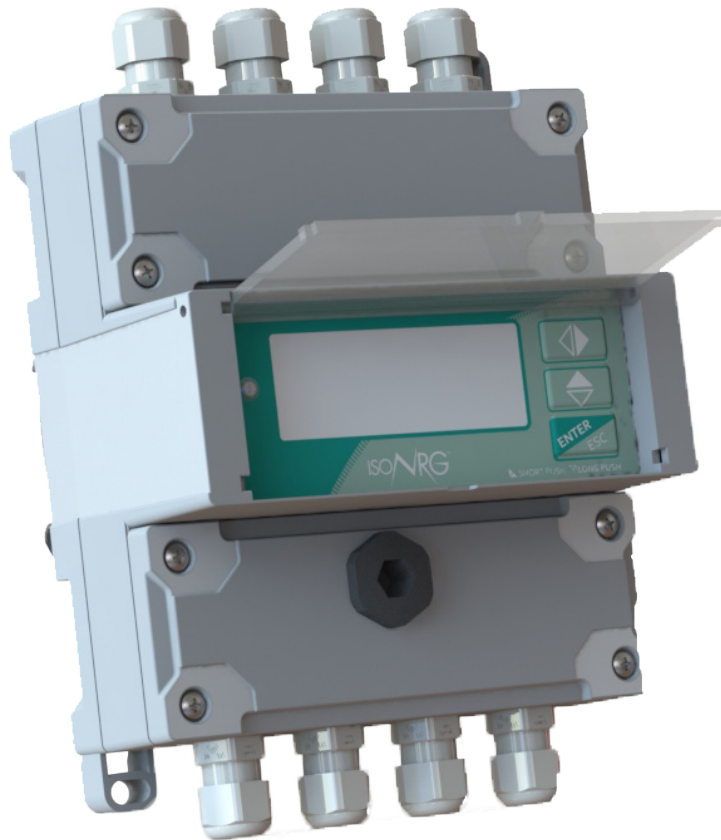


## DATA SHEET



# MV311

Official Isoil dealer in The Netherlands:



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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 :

$$Q = \dot{m} \cdot \Delta h \cdot t$$

Where:

- Q: amount of heat (energy) transferred or absorbed
- $\dot{m}$ : 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:

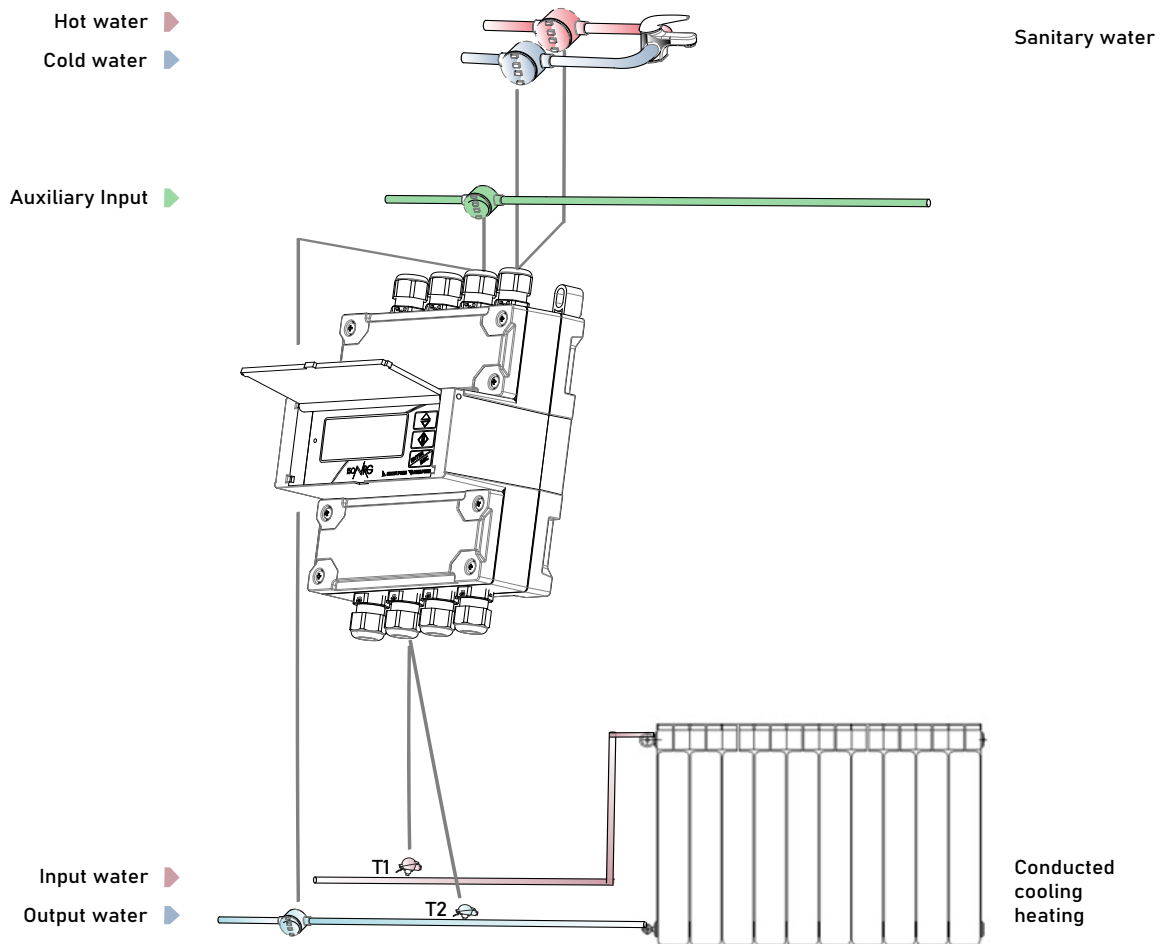
- Analogic: it acquires the 4-20mA signal from a flow meter
- Factorized pulses: it calculates the flow rate throughout factorized pulses coming from the flow meter

### 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.

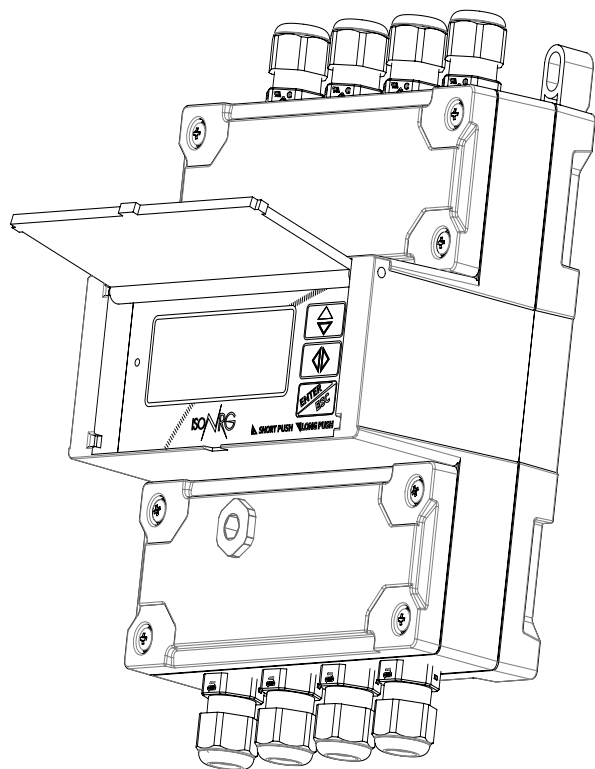
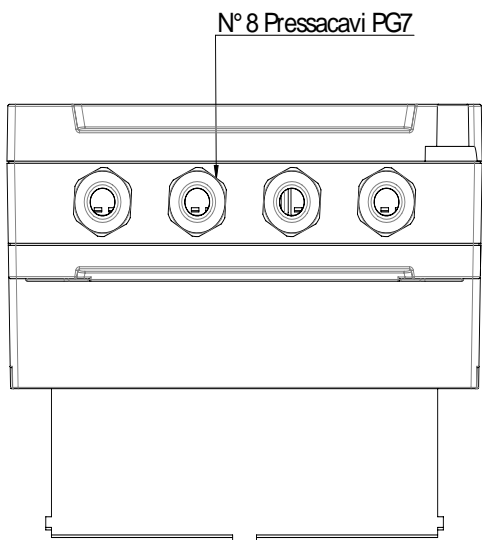
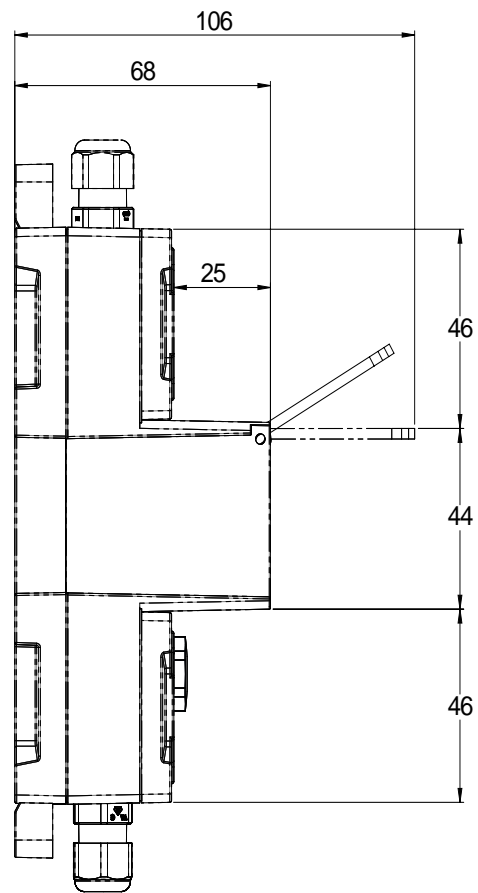
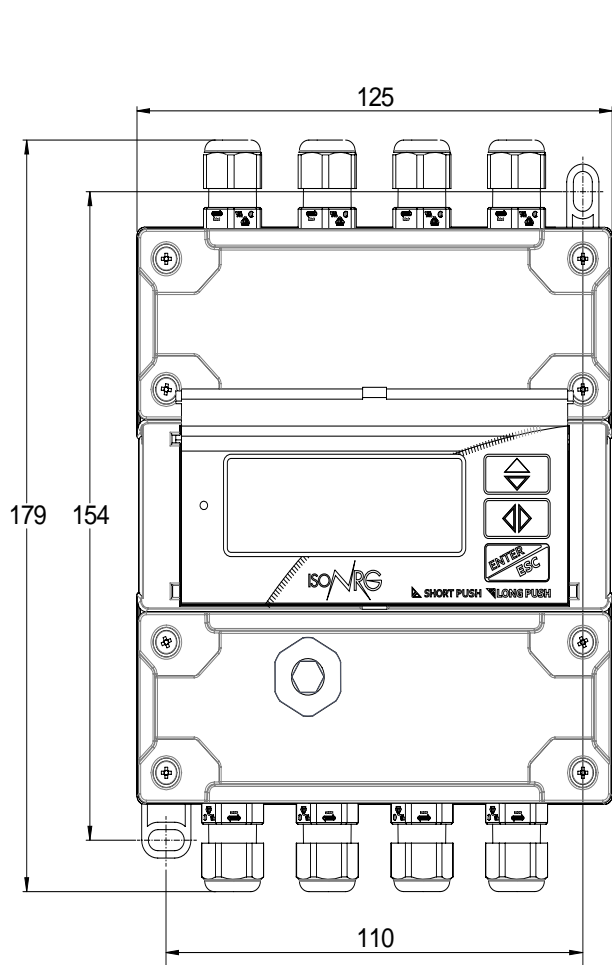
## TECHNICAL DATA

<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

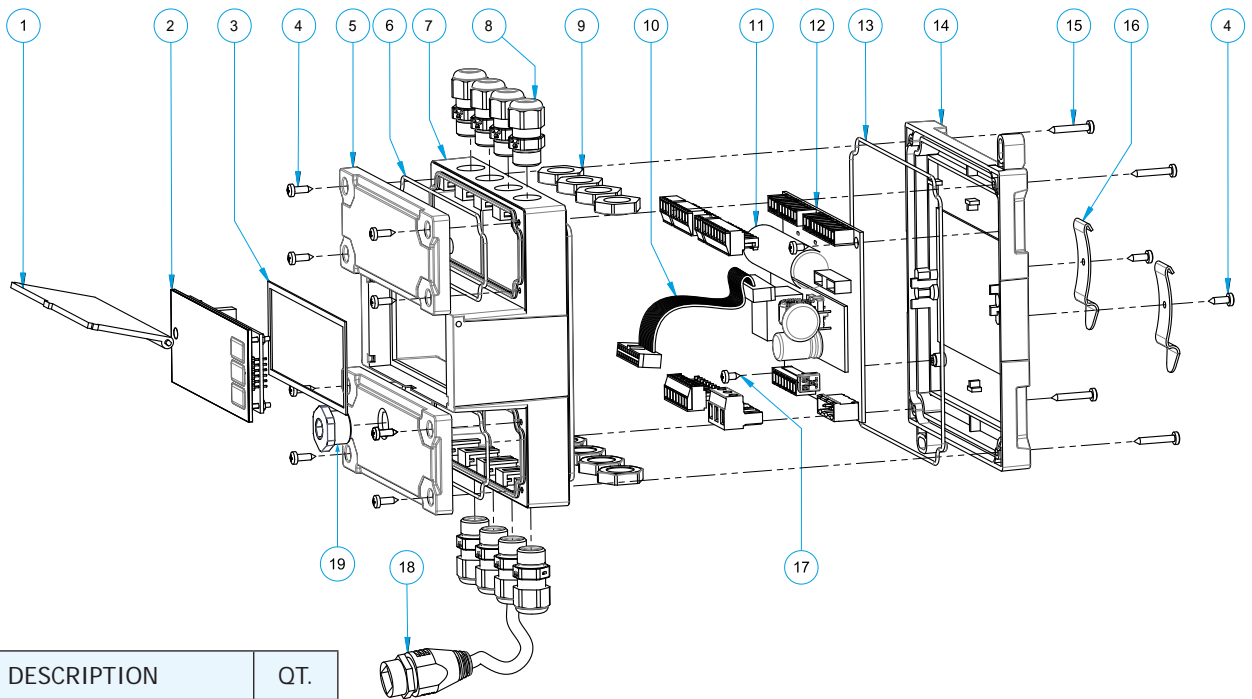
**OPTIONAL FEATURES****(CHECK FOR MORE DETAILS 'HOW TO ORDER' ON LAST PAGE)**

<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: $\pm 0,20\%$ ( $0.18 + \Delta\vartheta_{min}/\Delta\vartheta$ )

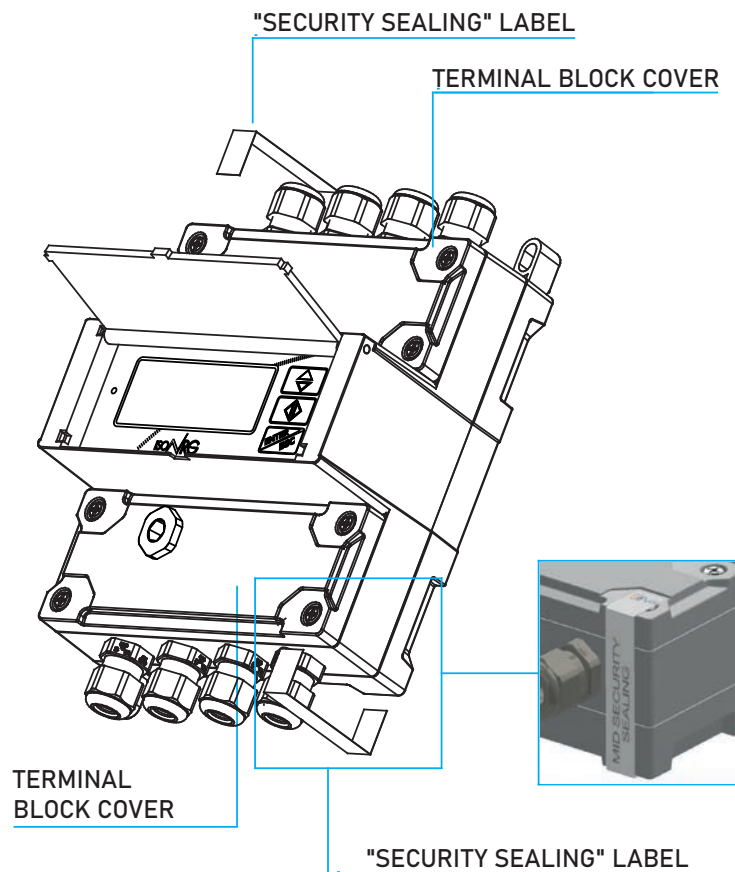
# OVERALL DIMENSIONS



# MV311 CONSTRUCTION



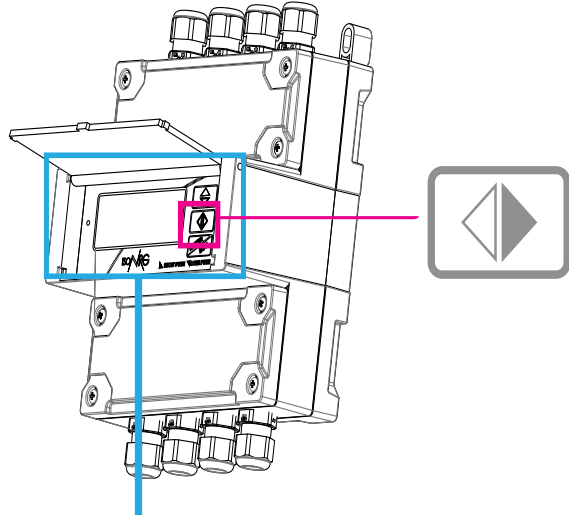
POS.	DESCRIPTION	QT.
1	PROTECTION GLASS	1
2	MV311 DISPLAY	1
3	ADHESIVE GASKET	1
4	SELF-TAPPING SCREW 2.9X9.5	10
w	TERMINAL BLOCK COVER	1
6	O-RING TERMINAL BLOCK COVER	2
7	MAIN HOUSING	2
8	CABLE GLAND PG7 COMPLETE WITH O-RING	8
9	CABLE GLAND RING PG7	8
10	FLAT CABLE 20 VIE	1
11	MV311 BATTERY	1
12	MV311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

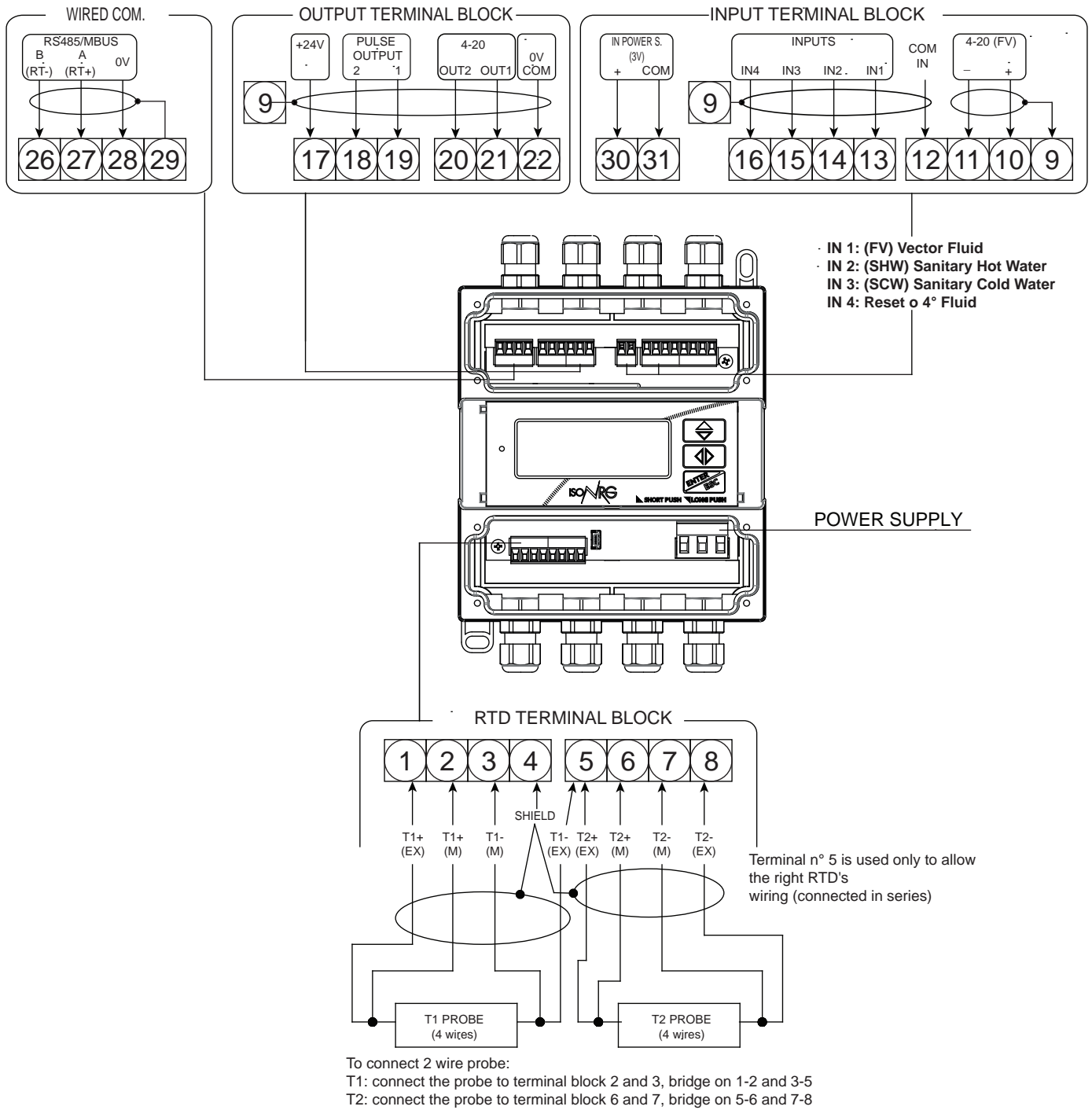
Different visualization possibilities by simply pressing of a key.



<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 SERU. WATER</b> T. m³ 0.0969618 P. m³ 0.0969618 2018/03/07 09:28:40	<b>COLD SERU. 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		

# ELECTRICAL CONNECTIONS

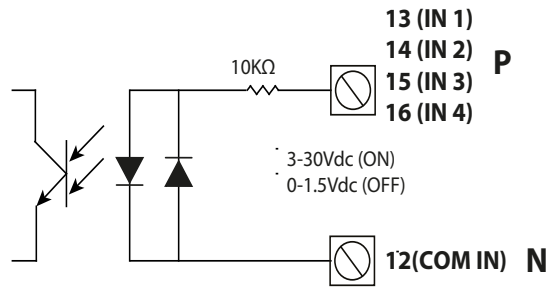
**Cable gland PG7:**  
**Allowed diameter**  
**cables 3-6.5 mm.**



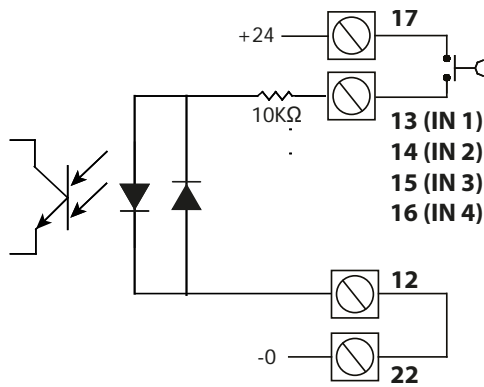
# DIGITAL INPUTS

## Connections with polarity type "P"

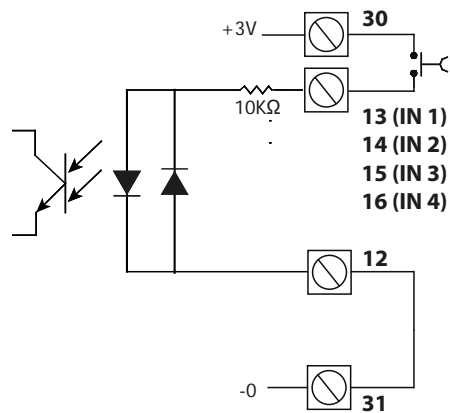
Isolated digital input with external power supply



Isolated digital input with + 24V internal power supply

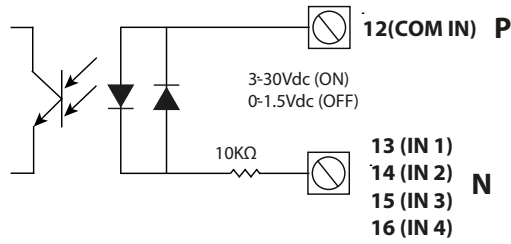


Not isolated digital input with internal battery power supply

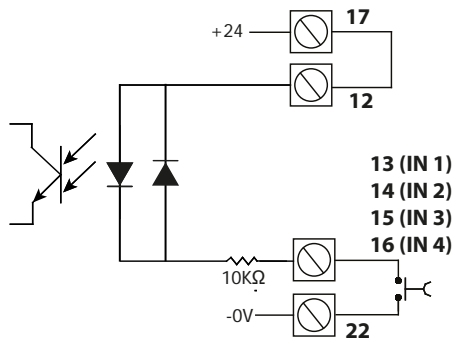


**Connections with polarity type "N"**

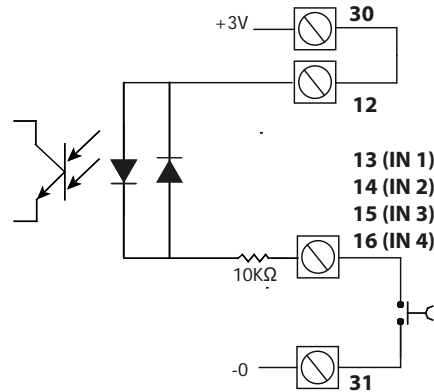
Isolated digital input with external power supply



Digital input with + 24V internal power supply

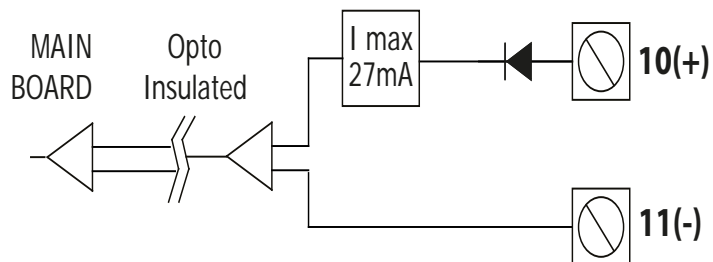


Not isolated digital input with internal battery power supply



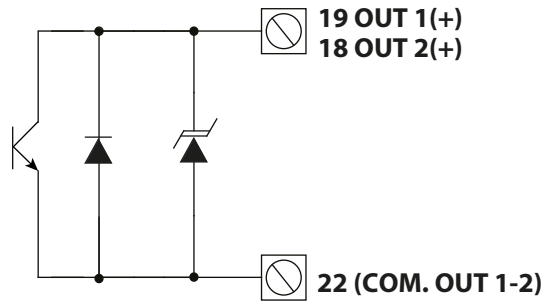
**ANALOG INPUTS**

4-20mA INPUT



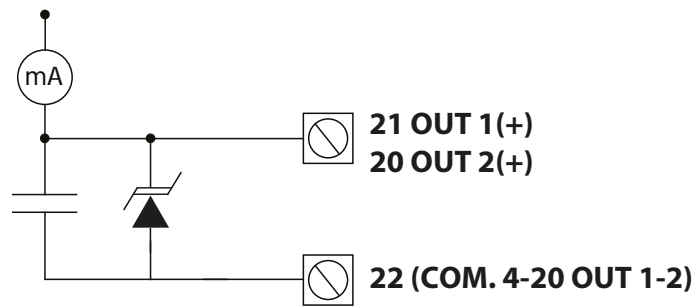
## DIGITAL OUTPUTS

Output 4-20mA

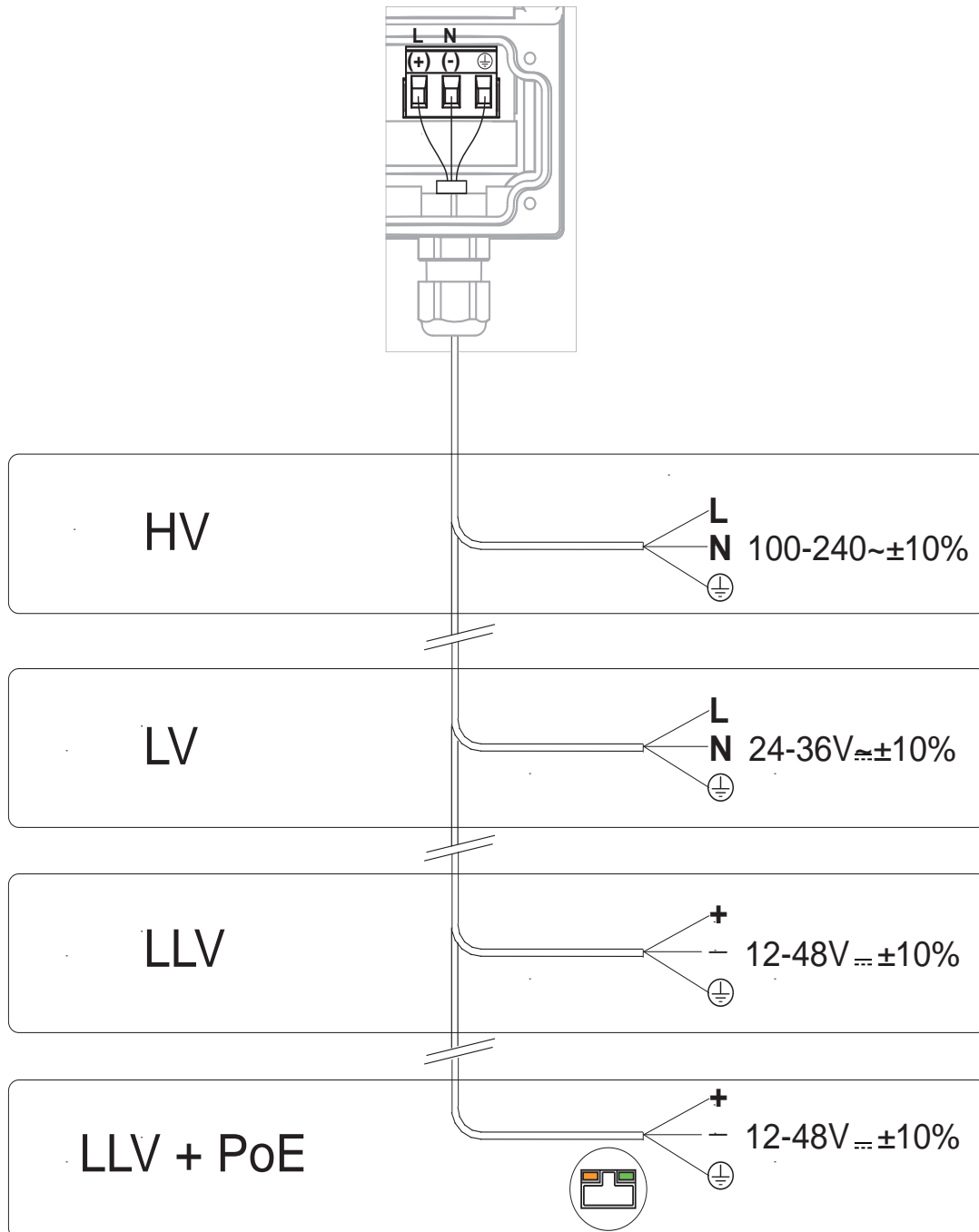


## ANALOG OUTPUTS

Output on/off  
1250hz



## POWER SUPPLIES



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	
2-Scales	
3-Measure	
4-Alarms	
5-SCALES	
6-TPwr	
7-IP1	
8-IP2	
9-IP3	
10-IP4	
11-OP1	
12-OP2	

UNITS	
FR.unit	METRIC
Temper. unit	°C
Energy unit	METRIC
Energy unit	(MWh)
D.P. Energy	2
VFv unit	METRIC
VFv unit	(m <sup>3</sup> )
VFv D.P.	2
HWv unit	METRIC
HWv unit	(m <sup>3</sup> )
HWv D.P.	2
CWv unit	METRIC
CWv unit	(m <sup>3</sup> )
CWv D.P.	2
AXi unit	MET.V.
AXi unit	(m <sup>3</sup> )
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	
3-Measure	
4-Alarms	
5-SCALES	
6-TPwr	
7-IP1	
8-IP2	
9-IP3	
10-IP4	
11-OP1	
12-OP2	

SCALES	
FR	m <sup>3</sup> /h,100.00
TPwr	MW,1.0000
Ip11	m <sup>3</sup> ,0.0100
Ip12	m <sup>3</sup> ,0.0100
Ip13	m <sup>3</sup> ,0.0100
Ip14	m <sup>3</sup> ,0.0100
Op11	MWh,10.000
Op12	m <sup>3</sup> ,1.0000
TOP1	(ms)
TOP2	(ms)
Start S.T	(°C)
Full S. T	(°C)
F.S.DTemp	(H)
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		
<b>3-Measures</b>		
4-Alarms		
5-Inputs		
6-Outputs		
7-Settings		
8-About		
9-Factory		
0-Exit		
MEASURES		
Sens.Type	PT100	3.1 Temperature sensor type
UFF C.O.	(%)	3.2 Vector fluid flow cut-off threshold
DT Min.	(H)	3.3 Temperature delta cut-off threshold
T1HC enable	OFF	3.4 T1 Heating-Cooling threshold enable
T1HC	(°C)	3.5 T1 Heating-Cooling threshold value
VF Meas. side	T2	3.6 Vector fluid measurement side
VF F.r. src	PLS1	3.7 Vector Fluid flow rate source
Aux Inp. En.	OFF	3.8 Aux nput enable
VF F.r. pls	FRQ	3.9 Vector Fluid f. rate pulse type
Max Tme In1	(s)	3.10 Max Time Period for Input
Max PIs In1	500	3.11 Max Pulses per second for Input
Max PIs In2	500	3.12 Max Pulses per second for Input
Max PIs In3	500	3.13 Max Pulses per second for Input
Max PIs In4	500	3.14 Max Pulses per second for Input
E. Ctrl type	AUT	3.15 Energy counter control type enable
H-Factor	OFF	3.16 Enable Table of Kfactor Coeff.
Subst.type	PPGAPrLSAS201	3.17 Kfactor Substance Type
Subst. Conc. %	---	3.18 Kfactor Substance Concentration
M.Prof.	STD	3.19 Measure acquisition profile
LP S.Freq.	1.0(Hz)	3.20 Low power sampling frequency
LP Cycle sim	OFF	3.21 Low power m.cycle simulation

ALARMS

MAIN MENU		
1-Units		
2-Scales		
3-Measure		
<b>4-Alarms</b>		
5-Inputs		
6-Outputs		
7-Settings		
8-About		
9-Factory		
0-Exit		
ALARMS		
FM	OFF	4.1 VF Max. flow rate alarm threshold
Fm	OFF	4.2 VF min. flow rate alarm threshold
Pwr M	OFF	4.3 Max. thermal power alarm threshold
Pwr m	OFF	4.4 min. thermal power alarm threshold
DT max	OFF	4.5 Max. temperature delta alarm threshold
DT min	OFF	4.6 Min. temperature delta alarm threshold
T1 Max	OFF	4.7 Max. temperature alarm threshold
T1 min	OFF	4.8 min. temperature alarm threshold
T2 Max	OFF	4.9 Max. temperature alarm threshold
T2 min	OFF	4.10 min. temperature alarm threshold
Hysteresis	(%)	4.11 Hysteresis on alarm thresholds
OC Fault	(mA)	4.12 Out.Current Alarm Condition Val.

INPUTS

MAIN MENU		
1-Units		
2-Scales		
3-Measure		
4-Alarms		
<b>5-Inputs</b>		
6-Outputs		
7-Settings		
8-About		
9-Factory		
0-Exit		
INPUTS		
VFv P. reset	OFF	5.1 Vector fluid vol. part. reset input en.
HWv P. reset	OFF	5.2 Hot water vol. partial reset input en.
CWv P. reset	OFF	5.3 Cold water vol. partial reset input en.
AXi P. reset	OFF	5.4 Aux input partial reset input en.
HEv P. reset	OFF	5.5 Heating energy partial reset input en.
CEv P. reset	OFF	5.6 Cooling energy partial reset input en.
P.Count lock	OFF	5.7 Partial counters lock input enable
VFv T. reset	OFF	5.8 Vector fluid vol. total reset input en.
HWv T. reset	OFF	5.9 Hot water vol. total reset input en.
CWv T. reset	OFF	5.10 Cold water vol. total reset input en.
AXi T. reset	OFF	5.11 Aux input total reset input en.
HEv T. reset	OFF	5.12 Heating energy total reset input en.
CEv T. reset	OFF	5.13 Cooling energy total reset input en.
T.Count lock	OFF	5.14 Total counters lock input enable



## OUTPUTS

```

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

OUTPUTS	
D.Out1	T.NRG.PLS
D.Out2	VF.U.PLS
A.Out1	T. POWER
A.Out2	VF.FLOW
A.Out1	4,0
A.Out2	4,0

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.

## COMMUN.

```

COMMUNICATION
BACnet IP
Modbus TCP
M-Bus ON
Dev. Address 1
Com.Speed 9600
Parity NO 1SB
Ans. Delay (ms)
ETH DHCP en. ON
ETH dev IP addr. 010.138.09.
ETH network mask 255.255.25.
ETH gateway addr. 010.138.09.
ETH DNS 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 Pa55w0rd
Bnet W.E. OFF
M-Bnet Port 47808
MDB_32 AAAA-BBBB
Mbus ID 985000
Mbus Dev.T. AUTO
    
```

```

6-Outputs
7-Communication
8-Display
9-Data logger
10-Functions
11-Diagnostic
12-System
    
```

7.1	BACnet Communication Protocol
7.2	Modbus Communication Protocol
7.3	MeterBus Communication Protocol
7.4	Device Communication Address
7.5	Communication Speed
7.6	Communication Parity Bits
7.7	Communication Answer Delay
7.8	Ethernet DHCP enable
7.9	Ethernet device IP address
7.10	Ethernet network mask
7.11	Ethernet gateway address
7.12	Ethernet DNS address
7.13	NTP time server name / address
7.14	Network access password
7.15	Network security (SSL-TLS) enable
7.16	BACnet max master
7.17	BACnet Object Instance Number
7.18	BACnet Device Object Name
7.19	BACnet Device Object Description
7.20	BACnet Device Object Location
7.21	BACnet Device Managem. Password
7.22	BACnet Device Object Write Enable
7.23	BACnet Device Ethernet Port number (47808)
7.24	Modbus 32 bits registers order
7.25	MeterBus Identif. number (Secondary add.)
7.26	MeterBus Device Type (media)

## DISPLAY

DISPLAY	
Language	EN
Contrast	5
Disp.time	(s)
Disp. F.Num.	0
Disp. P.Lock	OFF
Disp. A.Scr1	0
Disp.date	ALL
LED Op. Mode	SIG
LED VF Blink	ON
LED HW Blink	OFF
LED CW Blink	OFF
LED Comm.Blk	BUS
Quick start	OFF
Web VD En	ON

```

7-Communication
8-Display
9-Data logger
10-Functions
11-Diagnostic
12-System
    
```

8.1	Language for all messages
8.2	Display contrast adjustment
8.3	Display/keyboard inactivity time
8.4	Display page function number
8.5	Display lock page number
8.6	Display auto-scroll pages bits (0=disab.)
8.7	Time and date display enable
8.8	LED Operating Mode color switch
8.9	LED Vector Fluid blink enable
8.10	LED Hot Water blink enable
8.11	LED Cold Water blink enable
8.12	LED Communication blink enable
8.13	Quick start menu enable
8.14	Virtual display web interface enable

## DATA LOGGER

### DATA LOGGER

D.logger en.	OFF
Meas. units	ON
Header	OFF
Field separat.	;
Decimal separ.	.
Interv.	15
On alarm en.	OFF
Tot. volume	OFF
Par. volume	OFF
Tot. energy	OFF
Par. energy	OFF
Temperatur.	OFF
Therm. power	OFF
U.F. Flow r.	OFF
Log ALARM Nr	OFF
Log TempS D.	OFF
Log Board T.	OFF
Log Int. B. VC	OFF

9.1	Data logger sampling enable
9.2	Measure units recording enable
9.3	Description headers recording enable
9.4	Field separator character
9.5	Decimal separator character
9.6	Sampling interval
9.7	Enable recording on alarm change
9.8	Enable log of volume total totalizer
9.9	Enable log of volume partial totalizer
9.10	Enable log of energy total totalizer
9.11	Enable log of energy partial totalizer
9.12	Enable log of temperatures
9.13	Enable log of thermal power
9.14	Enable log of vector fluid flow rate
9.15	Alarm events number logging enable
9.16	Temperature sensor's data logging enable
9.17	Board temperatures logging enable
9.18	Internal board voltages & curr. log. enable

```

7-Communication
8-Display
9-Data logger
10-Functions
11-Diagnostic
12-System
    
```

## FUNCTIONS

### FUNCTIONS

UFv P. reset
HWv P. reset
CWv P. reset
AXi P. reset
HEv P. reset
CEv P. reset
UFv 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

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

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```

7-Communication
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```

## 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

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

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```

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

# SYSTEM

SYSTEM		
Abitit. RTC	ON	12.1 Abilitazione data/ora (Real Time Clock)
Ora Legale	OFF	12.2 Abilitazione ora legale
F. Orario	(h)	12.3 Fuso orario locale
Data/ora	16	12.4 Impostazione data e ora di sistema
Cod. L1	0	12.5 Codice di accesso livello 1
Cod. L2	0	12.6 Codice di accesso livello 2
Cod. L3	0	12.7 Codice di accesso livello 3
Cod. L4	0	12.8 Codice di accesso livello 4
Cod. L5	0	12.9 Codice di accesso livello 5
Cod. L6	0	12.10 Codice di accesso livello 6
Lim. Accesso	OFF	12.11 Limitazione accesso al livello impostato
CT	154472	12.12 Cici totali di misura
Indirizzo IP Dis	010.011.01.	12.13 Indirizzo IP di rete del dispositivo
Indir. IP Client	010.011.01.	12.14 Indirizzo IP di rete del client
Network mask	255.255.25.	12.15 Network mask
BILANCIAM. T1-T2	(°C)	12.16 Calibrazione bilanciamento temp. T1 - T2
T1 OFFS.	(°C)	12.17 Calibrazione offset temperatura T1
T2 OFFS.	661	12.18 Calibrazione offset temperature T2
ADC 4mA	3327	12.19 Punto di calibrazione 4mA ingresso ADC
ADC 20mA	3453	12.20 Punto di calibrazione 20mA ingresso ADC
DAC1 4mA	14718	12.21 Punto di calibrazione 4mA uscita DAC1
DAC1 20mA	3403	12.22 Punto di calibrazione 20mA uscita DAC1
DAC2 4mA	14637	12.23 Punto di calibrazione 4mA uscita DAC2
DAC2 20mA		12.24 Punto di calibrazione 20mA uscita DAC2
Stand-by		12.25 Attivazione modalita' stand-by (spegnim.)
OS Salva e Bloc.		12.26 Salva e blocca modifica quick setup
FW update		12.27 Aggiornamento firmware

10-Functions  
11-Diagnostic  
12-System

## 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 Gateways & Protocols	
	A	Without Protocol
	B	Ethernet port ONLY (FTPs, WEBs, NTPs, ...)
	C	Modbus RTU (over RS485)
	D	Modbus TCP (over Ethernet)
	E	Modbus RTU + TCP (over RS485 + Ethernet)
	F	Bacnet MS-TP (over RS485)
	G	Bacnet IP (over Ethernet)
	H	BACnet MS-TP + TCP - selectable by the customer - (over RS485 + Ethernet)
	I	BACnet MS-TP + Modbus RTU - selectable by the customer - (over RS485)
	L	Modbus TCP + BACnet IP (over Ethernet)
	M	Modbus RTU + TCP + BACnet MS-TP + IP (over RS485 + Ethernet)
	N	Mbus
	P	Mbus + Modbus IP (over Ethernet)
Q	Mbus + BACnet IP (over Ethernet)	
R	Mbus + Modbus TCP + BACnet IP (over Ethernet)	
Z	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
	B	Connectors IP67 for Ethernet connection (female/female - Valid ONLY for Ethernet Communication Gateway)



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 prior notice.