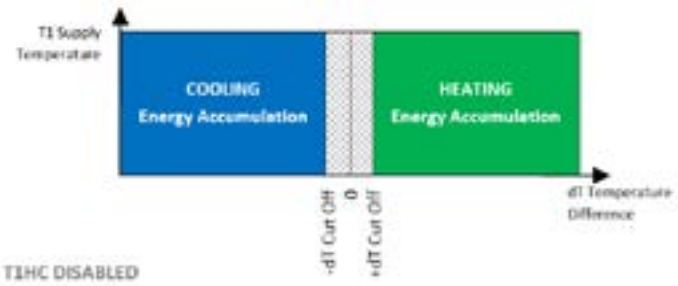
Enable T1 heating cooling threshold. See the referenced scheme below.

(POS. 3.5) T1 Heat. - Cool. threshold value **[T1HC]** ***AL3*** **[T1HCV]**

Threshold value T1 heating cooling. See the reference scheme below.

REFERENCE DIAGRAM FUNCTIONS POS.3.4 / POS.3.5:

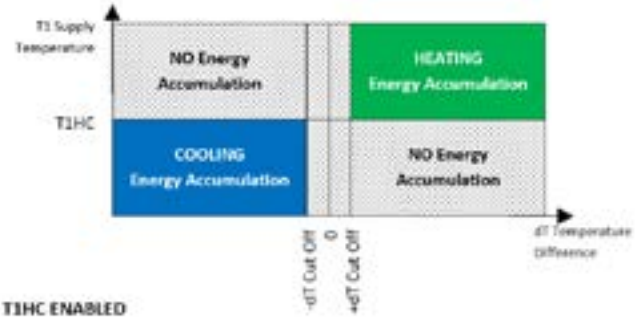
MV311 uses dT to discriminate heating (dT Positive) and cooling (dT Negative); when the temperature is lower than the set point, the power is zero. The parameter T1HC POS 3.4 is disabled as shown in the diagram.



In compliance with EN 1434 it is possible to set a parameter "Optional cold flow temperature threshold" POS 3.5; when the parameter T1HC POS 3.4 is enabled, it allows the discrimination between Heating / Cooling which must be accumulated to Energy and undesirable temperature differences that do not have to be accumulated; maintaining the same previous mechanism for heating / cooling, T1HC allows the H / C switch and energy storage only when:

- T1 <T1HC in cooling conditions.
- T1> T1HC in heating conditions.

In other conditions, the accumulation of energy is not allowed and the vector fluid flow LED does not flash despite the presence of flow.



NOTE: The H / C status of the T1 threshold is indicated close to the T1 temperature on Display exactly as the H / C determination is indicated near the DT temperature.

(POS. 3.6) Vector fluid measurement side [VF Meas. side] *AL3* [FRCSD]

This function is used to inform the system on which measuring point the meter is inserted. In fact, the flow measurement can be entered at point T1 (delivery) or point T2 (return). Depending on the detection point, different volume (and density) measurements can be obtained due to the different temperature detected. For this reason it is therefore necessary to inform the computer to make the necessary corrections. An incorrect setting of this parameter can result in significant measurement errors.

(POS. 3.7) Vector Fluid flow rate source [Sorg. F. FV] *AL3* [FRSRM]

The function selects the source type of the vector fluid flow measurement: from 4-20mA input (optional) or from pulse input (IN1 input). If the 4-20mA input is enabled, the function does not allow to select the pulses related to input IN1.

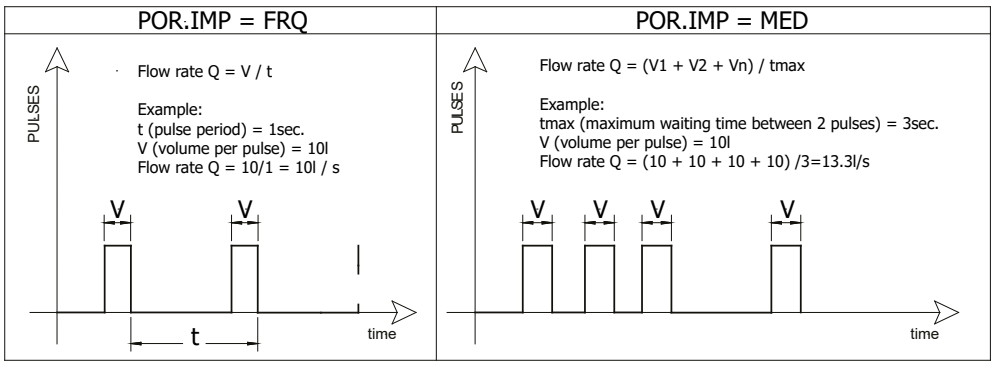
(POS. 3.8) Aux Volume input enable [Aux Vol. En.] *AL4* [AXAIE]

Input pulses auxiliary volume input (In 4) auxiliary fluid volume measurement. When input 4 is used to measure the auxiliary fluid, the whole 4-INPUTS menu may no longer be present in the menu list and it is no longer possible to assign a block / reset function to the IN4 input.

(POS. 3.9) Vector Fluid f. rate pulse type [VF F.r. pls] *AL3* [PLSMT]

FREQUENCY mode (FRQ): the flow calculation is done every two successive pulses; recommended mode in the presence of distributed pulses

MEDIA mode (MED): the flow is calculated at the end of a time interval equal to Tmax; recommended mode in the presence of packet pulses.



(POS. 3.10) Max Time Period for Input [Max Tme In1] *AL2* [PMXI1]

Depending on the function settings (POS 3.7), the Tmax function has the following meanings:

- ❑ If FRQ: the Tmax is the time from reception of the last pulse to set the flow to ZERO.
- ❑ If AVG: Tmax is the time interval with which the instrument calculates the flow of the carrier fluid.

(POS. 3.11) Max Pul. second for Input. [Max Pls In1] *AL2* [MXPI1]

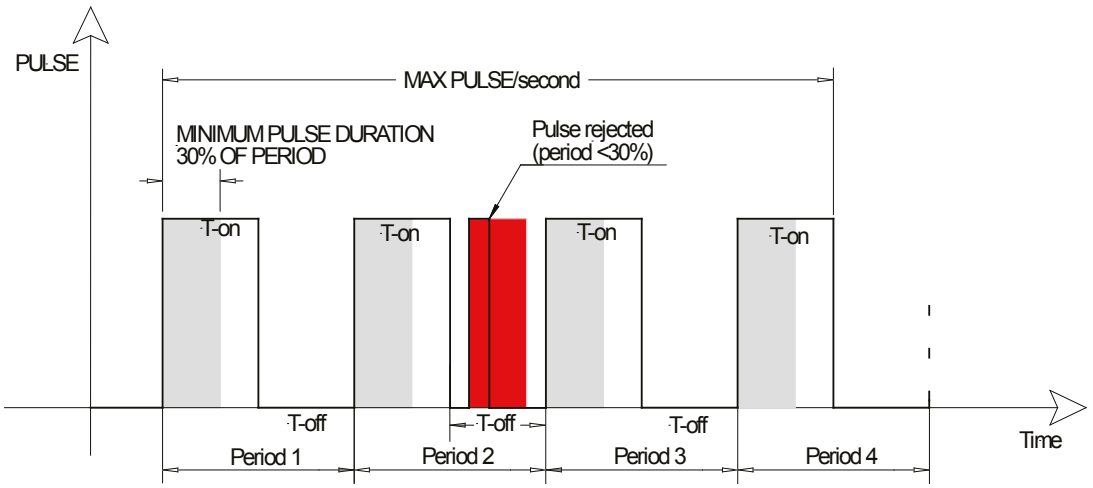
The operation is based on MAXIMUM IMPULSE depending on whether the instrument can measure (maximum frequency). Once this value has been established, it can be calculated:

$$\frac{1}{Max\ Pls\ I1} = \text{PULSE PERIOD}$$

All impulses lasting longer than 30% of the IMPULSE PERIOD (fixed value established in the factory), and will discharge all the others.
The values allowed by the "Maximum number of pulses" function are:

- 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000.

Example with Max Imp1 = 4
1/4 = 0.25s pulse duration MINIMUM = 0.075 s (30% of 0.25 seconds)



The instrument allows you to select one of the predefined values listed above, choose the value immediately greater than the Maximum number of expected impulses. In the example above the function must be set to 5.
NOTE:
In devices powered by a rechargeable backup battery, in consumption of the battery also depends on this setting and on the actual frequency of the input pulses; consumption increases as the input frequency increases and its maximum setting increases.

CAUTION :
If it is necessary to acquire pulses "slow" (a few per second) but with a "short" duration (a few milliseconds) it is necessary to select a value of Max Imp, among those available (see above), such that the minimum duration that derives, allow the impulse to be acquired.

(POS. 3.12)Max Pulses per sec. for Inp. [Imp.Max In2] *AL2* [MXPI2]

Pulses per second maxima for input 2. See function description POS 3.9.

(POS. 3.13) Max Pulses per sec. for Inp. [Imp.Max In3] *AL2* [MXPI3]

Pulses per second maxima for input 3. See function description POS 3.9.

(POS. 3.14) Max Pulses per sec. for Inp. **[Max Pls In4]** ***AL2*** **[MXPI4]**

Pulses per second maxima for input 4. See function description POS 3.7.

(POS. 3.15) Abilt. type control cont. ener. **[Tipo Cont.E.]** ***AL4*** **[CTRLT]**

Selection of control type for hot / cold management and totalizer counting.
If Type Ctrl = AUT (automatic) the heating / cooling energy totalizers are updated according to the sign of power (Delta T sign)
If Pot> 0 (Delta T> 0) the heating energy totalizers are updated
If Pot <0 (Delta T <0) the cooling energy totalizers are updated
If Type Ctrl = LOC (local) the heating / cooling energy totalizers are updated according to the status of input IN4
If IN4 = NOT ACTIVE, the heating energy totalizers are updated
If IN4 = ACTIVE the cooling energy totalizers are updated
If Type Ctrl = REM (remote) the heating / cooling energy totalizers are updated according to the setting made by one of the available communication protocols (where allowed)
When the function Type Ctrl = LOC the status of input IN4 is used only for the management of the count of the heating / cooling energy totalizers; therefore, the whole 4-INPUT menu may no longer be present in the menu list and it is no longer possible to assign a block / reset function to the IN4 input.
If you type Ctrl = AUT or REM, input IN4 is available again and its counter block / reset function can be set via the 4-INPUTS menu.

(POS. 3.16) Enable Table of Kfactor Coeff. **[K-factor]** ***AL2*** **[EFTKC]**

Enable coefficient factor K table. If the heat transfer liquid is water with additives, select the function (ON).

(POS. 3.17)Kfactor Coeff. Substance Type **[Glyc. type]** ***AL2*** **[STKTC]**

Glycol type for factor-K coefficients.
Select type of glycol: ETHY (Ethylene Glycol), PROP (Propylene Glycol).

(POS. 3.18) Kfactor Substance Concen. **[Concentr. %]** ***AL2*** **[SCKTC]**

Glycol concentration factor-K factor.
Concentration values selectable in% by volume of the heat transfer liquid.

(POS. 3.19) Measure acquisition profile **[M.Prof.]** ***AL3*** **[MPROF]**

Setting the measurement acquisition profile between:
SLOW = Slow acquisition, useful in the presence of disturbances or temperature / flow disturbances.
STD = Standard acquisition (default).
FAST = "Reactive" acquisition, useful when temperature / flow variations must be detected quickly.

(POS. 3.20) Low power sampling freq. **[LP S.Freq.]** ***AL2*** **[LPSFR]**

Available only on devices with a rechargeable backup battery, it allows to set the frequency with which the instrument performs temperature / flow measurements and performs energy and power calculations.
The selectable frequencies are between 0.1 measurements per second (one measure every 10 seconds), 0.2, 0.5 and 1 measure per second; the higher the frequency, the greater the battery consumption will be.

(POS. 3.21) Low power m.cycle simul. **[LP Cycle sim]** ***AL6*** **[LPSIM]**

Function reserved for measurement diagnostics; it allows to activate the sampling in "low power" mode even though the main power supply is present. Reserved for devices with a rechargeable backup battery and service.

MENU 4 - ALLARM

(POS. 4.1) VF Max. flow rate alarm threshold [FM] *AL3* [FRAXP]

Maximum value set for maximum flow alarm F.V.
When the flow value of the carrier fluid exceeds this threshold, the corresponding alarm message is generated. The value of this parameter is expressed in technical units and is limited by the set vector full scale value (POS function 2.1) and the minimum alarm. Set this parameter to zero to disable this alarm, OFF will appear.

(POS. 4.2) VF min. flow rate alarm threshold [Fm] *AL3* [FRANP]

Minimum value set for minimum flow alarm F.V.
When the flow value of the carrier fluid falls below this threshold, the corresponding alarm message is generated. The value of this parameter is expressed in technical units and is limited by the maximum alarm value. Set this parameter to zero to disable this alarm, OFF will appear.

(POS. 4.3) Max. therm. power alarm thresh. [Pwr M] *AL3* [PWAMX]

Maximum value set for maximum thermal power alarm.
When the thermal power value exceeds this threshold, the relative alarm message is generated. The value of this parameter is expressed in technical units and is limited by the set value of the set heat output (POS function 2.2) and the minimum alarm. Set this parameter to zero to disable this alarm, OFF will appear.

(POS. 4.4) min. thermal power alarm thres. [Pwr m] *AL3* [PWAMN]

Minimum value set for the minimum thermal power alarm.
When the thermal power value falls below this threshold, the corresponding alarm message is generated. The value of this parameter is expressed in technical units and is limited by the maximum alarm value. Set this parameter to zero to disable this alarm, OFF will appear.

(POS. 4.5) Max. temp. delta alarm thres. [DT max] *AL3* [TDAMX]

Maximum value set for the maximum temperature difference alarm DT.
When the temperature difference value (in absolute value) exceeds this threshold, the relative alarm message is generated. The value of this parameter is expressed in technical units and is limited by the value of the full scale difference in set temperature (POS function 2.13) and by the minimum alarm.
Set this parameter to zero to disable this alarm, OFF will appear.

(POS. 4.6) Min. temp. delta alarm thres. [DT min] *AL3* [TDAMN]

Minimum value set for the minimum temperature difference alarm DT.
When the temperature difference value (in absolute value) falls below this threshold, the corresponding alarm message is generated. The value of this parameter is expressed in technical units and is limited by the maximum alarm value. Set this parameter to zero to disable this alarm, OFF will appear.

NOTES ON THE FUNCTIONS 4.5-4.6 TEMPERATURE DIFFERENCE

DT VALUE

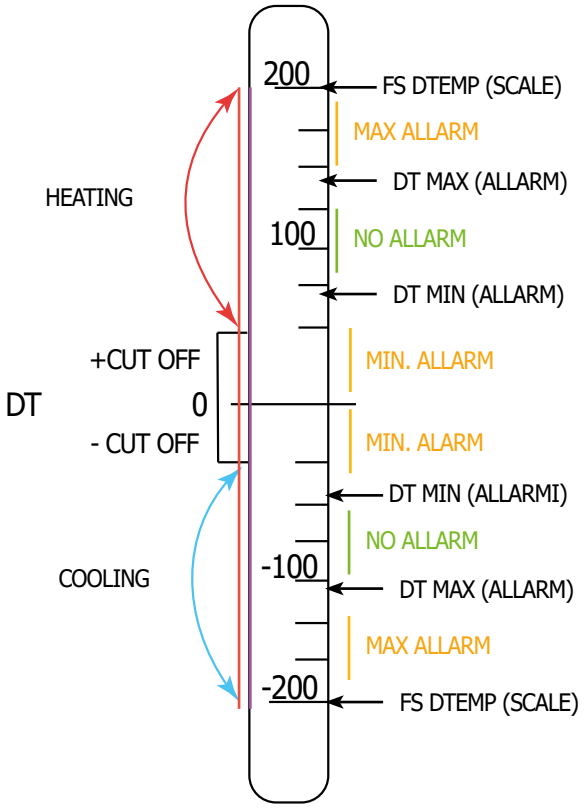
Considering that DT = T1 - T2, where T1 and T2 are the measures of the delivery and return temperatures respectively, we can have two DT values from the system:

- POSITIVE means that the system is in heating mode.
- NEGATIVE means that the system is cooling.

The full scale of the DT refers to the DT measured in absolute value; also the alarms, minimum and maximum, refer to the DT in absolute value:

- the maximum alarm threshold should therefore be considered as a value greater than the maximum positive DT or lower than the maximum negative DT
- the minimum alarm threshold goes in the same way as a lower value at the minimum positive DT is greater than the minimum negative DT.

The following diagram summarizes these conditions relating to the temperature difference:



(POS. 4.7) Max. temp. alarm threshold [T1 Max] *AL3* [T1AMX]

Maximum value set for maximum temperature alarms T1. When the temperature value exceeds this threshold, the corresponding alarm message is generated. The value of this parameter is expressed in technical units and is limited by the full scale value of the set temperature (POS function 2.12) and by the minimum alarm. Set this parameter to zero to disable this alarm, OFF will appear.

(POS. 4.8) min. temp. alarm threshold [T1 min] *AL3* [T1AMN]

Minimum value set for minimum temperature alarms T1. When the temperature value falls below this threshold, the corresponding alarm message is generated. The value of this parameter is expressed in technical units and is limited by the temperature start value (POS function 2.11) from the maximum alarm. Set this parameter to zero to disable this alarm, OFF will appear.

(POS. 4.9) Max. temp. alarm threshold [T2 Max] *AL3* [T2AMX]

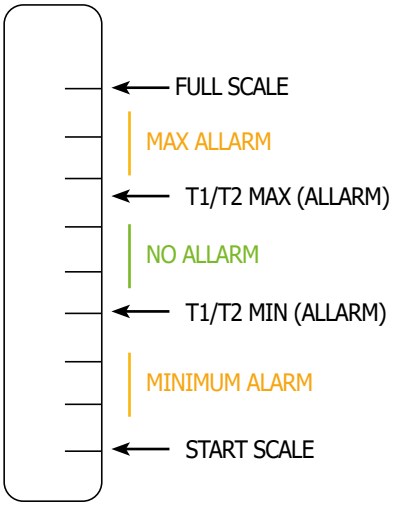
Maximum value set for maximum temperature alarms T2. When the temperature value exceeds this threshold, the corresponding alarm message is generated. The value of this parameter is expressed in technical units and is limited by the full scale value of the set temperature (POS function 2.12) and by the minimum alarm. Set this parameter to zero to disable this alarm, OFF will appear.

(POS. 4.10) min. temp. alarm threshold [T2 min] *AL3* [T2AMN]

Minimum value set for minimum temperature alarms T2. When the temperature value falls below this threshold, the corresponding alarm message is generated. The value of this parameter is expressed in technical units and is limited by the temperature start value (POS function 2.11) from the maximum alarm. Set this parameter to zero to disable this alarm, OFF will appear.

NOTES ABOUT THE FUNCTIONS: 4.7-4.8-4.9-4.10

The following are the conditions for using the minimum and maximum temperature thresholds for the alarms for the T1 and T2 values.



(POS. 4.11) Hysteresis on alarm thresholds [Hysteresis] *AL3* [ATHYS]

Hysteresis threshold set for minimum and maximum flow alarms. The value of this parameter is expressed as a percentage of the full scale value and can be set from 0 to 25%.

(POS. 4.12) Out.Current Alarm Condition Val [OC Fault] *AL3* [OCACV]

Current value of 4-20mA outputs replacing the selected value when in "High Priority" alarm status; settable from 0 to 22mA. See alarm table.

MENU 5 - INPUT

Note: When the POS 3.13 function is set with the CTRLT = LOC command or when the auxiliary fluid volume measurement function is activated (POS 3.6), the IN4 input is not available for block / reset management. 4-INPUT menu may no longer be present in the menu list and it is no longer possible to assign a block / reset function to the IN4 input.

The 4-INPUTS menu will still be present if a counter reset function can be assigned via one of the communication protocols.

(POS. 5.1) Vector fluid vol. part. reset input en. [VFv P. reset] *AL3* [A1IPE]

Enabling the partial volume zeroing of the Fluid Vector volume; this function enables the counter to be reset even by communication protocol. In the MID version the partial contactors cannot be reset because they are Long Term Storage contactors.

(POS. 5.2) Hot water vol. partial reset input en [HWv P. reset] *AL3* [A2IPE]

Enabling the partial volume reset of the Domestic Hot Water volume; this function enables the counter to be reset even by communication protocol. In the MID version the partial contactors cannot be reset because they are Long Term Storage contactors.

(POS. 5.3) Cold water vol. partial reset input en. [CWv P. reset] *AL3* [A3IPE]

Enabling the partial reset of the DHW volume; this function enables the counter to be reset even by communication protocol. In the MID version the partial contactors cannot be reset because they are Long Term Storage contactors.

(POS. 5.4) Aux fluid vol. partial reset input en. [AXv P. reset] *AL3* [A4IPE]

Enable partial zero volume auxiliary fluid input; this function enables the counter to be reset even by communication protocol. In the MID version the partial contactors cannot be reset because they are Long Term Storage contactors.

(POS. 5.5) Heat. energy partial reset input en [HEv P. reset] *AL3* [AHEPE]

Enabling the partial zeroing of energy input Heating; this function enables the counter to be reset even by communication protocol. In the MID version the partial contactors cannot be reset because they are Long Term Storage contactors.

(POS. 5.6) Cool. energy partial reset input en. [CEv P. reset] *AL3* [ACEPE]

Enabling the partial energy zero setting input Cooling; this function enables the counter to be reset even by communication protocol. In the MID version the partial contactors cannot be reset because they are Long Term Storage contactors.

(POS. 5.7) Partial counters lock input enable [P.Count lock] *AL3* [PCLIE]

Enable partial counter block input. If the function is set to ON, when IN4 becomes high, all the partial and total totalizers will no longer advance even if pulses continue to arrive at the respective inputs. In the MID version the partial contactor block cannot be reset as long-term storage contactors.

(POS. 5.8) Vector fluid vol. total reset input en. [VFv T. reset] *AL3* [A1ITE]

Enabling the total volume zeroing input Fluid Vector; this function enables the counter to be reset even by communication protocol.

(POS. 5.9) Hot water vol. total reset input en. [HWv T. reset] *AL3* [A2ITE]

Enabling the total volume reset input Domestic hot water; this function enables the counter to be reset even by communication protocol.

(POS. 5.10) Cold water vol. total reset input en. [CWv T. reset] *AL3* [A3ITE]

Enabling the total volume zero reset input Domestic cold water; this function enables the counter to be reset even by communication protocol.

(POS. 5.11) Aux fluid vol. total reset input en. [AXv T. reset] *AL3* [A4ITE]

Enabling of total zero volume input Auxiliary Fluid; this function enables the counter to be reset even by communication protocol.

(POS. 5.12) Heating energy total reset input en. [HEv T. reset] *AL3* [AHETE]

Enabling of total energy zeroing input Heating; this function enables the counter to be reset even by communication protocol.

(POS. 5.13) Cool. energy total reset input en. [CEv T. reset] *AL3* [ACETE]

Enabling of total energy zeroing input Cooling; this function enables the counter to be reset even by communication protocol.

(POS. 5.14) Total counters lock input enable [T.Count lock] *AL3* [TCLIE]

Enable total counter block input. By applying a voltage to the input terminals, the increment of the totalizers is interrupted.

MENU 6 - OUTPUT

(POS. 6.1) Digital Out 1 function selection [D.Out1] *AL3* [OUT1F]

Function for selection to be associated with digital output 1. The functions are listed in the following table.

(POS. 6.2) Digital Out 2 function selection [D.Out2] *AL3* [OUT2F]

Function for the selection to associate with the digital output 2. The functions are listed in the following table.

- **OFF:** DISABLED
- **IMP NRG T:** THERMAL ENERGY SCALED PULSES (SELECTABLE FOR OUTLET 1 ONLY)
- **IMP V. FV:** VECTOR FLUID VOLUME SCALED PULSES (SELECTABLE FOR OUTLET 2 ONLY)
- **ALL. GEN.:** GENERAL ALARM (EXCITED = ALL OFF); Any alarm present.
- **ALL. A.P.:** HIGH PRIORITY ALARM (EXCITED = ALL OFF); Only alarms that interrupt the operation of the instrument.
- **RIL. C/F:** TYPE OF DETECTED OPERATION (DE-EXCITED = HEATING, EXCITED = COOLING); Change according to the actual sign of Power / Delta T.
- **IMP. C/F:** FUNCTION TYPE SET (DE-EXCITED = HEATING, EXCITED = COOLING); Change according to the setting made, see POS 3.13
- **FL.FV m+M:** ALL. MIN / MAX FLOW RETURN VECTOR (EXCITED = ALL OFF)
- **POT.T m+M:** ALL. MIN / MAX THERMAL POWER (EXCITED = ALL OFF)
- **DT m+M:** ALL. MIN / MAX DELTA T (EXCITED = ALL OFF)
- **T1 m+M:** ALL. MIN / MAX TEMPERATURE T1 (EXCITED = ALL OFF)
- **T2 m+M:** ALL. MIN / MAX TEMPERATURE T2 (EXCITED = ALL OFF)
- **ERR. IN.A:** ANALOG INPUT ERROR (EXCITED = IN.AN. OK)
- **ERR. S.T.:** TEMPERATURE SENSOR ERROR (EXCITED = SENS.TEMP. OK)
- **ERR. BAT.:** BATTERY ERROR (EXCITED = BATT OK.)

(POS. 6.3) Analog Out 1 function selection [A.Out1] *AL3* [CO1FN]

Selection of the variable to be assigned to analogue output 1 see analogue output table.

(POS. 6.4) Analog Out 2 function selection [A.Out2] *AL3* [CO2FN]

Selection of the variable to be assigned to the analogue output 2 see analogue output table.

ANALOGUE OUTPUTS	
TERM. POWER	Thermal power (SELECTABLE ONLY FOR OUTPUT 1)
FLOW FV	Vector fluid flow rate
DT	Delta T
T1	Temperature T1
T2	Temperature T2

(POS. 6.5) Analog Out 1 current range sel. [A.Out1] *AL3* [AO1CF]

Analogue output current selection 1. Choice of function and measuring range to be associated with current output. There are 2 edit fields for this function: start scale: 0 or 4mA; end of scale: 20 or 22mA. The current values associated with the full scale% value are shown in the following table:

POSSIBLE FIELDS	ZERO	FLOW RATE VALUE	
	0%	+100%	≥+110%
Usc. mA = 0 - 20	0	20	20
Usc. mA = 0 - 22	0	20	22
Usc. mA = 4 - 20	4	20	20
Usc. mA = 4 - 22	4	20	22

(POS. 6.6) Analog Out 2 current range sel. [A.Out2] *AL3* [AO2CF]

Analogue output current selection 2. Similar values such as POS function 6.6.

MENU 7- COMMUNICATION

For further information on the communication protocols, consult the relative manuals.

Warning: Restart the device after changing the Ethernet settings

(POS. 7.1) BACnet Comm. Protocol	**[BACnet]**	***AL3***	**[BNCPR]**

BACnet communication protocol

(POS. 7.2) Modbus Comm. Protocol	**[Modbus]**	***AL3***	**[MBCPR]**

Modbus communication protocol

(POS. 7.3) Prot. comunicazione Meterbus	**[M-Bus]**	***AL3***	**[MTCPR]**

Meterbus communication protocol

(POS. 7.4) Device Comm. Address	**[Dev. Address]**	***AL3***	**[DVADR]**

Device communication address

(POS. 7.5) Communication Speed	**[Com.Speed]**	***AL3***	**[COMSP]**

Communication's Speed

(POS. 7.6) Communication Parity Bits	**[Parity]**	***AL3***	**[COMPR]**

Communication's Parity bit.

(POS. 7.7) Communication Answer Delay	**[Ans. Delay]**	***AL3***	**[ANSDL]**

Communication response delay

(POS. 7.8) ETHernet DHcp enable	**[ETH DHCP en.]**	***AL3***	**[ETHDH]**

DHCP ethernet enablement. After changing the ON / OFF status it is necessary to restart the device with the command mcp [ATSIC] present in the diagnostic menu.

(POS. 7.9) ETHernet device IP address	**[ETH dev IP addr.]**	***AL3***	**[ETHIP]**

Ethernet device IP address

(POS. 7.10) ETHernet Network Mask	**[ETH network mask]**	***AL3***	**[ETHNM]**

Ethernet network mask

(POS. 7.11) ETHernet GateWay address	**[ETH gateway add.]**	***AL3***	**[ETHGW]**

Ethernet gateway address

(POS. 7.12) ETHernet DNs address	**[ETH DNS address]**	***AL3***	**[ETHDN]**

Ethernet DNS address

(POS. 7.13) TiMe SeRVer name	**[NTP time server]**	***AL3***	**[TMSRV]**

NTP time server name / address

(POS. 7.14) Network Access PassWorD	**[Network password]**	***AL3***	**[NAPWD]**

Network access password

(POS. 7.15) NeTwork Secure Socket Layer	**[Net S.En.]**	***AL3***	**[NTSSL]**

Ethernet DNS address

- **OFF:** not encrypted access only (encrypted access is not possible)
- **ON:** encrypted access only (unencrypted access is not possible)
- **ON+OFF:** Access possible in both encrypted and unencrypted mode

(POS. 7.16) BACnet max master	**[Bnet max mst]**	***AL3***	**[BNMXM]**

BACnet max master

(POS. 7.17) BACnet Object Inst. Num.	**[Bnet ONr]**	***AL3***	**[BNOIN]**

BACnet Object Instance Number

(POS. 7.18 BACnet Device Object Name	**[Bnet ObjName]**	***AL2***	**[BNDON]**

BACnet Device Object Name

(POS. 7.19) BACnet Device Object Des.	**[Bnet ObjDescr]**	***AL2***	**[BNDOD]**

BACnet Device Object Description

(POS. 7.20) BACnet Device Object Loc.	**[Bnet ObjLoc]**	***AL2***	**[BNDOL]**

BACnet Device Object Location

(POS. 7.21) BACnet Device Manag. Passw.	**[Bnet pw]**	***AL3***	**[BNDMP]**

BACnet Device Management Password

(POS. 7.22) BACnet Dev. Object Write Enable	**[Bnet W.E.]**	***AL3***	**[BNDOW]**

Enabling writing BACnet Device Object

(POS.7.23)BacNet Device Ethernet Port number	**[Bnet Port]**	***AL3***	**[BNDEP]**

BACnet Device Ethernet Port number (47808)

(POS. 7.24) ModBus 32 registers Order	**[MDB_32]**	***AL3***	**[MB32O]**

Modbus 32 bits registers order

(POS.7.25)MeterBus Num. Identif. (In. Sec.)	**[Mbus ID]**	***AL3***	**[MTINR]**

MeterBus Identification Number (Address Sec.)

(POS. 7.26) MeterBus Tipo Dispositivo (Media)	**[Mbus Dev.T.]**	***AL3***	**[MTDTY]**

MeterBus Device Type (Medium)

MENU 7- COMMUNICATION: FUNCTIONS ACTIVABLE MCP ONLY

BACnet Database Revision Number	**[MCP ONLY]**	***AL3***	**[BNDRN]**

BACnet Database Revision Number

BACnet Energy unit of measure	**[MCP ONLY]**	***AL2***	**[BNEUM]**

BACnet Energy unit of measure

BACnet Volume unit of measure type	**[MCP ONLY]**	***AL2***	**[BNVUT]**

BACnet Volume unit of measure type

BACnet Volume unit of measure	**[MCP ONLY]**	***AL2***	**[BNVUM]**

BACnet Volume unit of measure

Remote energy counter control type	**[MCP ONLY]**	***AL2***	**[RCTRT]**

Remote energy counter control type

ETHernet Mac address High	**[MCP ONLY]**	***AL5***	**[ETHMH]**

Ethernet MAC address 3 Higher HEX bytes

ETHernet Mac address Low	**[MCP ONLY]**	***AL5***	**[ETHML]**

Ethernet MAC address 3 Lower HEX bytes

BacNet Energy Unit of measure Type	**[MCP ONLY]**	***AL2***	**[BNEUT]**

BACnet Energy unit of measure type

BacNet Other Unit of Measure	**[MCP ONLY]**	***AL2***	**[BNOUM]**

BACnet Other unit of measure

MENU 8- DISPLAY

(POS. 8.1) Language for all messages	[Language]	*AL1*	[LLANG]

Language change. The following languages are available:

- EN = English
- IT = Italian
- ES = Spanish
- PT = Portuguese
- TR = Turkish
- FR = French
- DE = German
- PL = Polish

(POS. 8.2) Display contrast adjustment	[Contrast]	*AL1*	[DCNTR]

Display contrast contrast set. Contrast may vary depending on the ambient temperature. The allowed range is from 0 to 9.

(POS. 8.3) Display/keyboard inactivity time	[Disp.time]	*AL1*	[KBTMT]

This function sets display / keyboard inactivity.
The set values are between 020 and 255 seconds.

(POS. 8.4)Display page function number	[Disp. F.Num.]	*AL2*	[DISFN]

Display page number function. This function sets the page display to make it visible when the display is started. For each display page is associated a number corresponding to the position.
0 = Main / ALARMS, 1 = POWER AND FLOW, 2 = TEMPERATURE, 3 = ENERGY HEATING,
4 = COOLING ENERGY, 5 = VECTOR FLUID, 6 = SERV HOT WATER, 7 = FREDD.SERV WATER,
8 = AUXILIARY FLUID.

(POS. 8.5) Display lock page number	[Disp. P.Lock]	*AL2*	[DLOKE]

Page number block displayed.
This function blocks scrolling of the displayed pages selected by the POS.8.4 setting.

(POS. 8.6) Dis. auto-scroll pag. bits (0=disab.)	[Disp. A.Scrl]	*AL2*	[DASPB]

This function sets the automatic scrolling of the selected screens.
To select the screens that you want to display in the automatic scrolling insert the sum of the values related to the "binary weight" of each page:
1 = Main / ALARMS, 2 = POWER AND FLOW, 4 = TEMPERATURE, 8 = ENERGY HEATING, 16 = ENERGY COOL, 32 = FLUID VECTOR, 64 = HOT WATER SERV, 128 = WATER FREDD.SERV, 256 = FLUID AUXILIAR.
For example: 2 + 4 = 6 enables the scrolling of the POWER AND FLUX and TEMPERATURE screens only.
If selected, the Main / ALARMS screen will be scrolled only if there is at least one alarm present. Setting "0" scrolling is disabled.

(POS. 8.7) Time and date display enable [Disp.date] *AL2* [DATDE]

Date and time visualization can be hidden (OFF), visualisation only on the Main / ALARMS (MAIN) screen or on all pages (ALL), reducing the font size of a parameter.

(POS. 8.8) LED Operating Mode color switch [Modo Op. LED] *AL2* [LEDMD]

Set the main LED color change:
OFF = Color change off, the main color of the LED will be Green.
SIG = Color change dependent on the "sign" of Power (and DT); Green with positive sign (in heating), Blue with negative sign (in cooling).
CTR = Color change dependent on the actual "control" of the type; the colors Green (Heating) and Blue (Cooling) will therefore depend on the setting of the POS.3.13 function and, relatively, also on the Input 4 or the setting via the communication protocol

(POS. 8.9) LED Vector Fluid blink enable [LED VF Blink] *AL2* [LED1E]

Sets the flashing of the LED related to the flow rate of the Vector Fluid:
ON = The color of the Green or Blue LED (see previous setting) will flash only when there is a flow rate otherwise it will remain on steady.
OFF = The color of the Green or Blue led (see previous setting) will flash regardless of the presence of flow.

(POS. 8.10) LED Hot Water blink enable [LED HW Blink] *AL2* [LED2E]

Sets the flashing of the LED related to the range of DHW:
ON = The color of the yellow LED flashes only when there is a flow rate, otherwise it remains off.
OFF = The color of the yellow LED remains off.

(POS. 8.11) LED Cold Water blink enable [LED CW Blink] *AL2* [LED3E]

Sets the flashing of the LED related to the range of the Domestic Cold Water:
ON = The color of the Blue led flashes only when there is a flow rate, otherwise it remains off.
OFF = The color of the Blue led remains off.

(POS. 8.12) LED Comm. blink enable [LED Comm.Blk] *AL2* [LEDME]

Set the flashing of the LED related to communication:
ALL = The color of the white LED flashes in the presence of any communication, otherwise it remains off.
BUS = The color of the white LED flashes when there is communication with the selected fieldbus, otherwise it remains off.
MCP = The color of the white LED flashes when there is communication with MCP, otherwise it remains off.
OFF = The color of the white LED remains off.

(POS. 8.13) Quick start menu enable [Quick start] *AL2* [QSTME]

This function enables the quick start menu to be displayed.
OFF: Quick start menu disabled
DIR: Quick start menu enabled, access from visualization pages
MENU: Quick start menu enabled, access from Main menu

(POS. 8.14) Virtual Display Web Interface Enable [Web VD En] *AL2* [VDWIE]

This function enables the quick start menu to be displayed.

MENU 9- DATA LOGGER

(POS. 9.1) Data logger sampling enable **[D.logger en.]** ***AL3*** **[DLOGE]**

This function enables the setting of the data logger values.

The following functions are activated if D.logger en. = ON

(POS. 9.2) Measure units recording enable **[Meas. units]** ***AL3*** **[DLUME]**

Enables recording of the units of measurement set in the device.

(POS. 9.3) Field separator character **[Field separat.]** ***AL3*** **[DLFSC]**

This function sets the separation character between the recorded data.

(POS. 9.4) Decimal separator character **[Decimal separ.]** ***AL3*** **[DLDSC]**

This function sets the character used for decimals (.o,).

(POS. 9.5) Sampling interval **[Interv.]** ***AL3*** **[DLGSI]**

This function sets the frequency of data logging. [interval = Hours: Minutes: seconds].

(POS. 9.6) Enable log of volume total tot. **[Tot. volume]** ***AL3*** **[DLVTE]**

Enable total volume totalizer log.

(POS. 9.7) Enable log of volume partial tot. **[Par. volume]** ***AL3*** **[DLVPE]**

Enable totalizz. Log partial volume.

(POS. 9.8) Enable log of energy total tot. **[Tot. energy]** ***AL3*** **[DLETE]**

Enabling log totaliz. total energy.

(POS. 9.9) Enable log of energy partial tot. **[Par. energy]** ***AL3*** **[DLEPE]**

Enabling log totaliz. energy part.

(POS. 9.10) Enable log of temperatures **[Temperatur.]** ***AL3*** **[DLTME]**

Log temperature enabling.

(POS. 9.11) Enable log of thermal power **[Therm. power]** ***AL3*** **[DLTPE]**

Enable thermal power log.

(POS. 9.12) Enable log of vector fluid flow rate **[V.F. flow r.]** ***AL3*** **[DLVFE]**

Enable fluid flow vector log.

(POS. 9.13) Alarm events num. log. enable	**[Log ALARM Nr]**	***AL3***	**[DALEE]**

Enable alarm event number log.

(POS. 9.14) Temp. sensor's data log. enable	**[Log TempS D.]**	***AL6***	**[DTSDE]**

Enable temperature sensor diagnostic data log

(POS. 9.15) Board temp. log. enable	**[Log Board T.]**	***AL6***	**[DBTSE]**

Enables recording of the board temperature.

(POS. 9.16) Int. board volt. & curr. log.enable	**[Log Int.B.VC]**	***AL6***	**[DIBVE]**

Enables the recording of the internal power supply voltages of the board

MENU 9- DATA LOGGER: FUNCTIONS ENABLE MCP ONLY

Log all events information [MCP ONLY] *AL6* [LGAIE]

Enable logging of all instrument events. This function enables the recording of all the data for which registration is required.

Data logger fields format [MCP ONLY] *AL0* [DLFLF]

This function provides information on the format of the data logger field. Starting the command from interface MCPI> DLFLF; the result of the values varies according to the number of functions enabled in the data logger. The following is an example:

RNUM=5.0;DATE=yyyy/mm/dd;TIME=hh:mm:ss;U=m³;TOT_T_VF=9.7;U=m³;TOT_W=9.7;U=m³;TOT_T_CW=9.7;U=ml;TOT_T_AX=9.0;U=m³;TOT_P_VF=9.7;U=m³;TOT_P_HW=9.7;U=m³;TOT_P_CW=9.7;U=ml;TOT_P_AX=9.0;U=kWh;TOT_T_HE=9.7;U=kWh;TOT_T_CE=9.7;U=kWh;TOT_T_HE=9.7;U=kWh;TOT_T_CE=9.7;U=°C;TEMP_DT=+6.2;U=°C;TEMP_T1=+6.2;U=°C;TEMP_T2=+6.2;U=MW;TH_PWR=+5.4;U=m³/s;VF_FLW=5.2;U=µA;TS_REF_I=5.1;U=ohm;RTD1_R=6.2;U=ohm;RTD2_R=6.2;U=AL;ALARMS=2.0;U=°C;BOARD_T=4.1;U=°C;CPU_T=4.1;U=V;PS_V=4.3;U=V;CPU_V=4.3;U=V;OUT_3V=4.3;;;U=%;BATT_CH=3.0;U=V;BATT_V=4.31,0:OK

Instantaneous process data read [MCP ONLY] *AL0* [DLIPD]

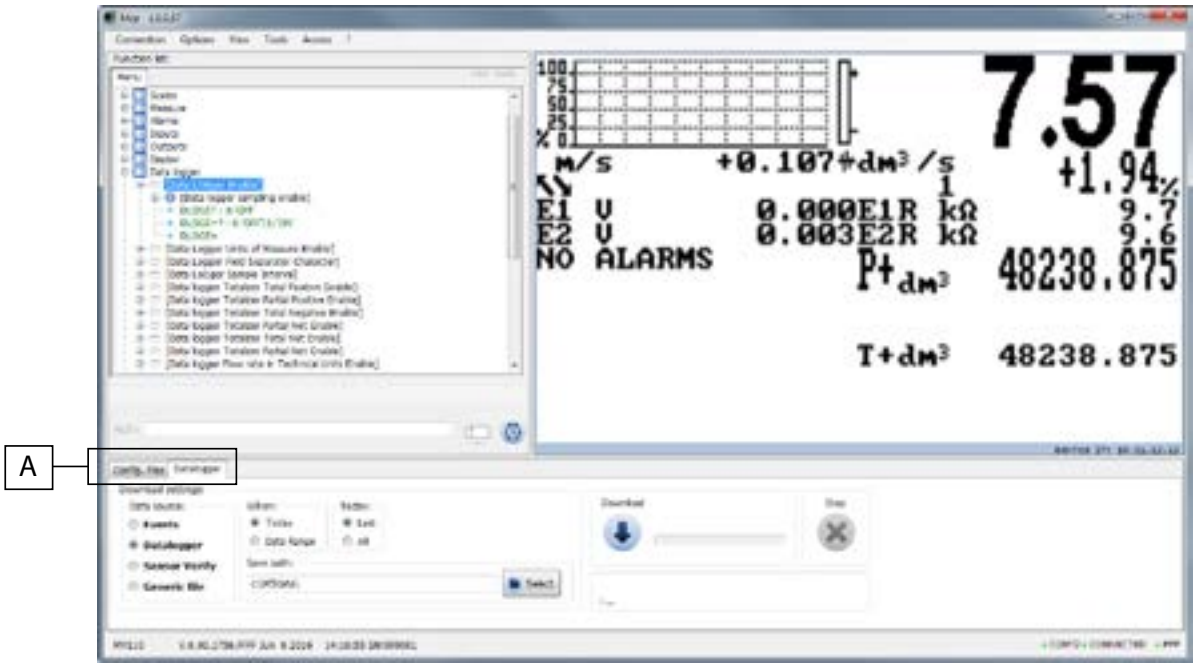
Instant readout of process data is initiated via the MCPI> DLIPD command. It shows the instantaneous values at which the read command is started. The result of the values varies according to the number of functions enabled in the data logger. The following is an example:

0;----------;01:00:00;m³;0.1146227;m³;0.0969618;m³;0.0969618;ml;317785975;m³;0.1146227;m³;0.0969618;m³;0.0969618;ml;317785975;kWh;4.6460583;kWh;0.0000000;kWh;0.0000000;kWh;0.0000000;°C;+0.00;°C;+0.00;°C;+0.00;MW;+0.0000;m³/s;0.00;µA;-1.5;ohm;0.00;ohm;0.00;AL;2;°C;28.9;°C;28.5;V;0.002;V;3.317;V;3.028;;;%;98;V;4.083 1,0:OK.

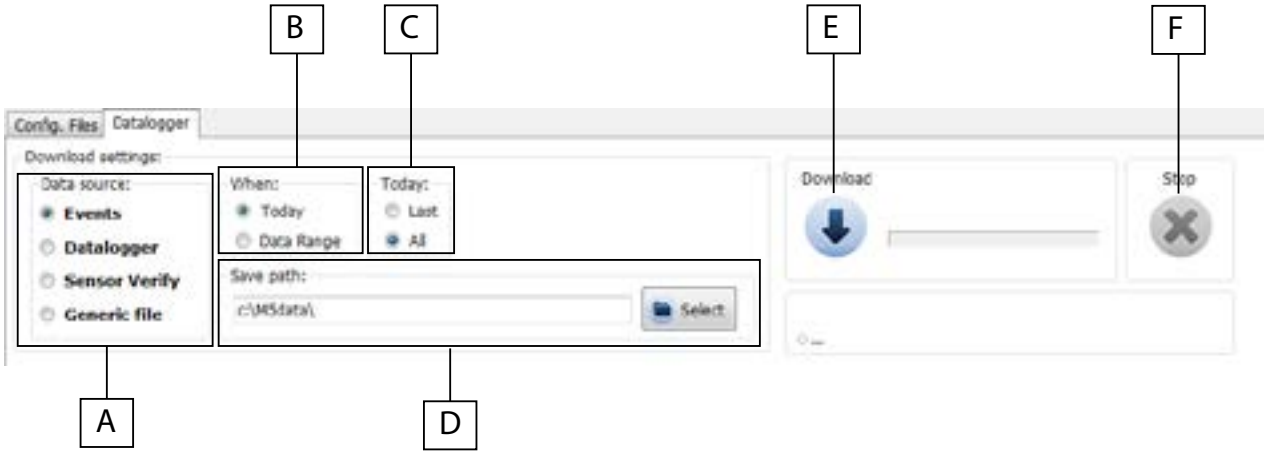
DATA LOGGER BY MCP INTERFACE

Data are stored on micro SD card; the organization is based on "tree-structure": the system create a daily folder where it save events and data logger . The data can be downloaded by MCP interface.
Note: The number of processed data depends on the set sampling interval and the number of variables enabled for recording.

MCP INTERFACE



Click the "data logger" tab as shown below to access the file download interface.



A=Data source
Events: Save the file system events (Example F-RAM hardware data [WORKING AREA] [SUCCESSFULLY LOADED])
Data logger: Save files of the enabled data logger function.
Sensor Verify: data logged by BIV function
Generic file:

B=When
Today; It indicates the download file for the current day
Data range; this option allows you to select the date range for download.

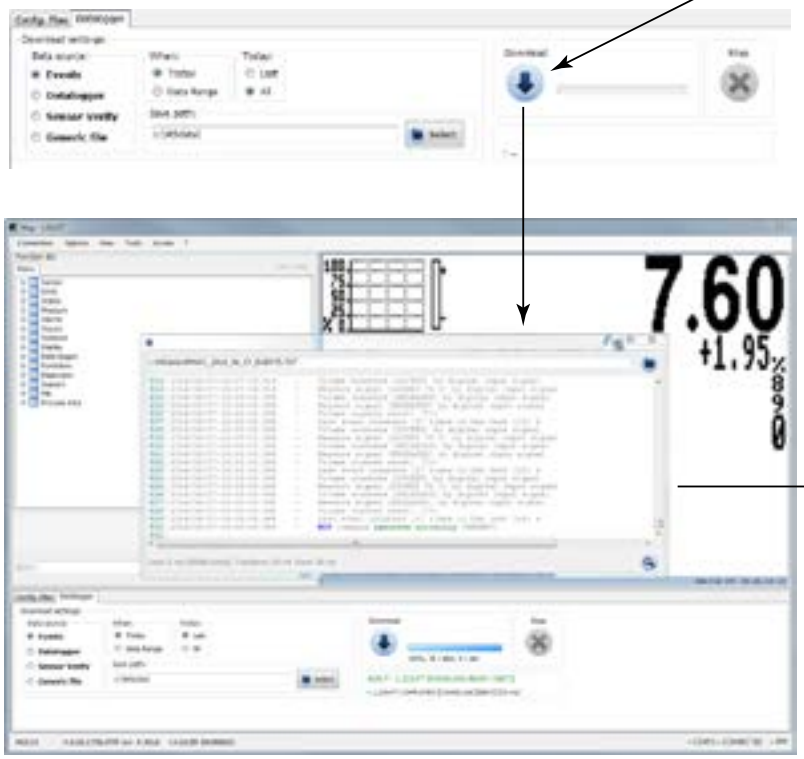
C=Today
Last; this option allows to download the latest files, recordered after the laat download
All; this option allows the download of all the current day of the file

D=Save path:
This option allows you to save files to the folder on your PC

E=Download:
Button to start the download process

F=Stop:
Button to stop the download process

Example: Download Events



To download all the events of the current day in a specific folder, set the below parameters as follows:
Data source: Events
When: Today
Today: All
Save path: C: / .....
The parameters are set then click the Download button.

Once the download is completed, a window containing the list of today's events appears. The file is saved in the specified folder in .txt format .

Example: Download Data Logger

Note: it is recommended the date synchronization between converter and PC to perform correctly the events and logger reading operations.

To download all the data of the current day in a specific folder, set the below parameters as follows:
Data source: DATALOGGER
When: Today
Today: All
Save path: C: / .....
The parameters are set then click the Download button.

below the formatting of file data downloaded from the download data logger setting for an Excel® file.

Note: The fields are at a fixed position, regardless of whether the previous fields are active or not. Inactive fields are empty (delimited by the separator but do not contain data)

N ° Record. View the number of recorded records in progression.
Date. Displaying the recording date for each record.
Now. Viewing the recording time for each record.
Total Fluid Volume Totalizer Value Vector. POS. 9.6 = ON
Total Water Volume Totalizer Value. POS. 9.6 = ON
Total Water Volume Totalizer Value. POS. 9.6 = ON
Totalizer Value Total Auxiliary Fluid Volume. POS. 9.6 = ON
Partial Totalizer Volume Fluid Vector Value. POS. 9.7 = ON
Partial Totalizer Value Hot Water Volume. POS. 9.7 = ON
Partial Totalizer Value Cold Water Volume. POS. 9.7 = ON
Partial Totalizer Value Auxiliary Fluid Volume. POS. 9.7 = ON
Total Energy Total Heating Value. POS. 9.8 = ON
Total Energy Total Cooling Value. POS. 9.8 = ON
Totalizer Value Partial Energy Heating. POS. 9.9 = ON
Partial Totalizer Energy Cooling Value. POS. 9.9 = ON

Display of data logger files.
Access level 3/6 (diagnostic level) to download this type of file.

Temperature Difference Value (T1-T2). POS. 9.10 = ON	
Temperature Difference Value (T1-T2). POS. 9.10 = ON	
Temperature value T2 (Return). POS. 9.10 = ON	
Thermal Power Value. POS. 9.11 = ON	
Value Fluid Flow Vector. POS. 9.12 = ON	
Current temperature sensor excitation. (diagnostic values). POS. 9.14 = ON	
Resistance temperature sensor T1. (diagnostic values). POS. 9.14 = ON	
Resistance temperature sensor T2. (diagnostic values). POS. 9.14 = ON	
No. of active alarms. (only N. of total alarms present). POS. 9.13 = ON	
Board temperature. (diagnostic values). POS. 9.15 = ON	
CPU temperature. (diagnostic values). POS. 9.15 = ON	
Voltage generated by the internal power supply. (diagnostic values). POS. 9.16 = ON	
Primary power supply of the CPU. (diagnostic values). POS. 9.16 = ON	
Voltage on the power supply input from the battery. (diagnostic values). POS. 9.16 = ON	
Input current 4-20mA. (diagnostic values). POS. 9.16 = ON	
% of battery charge. (diagnostic values). POS. 9.16 = ON	
Voltage measured on the rechargeable battery. (diagnostic values). POS. 9.16 = ON	

Example: Generic File

This function allows to select a file in the SD memory and download it. In the "Generic file path" specify the file name contained in the SD and indicate "Save path" where to save the file. Set these values to proceed with the download by clicking the "download".

MENU 10 - FUNCTION

The following functions are activated by first pressing the "ENTER" key and then the "ESC" key when the screen shows "confirm" to start the function.

(POS. 10.1) Vector fluid vol. part. reset function [VFv P. reset] *AL3* [TPR1V]

Partial FV volume reset function. In the MID version the partial totalizers cannot be reset because they are Long Term Storage totalizers.

(POS. 10.2) Hot water vol. partial reset function [HWv P. reset] *AL3* [TPR2V]

Partial AC volume reset function. In the MID version the partial totalizers cannot be reset because they are Long Term Storage totalizers.

(POS. 10.3) Cold water vol. partial reset function [CWv P. reset] *AL3* [TPR3V]

Partial AF volume reset function. In the MID version the partial totalizers cannot be reset because they are Long Term Storage totalizers.

(POS. 10.4) Aux fluid vol. partial reset function [AXv P. reset] *AL3* [TPR4V]

Partial AUX volume reset function. In the MID version the partial totalizers cannot be reset because they are Long Term Storage totalizers.

(POS. 10.5) Heat. ener. partial reset functtion [HEv P. reset] *AL3* [TPRHV]

Partial heat energy reset function. In the MID version the partial totalizers cannot be reset because they are Long Term Storage totalizers.

(POS. 10.6) Cooling energy Partial reset function [CEv P. reset] *AL3* [TPRCV]

Partial zero cooling energy function. In the MID version the partial totalizers cannot be reset because they are Long Term Storage totalizers.

(POS. 10.7) Vector fluid vol. total reset function	**[VFv T. reset]**	***AL3***	**[TTR1V]**

Total zero volume function.

(POS. 10.8) Hot water vol. total reset function	**[HWv T. reset]**	***AL3***	**[TTR2V]**

Total AC volume reset function

(POS. 10.9) Cold water vol. total reset function	**[CWv T. reset]**	***AL3***	**[TTR3V]**

Total AF volume reset function

(POS. 10.10) Aux fluid vol. total reset function	**[AXv T. reset]**	***AL3***	**[TTR4V]**

Total AUX volume reset function

(POS. 10.11) Heating energy total reset function	**[HEv T. reset]**	***AL3***	**[TTRHV]**

Total heating energy reset function

(POS. 10.12) Cool. energy total reset function	**[CEv T. reset]**	***AL3***	**[TTRCV]**

Function clears. total cooling energy

(POS. 10.13) Load device factory def. values	**[Load Dev. Fact.]**	***AL3***	**[LFDCD]**

This function reloads the factory values set in the device above by writing the customization made later.

(POS. 10.14) Save device factory default values	**[Save Dev. Fact.]**	***AL6***	**[SFDCD]**

This function saves the current settings with the device's factory values.

(POS. 10.15) Acknow. factory data warn. mess.	**[Acknow.Fact.Warn]**	***AL3***	**[AWFDA]**

Should the settings of the device be lost, the factory settings will be automatically recharged and the corresponding alarm will be displayed [21, 22, 23]; use this function to eliminate the alarm while keeping current factory data in use.

MENU 11 - DIAGNOSTIC

(POS. 11.1) Reboot exec. self test diag. funct. [Reboot-Self_Test] *AL3* [ATSIC]

Meter auto-test function. This function stops the normal functions of the meter and performs a complete test cycle on the measure input circuits and on the excitation generator. To activate this function, after select it, push key Enter, at the question: "CONFIRM EXEC.?" Long Push the same key to start auto-test, or any other key for delete operation. At the end of operation the converter will revert to one of the initial visualization pages. This function is automatically performed when switching on the device. This function restarts the converter.

(POS. 11.2) Firmware version information [Firmware info] *AL0* [MODSV]

This function displays the latest firmware version of the device.

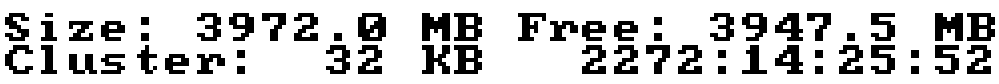
The model of the converter is shown, the firmware version is the date and time of the last update.

(POS. 11.3) Quick sEtup INFormation [Quick Setup info] *AL0* [QEINF]

Quick Setup information.

(POS. 11.4) SD card status information [SD card info] *AL0* [SDSTA]

This function shows the status of the SD card as shown in the following figure.



(POS. 11.5) Battery information [Battery info] *AL0* [BTTDS]

The displayed battery status information is xx% x.xxV XmA XXC °.
xx%: indicates the remaining% of available battery.
x.xxV: indicates the current battery voltage.
XmA: indicates the charge current of the battery.
XXC °: indicates the current temperature of the board

(POS. 11.6) Diagnostic System VaLueS [Disp. sys.values] *AL0* [DSVLS]

Display diagnostic system values

(POS. 11.7) Ethernet information [Ethernet info.] *AL0* [ETHID]

Ethernet information data.

(POS. 11.8) FieldBus comm.diag. values [F.Bus comm.diag.] *AL0* [FBCDV]

FieldBus communication diagnostics.

(POS. 11.9) Display comm.diagnostic values [Disp.comm.vars] *AL5* [DCVLS]

This function shows the values of various internal parameters specific to MCP communication (diagnostic purpose reserved for the service).

```
PPPlink:      00_NETW  E_IP_HDR3:     0
MCP_TCP:       ESTAB.  E_IP_HDR4:     0
FTR_TCP:       CLOSED  E_IP_HDR5:     0
RxCNT[0]:  500359865   E_IP_HDR6:     0
TxCNT[0]: 1143692041   E_IP_HDR7:     0
RxERR[0]:             0 E_IP_HDR8:    62
E_PAKTLEN:            0 E_IP_HDR9:     0
E_BFOVRUN:            0 E_TCPHDR1:     0
E_TSPLAYR:            0 E_TCPHDR2:     0
E_BFOVERR:            0 E_UDPHDR1:     0
E_TSPLAYR:            0 E_UDPHDR2:     0
E_IP_HDR1:            0 E_UDPHDR3:     0
E_IP_HDR2:            0 E_ICMPHDR:     0
```

Following are the states for the PPP link and MCPI to connect the device.

PPP link status:
"UNDT" = undetermined
"DEAD" = dead, link down, persistent condition
"LCP" = LCP phase, transition condition
"AUTH" = Authentication phase, transition condition
"IPCP" = IP and DNS addressess assign phase, transition condition
"NETW" = network established (normal persistent condition when the link is UP)
"TERM" = link termination request, transition condition

MCPI link status:
"CLOSED" = socket closed
"ACCEPT" = socket awaiting for new connection
"ESTABLISH" = link established
"CLS_WAIT" = waiting for closure
"LAST_ACK" = lask ACK sent
"FIN_WAIT" = (see TCP/IP RFC documentation)
"TIME_WAIT" = (see TCP/IP RFC documentation)

(POS. 11.10) Diagnostic Measure VaLueS Display measure *AL5* [DMVLS]

Diagnostic Measure VaLueS. Display internal measured values.

(POS. 11.11) Board serial number (read only) [S/N] *AL0* [SRNUM]

Board serial number (read only)

(POS. 11.12) Total working time (read only) [WT] *AL0* [TWKTM]

Total work time (read only)

(POS. 11.13) Battery working time (read only) [BW] *AL0* [BWKTM]

Tempo di lavoro a batteria (sola lettura)

(POS. 11.14) Partial counters / L.T.S. life time	[PT]	*AL0*	[PTCTM]

NOT-MID devices, the operating time (counted as the total work time see function 10.10) which has elapsed since the last reset of at least one of the partial counters.
The partial counters can be reset using the relative functions (if enabled) from MCP commands, from input 4 or from the communication protocol. The new partial time totalizer "PTCTM" is reset to zero when at least one partial counter is reset.

MID devices, the operating time (counted as the total working time see function 10.10) which has elapsed since the last copy of the total counters in the partial counters ==> Long Term Storage function; in this way you can see how long ago the stored copy of the Long Term Storage counters is referenced.
All the total counters are copied to the Partial Counters (which become counters of Long Term Storge) whenever the total working time see function 10.10 is a multiple of 30 exact days; at the same time the new partial time totalizer "PTCTM" is reset, allowing to evaluate, to how long ago, the copy of the counters is referred.

(POS. 11.15) Flow & Temp. sim. function	[Simulation]	*AL3*	[MSIEN]

Simulation Function PV Flow and Temperatures. When the simulation is active, the flashing  flag appears in the display.
To set the simulation parameters, press Enter from one of the display pages and then set the parameters of:

- % full scale
- T1
- T2

To stop the simulation, select the function> END OF SIMULATION.

DIAGNOSTIC MENU 11: FUNCTIONS ACTIVABLE MCP ONLY

Set diagnostic function	[MCP ONLY]	*AL6*	[DIAGF]

Set diagnostic function

Energy calculation values	[MCP ONLY]	*AL6*	[NRGCV]

Energy calculation values

MENU 12 - SYSTEM

(POS. 12.1) Date/Time (Real Time Clock) enable **[RTC enable]** ***AL2*** **[RTCEN]**

Date/Time (Real Time Clock) enable.

(POS. 12.2) Daylight saving time change **[Dayl.saving]** ***AL2*** **[DYSTE]**

Daylight saving time change

(POS. 12.3) Localized time zone **[Time ZONE]** ***AL0*** **[TZONE]**

Set the difference between GMT and the local time where the instrument is installed.

(POS. 12.4) System date and time **[Date and TIME]** ***AL2*** **[DTIME]**

Set to system date and time

(POS. 12.5-12.10) Access level X code **[LN XXXXXXXX]** ***AL1*** **[L1ACD]-> [L6ACD]**

This function enables or disables the main menu functions for each access level code.
Each level unlocks the functionality of the lower level if the POS function 12.10 is enabled.

L1 code= ******** Access level 1 code
L2 code= ******** Access level 2 code
L3 code= ******** Access level 3 code
L4 code= ******** Access level 4 code
L5 code= ******** Access level 5 code
L6 code= ******** Access level 6 code

(POS. 12.11) Restricted access level **[Restr.access]** ***AL6*** **[RSARE]**

Access level limited to the functions for which the access code is known.

(POS. 12.12) Total measure cycles **[CT]** ***AL6*** **[TMCYC]**

Total measure cycles

SETTINGS IP ADDRESS INTERFACE MCP (12.12 - 12.13 - 12.14)

Attention: The changes made to functions 12.13 / 12.14 / 12.15 are activated after the instrument is restarted (start the POS function 11.1 Auto Test to restart the converter).

(POS. 12.13) Device IP network address **[Device IP addr]** ***AL3*** **[DIPAD]**

Device IP network address

(POS. 12.14) Client IP network address **[Client IP addr]** ***AL3*** **[CIPAD]**

Client IP network address

(POS. 12.15) Network mask **[Network mask]** ***AL3*** **[NETMS]**

Network mask

(POS. 12.16) Temp. T1 - T2 calib. balance [T1-T2 BALANCE] *AL5* [T12CB]

Calibration calibration temp. T1 - T2. This function is used to calculate the compensation value between the two temperature probes; to use the function, place both temperature probes in the same liquid to bring them to the same temperature. The temperature difference is compensated by automatically setting the following temperature offsets for T1 and T2. The calculation is performed only if Delta T <± 2.55

(POS. 12.17) Temp. T1 calib. offset [T1 OFFS.] *AL5* [T1COS]

Temperature T1 Calibration OffSet

(POS. 12.18) Calib. offset temperatura T2 [T2 OFFS.] *AL5* [T2COS]

Temperature T2 Calibration OffSet

(POS. 12.19) ADC in 4mA calibration point [ADC 4mA] *AL5* [A1CP1]

Calibration point 4mA ADC input

(POS. 12.20) ADC in 20mA calibration point [ADC 20mA] *AL5* [A1CP2]

Calibration point 20mA ADC input

(POS. 12.21) DAC1 out 4mA calib. point [DAC1 4mA] *AL5* [C1CP1]

Calibration point 4mA output DAC1. DAC1 4mA output calibration point (Calibration point 1 current output 1).

(POS. 12.22) DAC1 out 20mA calib. point [DAC1 20mA] *AL5* [C1CP2]

Calibration point 20mA output DAC1. DAC1 20mA output calibration point (calibration point 2 current output 1).

(POS. 12.23) DAC2 out 4mA calib. point [DAC2 4mA] *AL5* [C2CP1]

Calibration point 4mA output DAC2. DAC2 4mA output calibration point (Calibration point 1 current output 2).

(POS. 12.24) DAC2 out 20mA calib. point [DAC2 20mA] *AL5* [C2CP2]

Calibration point 20mA output DAC2. DAC1 20mA output calibration point (calibration point 2 current output 2).

(POS. 12.25) System standby mo. act. (pow. off) [System STanDBY] *AL3* [SSTBY]

Stand-by mode (power off). This function activates the drive stand-by mode. Function for battery powered instruments.

(POS. 12.27) Quick setup save and lock editing [QS Save & Lock] *AL3* [QESLE]

Quick setup save and lock editing

(POS. 12.26) Firmware update [FW update] *AL4* [FWUPD]

This function updates the instrument firmware. The firmware can be loaded into the SD card (name.file). Via the MCP interface the FWUPD = name.file command is activated for the firmware upload.

MENU 12- SYSTEM: FUNCTIONS ACTIVATED MCP ONLY

Unique Identity KEY	**[MCP ONLY]**	***AL0***	**[UIKEY]**

Unique identification code of the device.

HardWare SET	**[MCP ONLY]**	***AL0***	**[HWSET]**

Device hardware configuration

HardWare CODe	**[MCP ONLY]**	***AL0***	**[HWCOD]**

Device hardware code

RTC Adjustment Coefficient	**[MCP ONLY]**	***AL2***	**[RTCAC]**

This function is used for correcting the internal clock. To set the instrument time with the MCP program, press the button. 

Function CODe Selection	**[MCP ONLY]**	***AL0***	**[FCODS]**

Select the function code

Select function enable status	**[MCP ONLY]**	***AL0***	**[FNESS]**

Select function enable status

Select status enable of all the functions	**[MCP ONLY]**	***AL6***	**[AFNSS]**

Select the enabling status of all functions

Quick Start FuNction Selection	**[MCP ONLY]**	***AL0***	**[QSFNS]**

Select fun.for quick start menu

Quick Start All Functions Selection	**[MCP ONLY]**	***AL0***	**[QSAFS]**

Select ALL functions for quick start menu

Quick start function Status LiST	**[MCP ONLY]**	***AL6***	**[QSLST]**

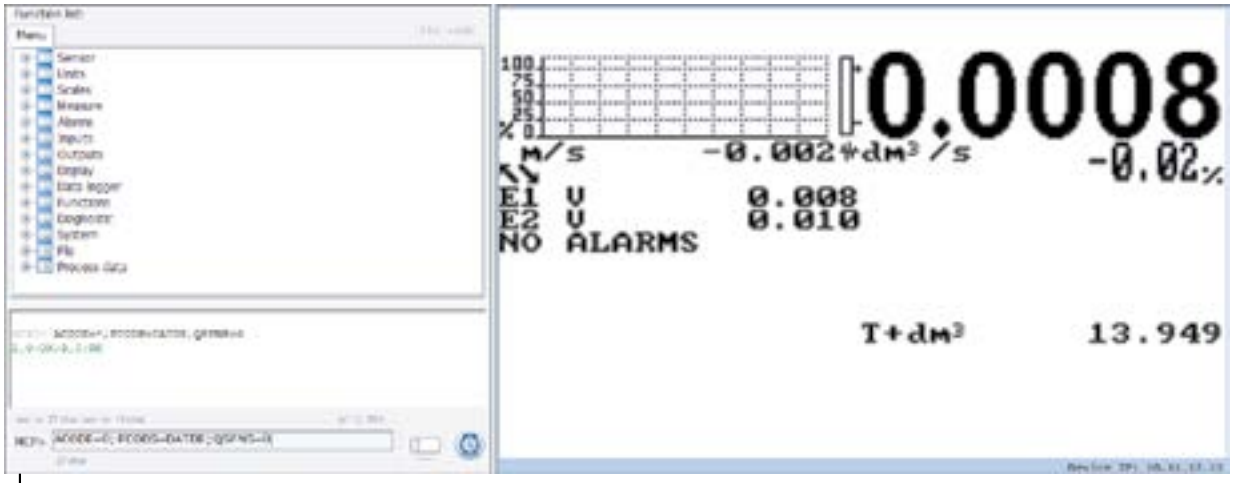
List quick start group functions

Function enable Status LiST	**[MCP ONLY]**	***AL6***	**[FSLST]**

List enable status of functions

Access CODE	**[MCP ONLY]**	***ALO***	**[ACODE]**

Entering the access code through the MCP console.



ACODE=0; FCODS = [MCP COMMAND] ; QSFNS=1

- ACCESS CODE
- Enter the MCP command of the function to be enabled in the QS menu
- Enable the function in the QuickStart menu.

LINK Terminate	**[MCP ONLY]**	***ALO***	**[LTERM]**

Terminate the PPP data connection link.

MCPI session QUIT	**[MCP ONLY]**	***ALO***	**[MQUIT]**

Quit the MCPI connection

Functions LIST	**[MCP ONLY]**	***ALO***	**[FLIST]**

View the list of available converter features.

List all function (compr.mode)	**[MCP ONLY]**	***ALO***	**[FLISC]**

View the list of functions of the converter in a compact version.

List of hidden function	**[MCP ONLY]**	***ALO***	**[HFLST]**

View the list of hidden function

Functions Menu SELection	**[MCP ONLY]**	***ALO***	**[FMSEL]**

Select menu for functions list

ConFiguration LiST	**[MCP ONLY]**	***ALO***	**[CFLST]**

Parameter list configuration, A list with the status / value of the drive parameters is displayed.

Totalizer Partial Set 1st Value	**[MCP ONLY]**	***AL4***	**[TPS1V]**

1st Totalizer Partial value Set

Totalizer Partial Set 2st Value	**[MCP ONLY]**	***AL4***	**[TPS2V]**

2st Totalizer Partial value Set

Totalizer Partial Set 3st Value	**[MCP ONLY]**	***AL4***	**[TPS3V]**

3st Totalizer Partial value Set

Totalizer Partial Set 4st Value	**[MCP ONLY]**	***AL4***	**[TPS4V]**

4st Totalizer Partial value Set

Totalizer Partial Set Heating energy Value	**[MCP ONLY]**	***AL4***	**[TPSHV]**

Heat.energy Totalizer Partial Set

Totalizer Partial Set Cooling energy Value	**[MCP ONLY]**	***AL4***	**[TPSCV]**

Cool.energy Totalizer Partial Set

Totalizer Total Set 1st Value	**[MCP ONLY]**	***AL4***	**[TTS1V]**

1st Totalizer Total value Set

Totalizer Total Set 2st Value	**[MCP ONLY]**	***AL4***	**[TTS2V]**

2st Totalizer Total value Set

Totalizer Total Set 3st Value	**[MCP ONLY]**	***AL4***	**[TTS3V]**

3st Totalizer Total value Set

Totalizer Total Set 4st Value	**[MCP ONLY]**	***AL4***	**[TTS4V]**

4st Totalizer Total value Set

Totalizer Total Set Heating energy Value	**[Quick start]**	***AL4***	**[TTSHV]**

Heat.energy Totalizer Total Set

Totalizer Total Set Cooling energy Value	**[MCP ONLY]**	***AL4***	**[TTSCV]**

Cool.energy Totalizer Total Set

Totalizer Total Set 1st Overflow value	**[MCP ONLY]**	***AL4***	**[TTS1O]**

1st Totalizer T.Overflow value Set

Totalizer Total Set 2st Overflow value	**[MCP ONLY]**	***AL4***	**[TTS2O]**

2st Totalizer T.Overflow value Set

Totalizer Total Set 3st Overflow value	**[MCP ONLY]**	***AL4***	**[TTS3O]**

3st Totalizer T.Overflow value Set

Totalizer Total Set 4st Overflow value	**[MCP ONLY]**	***AL4***	**[TTS4O]**

4st Totalizer T.Overflow value Set

Tot. Total Set Heating en. Overflow value	**[MCP ONLY]**	***AL4***	**[TTSHO]**

Heat.energy Tot. T.Overflow Set

Tot. Total Set Cooling en. Overflow value	**[MCP ONLY]**	***AL4***	**[TTSCO]**

Cool.energy Tot. T.Overflow Set

BoaRD MaX.recorded temperature	**[MCP ONLY]**	***AL6***	**[BRDMX]**

BOARD max.recorded temperature

BoaRD MiN.recorded temperature	**[MCP ONLY]**	***AL6***	**[BRDMN]**

BOARD min.recorded temperature

CPU MaX.recorded temperature	**[MCP ONLY]**	***AL6***	**[CPUMX]**

CPU max.recorded temperature

CPU MiN.recorded temperature	**[MCP ONLY]**	***AL6***	**[CPUMN]**

CPU min.recorded temperature

End CHarge Battery Voltage	**[MCP ONLY]**	***AL6***	**[ECHBV]**

Battery end charge recorded Voltage

Analog input 1 Temp 0 Compensation	**[MCP ONLY]**	***AL5***	**[A1T0C]**

Analog input 1 Temperature 0 Compensation

Analog input 1 Temp. 100 Compensation	**[MCP ONLY]**	***AL5***	**[A1T1C]**

Analog input 1 Temperature 100 Compensation

Select fun.for quick setup menu	**[MCP ONLY]**	***AL6***	**[QEFNS]**

Select fun.for quick setup menu

Select ALL functions for quick setup menu	**[MCP ONLY]**	***AL6***	**[QEAFS]**

Select ALL functions for quick setup menu

List quick setup group functions	**[MCP ONLY]**	***AL6***	**[QESLS]**

List quick setup group functions

Quick setup menu edit and execute enable	**[MCP ONLY]**	***AL2***	**[QEEEN]**

Quick setup menu edit and execute enable

Quick setup saving time (read only)	**[MCP ONLY]**	***AL0***	**[QESTM]**

Quick setup saving time (read only)

Quick setup Heating energy Tot.(read only)	**[MCP ONLY]**	***AL0***	**[QETHE]**

Quick setup Heating energy Tot.(read only)

[Quick setup Cooling energy Tot.(read only)]	**[MCP ONLY]**	***AL0***	**[QETCE]**

Quick setup Cooling energy Tot.(read only)

MENU 13- FILE: FUNCTIONS ACTIVATED MCP ONLY

File Transfer ABoRt	**[MCP ONLY]**	***AL2***	**[FTABR]**

Abort the current File Transfer

File Transfer STAte	**[MCP ONLY]**	***AL0***	**[FTSTA]**

File Transfer STAte

Read Last EVenTs	**[MCP ONLY]**	***AL2***	**[RLEVT]**

Read the latest system events

Read All EVenTs	**[MCP ONLY]**	***AL2***	**[RAEVT]**

Read all current system events

Read Last Logged DaTa	**[MCP ONLY]**	***AL2***	**[RLLDT]**

Read the latest logged data

Read All Logged DaTa	**[MCP ONLY]**	***AL2***	**[RALDT]**

Read all current logged data

File SEND	**[MCP ONLY]**	***AL2***	**[FSEND]**

Set file name for read operation

File ReCeiVE	**[MCP ONLY]**	***AL5***	**[FRCVE]**

Set file name for write oper.

File ReCeive APpend mode	**[MCP ONLY]**	***AL5***	**[FRCAP]**

Set file name for write-append

Set file offset position	**[MCP ONLY]**	***AL2***	**[FOFFS]**

Set file offset position

ConFiGuration file WRite	**[MCP ONLY]**	***AL2***	**[CFGWR]**

Save the configuration to a file

ConFiGuration file ReaD	**[MCP ONLY]**	***AL2***	**[CFGRD]**

Read the configuration from file

FuNCtion list file WRite	**[MCP ONLY]**	***AL2***	**[FNCWR]**

Save the functions list to file

Function Enable Status WRite	**[MCP ONLY]**	***AL6***	**[FESWR]**

Save funct.enable status to file

Quick Start function Status WRite	**[MCP ONLY]**	***AL6***	**[QSSWR]**

Save function group quick start on file

Save quick setup function group to file	**[MCP ONLY]**	***AL6***	**[QESWR]**

Save quick setup function group to file

MENU 14- PROCESS DATA: FUNCTIONS ACTIVABLE MCP ONLY

Digital INput 1 Status	**[MCP ONLY]**	***ALO***	**[DIN1S]**

Digital input 1 status read

Digital INput 2 Status	**[MCP ONLY]**	***ALO***	**[DIN2S]**

Digital input 2 status read

Digital INput 3 Status	**[MCP ONLY]**	***ALO***	**[DIN3S]**

Digital input 3 status read

Digital INput 4 Status	**[MCP ONLY]**	***ALO***	**[DIN4S]**

Digital input 4 status read

Flow Rate Value PerCentage	**[MCP ONLY]**	***ALO***	**[FRVPC]**

VF Flow rate value in percentage

Flow Rate Value Percentage without cut-off	**[MCP ONLY]**	***ALO***	**[FRVPX]**

Vector fluid flow in percentages without cut-off.

Flow Rate Value Technical Unit	**[MCP ONLY]**	***ALO***	**[FRVTU]**

VF Flow rate value in unit of measure

Thermal Power Value PerCentage	**[MCP ONLY]**	***ALO***	**[TPVPC]**

Thermal power value in percentage

Thermal Power Value Technical Unit	**[MCP ONLY]**	***ALO***	**[TPVTU]**

Thermal power value in unit of measure

TeMPerature 1 Value	**[MCP ONLY]**	***ALO***	**[TMP1V]**

Temperature T1 value in unit of measure

TeMPerature 2 Value	**[MCP ONLY]**	***ALO***	**[TMP2V]**

Temperature T2 value in unit of measure

TeMPerature Delta Value	**[MCP ONLY]**	***ALO***	**[TMPDV]**

Temperature Delta value in unit of measure

Heating ENergy totalizer Total Value	**[MCP ONLY]**	***ALO***	**[HENTV]**

Energy Heating Total Totalizer read value

Heating ENergy totalizer Partial Value	**[MCP ONLY]**	***ALO***	**[HENPV]**

Energy Heating Partial Totalizer read val.

Cooling ENergy totalizer Total Value	**[MCP ONLY]**	***ALO***	**[CENTV]**

Energy Cooling Total Totalizer read value

Cooling ENergy totalizer Partial Value	**[MCP ONLY]**	***ALO***	**[CENPV]**

Energy Cooling Partial Totalizer read val.

Volume Totalizer 1 Total Value	**[MCP ONLY]**	***ALO***	**[VT1TV]**

Volume 1 Total Totalizer read value

Volume Totalizer 1 Partial Value	**[MCP ONLY]**	***ALO***	**[VT1PV]**

Volume 1 Partial Totalizer read value

Volume Totalizer 2 Total Value	**[MCP ONLY]**	***ALO***	**[VT2TV]**

Volume 2 Total Totalizer read value

Volume Totalizer 2 Partial Value	**[MCP ONLY]**	***ALO***	**[VT2PV]**

Volume 2 Partial Totalizer read value

Volume Totalizer 3 Total Value	**[MCP ONLY]**	***ALO***	**[VT3TV]**

Volume 3 Total Totalizer read value

Volume Totalizer 3 Partial Value	**[MCP ONLY]**	***ALO***	**[VT3PV]**

Volume 3 Partial Totalizer read value

Volume Totalizer 4 Total Value	**[MCP ONLY]**	***ALO***	**[VT4TV]**

Volume 4 Total Totalizer read value

Volume Totalizer 4 Partial Value	**[MCP ONLY]**	***ALO***	**[VT4PV]**

Volume 4 Partial Totalizer read value

Heating ENergy totalizer Total Overflow	**[MCP ONLY]**	***ALO***	**[HENTO]**

Energy Heating Total Totalizer overflow nr

Cooling ENergy totalizer Total Overflow	**[MCP ONLY]**	***ALO***	**[CENTO]**

Energy Cooling Total Totalizer overflows n

Volume Totalizer 1 Total Overflow	**[MCP ONLY]**	***ALO***	**[VT1TO]**

Volume 1 Total Totalizer overflows number

Volume Totalizer 2 Total Overflow	**[MCP ONLY]**	***ALO***	**[VT2TO]**

Volume 2 Total Totalizer overflows number

Volume Totalizer 3 Total Overflow	**[MCP ONLY]**	***ALO***	**[VT3TO]**

Volume 3 Total Totalizer overflows number

Volume Totalizer 4 Total Overflow	**[MCP ONLY]**	***ALO***	**[VT4TO]**

Volume 4 Total Totalizer overflows number

Board TeMPeratures	**[MCP ONLY]**	***ALO***	**[BTMPS]**

Board TeMPeratures

Temperature CPU	**[MCP ONLY]**	***ALO***	**[CPUTP]**

Temperature CPU

System Battery VoLTage	**[MCP ONLY]**	***ALO***	**[SBVLT]**

System battery voltage

System Battery CHarge Status	**[MCP ONLY]**	***ALO***	**[SBCHS]**

System battery charge status

Analog Input 4_20ma Value	**[MCP ONLY]**	***ALO***	**[I420V]**

Analog Input 4_20ma Value

analog Input 4_20ma Adc	**[MCP ONLY]**	***ALO***	**[I420A]**

Analog Input 4_20ma Adc

FReQency Output 1 value	**[MCP ONLY]**	***ALO***	**[FRQO1]**

FReQency Output 1 value

FReQency Output 2 value	**[MCP ONLY]**	***ALO***	**[FRQO2]**

Freqency Output 1 value

PuLseS Output 1 value	**[MCP ONLY]**	***ALO***	**[PLSO1]**

Pulses output 1 value

PuLseS Output 2 value	**[MCP ONLY]**	***ALO***	**[PLSO2]**

Pulses output 2 value

ALARM status	**[MCP ONLY]**	***ALO***	**[ALARM]**

Active alarm(s) status

ALARM MESSAGES (CAUSES AND ACTIONS TO BE TAKEN)

MESSAGE	CAUSES	ACTION TO TAKE
NO ALARMS	All works regularly	---
HP_ALARMS (In the presence of one of these errors, the main function of the device is not operational)		
[00] B.DATA NOT INIT	Data system not initialized.	Contact the service
[01] DYN. DATA LOST	Dynamic Data (counters, ...) reset.	Contact the service
[02] HW DATA LOST	Hardware configuration reset to default values.	Contact the service
[03] CFG DATA LOST	Configuration Settings reset to default values.	Contact the service
[04] COMM DATA LOST	Communication configuration reset to default values.	Contact the service
[05] SYS.PROT.FAULT	MID device protection error.	Contact the service
[06] RTD DISCONNECTED	Temperature sensor disconnected.	Check the connections and integrity of the cable sensors.
[07] EXCITATION ERROR	Temperature sensor excitation current incorrect.	Check the type of sensor set. Check the connections. Contact the service
[08] RESIST.1 ERROR	Resistance temperature sensor T1 incorrect.	Check the type of sensor set.
[09] RESIST.2 ERROR	Resistance temperature sensor T2 incorrect.	Check the type of sensor set.
[10] INTERNAL PS FAIL.	Internal power supply error.	Check for sources of excessive EM noise. Contact the service.
[11] ERR.INGR.C. 4-20	Input current error 4-20mA.	Verify that the sensor is connected correctly and provides power to the expected range.
GENERIC ALARMS		
[21] FACTORY HW DATA	Hardware reset configuration to Factory values.	Confirm the reading of the warning using function 10.15 and change the customized parameters to the factory settings, if necessary.
[22] FACTORY CFG DATA	Configuration Settings reset to Factory values.	
[23] FACTORY COM DATA	Communication configuration reset to Factory values.	
[24] CLOCK NOT SET	System clock not set.	Set the system clock from the converter menu 12.1-2-3 (see also MCP function).
[25] ERRORE SD CARD	SD card not found or illegible.	Contact the service; Check and / or replace the MICRO-SD.
[26] SDC ALMOST FULL	MSD card space <500 MB.	See function reference "11.6 SD card status information"
[27] SDC MEM.ESAURITA	SD card memory exhausted.	Out of memory. Logs can not be saved. Contact the service to replace the card.
[28] BATTERY ERROR	Battery Voltage Error.	Verify that the rechargeable battery is connected. Contact the service to replace the battery.
[29] BATTERY LOW	Rechargeable battery discharge.	Restore the main power supply.
[30] 3V EXT. OUT FAIL	Pulse sensor power supply error input to battery.	Check the input connections and have used only clean contacts. Check the voltage (≥ 3V).
[31] M-BUS POWER FAIL	Absence of MeterBus power supply.	Check the M-BUS connection and check the voltage on the M-BUS line. Check that the blue LED lights up on the communication board.

MESSAGE	CAUSES	ACTION TO TAKE
[32] T.DELTA OVERFLOW	Overflow in the measurement of the Delta T.	Check the stairs setting
[33] TEMP.T1 OVERFLOW	Overflow in the measurement of Temp. T1.	
[34] TEMP.T1 OVERFLOW	Overflow nella misura della Temp. T2.	
[35] VF FLOW OVERFLOW	Flow overflow Fluid Vector.	
[36] T.POWER OVERFLOW	Overflow in the calculation of Thermal Power.	
[37] POWER SIGN INC.	The sign of Power (Heating / Cooling) is inconsistent with the selection (Local / Remote) of the Energy Totalizer.	Select the correct counter (Heat / Cool) or set selection 3.13 to Automatic.
[38] PULSE_IN1>RANGE	Pulse overflow Input 1.	Check the setting of the scales and parameters of the input pulses.
[39] PULSE_IN2>RANGE	Pulse overflow Input 2.	
[40] PULSE_IN3>RANGE	Pulse overflow Input 3.	
[41] PULSE_IN4>RANGE	Pulse overflow Input 4.	
[42] PULSE_OUT1>RANGE	Pulse overflow Output 1.	Check the setting of the scales and parameters of the input pulses.
[43] PULSE_OUT2>RANGE	Pulse overflow Output 2.	
[44] TEMPER. T2 LIMIT	Alarm threshold Temp. T2 reached.	Check the value from the relative threshold set in menu 4.x and the process conditions.
[45] TEMPER. T1 LIMIT	Alarm threshold Temp. T1 reached.	
[46] DELTA T LIMIT	Threshold alarm threshold reached.	
[47] V.F. FLOW LIMIT	Alarm threshold Flow rate. Vector reached.	
[48] TH. POWER LIMIT	Alarm threshold Thermal power reached.	
[49] EVENT LOG. ERROR	Error Saving Event Log.	Error in saving logs. Contact the service to check the SD card.
[50] DATA LOG. ERROR	Error Saving Data Log.	
[51] FACT. DATA ERROR	Factory data error	Try to re-save the factory data. Contact the service

ERROR CODES CONVERTER

The codes are in hexadecimal format, the meaning is given for each bit. Multiple simultaneous error combinations (multiple active bits) are possible which will then give combined numerical codes.

CODE	DESCRIPTION OF ANOMALIES	REMEDIES
00000002	Generic data memory error.	Contact the service if the problem persists or generates other errors.
00000004	Error of dynamic copies of the totalizers.	The totalizers have been reset; contact the service.
00000008	Current Hardware configuration data is invalid.	The system will automatically load the Factory version.
00000010	The data of the Factory Hardware configuration are also invalid.	Contact the service.
00000080	Configuration data Invalid current settings and / or communication.	The system will automatically load the relative version of the Factory.
00000100	The configuration and / or factory communication configuration data are also invalid.	Contact the service.
00000400	µSD card not present or not readable.	Contact the service; Check or replace the µSD.
00020000	Firmware update error.	The FirmWare update was not performed; verify the cause in the LOG.
00040000	Error loading data after Firmware update.	Check the LOG and contact the service.

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 REVIEWS

REVIEW	DATE	DESCRIPTION
MV311_EN_IT_R0_000.0	03/08/2018	First edition
MV311_EN_IT_R1_1.04.0	10/03/2020	Update to firmware 1.04.0xx

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Due to the constant technical development and improvement of its products, the manufacturer reserves the right to make changes and/or modify the information contained in this document without notice.