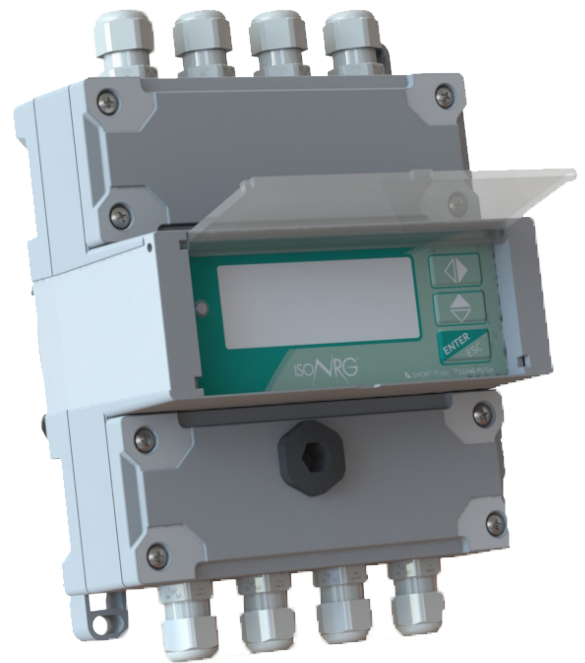


**DATA SHEET  
MV311**



CE

# INDEX

SYSTEM DESCRIPTION	3
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## SYSTEM DESCRIPTION

MV311 is an energy meter designed for heating, cooling or combined heating/cooling carried by a thermal fluid; typically the thermal fluid is water, though a special features allow to calculate the energy even for water and glycol ethylene or polypropylene at several concentration. The calculator contains all the necessary circuits for calculating energy value according to the standard EN1434; the thermal energy calculation is based on the following calculation :

$$Q = \int_{t_0}^{t_1} q_m \Delta h dt$$

Where:

- Q: amount of heat (energy) transferred or absorbed
- $q_m$ : mass flow rate of the vector fluid /kg s-1
- $\Delta h$ :  $\Delta$  of specific enthalpy between in-let and out-let pipe line /J kg-1
- t: time /s

So, the quantities to be measured are the the heat transfer fluid flow rate and the two temperatures of the circuit, measured respectively on a suitable flow and return point of the fluid itself.

### Flow measurement

The calculator can calculate the flow rate throughout two channel:

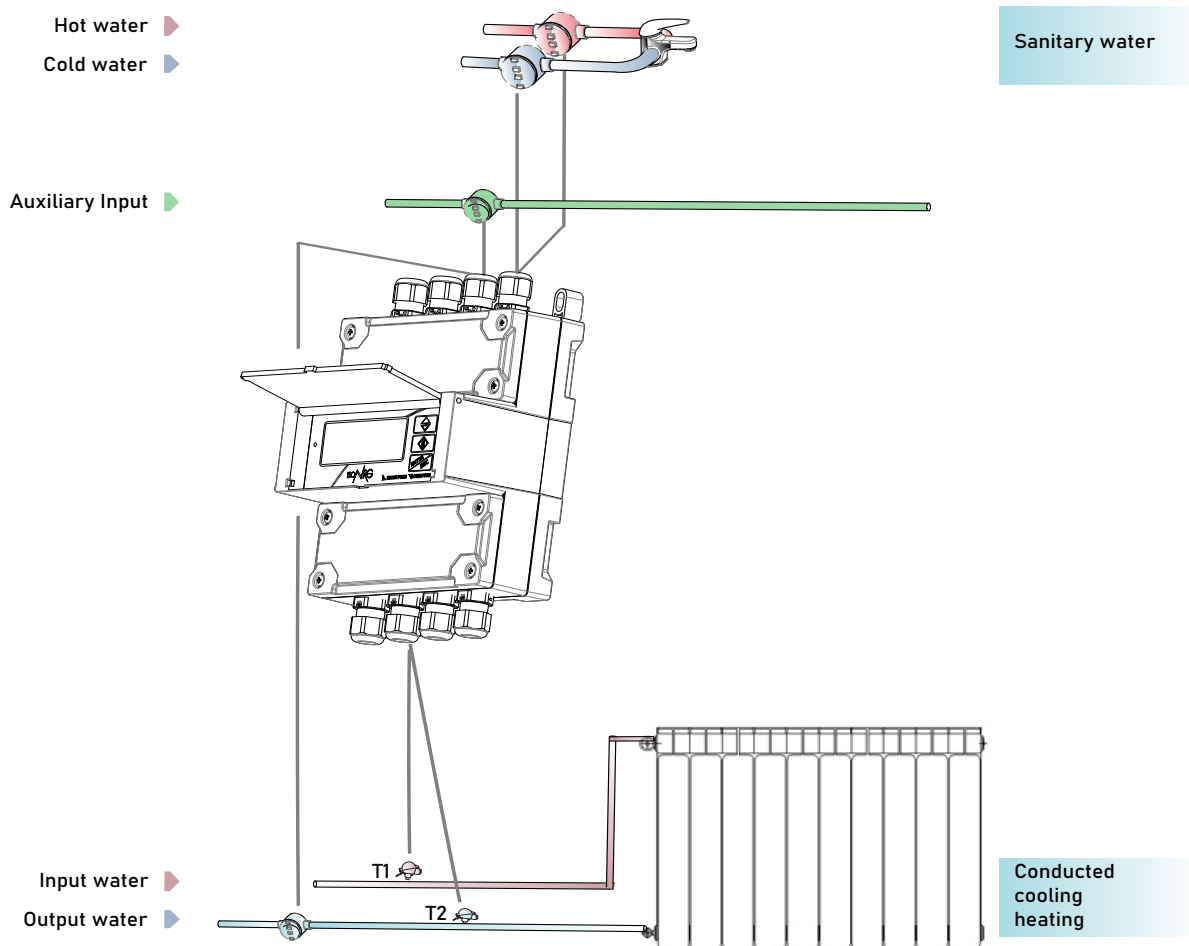
- Analogic: it acquires the 4-20mA signal from a flow meter
- Factorized pulses: it calculates the flow rate throughout factorized pulses coming from the flow meter

### Temperature measurement

The instrument measures the temperature by RTD (PT type), in a 4-wires configuration; the PT values, can be selected via software; the allowed model are:

- PT100
- PT500
- PT1000

By a highly accurate internal reference system and an appropriate electronic switch network, the temperatures are measured by highly accurate ADC (Analog to Digital Converter).




The diagram is a schematic of the principle: in addition to the thermal energy meter function, the MV 311 allows to totalize hot and cold water volume used for service lines; in some cases this solution can be helpful for a quick reference of the measures and the possibility to transfer them to other systems using several fieldbus which the instrument has built-in.

## TECHNICAL DATA

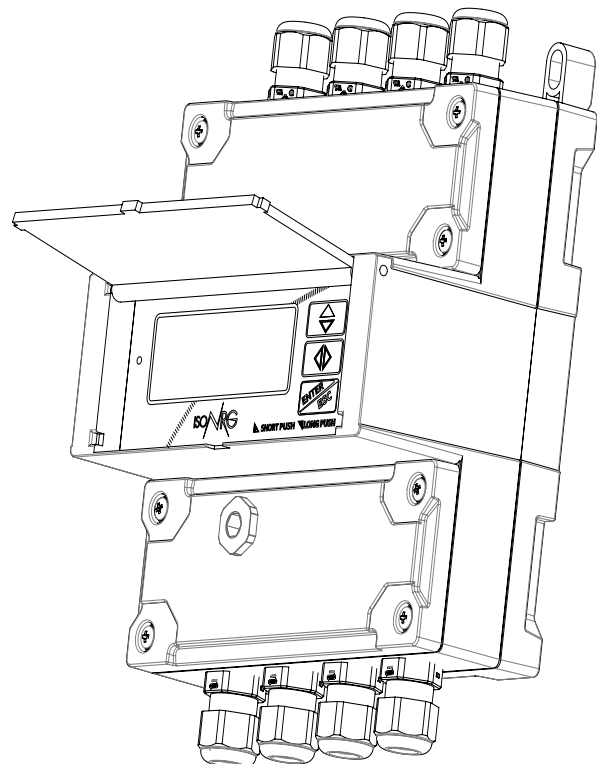
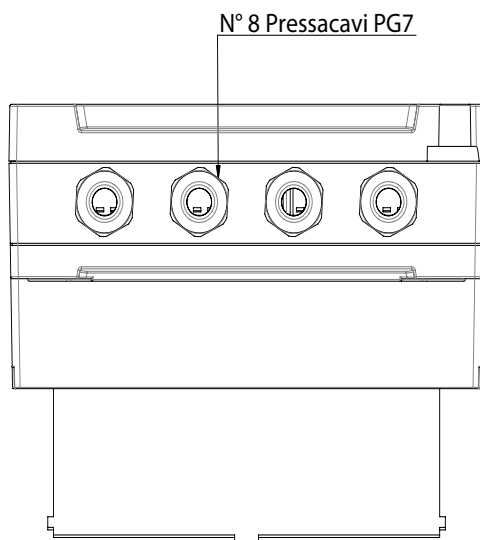
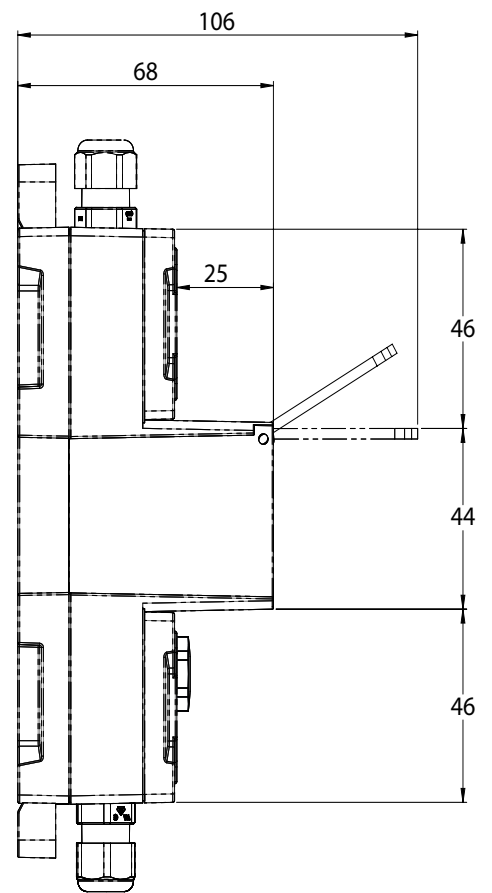
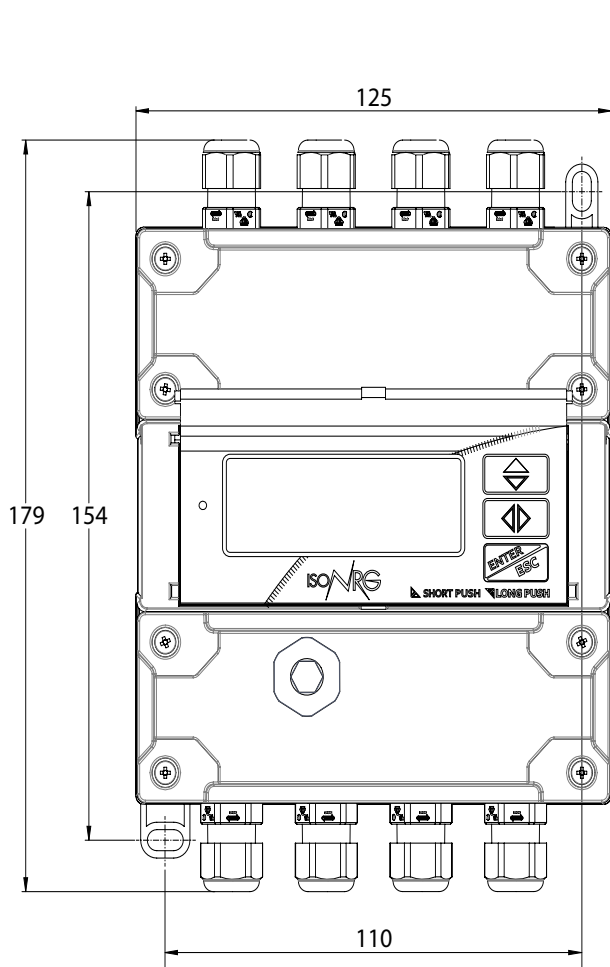
<b>OVERALL FEATURES</b>	
<b>Maximum Thermal Power</b>	<input type="checkbox"/> Ps = 99999 GW
<b>Hot/Cold Switching</b>	<input type="checkbox"/> Automatic through assignment of the +/- sign (possibility of congruence control from remote input)
<b>Measure Units Available</b>	<input type="checkbox"/> kW/MJ, W, kW, MW, GW, J, kJ, Wh, Mj, kWh, Gj, MWh, GWh, BTU, kBTU, MBTU, °C, °F, ml, cm3, l, dm3, dal, hl, m3, Ml, in3, Gal, IGL, ft3, bbl, BBL, hf3, KGL, IKG, kf3, ttG, Aft, MGL, IMG,
<b>Installation</b>	<input type="checkbox"/> Any orientation - DIN rail
<b>Altitude</b>	<input type="checkbox"/> From -200m to 4000m (from -656 to 13120 feet)
<b>Environmental Temperature</b>	<input type="checkbox"/> +5... +55°C (+41...+131°F)
<b>Temperature Range(Measure)</b>	<input type="checkbox"/> -30... +200 (-22...+392°F) <input type="checkbox"/> -15... +150 (+5...+302°F) for MID instrument
<b>Protection Rate</b>	<input type="checkbox"/> IP65
<b>STANDARD FEATURES</b>	
<b>Housing Material</b>	<input type="checkbox"/> PC/ABS self-extinguishing
<b>Power Supply/Power Consumption</b>	<input type="checkbox"/> 100-240V~ 45-66Hz (5W); 24-36V~ 45-66Hz --- (5W); 12-48V (5W)
<b>Pulses Outputs</b>	<input type="checkbox"/> N° 2 output 1250Hz, 100mA, 30Vdc
<b>Available Protocols</b>	<input type="checkbox"/> MCP over USB
<b>Digital Input</b>	<input type="checkbox"/> N° 1 multifunction (Reset totalizers, cooling, heating, auxiliary fluid volume)
<b>Analog Input For Flow Meter</b>	<input type="checkbox"/> N°1 4..20mA range for measure fluid flow rate
<b>Pulses Inputs (q max weight function per pulse)</b>	<input type="checkbox"/> N° 4 inputs (frequency max. 1kHz, min. 0.003 Hz): <input type="checkbox"/> Vector Fluid volume <input type="checkbox"/> Hot water volume <input type="checkbox"/> Cold water volume <input type="checkbox"/> Auxiliary fluid volume (or digital input)
<b>Inputs For Sensor Temperature</b>	<input type="checkbox"/> N° 2 (one for the delivery and one for the return)
<b>Digital Outputs</b>	<input type="checkbox"/> N° 2 programmable for alarms or pulses for energy/volume
<b>Programming Plug In</b>	<input type="checkbox"/> Mini USB type B
<b>Data storage</b>	<input type="checkbox"/> F-RAM: permanent data storage in case of power failure
<b>Galvanic Isolation</b>	<input type="checkbox"/> All the inputs/outputs are galvanically isolated from power supply up to 500 V
<b>Diagnostic Function</b>	<input type="checkbox"/> Yes
<b>CE Certification</b>	<input type="checkbox"/> Yes

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**OPTIONAL FEATURES**  
**(CHECK FOR MORE DETAILS 'HOW TO ORDER' ON LAST PAGE)**

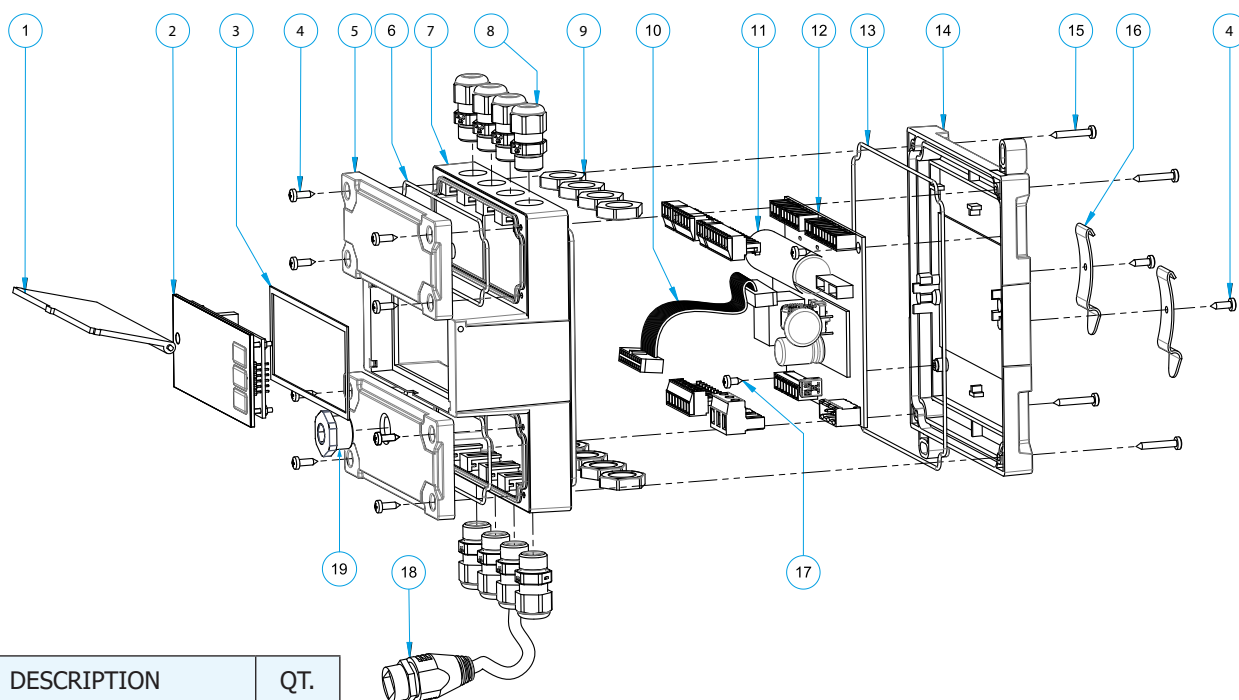
<b>LCD Display</b>	<input type="checkbox"/> Graphic display 128 x 48 pixels back light; characters height 7,2/3,6mm <input type="checkbox"/> 3 membrane keys <input type="checkbox"/> Led status
<b>Current Output</b>	<input type="checkbox"/> N° 2 0/4...20mA selectable alternatively for flow, power, temperature T1, T2 or delta T
<b>Temperature Sensor</b>	<input type="checkbox"/> Thermal probes PT 100/PT500/PT1000 (2/3/4 wires)
<b>Communication Port</b>	<input type="checkbox"/> RS 485/MBus
<b>Available Protocols</b>	<input type="checkbox"/> Modbus (over RS485)/ BACnet (over RS485)/ M-bus 
<b>Data Storage</b>	<input type="checkbox"/> Data Logger with MicroSD Memory 4 GB
<b>RTC</b>	<input type="checkbox"/> Real Time Clock with Autonomy of 7 days (1 month if Measure Backup battery is installed) in absence of power supply.
<b>Measure Backup</b>	<input type="checkbox"/> Rechargeable Li-ion Battery for Measure Backup operations up to 1 month in absence of power supply (depending on configurations and connections).
<b>MID Certification</b>	<input type="checkbox"/> MI-004
<b>MEASUREMENT</b>	
<b>Temperature Measuring Range</b>	<input type="checkbox"/> $\vartheta_{min}$ -15 °C (+5°F), $\vartheta_{max}$ 200°C (392°F)
<b>Delta Temperature (<math>\Delta\vartheta</math>)</b>	<input type="checkbox"/> $\Delta\vartheta$ min 3 °C (37,4°F), $\Delta\vartheta$ max 150 °C (392°F) <input type="checkbox"/> $\Delta\vartheta$ min 0,1 °C (32.18°F) $\Delta\vartheta$ max 200 °C (392°F) – instruments without MID certificate
<b>Measurement Accuracy</b>	<input type="checkbox"/> System: $\pm 0,20\%$ ( $0.18 + \Delta\vartheta_{min}/\Delta\vartheta$ )

# OVERALL DIMENSIONS

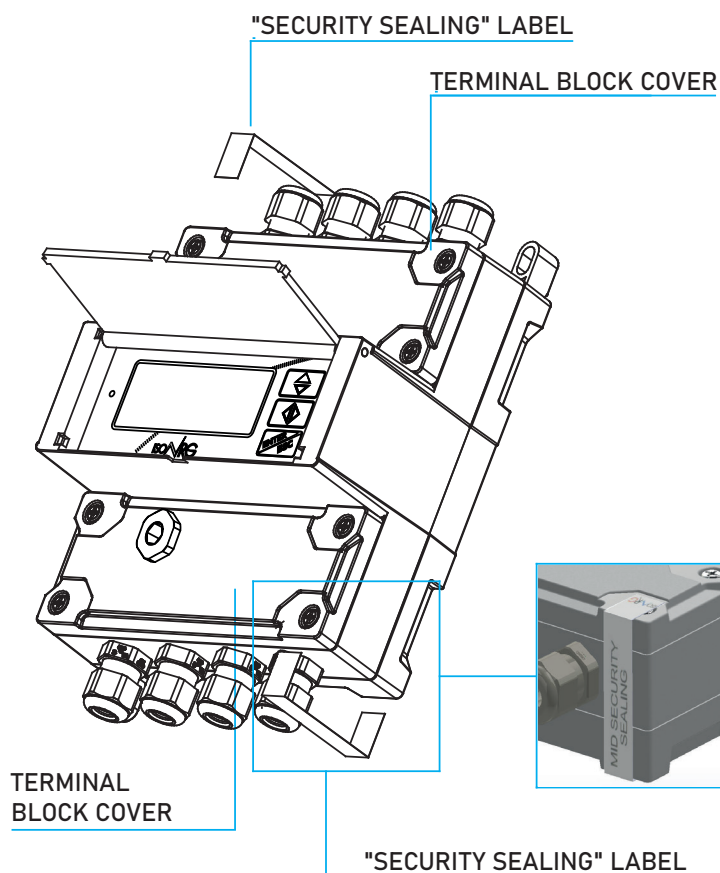


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# MV311 CONSTRUCTION



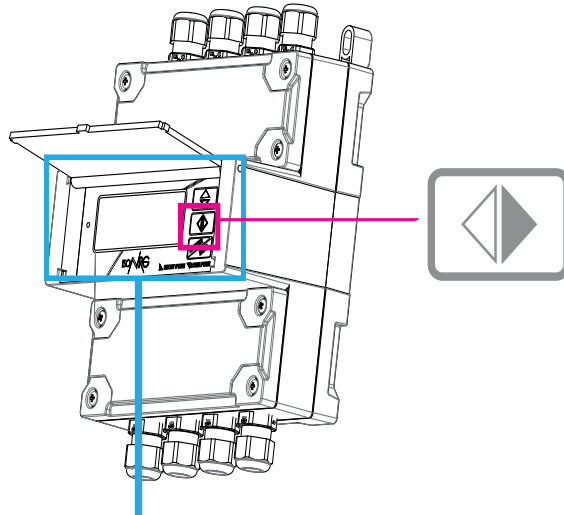
POS.	DESCRIPTION	QT.
1	PROTECTION GLASS	1
2	MV311 DISPLAY	1
3	ADHESIVE GASKET	1
4	SELF-TAPPING SCREW 2.9X9.5	10
w	TERMINAL BLOCK COVER	1
6	O-RING TERMINAL BLOCK COVER	2
7	MAIN HOUSING	2
8	CABLE GLAND PG7 COMPLETE WITH O-RING	8
9	CABLE GLAND RING PG7	8
10	FLAT CABLE 20 VIE	1
11	MV311 BATTERY	1
12	MV311 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





# PAGES VISUALIZATION

Different visualization possibilities by simply pressing of a key.

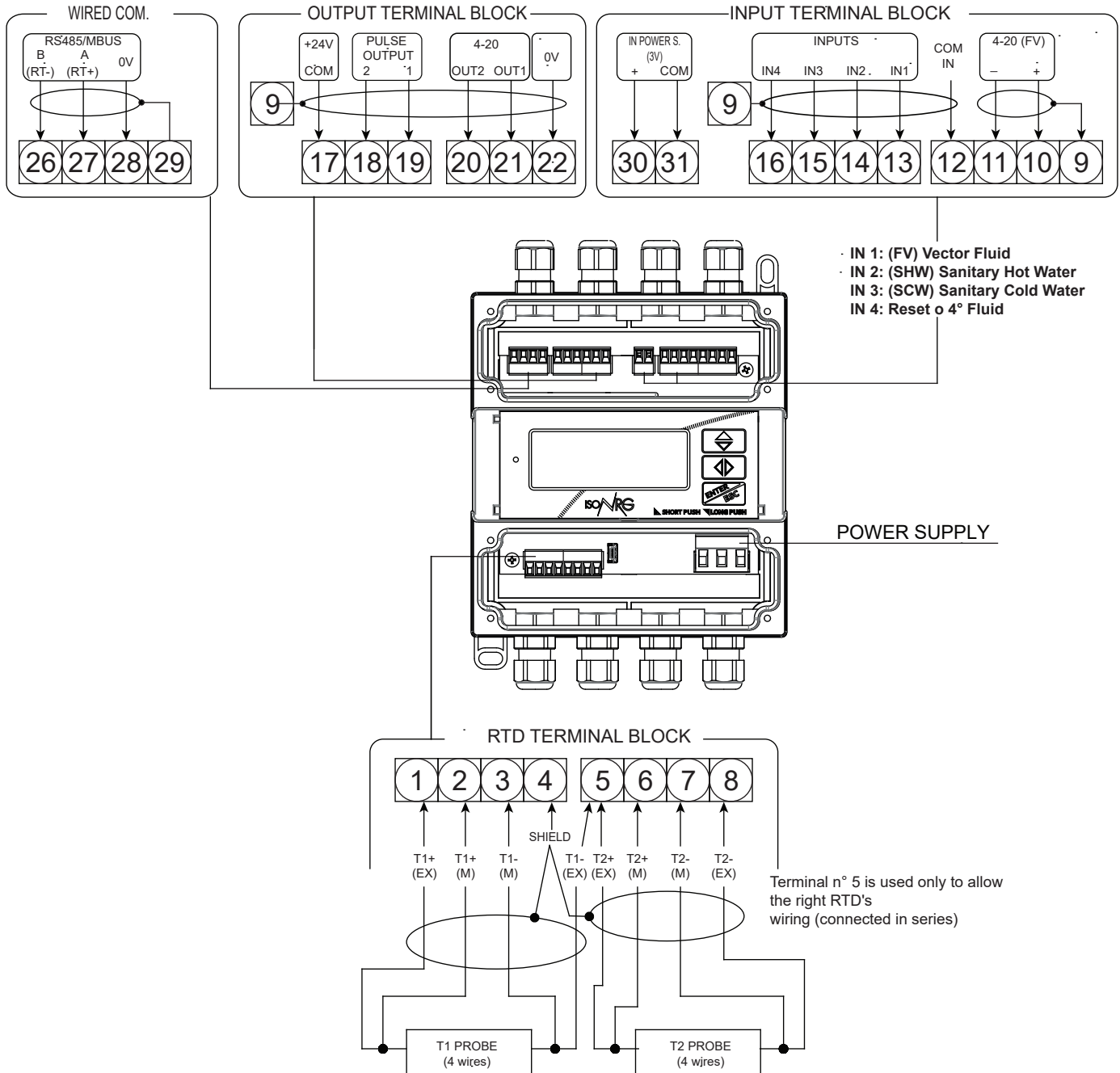


<b>NO ALARMS</b> 2018/03/07 09:28	<b>POWER &amp; FLOW</b> ThPwr kW ▲ 1.4 UF 1/h ▼ 775.3 2018/05/25 13:29:59	<b>TEMPERATURES</b> TD °C +3.02 T1 °C 26.28 T2 °C 23.26 2018/03/07 09:28:32
<b>HEATING ENERGY</b> T. kWh 4.6460583 P. kWh 4.6460583 2018/03/07 09:28:34	<b>COOLING ENERGY</b> T. kWh 0.0000000 P. kWh 0.0000000 2018/03/07 09:28:35	<b>DECTOR FILL</b> T. m³ 0.1012744 P. m³ 0.1012744 2018/03/07 09:28:37
<b>HOT SERV. WATER</b> T. m³ 0.0969618 P. m³ 0.0969618 2018/03/07 09:28:40	<b>COLD SERV. WATER</b> T. m³ 0.0969618 P. m³ 0.0969618 2018/03/07 09:28:41	<b>SUMMARY MENU</b> T. ml 0.00 P. ml 0.00 2020/04/23 09:22:52
<b>MAIN POWER SUPPLY OFF</b> 2018/03/07 09:35:11		

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# ELECTRICAL CONNECTIONS

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



POWER SUPPLY

Terminal n° 5 is used only to allow the right RTD's wiring (connected in series)

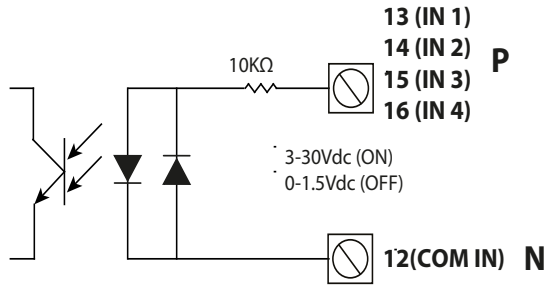
To connect 2 wire probe:  
 T1: connect the probe to terminal block 2 and 3, bridge on 1-2 and 3-5  
 T2: connect the probe to terminal block 6 and 7, bridge on 5-6 and 7-8

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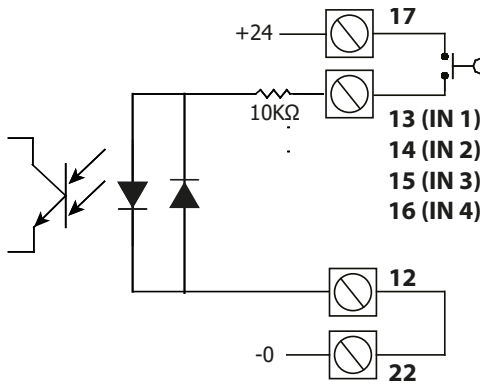
# DIGITAL INPUTS

## Connections with polarity type "P"

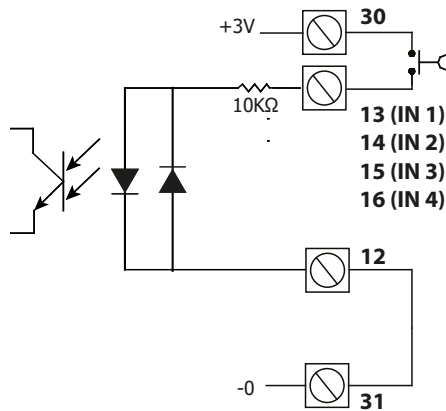
Isolated digital input with external power supply



Isolated digital input with + 24V internal power supply

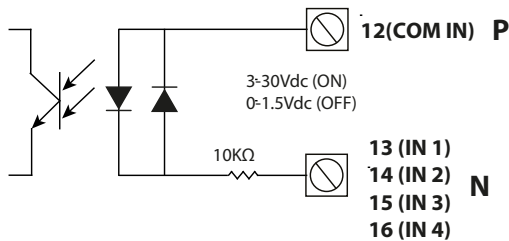


Not isolated digital input with internal battery power supply

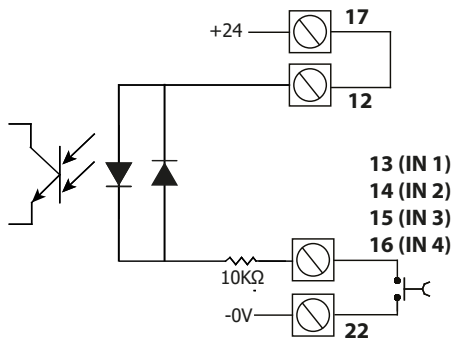


### Connections with polarity type "N"

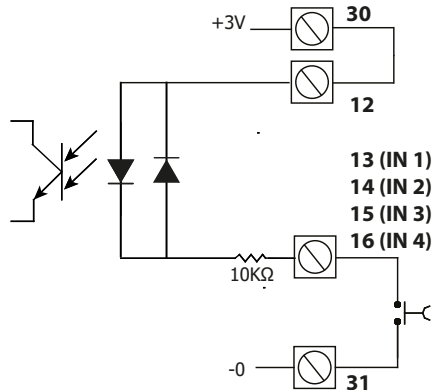
Isolated digital input with external power supply



Digital input with + 24V internal power supply

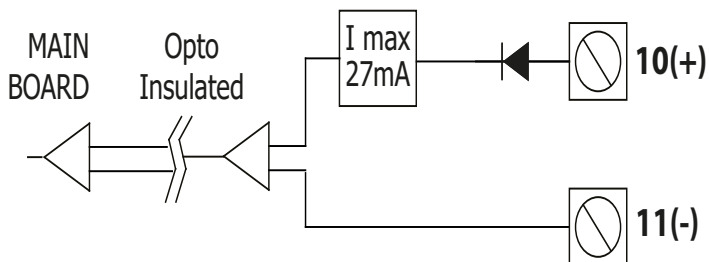


Not isolated digital input with internal battery power supply



### ANALOG INPUTS

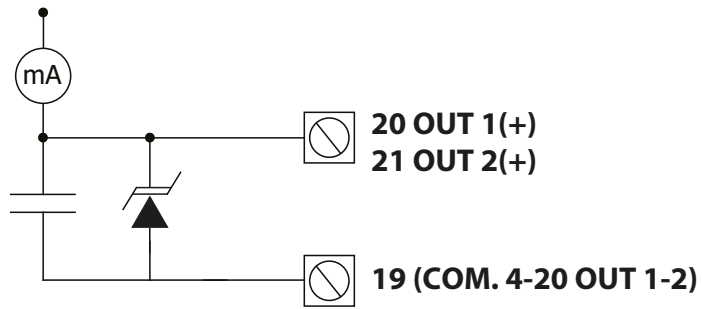
4-20mA INPUT



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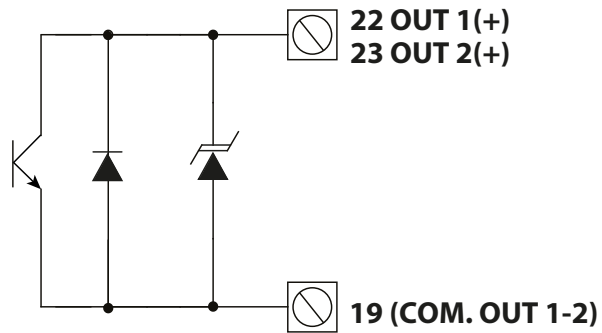
## DIGITAL OUTPUTS

Output 4-20mA

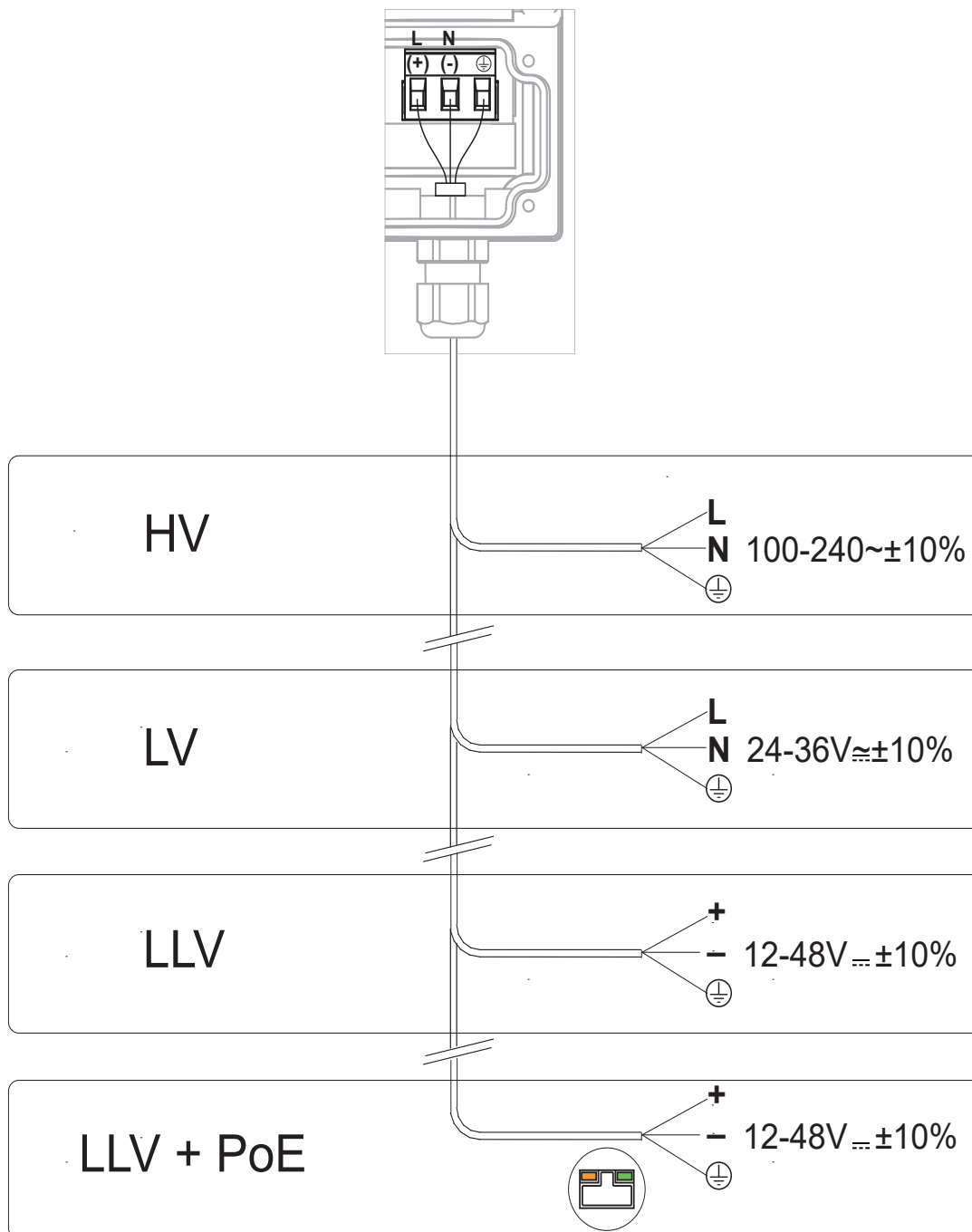


## ANALOG OUTPUTS

Output on/off  
1250hz



## POWER WSUPPLIES



If the PoE power supply version, to guarantee the isolation required by the IEEE for ethernet, the external power supply (optional) must have minimum 1500Vac insulation with respect to earth and to every other connection.

**The options above are also available with a rechargeable backup battery.**

# FUNCTIONS MENU

## Units

MAIN MENU	
1-Units	
<b>UNITS</b>	
FR.unit	METRIC
Temper. unit	°C
Energy unit	METRIC
Energy unit	(MWh)
D.P. Energy	2
VFv unit	METRIC
VFv unit	(m³)
VFv D.P.	2
HWv unit	METRIC
HWv unit	(m³)
HWv D.P.	2
CWv unit	METRIC
CWv unit	(m³)
CWv D.P.	2
AXi unit	MET.V.
AXi unit	(m³)
AXi D.P.	2
IP1 unit	METRIC
IP2 unit	METRIC
IP3 unit	METRIC
IP4 unit	MET.V.
OP1 unit	METRIC
OP2 unit	METRIC

- 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

## Scales

MAIN MENU	
1-Units	
2-Scales	
<b>SCALES</b>	
FR	m³/h,100.00
TPwr	MW,1.0000
Ip11	m³,0.0100
Ip12	m³,0.0100
Ip13	m³,0.0100
Ip14	m³,0.0100
Op11	kWh,10.000
Op12	m³,1.0000
TOp1	(ms)
TOp2	(ms)
Start S.T	(°C)
Full S. T	(°C)
F.S.DTemp	(K)
Prest1	(kPa)
Prest2	(kPa)

- 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

## Measures

MAIN MENU	
1-Units	
2-Scales	
3-Measure	
<b>MEASURE</b>	
Sens.Type	PT100
UFF C.O.	(%)
DT Min.	(K)
T1HC enable	OFF
T1HC	(°C)
VF Meas. side	T2
VF F.r. src	PLS1
Aux Inp. En.	OFF
VF F.r. pls	FRQ
Max Tme In1	(s)
Max PIs In1	500
Max PIs In2	500
Max PIs In3	500
Max PIs In4	500
E. Ctrl type	AUT
H-Factor	OFF
Glyc. type	ETHY
Concentr. %	0
M.Prof.	STD
LP S.Freq.	1.0(Hz)
LP Cycle sim	OFF

- 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

Alarms

```

MAIN MENU
1-Units
2-Scales
3-Measure
4-Alarms
    
```

```

ALARMS
FM          OFF 4.1
Fm          OFF 4.2
Pwr M      OFF 4.3
Pwr m      OFF 4.4
DT max     OFF 4.5
DT min     OFF 4.6
T1 Max     OFF 4.7
T1 min     OFF 4.8
T2 Max     OFF 4.9
T2 min     OFF 4.10
Hysteresis OFF 4.11
OC Fault   (mA) 4.12
    
```

- 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.

Inputs

```

MAIN MENU
1-Units
2-Scales
3-Measure
4-Alarms
5-Inputs
    
```

```

INPUTS
VFv P. reset OFF 5.1
HWv P. reset OFF 5.2
CWv P. reset OFF 5.3
AHi P. reset OFF 5.4
HEv P. reset OFF 5.5
CEv P. reset OFF 5.6
P.Count lock OFF 5.7
VFv T. reset OFF 5.8
HWv T. reset OFF 5.9
CWv T. reset OFF 5.10
AHi T. reset OFF 5.11
HEv T. reset OFF 5.12
CEv T. reset OFF 5.13
T.Count lock OFF 5.14
    
```

- 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

Outputs

```

MAIN MENU
1-Units
2-Scales
3-Measure
4-Alarms
5-Inputs
6-Outputs
    
```

```

OUTPUTS
D.Out1     T.NRG PLS 6.1
D.Out2     VF.U.PLS 6.2
A.Out1     T. POWER 6.3
A.Out2     VF.FLOW 6.4
A.Out1     4,0      6.5
A.Out2     4,0      6.6
    
```

- 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.




Communications

```

MAIN MENU
1-Units
2-Scales
3-Measure
4-Alarms
5-Inputs
6-Outputs
7-Communication
    
```

```

COMMUNICATION
BACnet IP
Modbus TCP
M-Bus ON
Dev. Address 1
Com.Speed 9600
Parity NO 1SB
Ans. Delay (ms)
ETH DHCP en. ON
ETHdevIP addr. 010.138.09.
ETHnetwork mask 255.255.25.
ETHgateway add. 010.138.09.
ETHDNS address 010.138.09.
NTP time server
Network password
Net S.En. ON+OFF
Bnet max mst 127
Bnet ONr 4194302
Bnet ObjName MU311_Name
Bnet ObjDescr MU311_desc.
Bnet ObjLoc MU311_locat.
Bnet pw PaSSwOrd
Bnet W.E. OFF
Bnet Port 47808
MDB_32 AAAA-BBBB
Mbus ID 00985000
Mbus Dev.T. AUTO
    
```

- 13.1 BACnet Communication Protocol 
- 13.2 Modbus Communication Protocol
- 13.3 MeterBus Communication Protocol
- 13.4 Device Communication Address
- 13.5 Communication Speed
- 13.6 Communication Parity Bits
- 13.7 Communication Answer Delay
- 13.8 Ethernet DHCP enable
- 13.9 Ethernet device IP address
- 13.10 Ethernet network mask
- 13.11 Ethernet gateway address
- 13.12 Ethernet DNS address
- 13.13 NTP time server name / address
- 13.14 Network access password
- 13.15 Network security (SSL-TLS) enable
- 13.16 BACnet max master
- 13.17 BACnet Object Instance Number
- 13.18 BACnet Device Object Name
- 13.19 BACnet Device Object Description
- 13.20 BACnet Device Object Location
- 13.21 BACnet Device Managem. Password
- 13.22 BACnet Device Object Write Enable
- 13.23 BACnet Device Ethernet Port number (47808)
- 13.24 Modbus 32 bits registers order
- 13.25 MeterBus Identif. number (Secondary add.)
- 13.26 MeterBus Device Type (media)

Display

```

MAIN MENU
1-Units
2-Scales
3-Measure
4-Alarms
5-Inputs
6-Outputs
7-Communication
8-Display
    
```

```

DISPLAY
Language OFF
Contrast OFF
Disp.time OFF
Disp. F.Num. OFF
Disp. P.Lock OFF
Disp. A.Serl OFF
Disp.date OFF
LED Op. Mode OFF
LED VF Blink OFF
LED HW Blink OFF
LED CW Blink OFF
LED Comm.Blk OFF
Quick start OFF
Web VD En OFF
    
```

- 14.1 Language for all messages
- 14.2 Display contrast adjustment
- 14.3 Display/keyboard inactivity time
- 14.4 Display page function number
- 14.5 Display lock page number
- 14.6 Display auto-scroll pages bits (0=disab.)
- 14.7 Time and date display enable
- 14.8 LED Operating Mode color switch
- 14.9 LED Vector Fluid blink enable
- 14.10 LED Hot Water blink enable
- 14.11 LED Cold Water blink enable
- 14.12 LED Communication blink enable
- 14.13 Quick start menu enable
- 14.14 Virtual display web interface enable

Data Logger

```

DATA LOGGER
D.logger en. OFF
Meas. units ON
Field separat. ;
Decimal separ. .
Interv. 15
Tot. volume OFF
Par. volume OFF
Tot. energy OFF
Par. energy OFF
Temperatur. OFF
Therm. power OFF
V.F. Flow r. OFF
Log ALARM Nr OFF
Log TEMPS D. OFF
Log Board T. OFF
Log Int.B.VC OFF
    
```

- 15.1 Data logger sampling enable
- 15.2 Measure units recording enable
- 15.3 Field separator character
- 15.4 Decimal separator character
- 15.5 Sampling interval
- 15.6 Enable log of volume total totalizer
- 15.7 Enable log of volume partial totalizer
- 15.8 Enable log of energy total totalizer
- 15.9 Enable log of energy partial totalizer
- 15.10 Enable log of temperatures
- 15.11 Enable log of thermal power
- 15.12 Enable log of vector fluid flow rate
- 15.13 Alarm events number logging enable
- 15.14 Temperature sensor's data logging enable
- 15.15 Board temperatures logging enable
- 15.16 Internal board voltages & curr. log.enable

```

9-Data logger
10-Functions
11-Diagnostic
12-System
    
```

The manufacturer guarantees only English text available on our web site www.isoil.com

### Functions

```

FUNCTIONS
VFv P. reset
HWv P. reset
CWv P. reset
AXi P. reset
HEv P. reset
CEv P. reset
VFv T. reset
HWv T. reset
CWv T. reset
AXi T. reset
HEv T. reset
CEv T. reset
Load Dev. Fact.
Save Dev. Fact.
Acknow.Fact.Warn
    
```

- 18.1 Vector fluid vol. part. reset function
- 18.2 Hot water vol. partial reset function
- 18.3 Cold water vol. partial reset function
- 18.4 Aux input partial reset function
- 18.5 Heating energy partial reset function
- 18.6 Cooling energy Partial reset function
- 18.7 Vector fluid vol. total reset function
- 18.8 Hot water vol. total reset function
- 18.9 Cold water vol. total reset function
- 18.10 Aux input total reset function
- 18.11 Heating energy total reset function
- 18.12 Cooling energy total reset function
- 18.13 Load device factory default values
- 18.14 Save device factory default values
- 18.15 Acknowledge factory data warning message

### Diagnostic

```

DIAGNOSTIC
Reboot-Self_Test
Firmware info
Quick Setup info
SD card info
Battery info
Disp.sys.values
Ethernet info.
F.Bus comm.diag.
Disp.comm.vars
Display measures
S/N 985000
WT 8
BW 0
PT 0
Simulation OFF
    
```

- 19.1 Reboot and execute self test diag. funct.
- 19.2 Firmware version information
- 19.3 Quick Setup information
- 19.4 SD card status information
- 19.5 Battery information
- 19.6 Display diagnostic system values
- 19.7 Ethernet information data
- 19.8 FieldBus comm.diagnostic values
- 19.9 Display comm.diagnostic values
- 19.10 Display internal measured values
- 19.11 Board serial number (read only)
- 19.12 Total working time (read only)
- 19.13 Battery working time (read only)
- 19.14 Partial counters / L.T.S. life time
- 19.15 Flow & Temp. simulation function

### System

```

MEASURE
RTC enable ON
Dayl.saving OFF
Time zone (h)
Date/time 16
L1 code 0
L2 code 0
L3 code 0
L4 code 0
L5 code 0
L6 code 0
Restr.access OFF
TC 154472
Device IP addr 010.011.01.
Client IP addr 010.011.01.
Network mask 255.255.25.
T1-T2 BALANCE
T1 OFFS. (°C)
T2 OFFS. (°C)
ADC 4mA 661
ADC 20mA 3327
DAC1 4mA 3453
DAC1 20mA 14718
DAC2 4mA 3403
DAC2 20mA 14637
Stand-by
QS Save & Lock
FW update
    
```

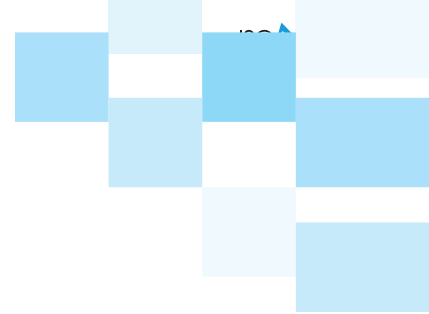
- 20.1 Date/Time (Real Time Clock) enable
- 20.2 Daylight saving time change
- 20.3 Localized time zone
- 20.4 System date and time
- 20.5 Access level 1 code
- 20.6 Access level 2 code
- 20.7 Access level 3 code
- 20.8 Access level 4 code
- 20.9 Access level 5 code
- 20.10 Access level 6 code
- 20.11 Restricted access level
- 20.12 Total measure cycles
- 20.13 Device IP network address
- 20.14 Client IP network address
- 20.15 Network mask
- 20.16 Temperature T1 - T2 calibration balance
- 20.17 Temperature T1 calibration offset
- 20.18 Temperature T2 calibration offset
- 20.19 ADC in 4mA calibration point
- 20.20 ADC in 20mA calibration point
- 20.21 DAC1 out 4mA calibration point
- 20.22 DAC1 out 20mA calibration point
- 20.23 DAC2 out 4mA calibration point
- 20.24 DAC2 out 20mA calibration point
- 20.25 System stand-by mode activation (poweroff)
- 20.26 Quick setup save and lock editing
- 20.27 Firmware update

## HOW TO ORDER

Code Example	Code/Description	
0	Certification	
	0	WITHOUT MID-004
	M	CE M CERTIFICATION: MID-004
B	Display	
	A	Blind version (without display)
	B	Graphic display 128 x 48 pixels with back light, 3 keys and RGB status LED.
2	Housing material / Protection rate	
	1	Without Housing
	2	PC/ABS housing sealable
A	Flow Rate Source (Thermal Fluid)	
	A	Pulses
	B	4/20 mA
	C	Pulses - 4/20 mA selectable by the customer, option NOT valid for MID instrument
1	Power supply	
	1	Power Supply : 100 ... 240 VAC 44/66 Hz
	2	Power Supply : 24 ... 36 VAC/VDC 0...44/66 Hz
	3	Power Supply : 12...48 VDC
	4	Power Supply : 12...48 VDC + P.o.E. (Power Over Ethernet - Ethernet port is required)
A	Analogue output	
	A	Without Analog Out
	B	n° 1 Programmable Analogue output 0/4...20/22 mA
	C	n° 2 Programmable Analogue outputs 0/4...20/22 mA
0	Digital Output	
	0	Without Digital Output
	1	With n° 2 Programmable Digital Outputs (Transistor)
A	Communication Gateway	
	A	Without Gateway
	B	RS485 port
	C	Mbus
	D	Ethernet port
	E	RS485 + Ethernet port
	F	Mbus + Ethernet port
	G	Others
0	Protocols	
	0	Without Protocol
	1	Modbus (RTU over RS485/ IP over Ethernet) - Modbus Protocol requires RS485 and/or Ethernet Gateway
	2	Bacnet (MS-TP over RS485/IP over Ethernet) - BACnet Protocol requires RS485 and/or Ethernet Gateway
	3	BACnet MS-TP/Modbus RTU - selectable by the customer - (over RS485)
	4	Mbus (M-bus Protocol requires Mbus Gateway)
	5	Mbus + Modbus IP (Mbus Protocol requires Mbus Gateway)
	6	Mbus + BACnet IP (Mbus Protocol requires Mbus Gateway)
	7	Modbus RTU/IP + BACnet MS-TC/IP
	8	Mbus + Modbus IP + BACnet IP (Mbus Protocol requires M-bus Gateway)
	9	Others

B	Thermal Probe	
	A	Without PT, selectable by the customer (default PT100)
	B	PT 100
	C	PT 500
	D	PT 1000
0	RTC - Measure BackUp - Data Logger	
	0	Without RTC - Measure BackUp - Data Logger
	1	RTC - With Autonomy of 7 days ( No measure back-up)
	2	RTC + Measure Back-Up With Autonomy up to 1 Month
	3	RTC - With Autonomy of 7 days + Data Logger with MicroSD Memory 4 GB ( No measure back-up)
	4	RTC + Measure BackUp (With Autonomy up to 1 Month)+ Data Logger with MicroSD Memory 4 GB
A	Special Features	
	A	NONE





BEFORE returning any material, please contact our SERVICE at the e-mail address: [isomagservice@isoil.com](mailto:isomagservice@isoil.com)

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