ISOMAG

The friendly magmeter

DATA SHEET

MV110

CE

ISOIL INDUSTRIA

INDEX

TECHNICAL DATA

OVERALL FEATURES	
Suitable For	❑ All the ISOMAG® sensors
Minimum conductivity	❑ 5 µS/cm
Altitude	❑ -200 m up to 4000 m
Ambient Temperature	❑ -20... +60°C / -4... +140 °F - Aluminium housing ❑ -10... +50°C / -4... +104 °F - Reinforced Nylon
Humidity Range	❑ 0÷100%

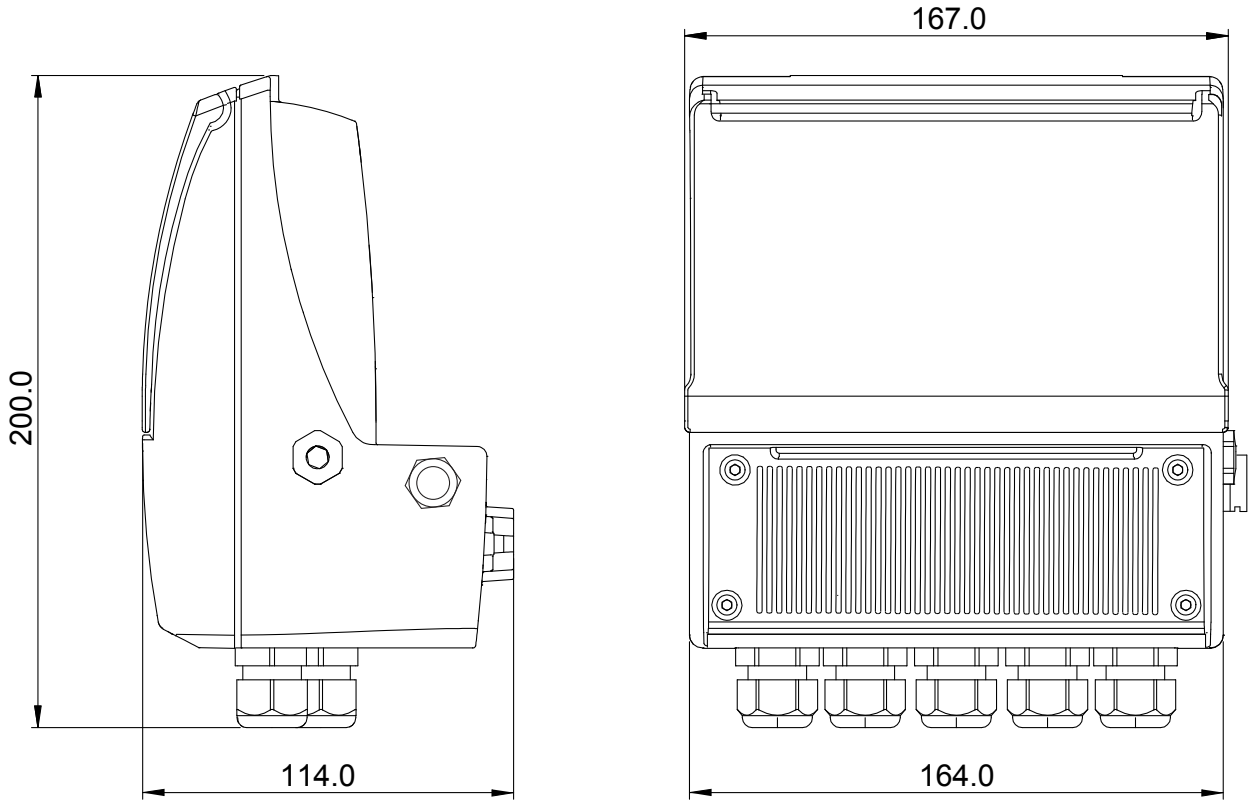
STANDARD FEATURES	
Housing materials	❑ Painted Aluminium die casting ❑ Nylon reinforced with 15% of fiber glass
Protection Rate	❑ IP 67
Power Supply/Consumption	❑ 100-240 V~ (20VA) – 44-66 Hz
Cable Gland	❑ N° 5 cable gland PG 11
Full scale value	❑ 0,4...10m/s
Dig. Input	❑ N°1 , programmable function (i.e. Totalizer reset)
Data Storage	❑ Values storing system in case of power failure
Galvanic Isolation	❑ All the inputs/outputs are galvanically isolated from power supply up to 250 V
Programming Plug In	❑ USB port for the connection to PC (USB cable type A/USB MINI B is required for the programmation)
Bi-Directional	❑ Yes
Diagnostic Funct.	❑ Yes
Empty Pipe Detect.	❑ Yes
CE Certification	❑ Yes

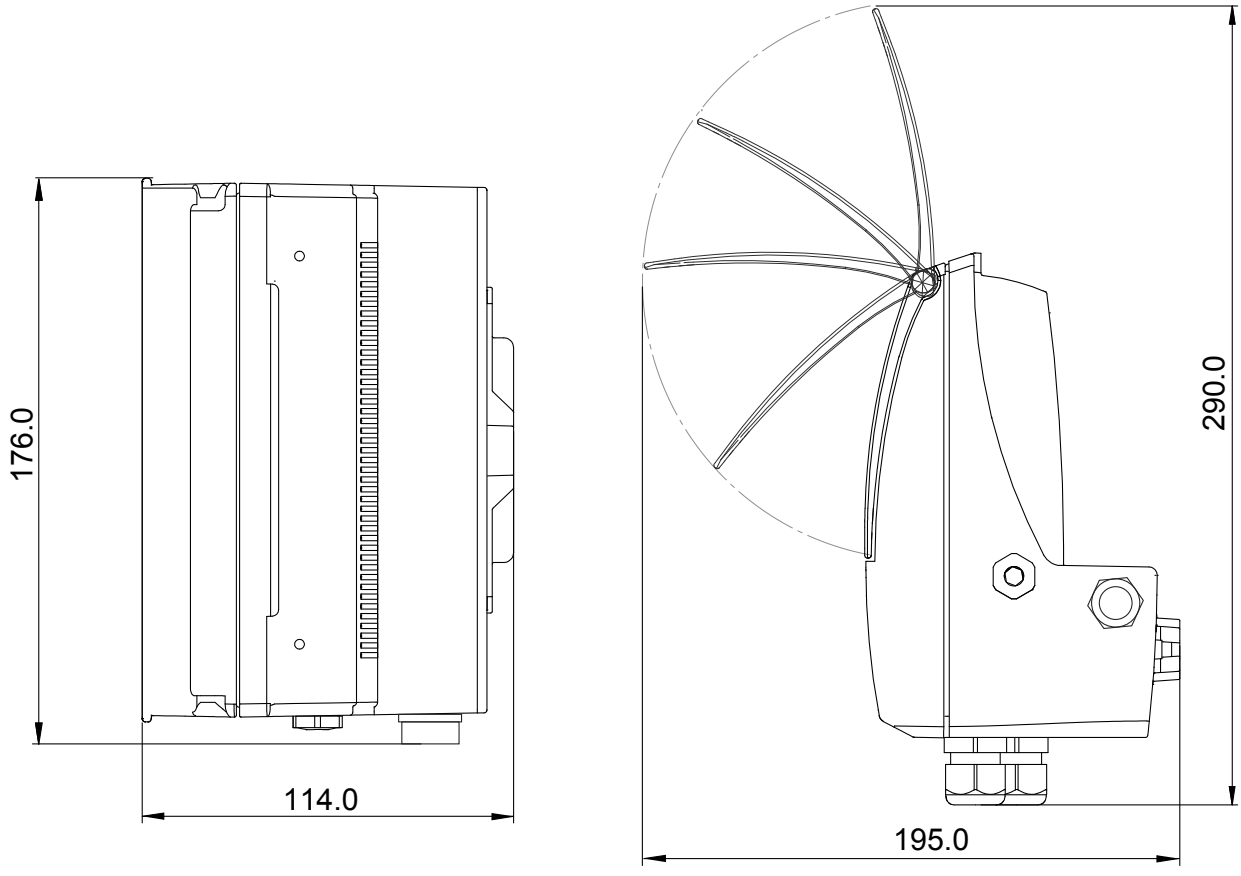
OPTIONAL FEATURES (CHECK HOW TO ORDER, AT LAST PAGE, FOR MORE DETAILS)	
Version	❑ Compact ❑ Separate
Protection Rate	❑ IP 68
Conn. Sensor Cable	❑ CABLE C014 for separate version
LCD Display	❑ Graphic display 128x64 pixels back light, 3 programming keys
Power Supply/Consumption	❑ Power supply : 100 ... 240 VAC 44/66 Hz ❑ Power supply : 24 ... 36 VAC/VDC 0...45/66 Hz ❑ Power supply : 12...48 VDC ❑ Power supply : 100 ... 240 VAC 44/66 Hz + 1 Rechargeable Battery ❑ Power supply : 24 ... 36 VAC/VDC 0...44/66 Hz + 1 Rechargeable Battery ❑ Power supply : 12...48 VDC + 1 Rechargeable Battery
Pulses/ Alarm Outputs	❑ N°1 digital Output , 1250 Hz, 100mA, 30 Vdc ❑ N°2 digital Outputs , 1250 Hz, 100mA, 30 Vdc
Analog Output	❑ n° 1 Analogue output 0/4...20/22 mA (Hart optional) ❑ n° 2 Analogue outputs 0/4...20/22 mA (Hart optional over Out.1)
Communication Gateway	❑ RS 485 ❑ Wi-Fi (for programming)
Data Logger	❑ MicroSD Memory Card 4...32 GBytes
Protocols	❑ Modbus over RS 485 ❑ HART (Available on analog output n° 1)

ACCURACY	
Measurements tolerance	❑ Flow rate (volume) = ±0,05% v.l. ❑ Out 4/20 mA = ± 0,08 % v.l. ❑ Frequency Out = ± 0,08% v.l.
Accuracy (whole system converter+sensor)	❑ See table below

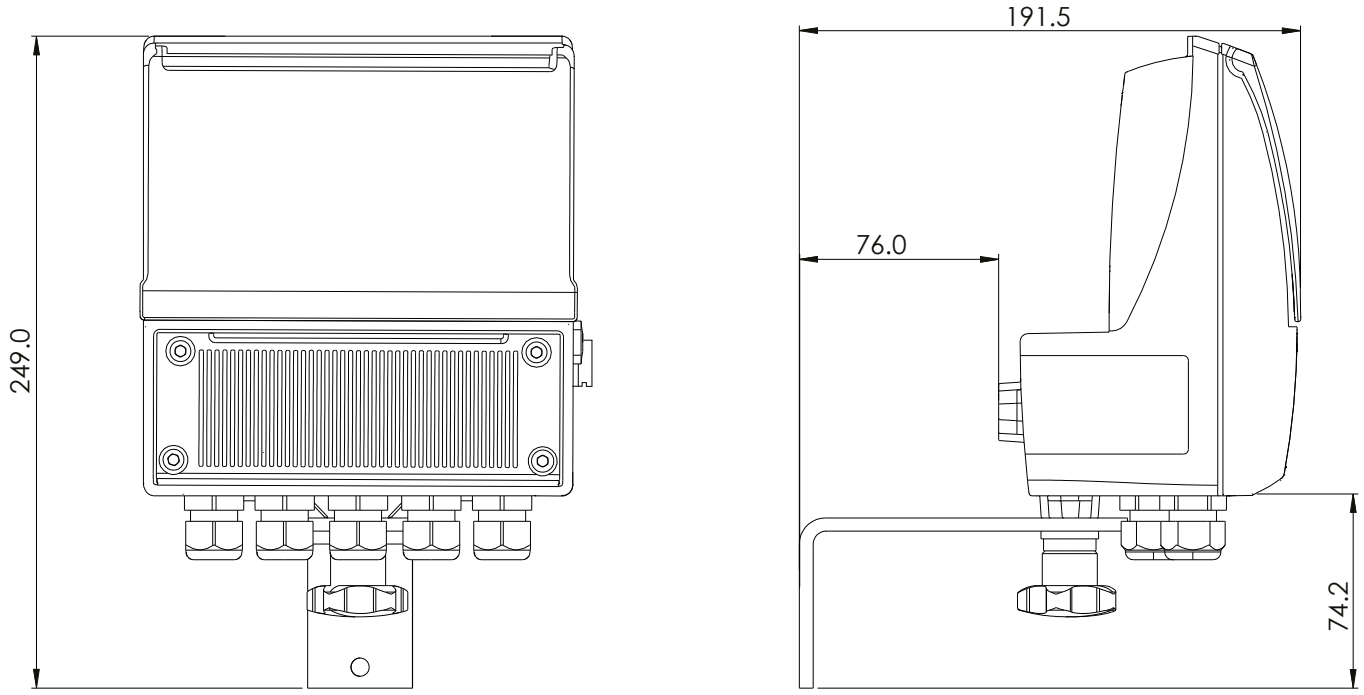
OVERALL DIMENSION

COMPACT VERSION

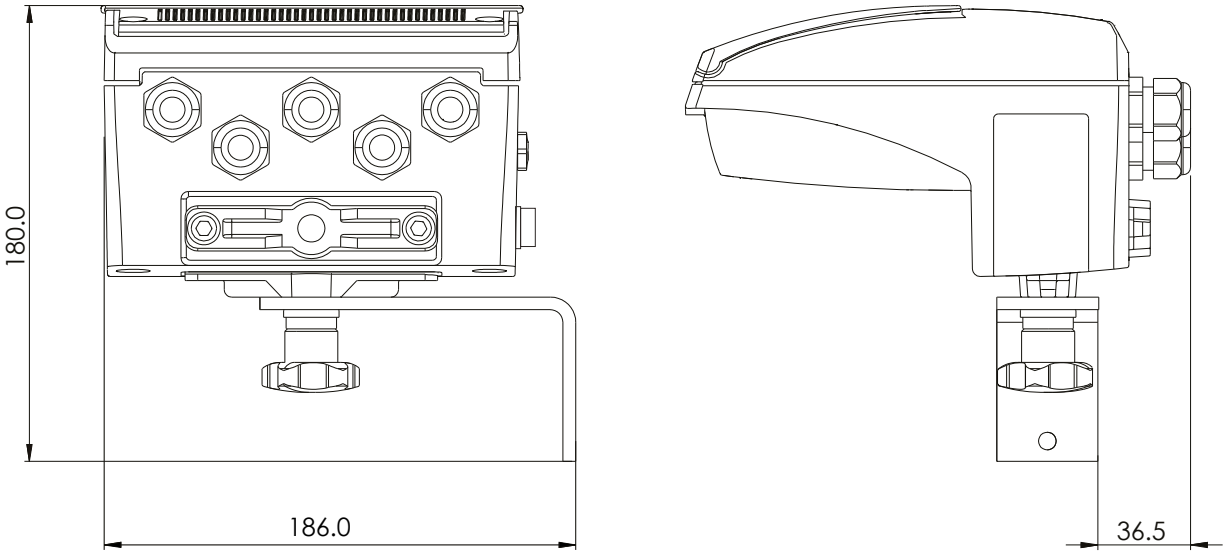




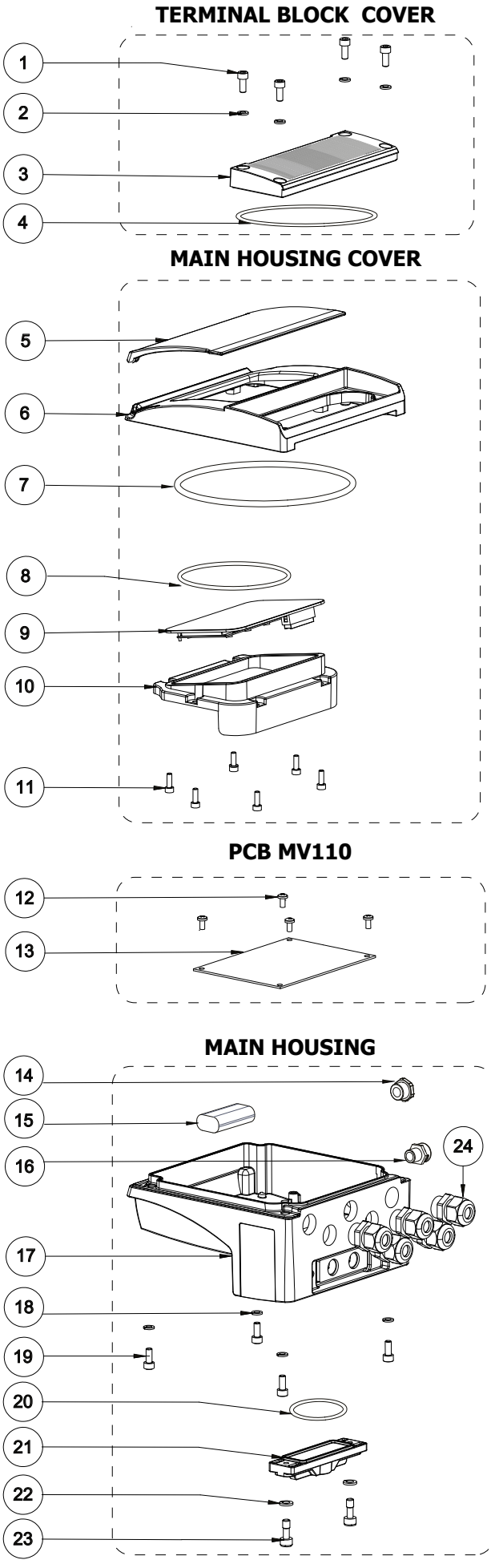
SEPARATE (WALL) VERSION



ROTATED (WALL) VERSION

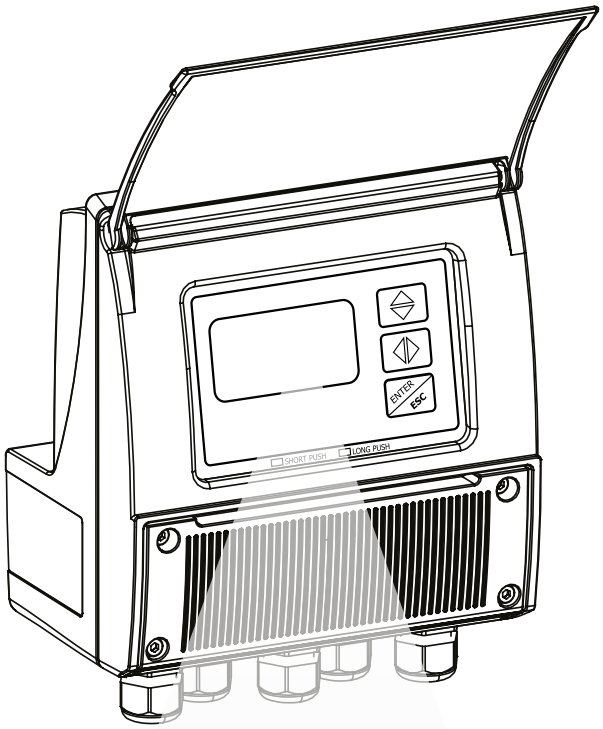


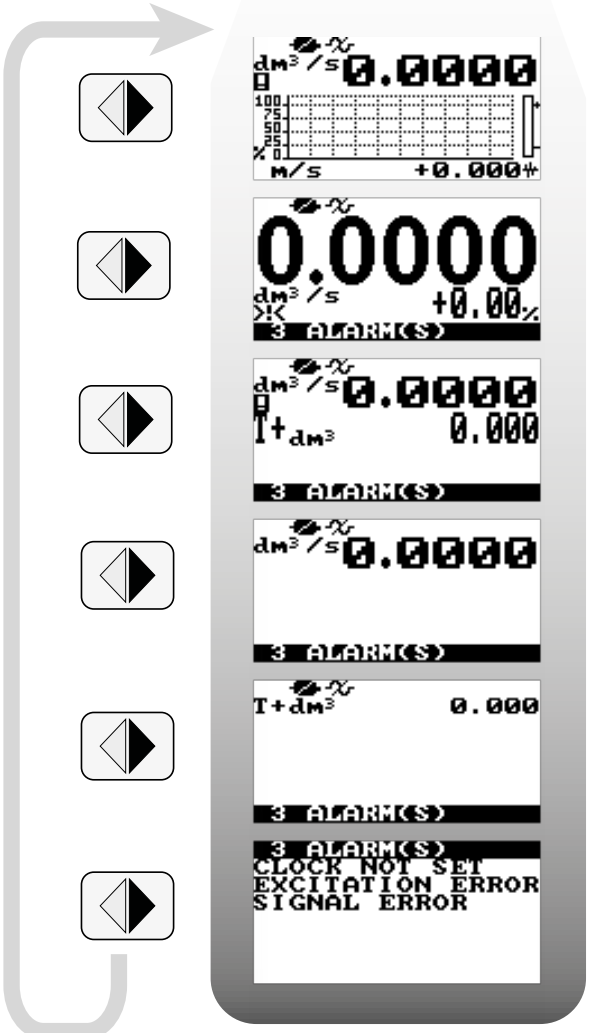
MV110 EXPLODED LAYOUT



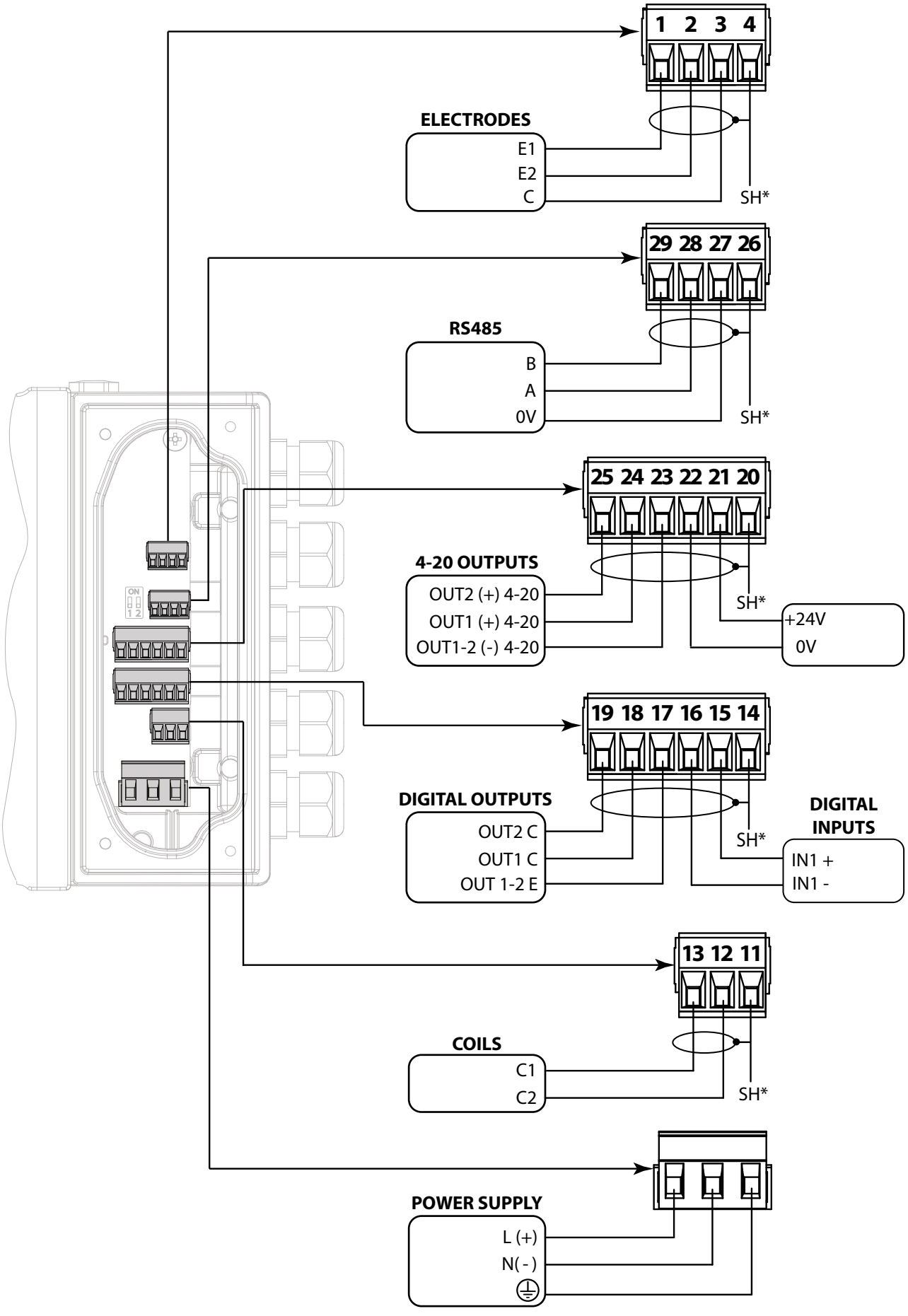
POS.	DESCRIPTION	
	PA6 VERSION	***ALUMINIUM VERSION***
1	SCREW M4x12	SCREW M5x12
2	GROWER Ø4	GROWER Ø5
3	TERMINAL BLOCK COVER	TERMINAL BLOCK COVER
4	ORING-4400	
5	PROTECTION GLASS	
6	HOUSING COVER	HOUSING COVER
7	ORING-4700	
8	ORING 117x3	
9	DISPLAY	
10	FIXING DISPLAY FRAME (MATERIAL PA06)	
11	SELF-TAPPING SCREW 4x10	TRILOBO SCREW 4x10
12	SELF-TAPPING SCREW 4x10	TRILOBO SCREW 4x10
13	PCB MV110	
14	PG9 CAP	
15	LITHIUM BATTERY	
16	ANTICONDESE CAP	
17	PA6 MAIN HOUSING	ALUMINIUM MAIN HOUSING
18	GROWER Ø4	GROWER Ø5
19	SCREW M4x12	SCREW M5x12
20	ORING-155	
21	VERSION CAP (MATERIAL PA06)	
22	SCREW M6x16	
23	GROWER Ø6	
24	PG11 CABLE GLAND	

MAIN PAGES VISUALIZATION



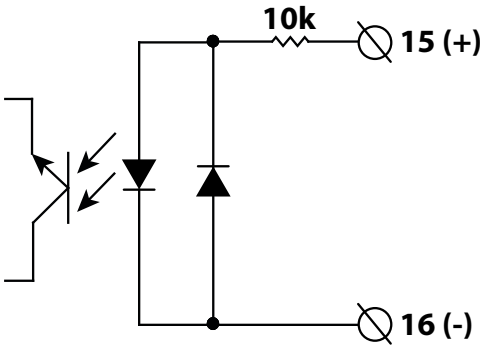


ELECTRICAL CONNECTIONS

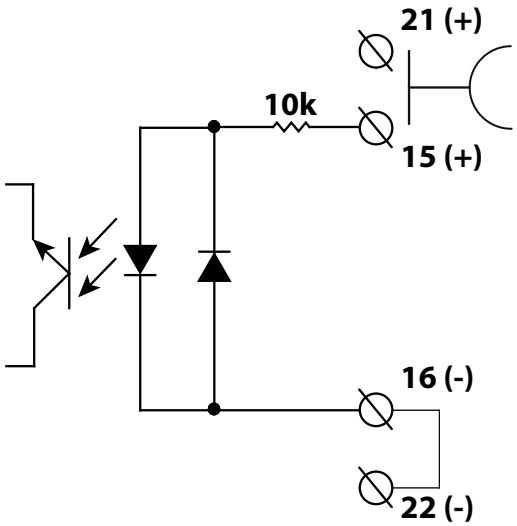


DIGITAL INPUT

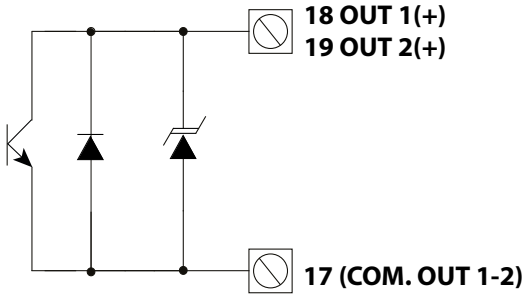
ON/OFF INPUT (EXTERNAL POWER SUPPLY)



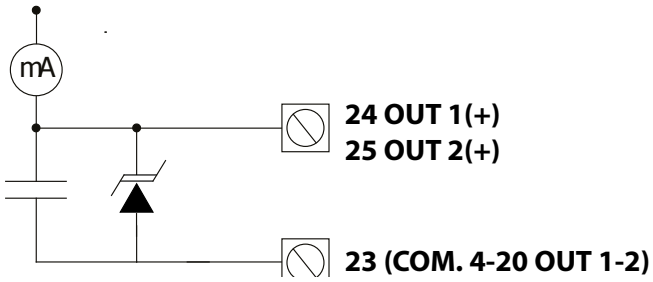
ON/OFF INPUT (INTERNAL POWER SUPPLY)



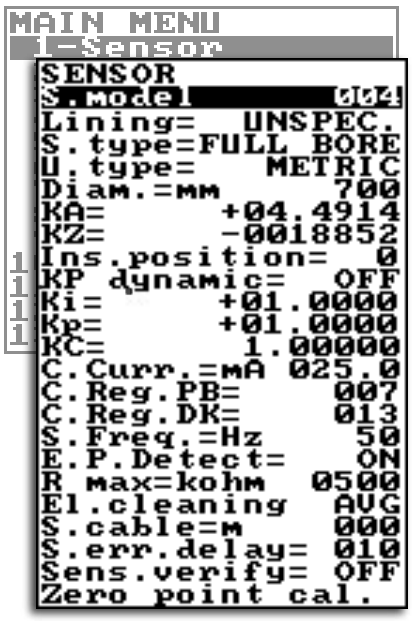
DIGITAL OUTPUTS



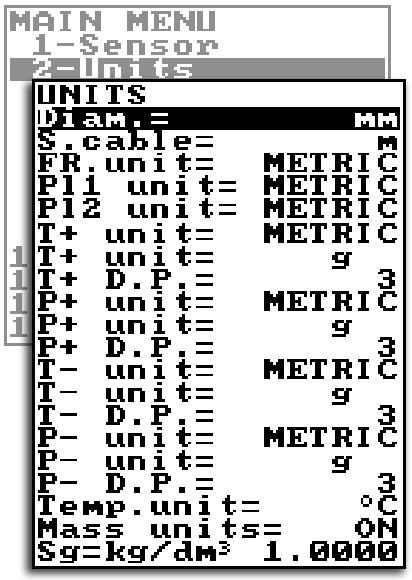
ANALOG OUTPUTS



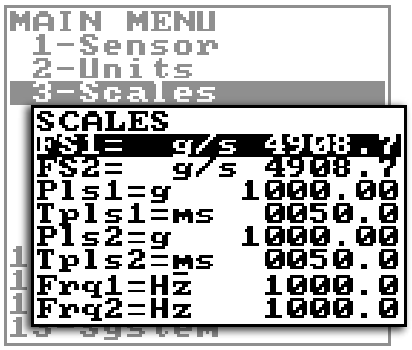
FUNCTIONS MENU



1.1 Sensors model: Enter the first two characters of the serial number of the sensor
1.2 Flow sensor lining material type
1.3 Type of sensor: fullbore or insertion
1.4 Type of measure unit for sensor parameter: metric or not metric
1.5 Insert ND of sensor (0-2500)
1.6 Calibration data of sensor visualized on sensor's label
1.7 Sensor coefficient KZ
1.8 Insertion position
1.9 KP dynamic, coefficient for insertion
1.10 Sensor coefficient Ki
1.11 Sensor coefficient Kp
1.12 Sensor coefficient KC
1.13 Sensor excitation current
1.14 Current regulator proportional band
1.15 Current regulator derivation constant
1.16 Measure sampling frequency
1.17 Enables the empty pipe detection feature
1.18 Empty pipe detection threshold
1.19 Electrode cleaning
1.20 Sensor connecting cable length
1.21 Signal error delay (n. sample)
1.22 Automatic sensor verify enable
1.23 Pipe hydraulic zero calibration

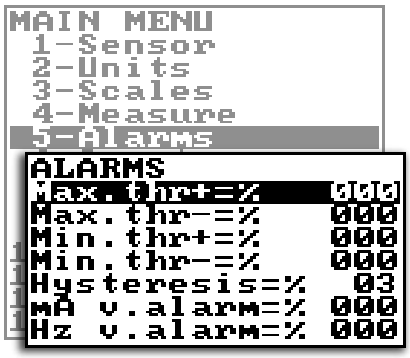


2.1 Nominal diameter measure unit
2.2 Cable length on separate version
2.3 Flowrate type measure unit: metric or not metric
2.4 Pulse 1 type measure unit: metric or not metric
2.5 Pulse 2 type measure unit: metric or not metric
2.6 Total direct totalizer measure unit type: metric or not metric
2.7 Total direct totalizer measure unit
2.8 Total direct totalizer decimal point position
2.9 Partial direct totalizer measure unit type: metric or not metric
2.10 Partial direct totalizer measure unit
2.11 Partial direct totalizer decimal point position
2.12 Total reverse totalizer measure unit type: metric or not metric
2.13 Total reverse totalizer measure unit
2.14 Total reverse totalizer decimal point position
2.15 Partial reverse totalizer measure unit type: metric or not metric
2.16 Partial reverse totalizer measure unit
2.17 Partial reverse totalizer decimal point position
2.18 Temperature measure unit
2.19 Enable/disable the selection of mass units on full scale set
2.20 Specific gravity coefficient

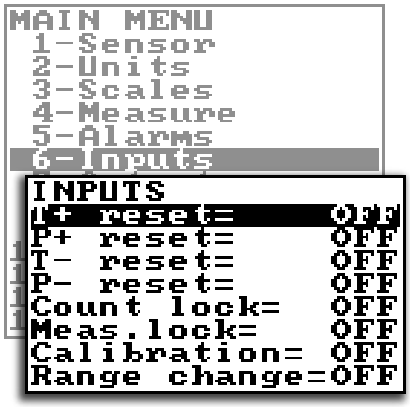


3.1 Full scale flow rate 1
3.2 Full scale flow rate 2
3.3 Pulse value on channel 1
3.4 Duration of the pulse generated on channel 1
3.5 Pulse value on channel 2
3.6 Duration of the pulse generated on channel 2
3.7 Full scale frequency for channel 1 (0.1Hz-1000.0Hz)
3.8 Full scale frequency for channel 2 (0.1Hz-1000.0Hz)

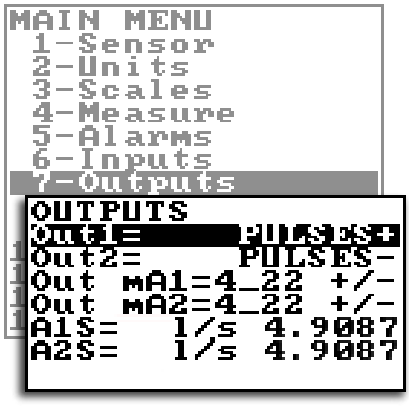
4.1 Measure filter
4.2 Low flow zero threshold: 0-25% of full scale value
4.3 Automatic calibration verify
4.4 Automatic change of measurement range



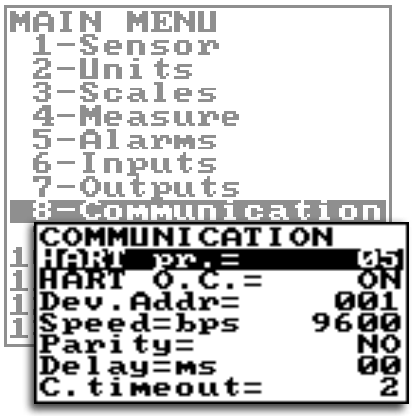
5.1 Maximum value alarm set for direct flow rate
5.2 Maximum value alarm set for reverse flow rate
5.3 Minimum value alarm set for direct flow rate
5.4 Minimum value alarm set for reverse flow rate
5.5 Hysteresis threshold set for the minimum and maximum flow rate alarms
5.6 Current output value in case of failure
5.7 Frequency output value in case of alarms



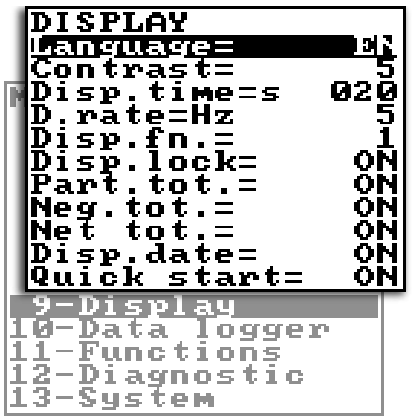
6.1 Total direct (positive) flow totalizer reset enable
6.2 Partial direct (positive) flow totalizer reset enable
6.3 Total reverse (negative) flow totalizer reset enable
6.4 Partial reverse (negative) flow totalizer reset enable
6.5 Totalizer counting lock command
6.6 Measure zero lock command
6.7 Calibration external command
6.8 Range change external command



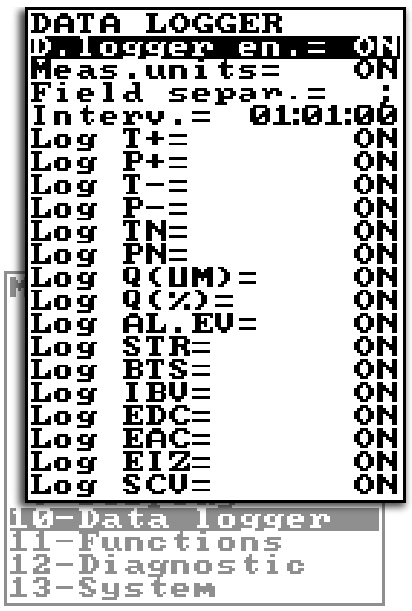
7.1 Output 1 functions
7.2 Output 2 functions
7.3 Choice of the function and the range of current output n.1
7.4 Choice of the function and the range of current output n.2
7.5 Full Scale value for analog out1
7.6 Full Scale value for analog out2



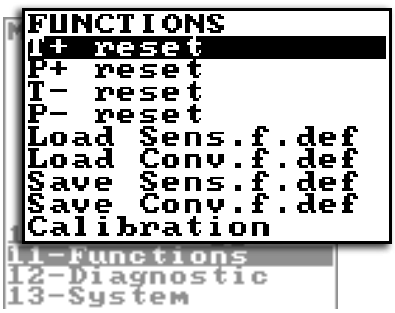
8.1 HART Packet byte preambles
8.2 HART Bus output - control
8.3 Device communication address number
8.4 MODBUS link speed
8.5 MODBUS link parity
8.6 MODBUS reply delay
8.7 Maximum delay between chars (frames) MODBUS



9.1 Choice of the language: E= English, I=italian
9.2 Display contrast
9.3 Display/keyboard inactivity time
9.4 Display updating frequency: 1-2-5-10 Hz
9.5 Display function number
9.6 Display function selection lock
9.7 Partial totalizer enable
9.8 Negative totalizer enable
9.9 Net totalizer enable
9.10 Time and date display enable
9.11 Quick start menu visualization

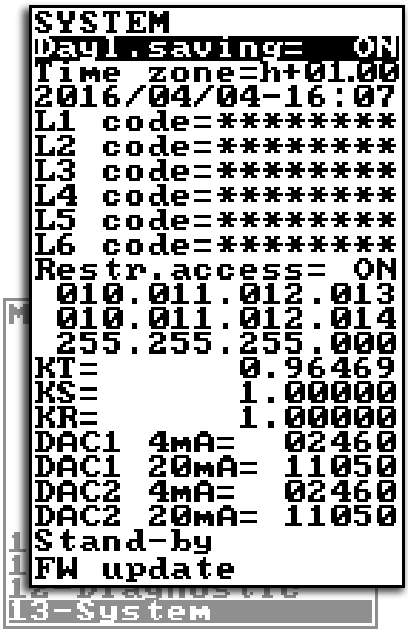


10.1 Data logger enabling
10.2 Measure unit recording enable
10.3 Field separator character
10.4 Sampling interval
10.5 Enable logging of total direct totalizer
10.6 Enable logging of partial direct totalizer
10.7 Enable logging of total reverse totalizer
10.8 Enable logging of partial reverse totalizer
10.9 Enable logging of total net totalizer
10.10 Enable logging of partial net totalizer
10.11 Enable logging of flow rate in measure unit
10.12 Enable logging of flow rate in percentage
10.13 Enable logging of alarm events
10.14 Enable logging of sensor test results
10.15 Enable logging of board temperature
10.16 Enable logging of internal board voltage
10.17 Enable logging of electrodes DC voltage
10.18 Enable logging of electrodes AC voltage
10.19 Enable logging of electrodes impedance
10.20 Enable logging of sensor coils value



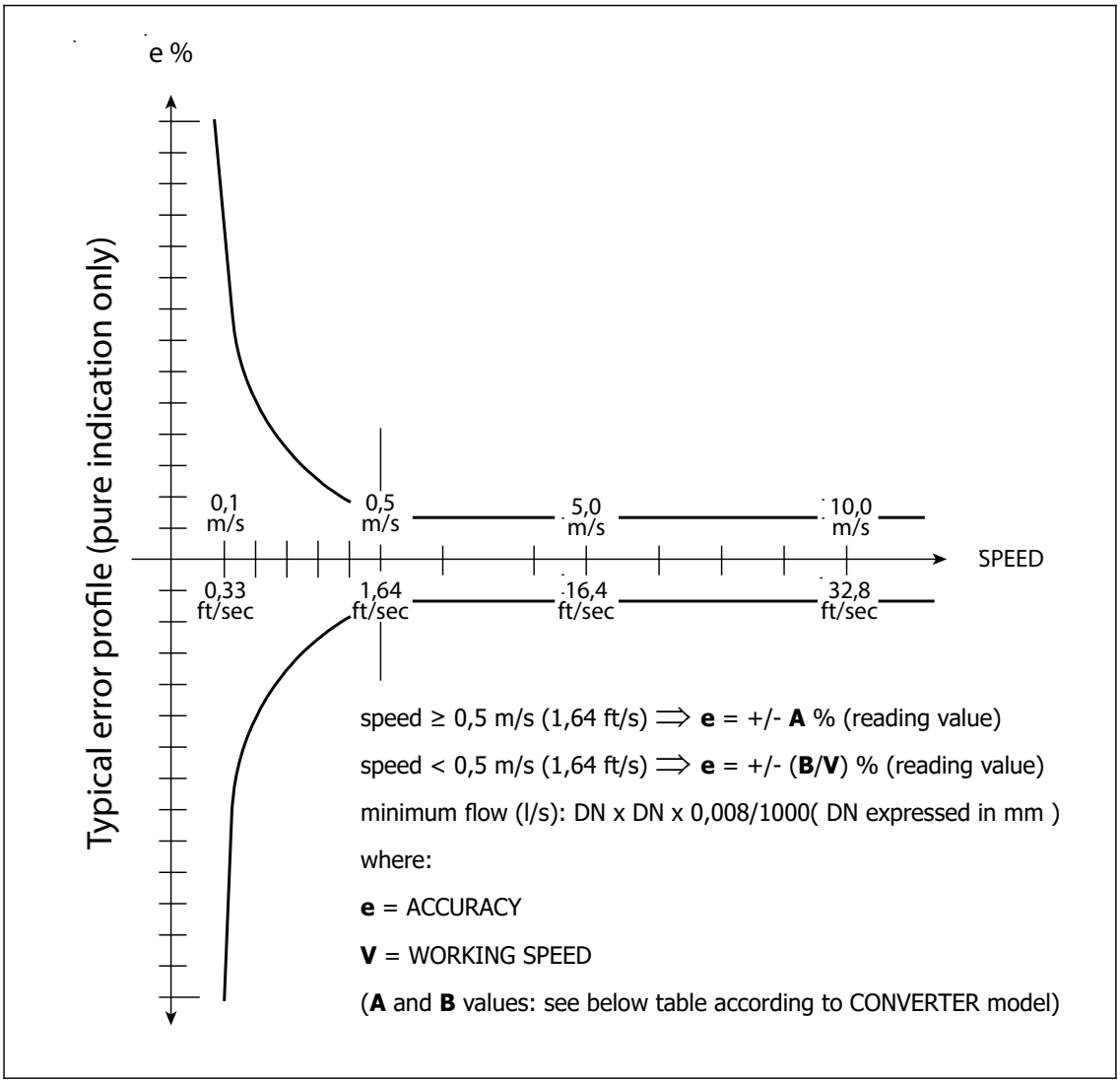
11.1 Execute immediate reset of total direct totalizer
11.2 Execute immediate reset of partial direct totalizer
11.3 Execute immediate reset of total reverse totalizer
11.4 Execute immediate reset of partial reverse totalizer
11.5 Load sensor factory default
11.6 Load converter factory default
11.7 Save sensor factory default values
11.8 Save converter factory default values
11.9 Execute immediate internal circuit calibration

12.1 Self test diagnostic function
12.2 Function tests physical display
12.3 Sensor verify diagnostic function
12.4 Flow rate simulation enabling
12.5 Display internal measured value
12.6 Display comm. diagnostic values
12.7 Display measure as graphs
12.8 Generic sensor parameters set
12.9 Sd card status informations
12.10 Firmware version/revision
12.11 Board serial number
12.12 Total working time



13.1 Daylight saving time change
13.2 Localized time zone
13.3 System date and time
13.4 Access level 1 code
13.5 Access level 2 code
13.6 Access level 3 code
13.7 Access level 4 code
13.8 Access level 5 code
13.9 Access level 6 code
13.10 Restricted access level
13.11 Device IP network address
13.12 Client IP network address
13.13 Network mask
13.14 Calibration coefficient KT
13.15 Calibration coefficient KS
13.16 Calibration coefficient KR
13.17 DAC1 out 4mA calibration point
13.18 DAC1 out 20mA calibration point
13.19 DAC2 out 4mA calibration point
13.20 DAC2 out 20mA calibration point
13.21 Stand-by
13.22 firmware update

ACCURACY



FULLBORE SENSOR

MS501/MS1000/MS2410/MS2500			MS 600			MS5000		
A	B(m/s)	B(ft/s)	A	B(m/s)	B(ft/s)	A	B(m/s)	B(ft/s)
0,8*	0,4**	0,31**	0,8*	0,2**	0,66**	2	1	3,28

* = 0,4 (special)
**= 0,2(m/s) ; 0,66(ft/s) - special

INSERTION SENSORS

See sensors DATA SHEET

Reference conditions below and as per internal testing procedures:

- ❑ Constant flow rate during the test
- ❑ Pressure: >30 Kpa
- ❑ Flow condition : fully developed flow profile
- ❑ Zero stability +/- 0,005 %

HOW TO ORDER

CODE EXAMPLE	Display	
A	A	Blind version (without display and programming keys)
	B	Graphic LCD WSTN - B/W - back light display, point matrix 128 x 64, 8 line/16 characters and 3 programming keys
Housing material / Protection rate		
0	0	Nylon PA6 with fiber glass, protection rate IP 67
	1	Painted aluminum die casting, protection rate IP67
	2	Painted aluminum die casting, protection rate IP68 1,5 meters under water, Compact Version, n° 1 IP 68 MIL connector for power supply
	3	Painted aluminum die casting, protection rate IP68 1,5 meters under water, Compact Version, Complete of n° 1 of 10 poles IP68 MIL connector (outputs connections to be specified) and n° 1 IP 68 MIL connector for power supply
	4	Painted aluminum die casting, protection rate IP68 1,5 meters under water, Separate Version, Complete of n° 1 IP 68 MIL connectors for cable from the sensor and n° 1 IP 68 MIL connector for power supply
	5	Painted aluminum die casting, protection rate IP68 1,5 meters under water, Separate Version, Complete of n° 1 IP 68 MIL connectors for cable from the sensor, n° 1 of 10 poles IP68 MIL connector (outputs connections to be specified) and n° 1 IP 68 MIL connector for power supply
Version		
A	A	Compact version with sensor MS.... (liquid maximum temperature 100 °C)
	B	Separate version for wall mounting, complete with mounting accessories (CABLE C014)
	C	Compact version with display visible from the top
Power supply		
1	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	P.S.: 100 ... 240 VAC 44/66 Hz+1 Rechargeable Battery (the use of battery supports only the measure; all the outputs are set to OFF)
	5	P.S.: 24 ... 36 VAC/VDC 0...44/66 Hz+1 Rechargeable Battery (the use of battery supports only the measure; all the outputs are set to OFF)
	6	P.S. : 12...48 VDC + 1 Rechargeable Battery (the use of battery supports only the measure; all the outputs are set to OFF)
	7	Power supply : 100 ... 240 VAC 44/66 Hz + n° 1 SETTINGS FOR Rechargeable back-up Battery (the Rechargeable Battery is NOT included)
	8	Power supply : 24 ... 36 VAC/VDC 0...44/66 Hz + n° 1 SETTINGS FOR Rechargeable back-up Battery (the Rechargeable Battery is NOT included)
	9	Power supply : 12...48 VDC + n° 1 SETTINGS FOR Rechargeable back-up Battery (the Rechargeable Battery is NOT included)
	A	Power supply : 100 ... 240 VAC 44/66 Hz + 1 Pack of n° 2 SUPERCAP (the use of it supports only the measure UP TO 3 minutes; all the outputs are set to OFF)
	B	Power supply : 24 ... 36 VAC/VDC 0...44/66 Hz + 1 Pack of n° 2 SUPERCAP (the use of battery supports only the measure UP TO 3 minutes; all the outputs are set to OFF)
	C	Power supply : 12...48 VDC + 1 Pack of n° 2 SUPERCAP (the use of battery supports only the measure UP TO 3 minutes; all the outputs are set to OFF)
Analogue output		
A	A	Without Analogue output
	B	n° 1 Analogue output 0/4...20/22 mA (Hart optional)
	C	n° 2 Analogue outputs 0/4...20/22 mA (Hart optional over Out.1)
Digital Input/Output		
0	0	With Digital Input only
	1	With n° 1 Digital output/n°1 Digital Input
	2	With n° 2 Digital output/n°1 Digital Input
Communication Gateway		
A	A	Without Gateway
	B	RS485 port - Protocol MODBUS required
	C	Hart (4/20 mA/ Analog OUT n° 1 is required) HART REGISTERED
	D	Wi-Fi (for programming)
	E	Others
Protocols		
0	0	Without Protocol
	1	Modbus (over RS485) requires RS485 port
Accuracy		
A	A	Standard accuracy 0,8 %
	B	Special accuracy 0,4 %
	C	Special accuracy (to be defined)

Data Logger		
0	**0**	Without Data Logger
	1	MicroSD Memory 4 GB : Data Logger + RTC (Real Time Clock)
	2	MicroSD Memory 4 GB : Data Logger + RTC (Real Time Clock) + BIV (Built In Verificator)
	3	MicroSD Memory 4 GB : Data Logger + RTC (Real Time Clock) + Meter Data (Real Time Converter & Sensor Data on SD Memory)
	4	MicroSD Memory 4 GB : Data Logger + RTC (Real Time Clock) + BIV + Meter Data
Special Features		
A	**A**	NONE
	B	WITH ANTICONDENSE CAP
	C	n° 4 CABLE GLAND 1/2" NPT - IP68 - Nickel plated brass CODE 1.609.1200.70 (CABLE 6 - 12 mm)
Mid Approval		
0	**0**	NONE
	1	OIML-R49- CLASS 1
	2	MI001/OIML-R49- CLASS 2
	3	MI004

MV110-A0A1A0A0A0A0 (Complete code example for order)

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 vendite@isoil.it	isomagservice@isoil.it

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

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