ISONRG™

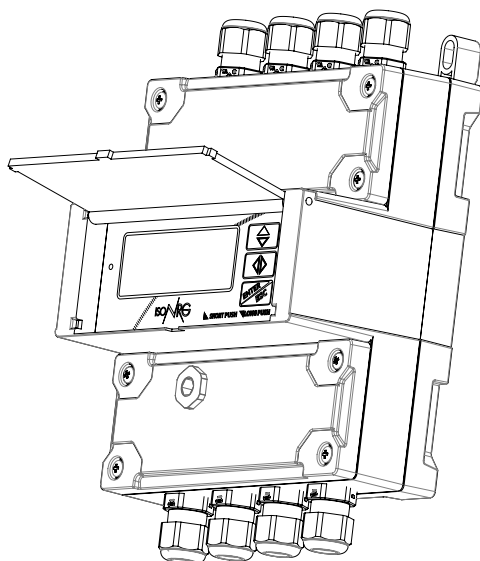# OPERATING MANUAL

MV311

NOTICE: The complete user manual is available at the following address:

XXXXXXXXXXXXXXXXXX

CE

MAN_MV311_QUICK_EN_IT_IS_R05_1.05.XXXX

Release number: **MAN_MV311_QUICK_EN_IT_IS_R05_1.05.XXXX** -

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.

TECHNICAL CHARACTERISTICS

Instrument classification: class I,
IP65 (where: 6 = totally protected against dust, 5 = Protected against jets of water)
overvoltage category II, rated pollution degree 2.

Power supply versions	Power supply voltage	Power supply frequency	Min Power	Max power
HV	100-240V~	45-66Hz	1.6W (Solo Misuratore)	7.5W (Con tutti i carichi)
LV	24-36V ⎓	//		
	24-36V~	45-66Hz		
LLV (+POE)	12-48V ⎓	//		

❑ The variations in the mains voltage must not exceed ± 10% of the nominal voltage.
❑ Inputs and outputs are isolated from each other up to 500 V *.
❑ ** 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 CONDITIONS OF USE

❑ The instrument is suitable for indoor and outdoor climatic conditions
❑ Altitude: untill 4000m
❑ Humidity range: 0-98%, 0-85% without condensation (IP65)
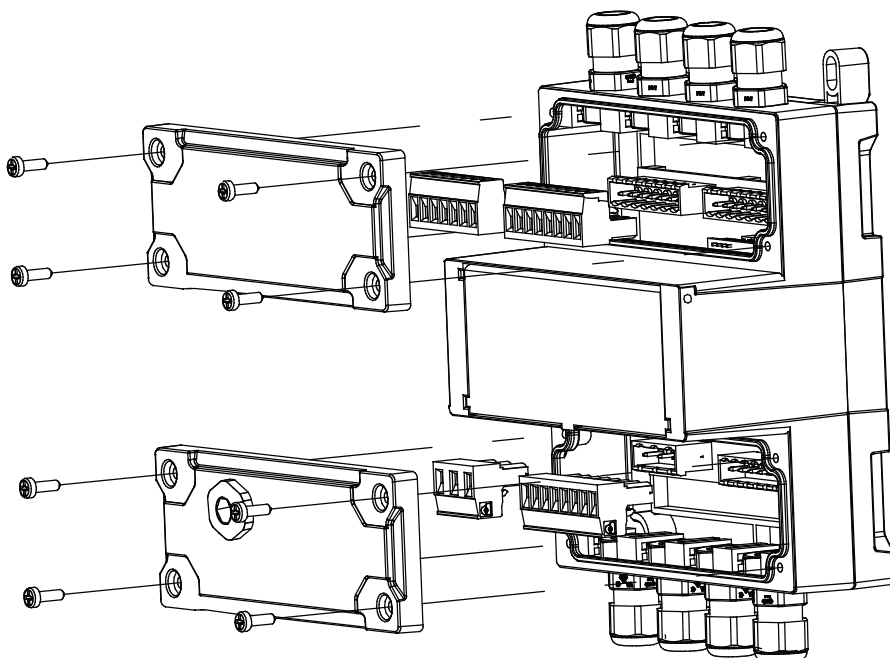
MECHANICAL RESISTANCE

The equipment has a mechanical impact resistance of 1J.
During the intended application, the tool must not be easily accessible to unauthorized persons or the general public; access to the equipment is limited to occasional operations such as adjustment, programming and maintenance.
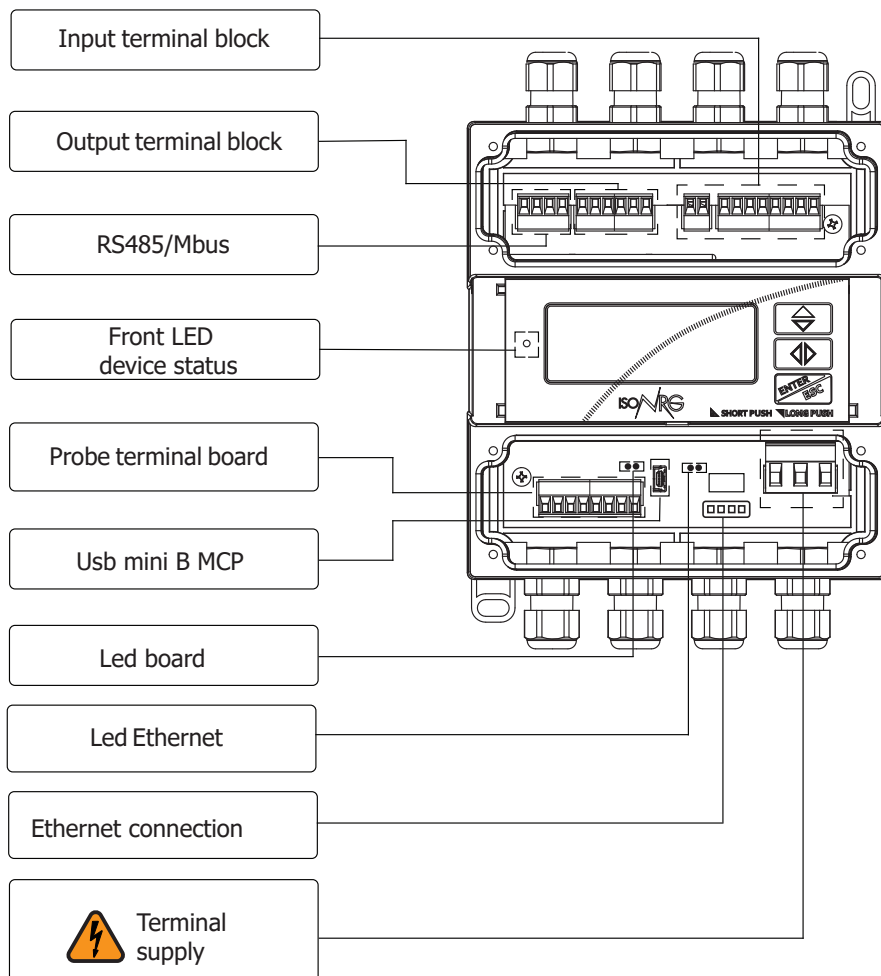
MAN_MV311_QUICK_EN_IT_IS_R05_1.05.XXXX

ACCESS TO THE TERMINALS

☞ To access the terminal blocks, remove the terminal covers.
Only qualified personnel can remove the terminal covers

TORQUES Nm	
Cover screws	0.8
Cable glands	1.5

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FRONT VIEW

Input terminal block

Output terminal block

RS485/Mbus

Front LED
device status

Probe terminal board

Usb mini B MCP

Led board

Led Ethernet

Ethernet connection

Terminal
supply

All signal cables used for the connections must be of a shielded type; the screen must be connected to the ground.

The length of the cables must be between 3m and 30m.
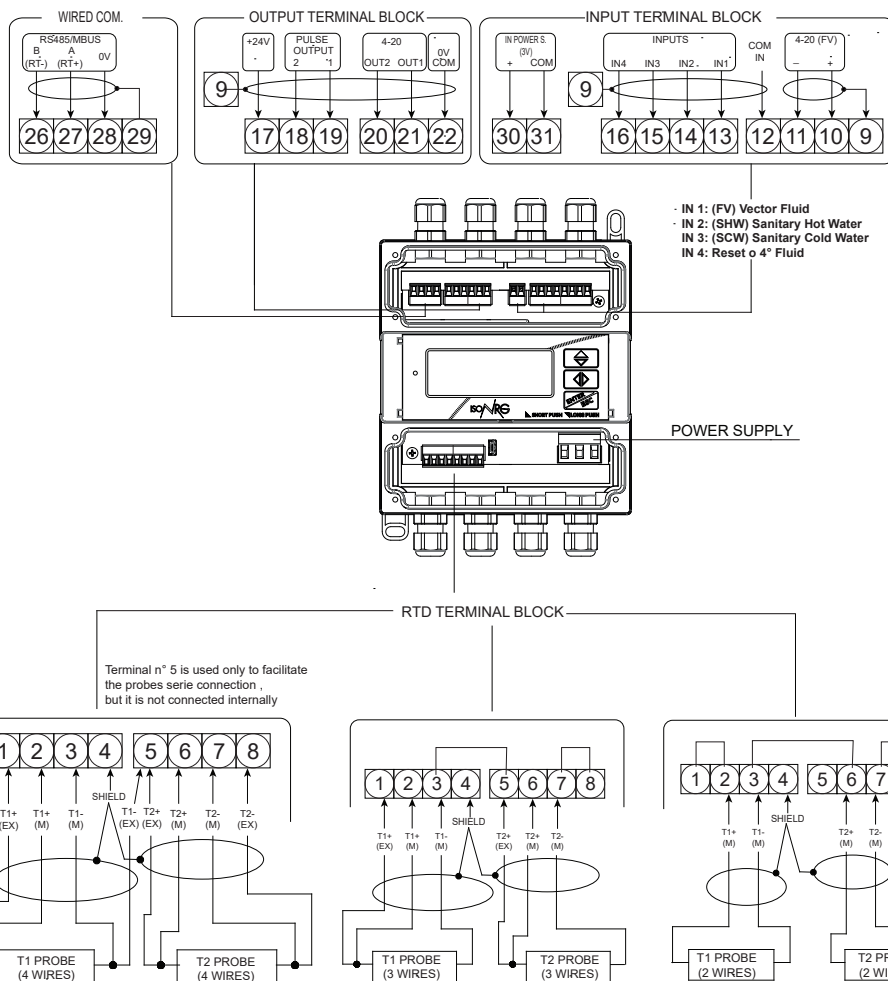The flow measurement can be done in 2 ways:
❑ analog: through a 4-20mA signal.
❑ factorized volume pulses (frequency).
The temperature is measured by means of a pair of PT thermoresistances (RTD with 2-3-4 wires, preferably with 4 wires) the selectable values are: PT100, PT500 and PT1000.

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ELECTRICAL CONNECTION

ATTENTION: the separate cables are adjacent to all the cables of the other wires, furthermore secure the cables with an additional fixing system placed near the terminal.


WIRED COM.

RS485/MBUS
| B (RT-) | A (RT+) | 0V |

| 26 | 27 | 28 | 29 |

OUTPUT TERMINAL BLOCK

| +24V | PULSE OUTPUT 2 1 | 4-20 OUT2 OUT1 | 0V COM |

9

| 17 | 18 | 19 | 20 | 21 | 22 |

INPUT TERMINAL BLOCK

IN POWER S. (3V)
| + | COM |

INPUTS
| IN4 | IN3 | IN2 | IN1 |

COM IN

4-20 (FV)
| – | + |

9

| 30 | 31 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 |

IN 1: (FV) Vector Fluid
IN 2: (SHW) Sanitary Hot Water
IN 3: (SCW) Sanitary Cold Water
IN 4: Reset o 4° Fluid

POWER SUPPLY

RTD TERMINAL BLOCK

Terminal n° 5 is used only to facilitate the probes serie connection , but it is not connected internally

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

| T1+ (EX) | T1+ (M) | T1- (M) | T1- (EX) | T2+ (EX) | T2+ (M) | T2- (M) | T2- (EX) |

SHIELD

T1 PROBE (4 WIRES)   T2 PROBE (4 WIRES)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

| T1+ (EX) | T1+ (M) | T1- (M) | | T2+ (EX) | T2+ (M) | T2- (M) | |

SHIELD

T1 PROBE (3 WIRES)   T2 PROBE (3 WIRES)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

| | T1+ (M) | T1- (M) | | | T2+ (M) | T2- (M) | |

SHIELD

T1 PROBE (2 WIRES)   T2 PROBE (2 WIRES)

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

⚠ ELECTRICAL CONNECTIONS POWER

- ❑ 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
- ❑ The mains power cables must have adequate values for the maximum current of the appliance, and the cable used must house the standards of the IEC 60227 standard or the IEC 60245 standard..Mains power cables certified or approved by any recognized national testing institute are deemed to comply with this requirement
- ❑ Always connect the ground terminal of the appliance to the system ground

HV — L N 100-240~±10%

LV — L N 24-36V≃±10%
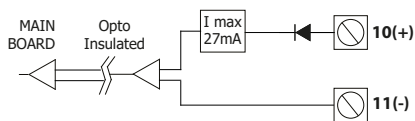
LLV — + − 12-48V ±10%

LLV + PoE — + − 12-48V ±10%
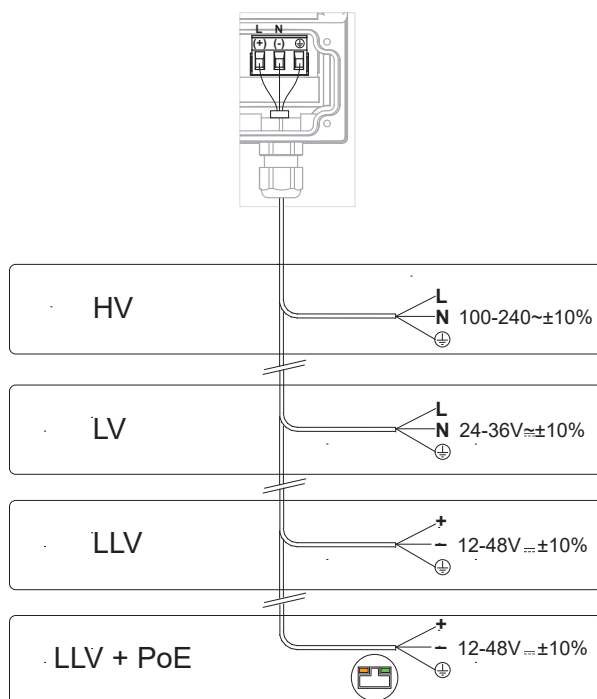
If the PoE energy version, to guarantee the isolation required by IEEE for ethernet, the external power supply must be protected at least 1500Vac with respect to a ground and any other connection.

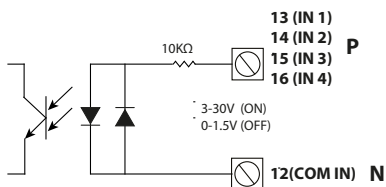**The options above are also available with a rechargeable backup battery.**

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INPUTS ELECTRICAL DIAGRAMS

INPUT 4-20mA

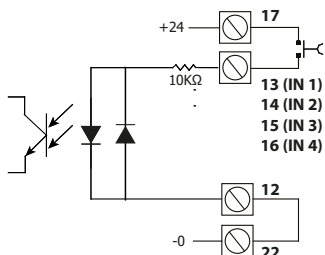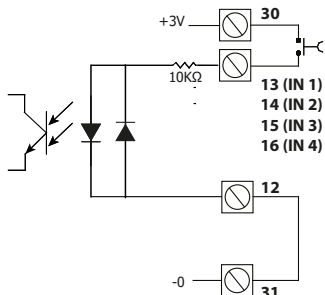|	
MAIN BOARD — Opto Insulated — I max 27mA — 10(+) / 11(-)	❑ Minimum voltage:8.5V ❑ Maximum continuous voltage: 30V ❑ Maximum input current 27mA

CONNECTIONS WITH POLARITY 'TYPE "P" (POSITIVE)

❑ **ISOLATED DIGITAL INPUT WITH EXTERNAL POWER SUPPLY**

10KΩ

13 (IN 1)
14 (IN 2)
15 (IN 3) P
16 (IN 4)

3-30V (ON)
0-1.5V (OFF)

12(COM IN) N

❑ **ISOLATED DIGITAL INPUT WITH + 24V INTERNAL POWER SUPPLY**

+24 — **17**

10KΩ
13 (IN 1)
14 (IN 2)
15 (IN 3)
16 (IN 4)

12
-0 — **22**

❑ **NON-ISOLATED DIGITAL INPUT WITH INTERNAL BATTERY POWER SUPPLY**

+3V — **30**

10KΩ
13 (IN 1)
14 (IN 2)
15 (IN 3)
16 (IN 4)

12
-0 — **31**

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CONNECTIONS WITH POLARITY 'TYPE "N" (NEGATIVE)

❑ **ISOLATED DIGITAL INPUT WITH EXTERNAL POWER SUPPLY**
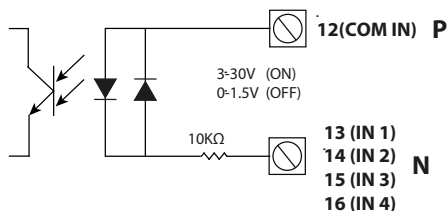
12(COM IN) P

3-30V (ON)
0-1.5V (OFF)

10KΩ

13 (IN 1)
14 (IN 2) N
15 (IN 3)
16 (IN 4)

❑ **DIGITAL INPUT WITH + 24V INTERNAL POWER SUPPLY**

+24 — **17**

12

13 (IN 1)
14 (IN 2)
15 (IN 3)
16 (IN 4)

10KΩ

-0V — **22**

❑ **NON-ISOLATED DIGITAL INPUT WITH INTERNAL BATTERY POWER SUPPLY**

+3V — **30**

12

13 (IN 1)
14 (IN 2)
15 (IN 3)
16 (IN 4)

10KΩ

-0 — **31**

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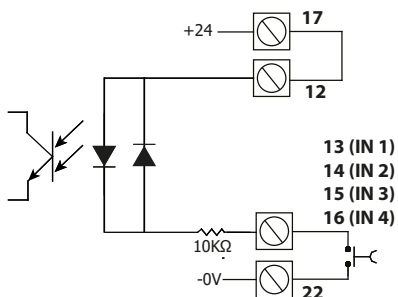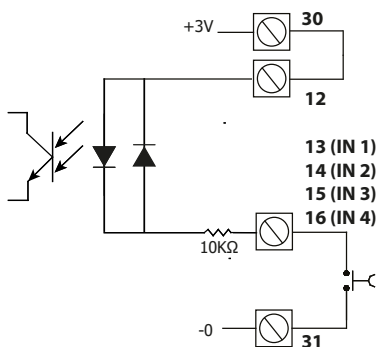
CONVERTER ACCESS CODE

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

Access Level 1-2-3-4 are freely programmable by user

ACCESS CODE SET : MENU 12 - SYSTEM

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

RESTRICTED ACCESS SET MENU SYSTEM 12

Settable Values
→ ON
→ OFF

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

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

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

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

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

START VISUALIZATION PAGES

DATA E TIME		FLUID VECTOR
N ° E TYPE OF ALARMS		THERMAL POWER
		(MIN ↓) (MAX ↑) ALARM

```
NO ALARMS
2018/03/07  09:28
```

```
POWER & FLOW
ThPwr  kW ▲ 0.00
VF  m³/h ▼ 0.0000
2018/03/07   09:28:30
```

PRESS TO CHANGE DISPLAY

VALUE OFT2		PARTIAL ENERGY HEATING VALUE
VALUE OF T1		TOTAL ENERGY HEATING VALUE
VALUE OF DELTA T		
(MIN ↓) (MAX ↑) ALARM **H** Riscaldamento **C** Raffreddamento		

```
TEMPERATURES
TD  °C  HV ▲ 41.52
T1  °C  H▲ 33.93
T2  °C  ▲ 32.41
2018/05/25  12:08:28
```

```
HEATING ENERGY
T. kWh 4.4460583
P. kWh 4.4460583
2018/03/07   09:28:34
```

PRESS TO CHANGE DISPLAY

| TOTAL ENERGY COOLING VALUE | | PARTIAL FLUID VECTOR VALUE |
| TOTAL ENERGY COOLING VALUE | | TOTAL FLUID VECTOR VALUE |

```
COOLING ENERGY
T. kWh 0.0000000
P. kWh 0.0000000
2018/03/07   09:28:35
```

```
VECTOR FLUID
T. m³ 0.1012744
P. m³ 0.1012744
2018/03/07   09:28:37
```

PRESS TO CHANGE DISPLAY

| PARTIAL VALUE HOT WATER | | PARTIAL VALUE COLD WATER |
| TOTAL VALUE HOT WATER | | TOTAL COLD WATER VALUE |

```
COLD SERV. WATER
T. m³  0.0969618
P. m³  0.0969618
2018/03/07   09:28:41
```

```
HOT SERV. WATER
T. m³  0.0969618
P. m³  0.0969618
2018/03/07   09:28:40
```

PRESS TO CHANGE DISPLAY

PARTIAL AUXILIARY FLUID VALUE		DATE AND TIME
TOTAL AUXILIARY FLUID VALUE		POWER SUPPLY
		SYMBOLS

```
AUXILIARY FLUID
T. ml  317785975
P. ml  317785975
2018/03/07   09:29:05
```

```
MAIN POWER
SUPPLY OFF
2018/03/07   09:35:11
```

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.

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KEYBOARD OPERATIONS

DEVICE KEYS		KEYS MCP	SCREEN ALARMS [0]	MENU E SUB MENU	MODIFICATION THE PARAMETERS
	SHORT PRESSURE	↑	Scroll the alarms displayed upwards.	Scrolls the entries upward	Increment of the numerical digit or of the parameter indicated by the cursor.
	PROLONGED PRESSURE	↓	Scroll the alarms displayed downwards	Scrolls the entries downward.	Decrease of the numerical digit or of the parameter indicated by the cursor.
	SHORT PRESSURE	→	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.
	PROLONGED PRESSURE	←	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 PRESSURE	**Enter**	Access the Menus.	Accesses the submenu / accesses the modification of the value or execution of the function.	Confirm the entered / selected value.
	PROLONGED PRESSURE	**Esc/ Del**	Inactive	Exit the Submenu / return to the Work screens.	Cancel the entered / selected value.

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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.

MAN_MV311_QUICK_EN_IT_IS_R05_1.05.XXXX

MANUAL REVIEWS

REVIEW	DATE	DESCRIPTION
MV311_QUICK_EN_IT_R0_1.00.0	09/07/18	First edition
MV311_QUICK_EN_IT_R1_1.04.0	09/07/18	update to firmware 1.04.0x
MV311_QUICK_EN_IT_R02_1.05.XXXX	06/07/21	update to firmware 1.05.XXXX
MV311_QUICK_EN_IT_R03_1.05.XXXX	22/04/22	Update for electrical safety certification
MV311_QUICK_EN_IT_R04_1.05.XXXX	17/11/22	Modifica sezione collegamenti elettrici-morsettiera sonde
MV311_QUICK_EN_IT_R05_1.05.XXXX	11/09/23	Descriptions pag.3 update

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ISOIL INDUSTRIA S.p.A.

HEAD OFFICE	SERVICE
Via Fratelli Gracchi, 27 20092 Cinisello Balsamo (MI) Tel +39 02 66027.1 Fax +39 02 6123202 sales@isoil.it	service@isoil.it

If you want to find the complete list of our distributors access at the following link:
http://www.isoil.it/en

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