



ISOMAG 

The friendly magmeter

DATA SHEET

MV110



CE

ISOIL 
I N D U S T R I A

INDEX

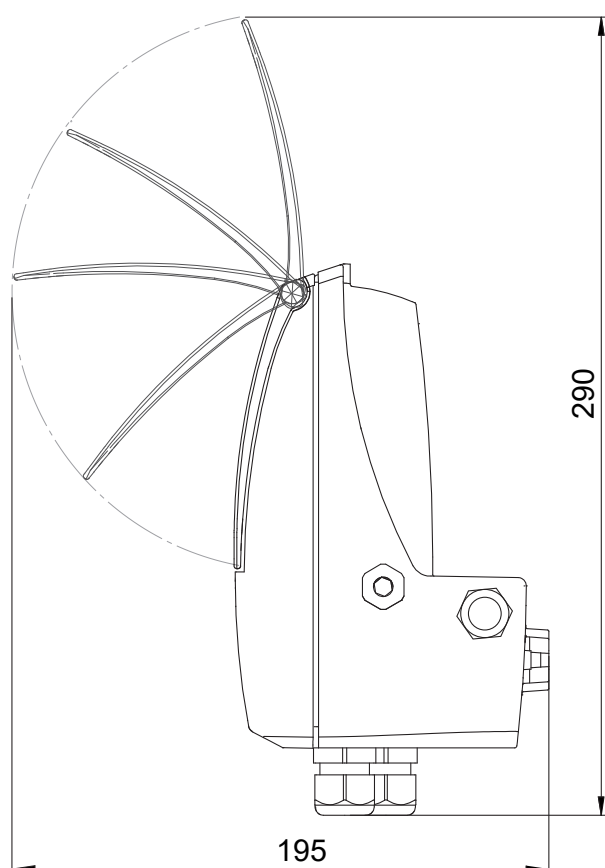
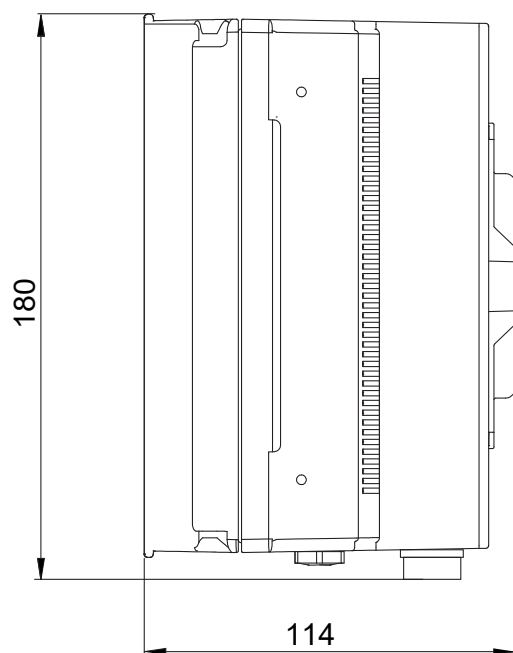
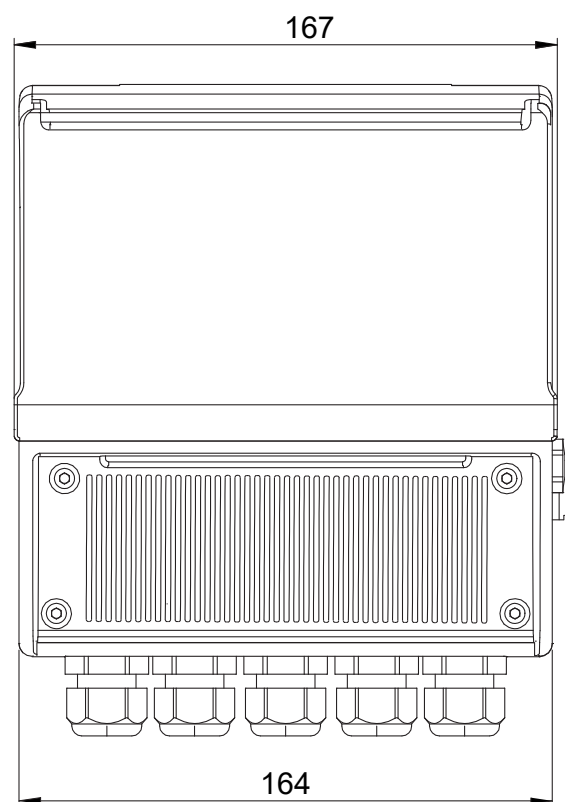
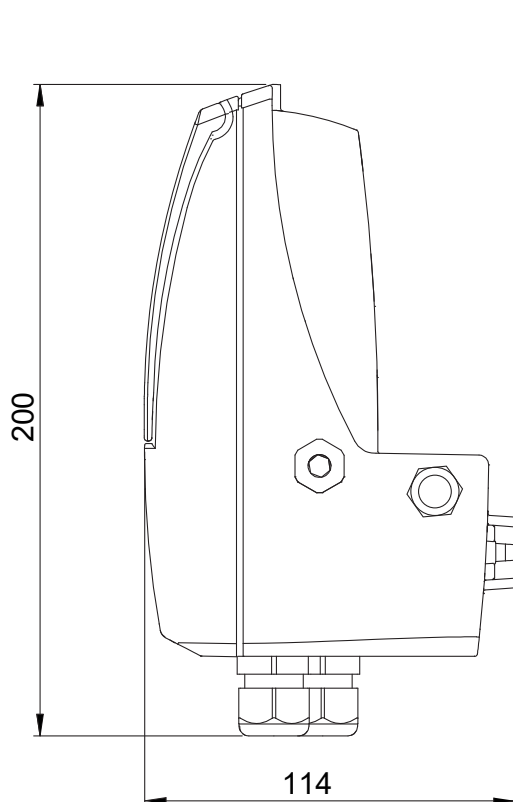
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OVERALL FEATURES	
Suitable For	☐ All the ISOMAG® sensors up to the DN 1000
Minimum conductivity	☐ 5 µS/cm
Altitude	☐ -200 m up to 4000 m
Ambient Temperature	☐ -20... +60°C / -4... +140 °F - Aluminium housing ☐ -10... +50°C / +14...+122 °F - Reinforced Nylon
Humidity Range	☐ 0÷100%
STANDARD FEATURES	
Version	☐ Compact ☐ Separate
Housing materials	☐ Painted Aluminium die casting ☐ Nylon reinforced with 15% of fiber glass ☐ AISI304 Stainless Steel
Protection Rate	☐ IP 67
Power Supply/Consumption	☐ 5W – 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 programming)
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)	
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 : 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
Outputs: Pulses/Frequence/Alarms	☐ 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) ☐ MeterBus
MID Certifications	☐ MI-001  ☐ MI-004
ACCURACY	
Measurements tolerance	☐ Flow rate (volume) = ±0,05% c.r ☐ Out 4/20 mA = ± 0,08 % c.r ☐ Frequency Out = ± 0,08% c.r
Accuracy (Whole System Converter+Sensor)	☐ See table below

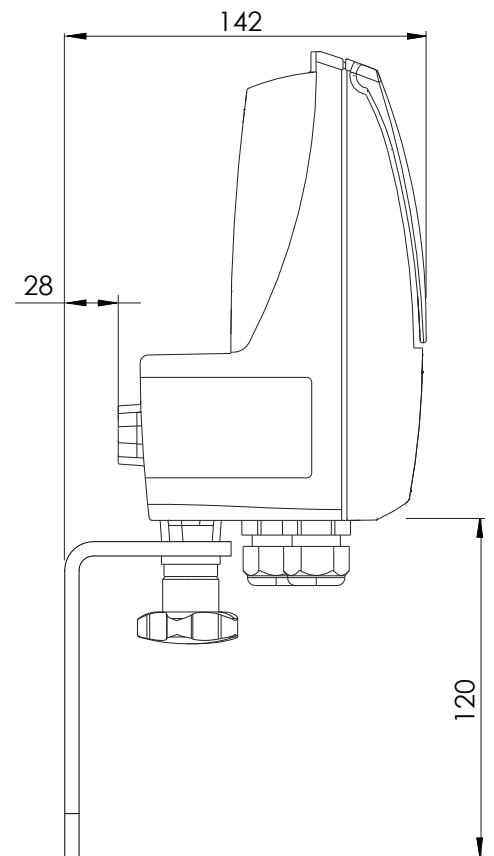
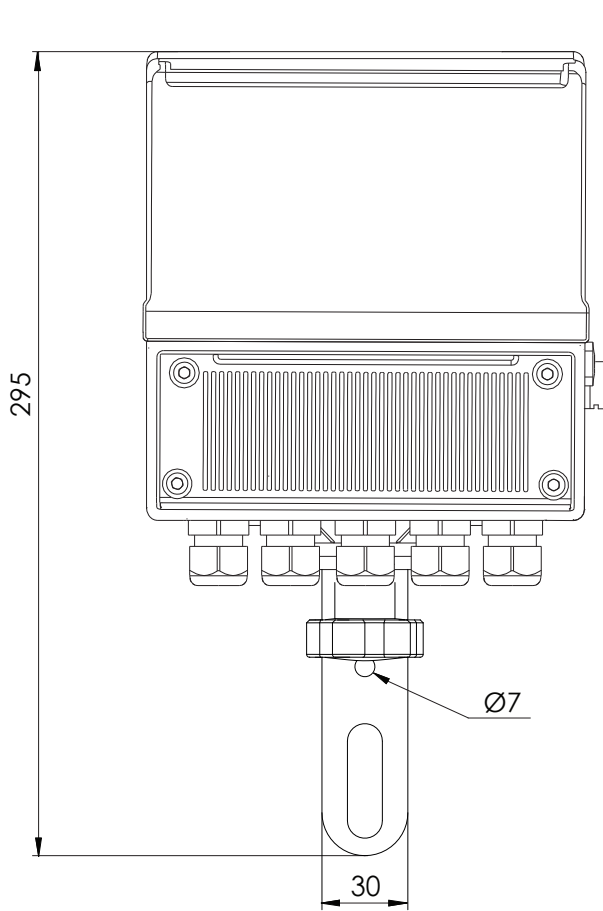


OVERALL DIMENSIONS

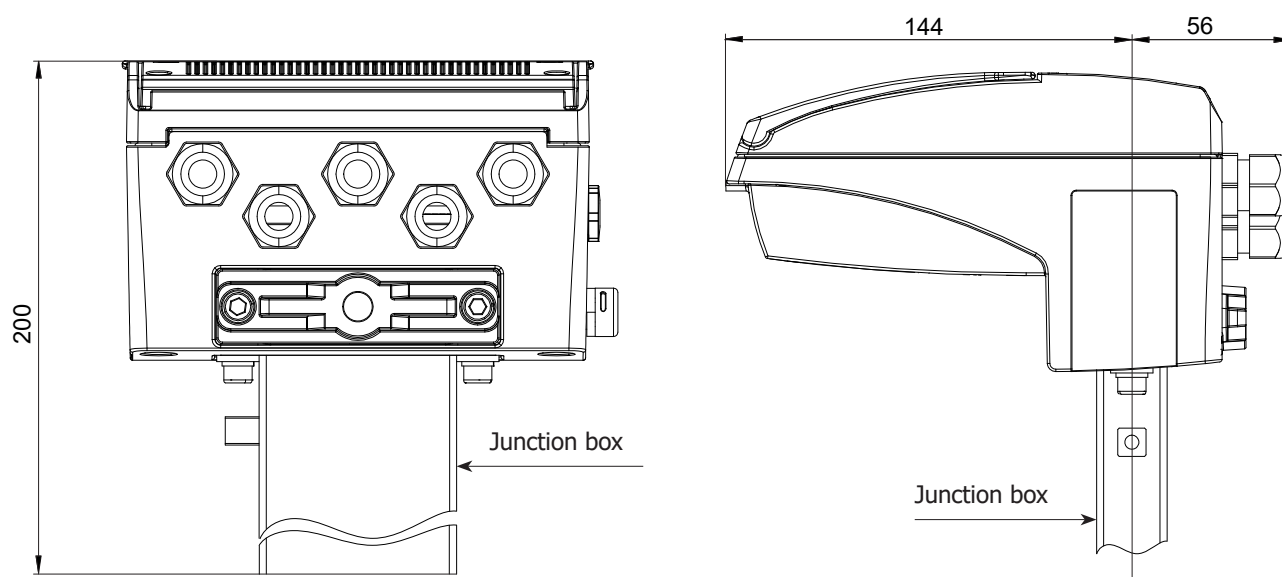
Compact version



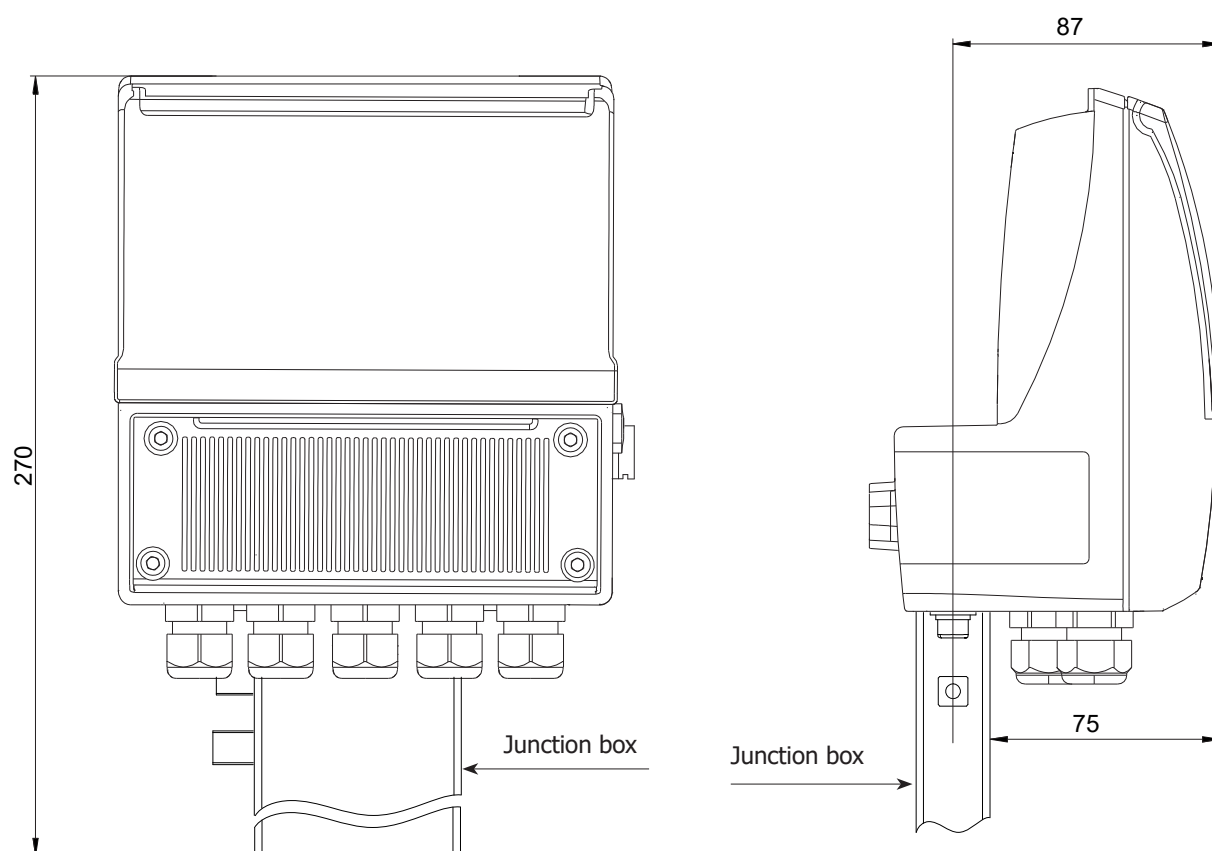
Separate (wall) version



Horizontal version

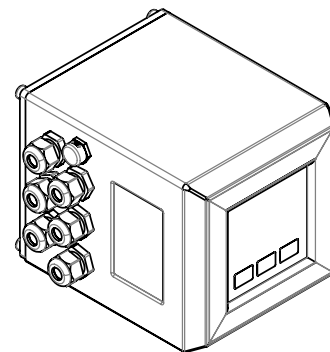
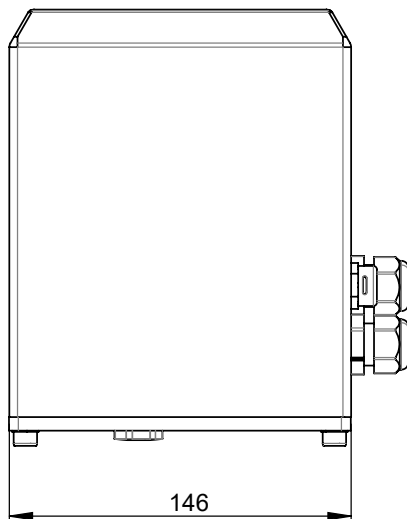
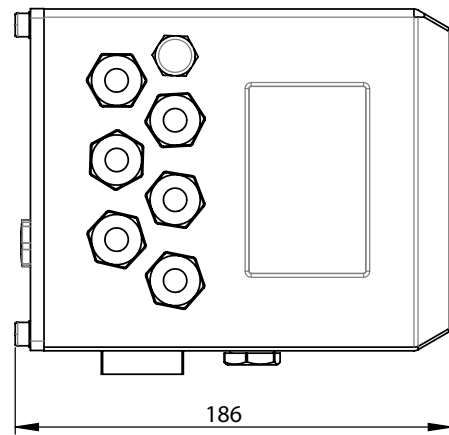
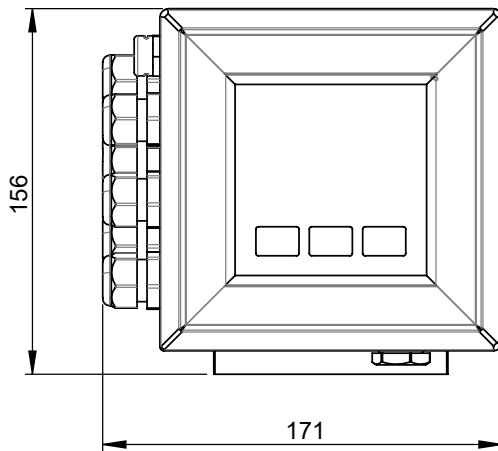


Vertical version

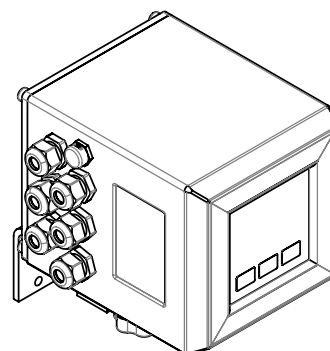
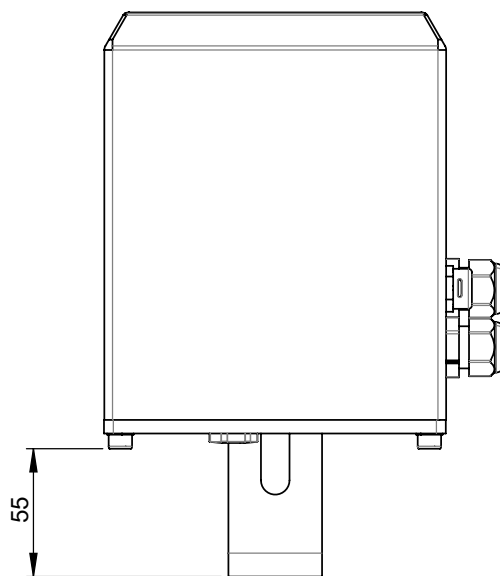
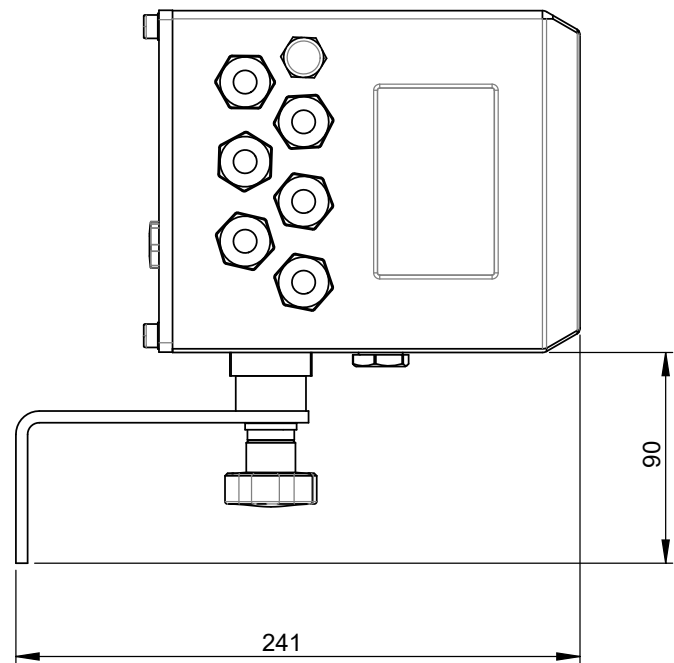
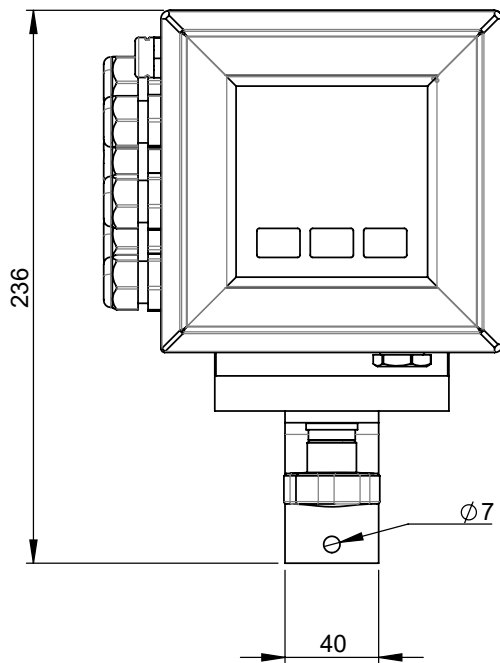


OVERALL DIMENSIONS (STAINLESS STEEL VERSION)

Compact Version

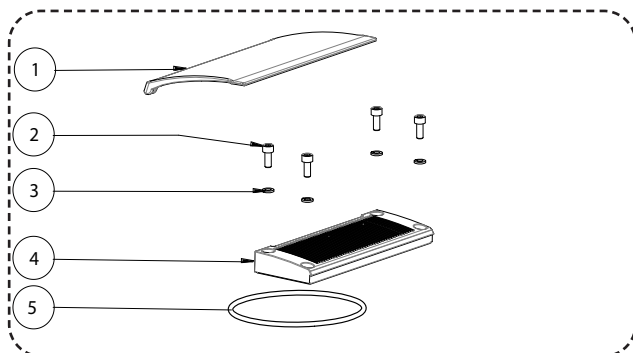


Separate Version

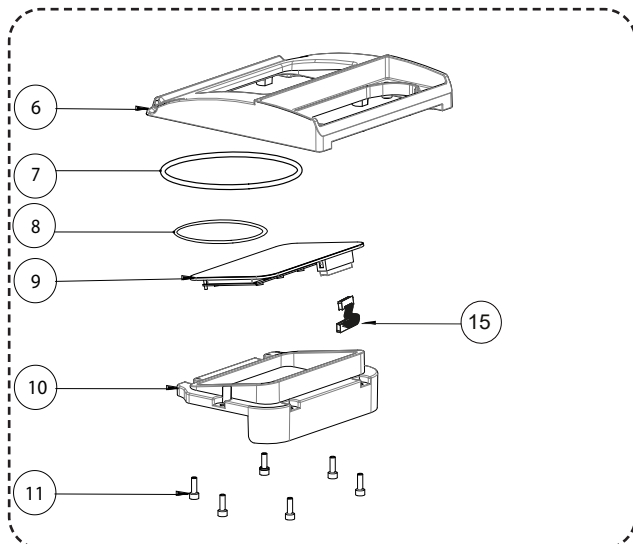


MV110 EXPLODED LAYOUT

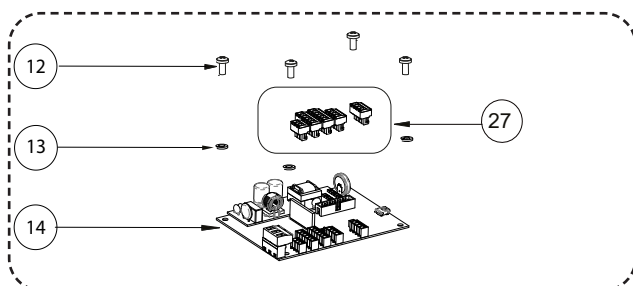
Terminal block cover



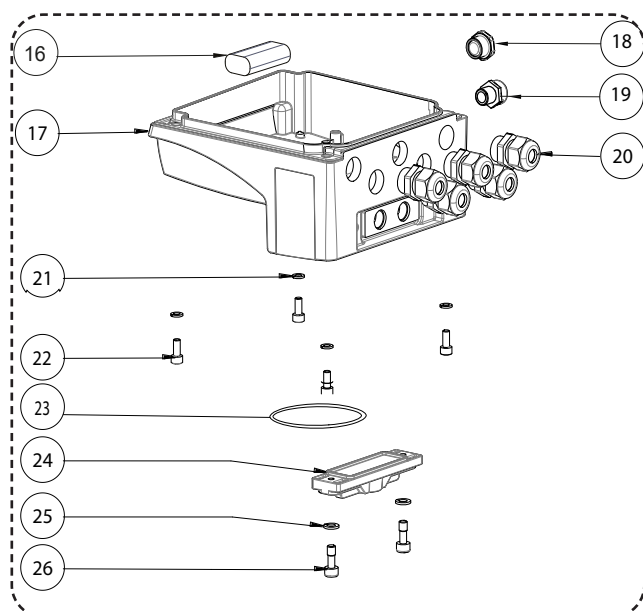
Main housing cover



PCB MV210

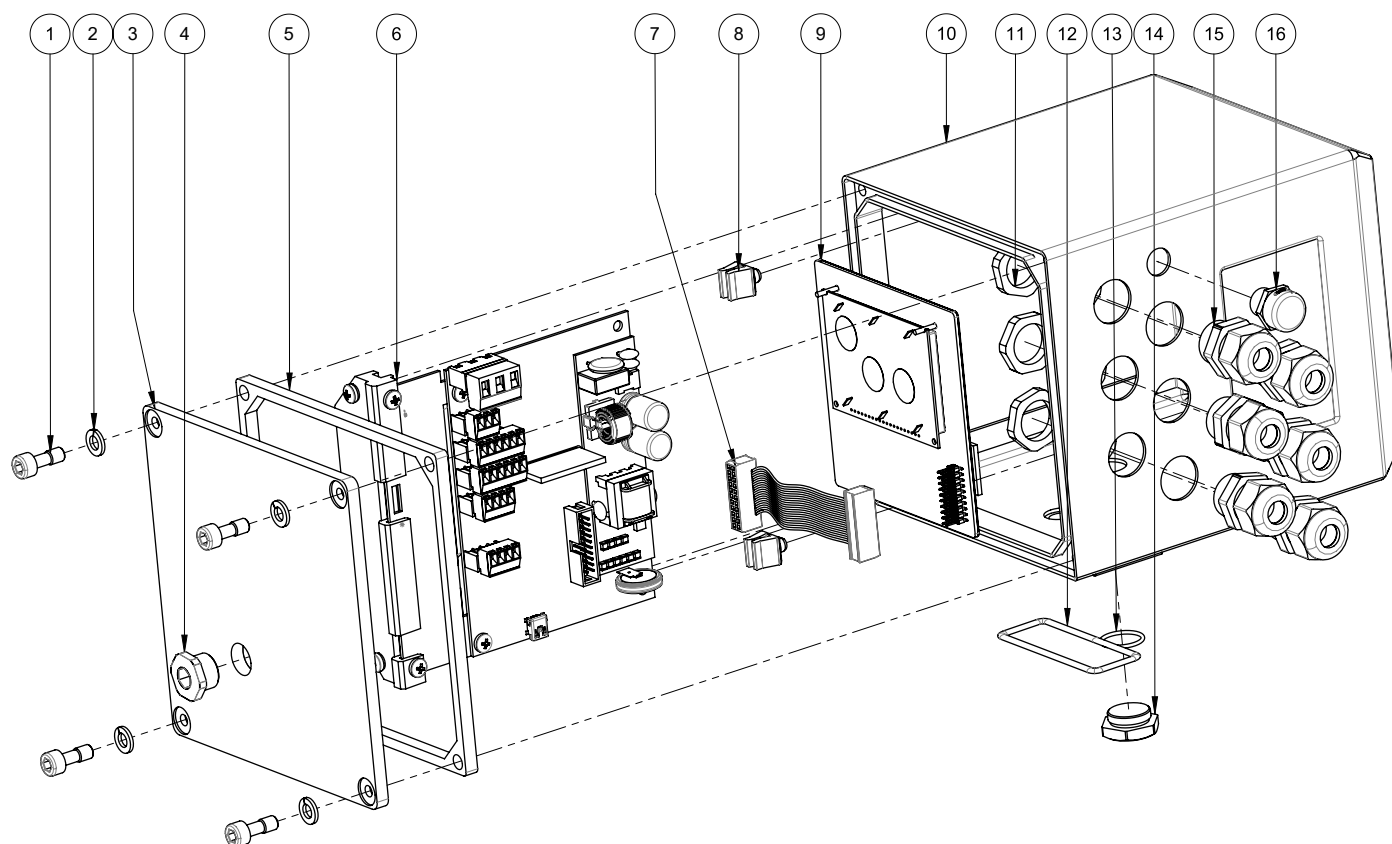


Main housing



POS.	DESCRIPTION	
	PA6 VERSION	ALLUMINIUM VERSION
1	PROTECTION COVER	
2	VITE M4x12	VITE M5x12
3	GROWER Ø4	GROWER Ø5
4	TERMINAL COVER	TERMINAL COVER
5	O-RING-4400	
6	HOUSING COVER	HOUSING COVER
7	O-RING-4700 (HOUSING COVER)	
8	O-RING-117x3 (DISPLAY)	
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	GROWER Ø4	SPRING WASHER Ø4
14	PCB MV210	
15	FLAT CABLE	
16	LITHIUM BATTERY	
17	PA6 MAIN HOUSING	ALUMINIUM MAIN HOUSING
18	PG9 CAP	
19	ANTICONDENSE CAP	
20	PG11 CABLE GLAND CABLE DIAMETER: Ø5-Ø10mm	
21	GROWER Ø4	SPRING WASHER Ø5
22	SCREW M4x12	SCREW M5x12
23	O-RING-155	
24	VERSION CAP (MATERIAL PA06)	
25	GROWER Ø6	
26	SCREW M6x16	
27	TERMINAL BLOCK SOLID WIRE: 26-16 AWG / 0.129-1.31 mm² STRANDED WIRE: 26-16 AWG / 0.129-1.31 mm² TORQUE: 3.0 Lb.In / 0.34 Nm	

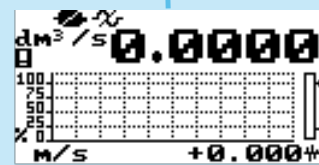
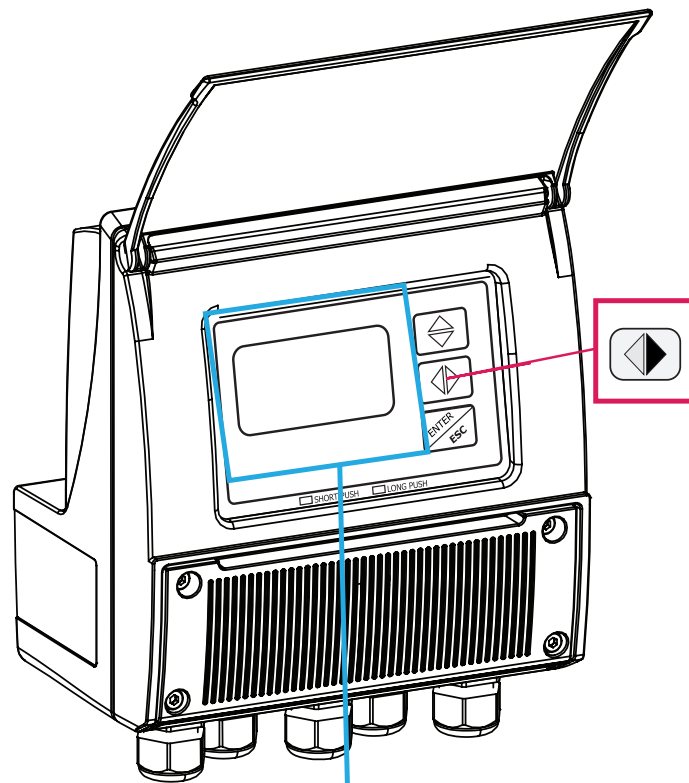
MV110 CONSTRUCTION (STAINLESS STEEL VERSION)



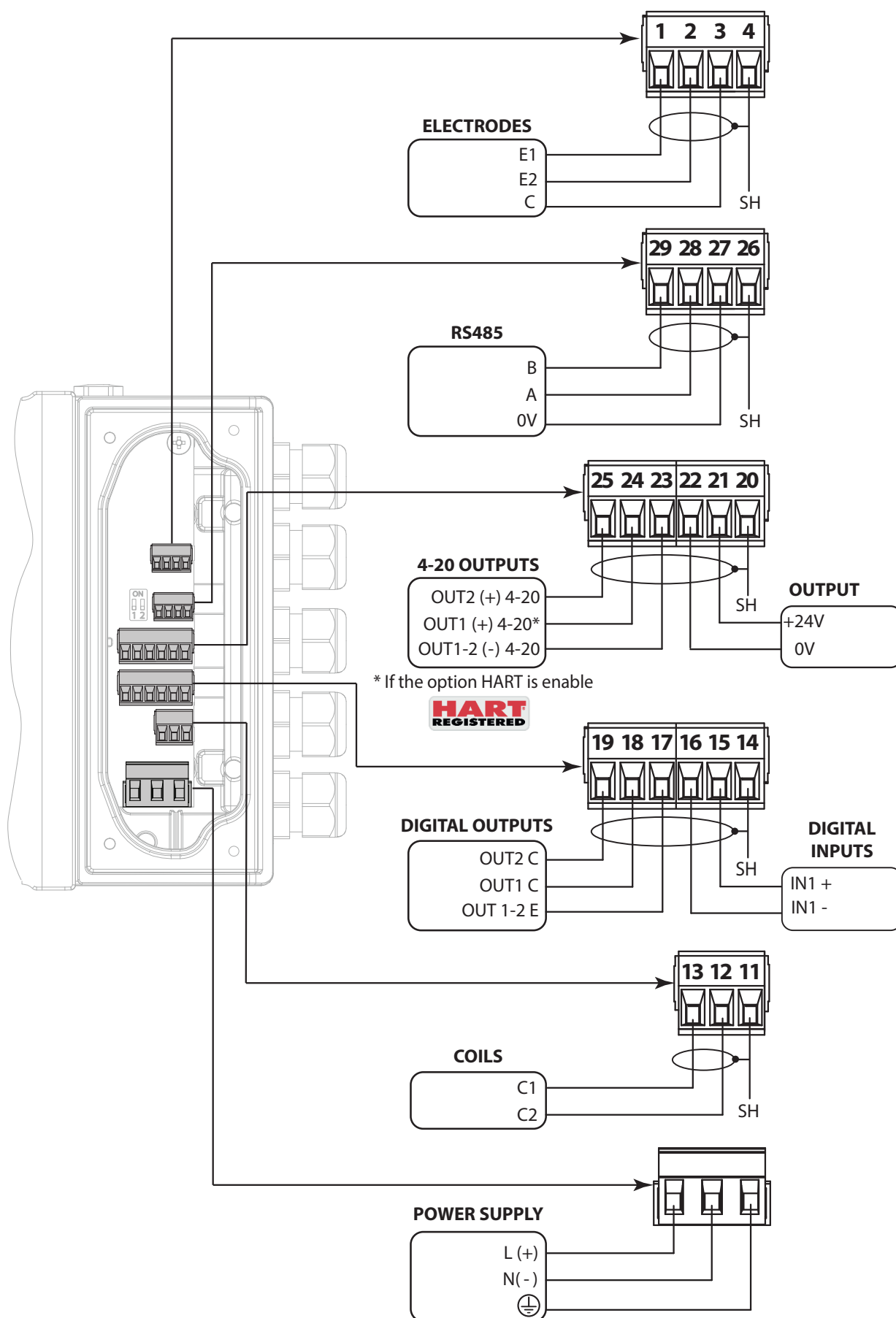
POS.	DESCRIPTION
1	SCREW M6X16
2	GROWER Ø 6
3	POLISHED COVER
4	PG9 CAP IP68
5	GASKET FOR Stainless steel HOUSING
6	BOARD FRAME M3C
7	FLAT CABLE
8	BOARD FIXING CLIPS
9	DISPLAY/BLIND
10	POLISHED Stainless steel HOUSING
11	PG11 NUT
12	FLAT GASKET O-RING 155
13	O-RING ORM 0160-15 Ø16X1.5
14	Stainless steel CAP M18X0.75
15	PG11 CABLE GLANDS
16	ANTICONDENSATION CAP

MAIN PAGES VISUALISATION

Different visualization possibilities by simply pressing of a key.

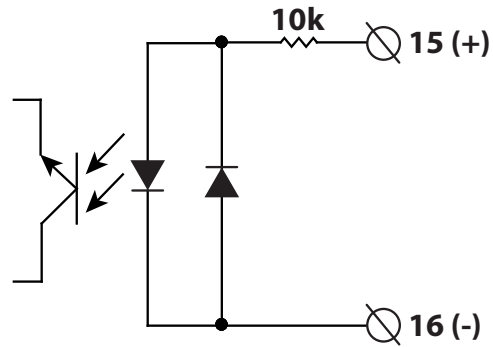


ELECTRICAL CONNECTIONS

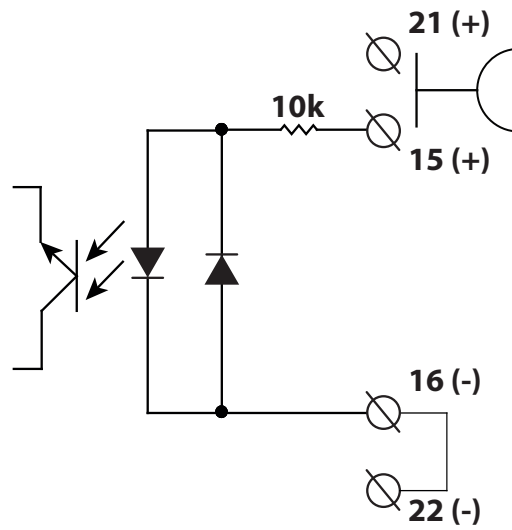


DIGITAL INPUT

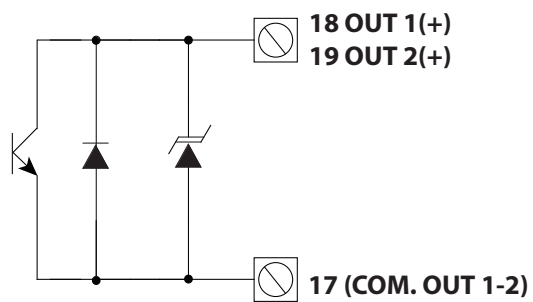
on/off input
(external power supply)



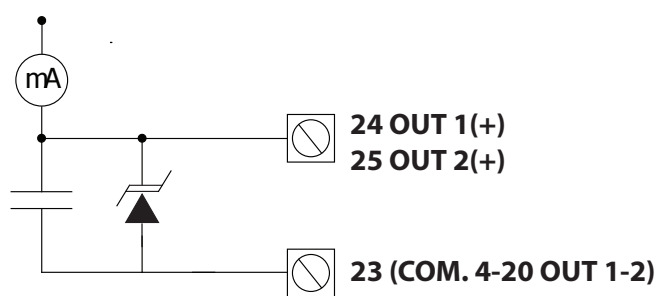
on/off input
(internal power supply)



DIGITAL OUTPUTS



ANALOG OUTPUTS



FUNCTIONS MENU

SENSOR

MAIN MENU			
1	1-Sensor		
2	2-Units		
3	3-Totalizer		
4	4-Config		
5	5-About		
6	6-Factory		
7	7-Reset		
8	8-Exit		
9	9-Back		
10	10-Home		
11	11-Exit		
12	12-Exit		
13	13-Exit		
SENSOR			
1	S. model =	0	1.1 Sensors model: Enter the first two characters of the serial number of the sensor
2	Lining =	UNSPEC.	1.2 Flow sensor lining material type
3	S. type =	FULL BORE	1.3 Type of sensor: fullbore or insertion
4	u. type =	METRIC	1.4 Type of measure units for sensor parameter: metric or imperial
5	Diam	mm 00025.0	1.5 Insert ND of sensor (0-2500)
6	KA =	+00.9637	1.6 Calibration data of sensor visualized on sensor's label
7	KA- =	-04.4904	1.7 Sensor coefficient KZ (zero point)
8	KZ =	+0000000	1.8 Sensor coefficient KD
9	KD =	+0000000	1.9 Insertion position
10	Ins. position =	0	1.10 KP dynamic, coefficient for insertion
11	HP Dinamic =	OFF	1.11 Sensor coefficient Ki
12	Ki =	01.8727	1.12 Sensor coefficient Kp
13	Kp =	01.0000	1.13 Sensor coefficient KC
14	KC =	1.00000	1.14 CW volume total. decimal point position
15	C.curr =	025.0	1.15 Current regulator proportional band
16	C.Reg.PB =	004	1.16 Current regulator derivation constant
17	C.Reg.DH =	008	1.17 Measure sampling frequency
18	S. Freq. = Hz	50	1.18 Enables the preamplifier
19	Preamplif.	OFF	1.19 Enables the empty pipe detection feature
20	E.P Detect =	ON	1.20 Empty pipe detection threshold
21	R max = kohm	0500	1.21 Electrode cleaning
22	El. Cleaning =	OFF	1.22 Sensor connecting cable length
23	S. cable =	m 000	1.23 Signal error delay (n. sample)
24	S. err. delay =	010	1.24 Automatic sensor verify enable
25	Sens. verify =	OFF	1.25 Pipe hydraulic zero calibration
26	Zero point cal.		1.27 Coefficient KL values
27	KL	00.00000000	

UNITS

MAIN MENU			
1	1-Sensor		
2	2-Units		
3	3-Totalizer		
4	4-Config		
5	5-About		
6	6-Factory		
7	7-Reset		
8	8-Exit		
9	9-Back		
10	10-Home		
11	11-Exit		
12	12-Exit		
13	13-Exit		
UNITS			
1	Diam.	mm	2.1 Nominal diameter measure unit
2	S.cable	m	2.2 Cable length on separate version
3	FR.unit	METRIC	2.3 Flowrate type measure unit: metric or not metric
4	PI1 unit	METRIC	2.4 Pulse 1 type measure unit: metric or not metric
5	PI2 unit	METRIC	2.5 Pulse 2 type measure unit: metric or not metric
6	T+ unit	METRIC	2.6 Total direct totalizer measure unit type: metric or not metric
7	T+ unit	g	2.7 Total direct totalizer measure unit
8	T+ D.P	3	2.8 Total direct totalizer decimal point position
9	P+ unit	METRIC	2.9 Partial direct totalizer measure unit type: metric or not metric
10	P+ unit	g	2.10 Partial direct totalizer measure unit
11	P+ D.P	3	2.11 Partial direct totalizer decimal point position
12	T- unit	METRIC	2.12 Total reverse totalizer measure unit type: metric or not metric
13	T- unit	g	2.13 Total reverse totalizer measure unit
14	T- D.P	3	2.14 Total reverse totalizer decimal point position
15	P- unit	METRIC	2.15 Partial reverse totalizer measure unit type: metric or not metric
16	P- unit	g	2.16 Partial reverse totalizer measure unit
17	P- D.P	3	2.17 Partial reverse totalizer decimal point position
18	Temp.unit	°C	2.18 Temperature measure unit
19	Mass units	ON	2.19 Enable/disable the selection of mass units on full scale set
20	Sg=kg/dm3	1.0000	2.20 Specific gravity coefficient

SCALES

MAIN MENU		
1	Sensor	
2	Units	
3	Scales	
4	Measure	
5	Alarms	
6	Inputs	
SCALES		
7	FS1 g/s	4908.7
8	FS2 g/s	4908.7
9	Pls1=g	1000.00
10	Tpls1=ms	0050.0
11	Pls2=g	1000.00
12	Tpls2=g	0050.0
13	Frq1=Hz	1000.00
	Frq2=Hz	1000.00

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)

MEASURES

MAIN MENU		
1	Sensor	
2	Units	
3	Scales	
4	Measure	
5	Alarms	
6	Inputs	
MEASURES		
7	Damping	SMART
8	Cut-off= %	00.1
9	DT Min.	ON
10	T1HC enable	ON
11	T1HC	OFF

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
4.5	High immunity inputs

ALARMS

MAIN MENU		
1	Sensor	
2	Units	
3	Scales	
4	Measure	
5	Alarms	
6	Inputs	
ALARMS		
7	Max+ = dm3/s	OFF
8	Max- = dm3/s	OFF
9	Min+ = dm3/s	OFF
10	Min- = dm3/s	OFF
11	Hysteresis=%	03
12	mA v.alarm=%	000
13	Hz v.alarm=%	000

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

INPUTS

MAIN MENU		
1	Sensor	
2	Units	
3	Scales	
4	Measure	
5	Alarms	
6	Inputs	
INPUTS		
7	T+ reset	OFF
8	P+ reset	OFF
9	T- reset	OFF
10	P- reset	OFF
11	Count lock	OFF
12	Meas.lock	OFF
13	Calibration	OFF
	Range change	OFF

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

OUTPUTS

```

MAIN MENU
1-Sensor
2-Units
3-Scales
4-Measure
5-Alarms
6-Inputs
7-Outputs
8-Communication
9-Display
10-Data logger
11-
12-
13-

```

OUTPUTS

```

10- Out1          PULSES+
11- Out2          PULSES-
12- Out mA1       4_22 +/-
13- Out mA2       4_22 +/-
    A1S           4.9087
    A2S           4.9087

```

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

COMM.

```

MAIN MENU
1-Sensor
2-Units
3-Scales
4-Measure
5-Alarms
6-Inputs
7-Outputs
8-Communication
9-Display
10-Data logger
11-
12-
13-

```

COMMUNICATION

```

1 HART pr.        05
2 HART O. C.      0N
3 Dev. Addr       001
4 Speed=bps       9600
5 Parity=         NO
6 Delay=ms        00
7 C. timeout      2
8 MBUS ID =       220483
9 MBUS Dev.T =    7

```

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)
 8.8 MeterBus Id.Number (Second.Add.)
 8.9 MeterBus Device Type (Media)



DISPLAY

```

MAIN MENU
1-Sensor
2-Units
3-Scales
4-Measure
5-Alarms
6-Inputs
7-Outputs
8-Communication
9-Display
10-Data logger
11-
12-
13-

```

DISPLAY

```

11- Language       EN
12- Contrast       5
13- Disp.time=s    020
    D.rate=Hz      5
    Disp. Fn.      1
    Disp.lock      0N
    Part. Tot      0N
    Neg. Tot.      0N
    Net tot.       0N
    Disp.date      0N
    Quick start    0N

```

9.1 Choice of the language
 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

DATA LOGGER

DATA LOGGER

D.logger en. **ON**
Meas. units **ON**
Field separat. **;**
Decimal separ. **.**
Interv. **01:01:00**
Log T+ **ON**
Log P+ **ON**
Log T- **ON**
Log P- **ON**
Log TN **ON**
Log PN **ON**
Log Q (UM) **ON**
Log Q (%) **ON**
Log AL.EV **ON**
Log STR **ON**
Log BTS **ON**
Log IBV **ON**
Log EDC **ON**
Log EAC **ON**
Log EIZ **ON**
Log SCU **ON**

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

MA 1
 2
 3
 4
 5
 6
 7
 8-Communication
 9-Display
 10-Data logger
 11-Functions
 12-Diagnostic
 13-System

FUNCTIONS

FUNCTIONS

T+ reset
P+ reset
T- reset
P- reset
Load Sens. F. def
Load Conv. F. def
Save Sens. F. def
Save Conv. F. def
Calibration

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

MA 1
 2
 3
 4
 5
 6
 7
 8
 9-Display
 10-Data logger
 11-Functions
 12-Diagnostic
 13-System

DIAGNOSTIC

DIAGNOSTIC

Self test
Test display
Sens. verify
Flow sim. = **ON**
Display measures
Disp. Comm. Vars
Display graphs
Gen. sens. set
SD card info
Firmware info
S/N= **999001**
WT= **0002:21:00 : 22**

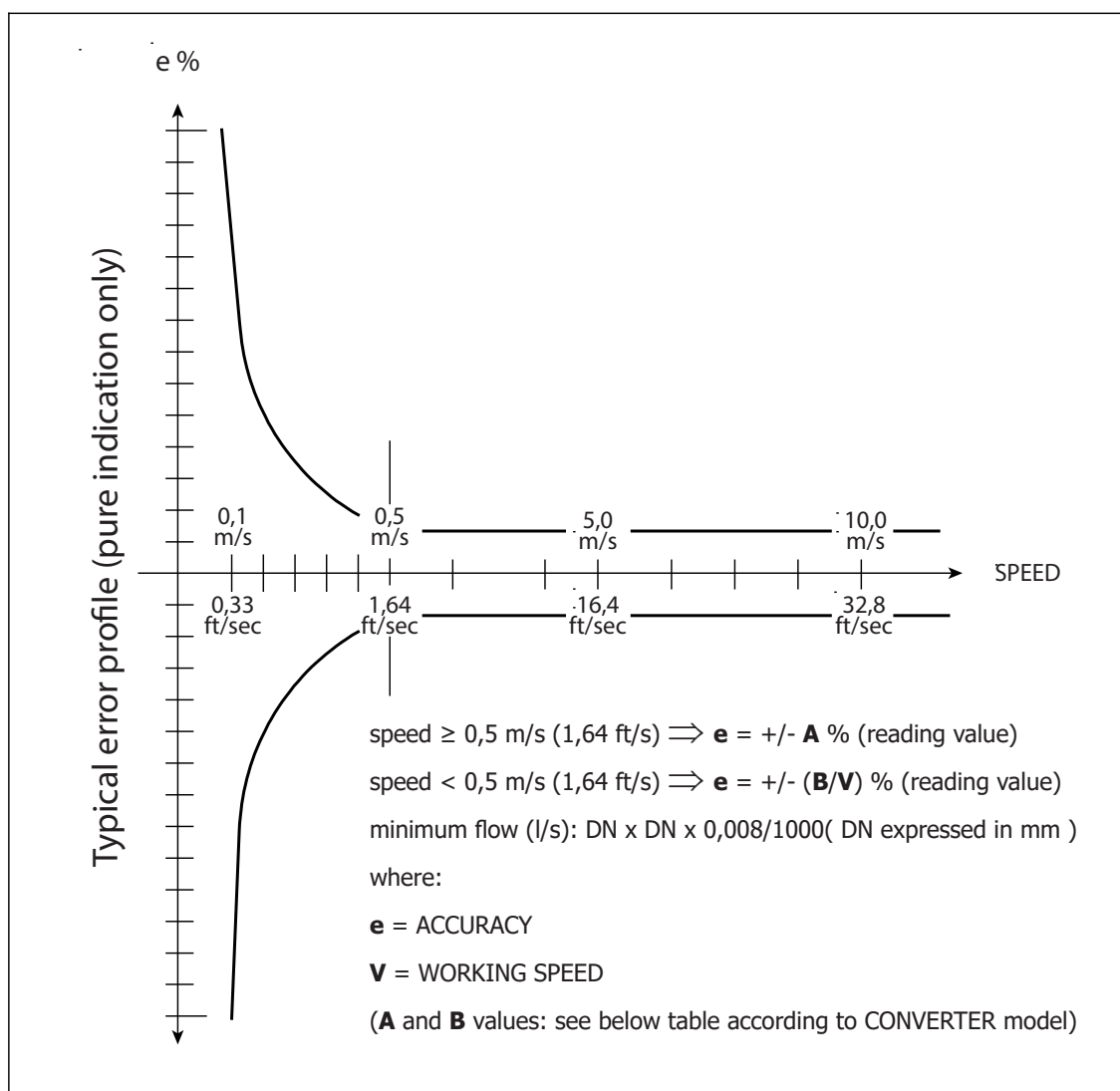
12.1 Self test diagnostic function
 12.2 Function tests physical display
 12.3 Sensor verify diagnostic function
 12.4 Flow rate simulation enabling
 12.5 Display internal measured value
 12.6 Display comm. diagnostic values
 12.7 Display measure as graphs
 12.8 Generic sensor parameters set
 12.9 Sd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

MA 1
 2
 3
 4
 5
 6
 7
 8
 9-Display
 10-Data logger
 11-Functions
 12-Diagnostic
 13-System

SYSTEM

SYSTEM		
Dayl. Saving =	ON	13.1 Daylight saving time change
Time zone =	h+01.00	13.2 Localized time zone
2016/04/04-16:07		13.3 System date and time
L1 code =	*****	13.4 Access level 1 code
L2 code =	*****	13.5 Access level 2 code
L3 code =	*****	13.6 Access level 3 code
L4 code =	*****	13.7 Access level 4 code
L5 code =	*****	13.8 Access level 5 code
L6 code =	*****	13.9 Access level 6 code
Restr. Access=	ON	13.10 Restricted access level
010.011.012.013		13.11 Device IP network address
010.011.012.014		13.12 Client IP network address
255.255.255.000		13.13 Network mask
HT	0.96469	13.14 Calibration coefficient KT
HS	1.00000	13.15 Calibration coefficient KF
HR	1.00000	13.16 Calibration coefficient KR
DAC1	(°C)	13.17 DAC1 out 4mA calibration point
DAC1	(°C)	13.18 DAC1 out 20mA calibration point
DAC2	661	13.19 DAC2 out 4mA calibration point
DAC2	3327	13.20 DAC2 out 20mA calibration point
Stand-by	3453	13.21 Stand-by
FW update	14718	13.22 firmware update
10-Data logger 11-Functions 12-Diagnostic 13-System		

ACCURACY



Full bore Sensor

MS501/MS1000/MS2410/MS2500			MS600			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**	1,31**	0,8*	0,4**	1,31**	2	1	3,28

* = 0,4 (special)

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

Insertion sensor

See sensor 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 %

MI-001 OIML R49 CLASS1: MV110

The **MS2500** sensor's diameters listed below, coupled with **MV110** comply with the European directive:
DIRECTIVE 2014/32/EU (MID) ANNEX III (MI-001) AND 2015/13/EU- OIML R49

SIZE		Q3	Q2	Q1	R
mm	inch	m3/h			Q3/Q1
25	1	16	0,26	0,16	100
32	1 ¼	25	0,40	0,25	
40	1 ½	40	0,64	0,40	
50	2	63	1,01	0,63	
65	2 ½	100	1,6	1,00	
80	3	160	2,6	1,60	
100	4	250	4,0	2,50	
125	5	400	6,4	4,00	
150	6	630	10,1	6,30	
200	8	1000	16	10,00	
250	10	1600***	26	16,0	
300	12	2500**	40	25	
350	14	2500**	40	25	
400	16	4000**	64	40	
450	18	4000**	64	40	
500	20	6300	101	63	
600	24	10000	160	100	
700	28	10000	160	100	
800	32	16000*	256	160	
900	36	16000*	256	160	
1000	42	25000*	400	250	

SIZE		Q3	Q2	Q1	R
mm	inch	m3/h			Q3/Q1
25	1	16	0,10	0,064	250
32	1 ¼	25	0,16	0,10	
40	1 ½	40	0,26	0,16	
50	2	63	0,40	0,25	
65	2 ½	100	0,64	0,40	
80	3	160	1,0	0,64	
100	4	250	1,6	1,0	
125	5	400	2,6	1,6	
150	6	630	4,0	2,5	
200	8	1000	6,4	4,0	
250	10	1600***	10	6,4	
300	12	2500**	16	10	
350	14	2500**	16	10	
400	16	4000**	26	16	
450	18	4000**	26	16	
500	20	6300	40	25	
600	24	10000	64	40	
700	28	10000	54	40	
800	32	16000*	102	64	
900	36	16000*	102	64	
1000	42	25000*	160	100	

(*) : Calibration flowrate 14000 m3/h - as for max rig flowrate L8

(**) : Calibration flowrate 1400 m3/h - as for max test rig flowrate L7

(***) Calibration flowrate 1100 m3/h - as for max test rig flowrate L6

MI-001 OIML R49 CLASS 2: MV110

The **MS2500** sensor's diameters listed below, coupled with **MV110** comply with the European directive:
DIRECTIVE 2014/32/EU (MID) ANNEX III (MI-001) AND 2015/13/EU- OIML R49

SIZE		Q3	Q2	Q1	R
mm	inch	m3/h			Q3/Q1
25	1	16	0,16	0,10	160
32	1 ¼	25	0,25	0,16	
40	1 ½	40	0,40	0,25	
50	2	63	0,63	0,39	
65	2 ½	100	1,0	0,63	
80	3	160	1,6	1,0	
100	4	250	2,5	1,6	
125	5	400	4,0	2,5	
150	6	630	6,3	3,9	
200	8	1000	10	6,3	
250	10	1600***	16	10	
300	12	2500**	25	15,625	
350	14	2500**	25	15,625	
400	16	4000**	40	25	
450	18	4000**	40	25	
500	20	6300	63	39,375	
600	24	10000	100	62,5	
700	28	10000	100	62,5	
800	32	16000*	160	100	
900	36	16000*	160	100	
1000	42	25000*	250	156,25	

SIZE		Q3	Q2	Q1	R
mm	inch	m3/h			Q3/Q1
25	1	16	0,10	0,06	250
32	1 ¼	25	0,16	0,10	
40	1 ½	40	0,26	0,16	
50	2	63	0,40	0,25	
65	2 ½	100	0,64	0,40	
80	3	160	1,0	0,64	
100	4	250	1,6	1,0	
125	5	400	2,6	1,6	
150	6	630	4,0	2,5	
200	8	1000	6,4	4,0	
250	10	1600***	10	6,4	
300	12	2500**	16	10	
350	14	2500**	16	10	
400	16	4000**	26	16	
450	18	4000**	26	16	
500	20	6300	40	25	
600	24	10000	64	40	
700	28	10000	54	40	
800	32	16000*	102	64	
900	36	16000*	102	64	
1000	42	25000*	160	100	

(*) : Calibration flowrate 14000 m3/h - as for max rig flowrate L8

(**) : Calibration flowrate 1400 m3/h - as for max test rig flowrate L7

(***) Calibration flowrate 1100 m3/h - as for max test rig flowrate L6

SIZE		Q3	Q2	Q1	R
mm	inch	m3/h			Q3/Q1
25	1	16	0,06	0,04	400
32	1 ¼	25	0,10	0,06	
40	1 ½	40	0,16	0,10	
50	2	63	0,25	0,16	
65	2 ½	100	0,40	0,25	
80	3	160	0,64	0,40	
100	4	250	1,0	0,63	
125	5	400	1,6	1,0	
150	6	630	2,5	1,6	
200	8	1000	4,0	2,5	
250	10	1600***	6,4	4,0	
300	12	2500**	10	6,3	
350	14	2500**	10	6,3	
400	16	4000**	16	10	
450	18	4000**	16	10	
500	20	6300	25	16	
600	24	10000	40	25	
700	28	10000	40	25	
800	32	16000*	64	40	
900	36	16000*	64	40	
1000	42	25000*	100	63	

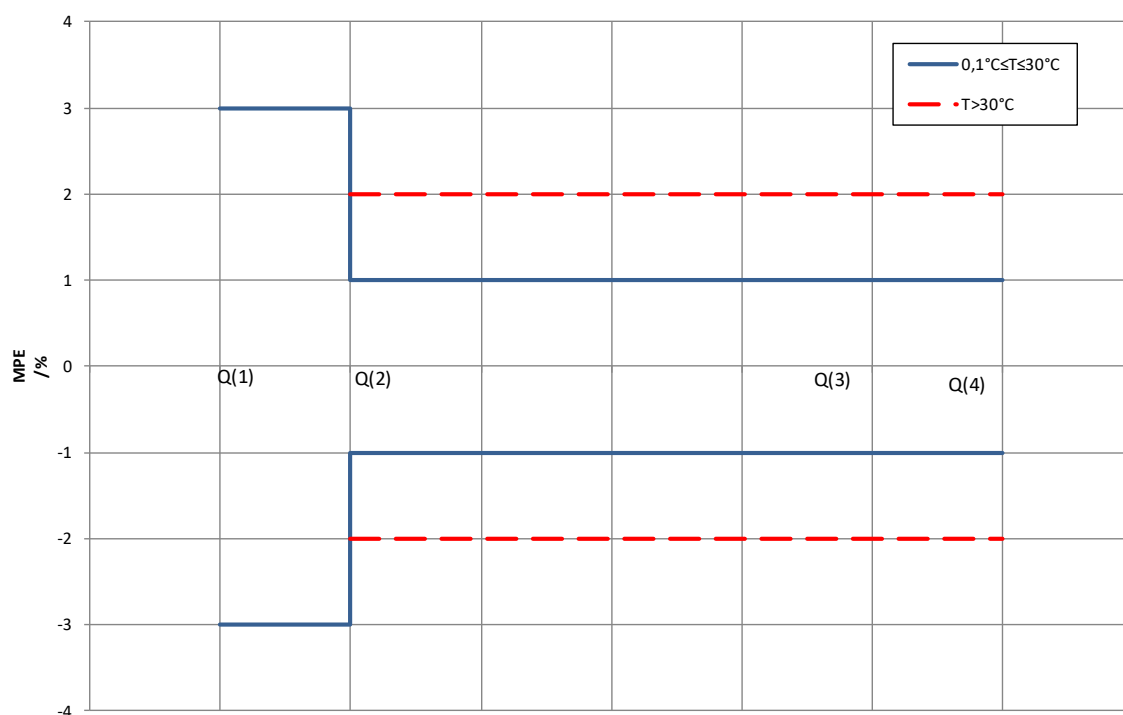
(*) : Calibration flowrate 14000 m3/h - as for max rig flowrate L8

(**) : Calibration flowrate 1400 m3/h - as for max test rig flowrate L7

(***) Calibration flowrate 1100 m3/h - as for max test rig flowrate L6

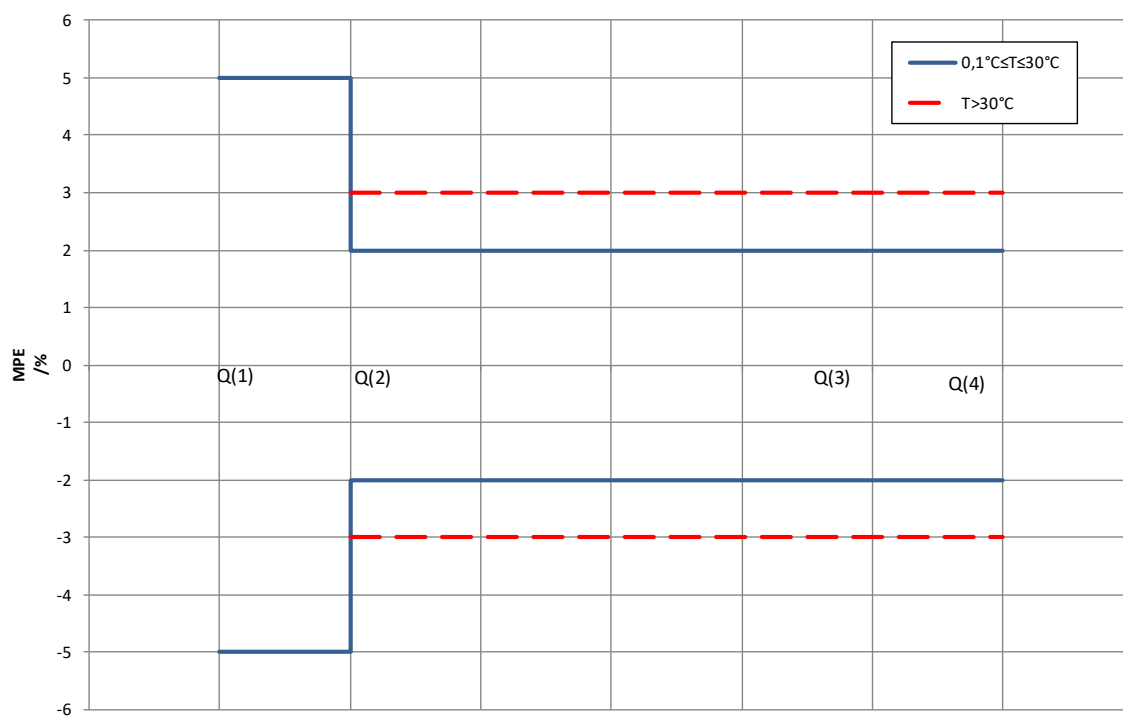
MPE - MI 001 - OIML R49 ACCURACYCLASS 1

(OIML R 49-1:2013 (E) - ISO4064-1:2017)



MPE - MI 001 - OIML R49 ACCURACYCLASS 2

(OIML R 49-1:2013 (E) - ISO4064-1:2017)



MI-004 OIML R75 CLASS1: MV110

The **MS2500** sensor's diameters listed below, coupled with **MV110** comply with the European directive:
DIRECTIVE 2014/32/EU (MID) ANNEX VI (MI-004) - OIML R75

SIZE		q _p	q _s	0,1 q _p	q _i	MC
mm	inch	m3/h				q _p /q _i
25	1	16	16	1,6	0,16	100
32	1 ¼	25	25	2,5	0,25	
40	1 ½	40	40	4	0,40	
50	2	63	63	6,3	0,63	
65	2 ½	100	100	10	1,00	
80	3	160	160	16	1,60	
100	4	250	250	25	2,50	
125	5	400	400	40	4,0	
150	6	630	630	63	6,3	
200	8	1000	1000	100	10	
250	10	1600*	1600	160	20,00	80
300	12	2500*	2500	250	31,25	
350	14	2500*	2500	250	31,25	
400	16	4000*	4000	400	50,00	

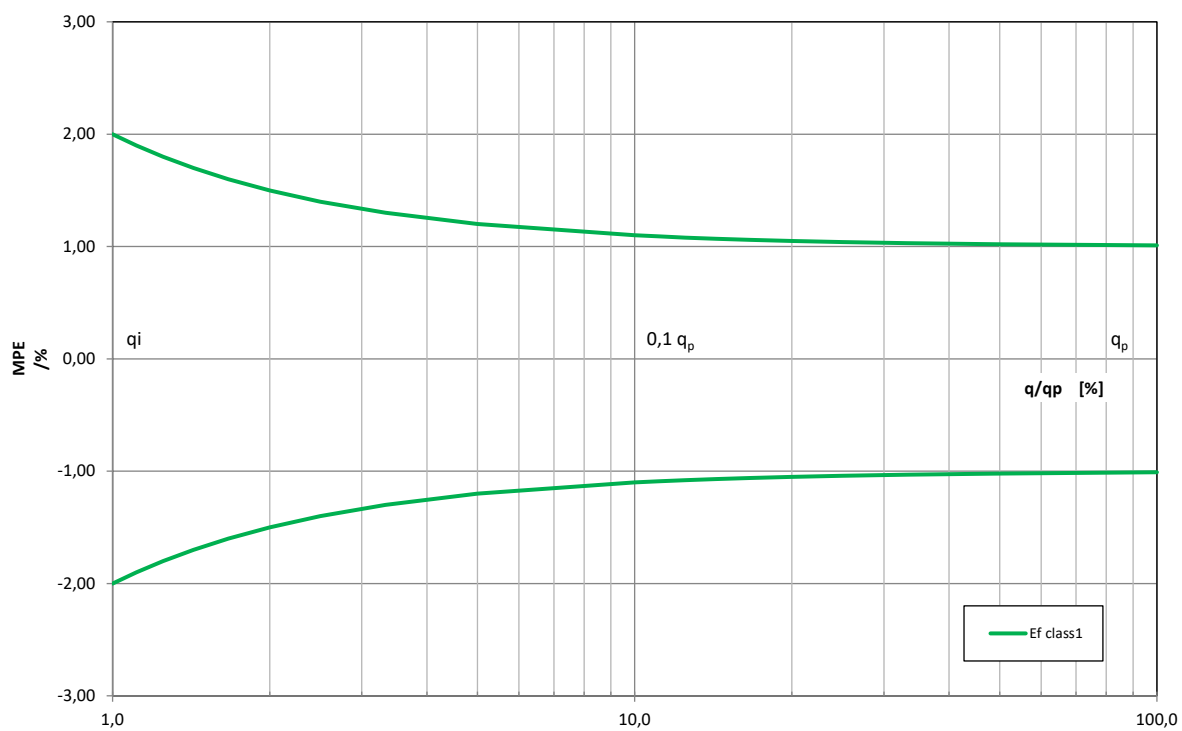
SIZE		q _p	q _s	0,1 q _p	q _i	MC
mm	inch	m3/h				q _p /q _i
25	1	10	16	1	0,2	50
32	1 ¼	16	25	1,6	0,32	
40	1 ½	25	40	2,5	0,5	
50	2	40	63	4	0,8	
65	2 ½	63	100	6,3	1,26	
80	3	100	160	10	2	
100	4	160	250	16	3,2	
125	5	250	400	25	5	
150	6	400	630	40	8	
200	8	630	1000	63	12,6	
250	10	1000	1600	100	20	10
300	12	1600*	2500	160	32	
350	14	2500*	2500	250	50	
400	16	2500*	4000	250	50	

SIZE		q _p	q _s	0,1 q _p	q _i	MC
mm	inch	m3/h				q _p /q _i
25	1	10	16	1	0,4	25
32	1 ¼	16	25	1,6	0,64	
40	1 ½	25	40	2,5	1	
50	2	40	63	4	1,6	
65	2 ½	63	100	6,3	2,52	
80	3	100	160	10	4	
100	4	160	250	16	6,4	
125	5	250	400	25	10	
150	6	400	630	40	16	
200	8	630	1000	63	25,2	
250	10	1000	1600	100	40	10
300	12	1600*	2500	160	64	
350	14	2500*	2500	250	100	
400	16	2500*	4000	250	100	

SIZE		q _p	q _s	0,1 q _p	q _i	MC
mm	inch	m3/h				q _p /q _i
25	1	10	16	1	1	10
32	1 ¼	16	25	1,6	1,6	
40	1 ½	25	40	2,5	2,5	
50	2	40	63	4	4	
65	2 ½	63	100	6,3	6,3	
80	3	100	160	10	10	
100	4	160	250	16	16	
125	5	250	400	25	25	
150	6	400	630	40	40	
200	8	630	1000	63	63	
250	10	1000	1600	100	100	10
300	12	1600*	2500	160	160	
350	14	2500*	2500	250	250	
400	16	2500*	4000	250	250	

(*) : Flow rates reduced to the limits of the system

MI 004 - MPE - ACCURACY CLASS 1 (UNI EN 1434-1:2016)



HOW TO ORDER

CODE EXAMPLE		CODE/DESCRIPTION
Display		
A	A	Blind version (without display and programming keys, cable USB type A/USB MINI B is REQUIRED TO PROGRAMMING)
	B	Graphic LCD WSTN - B/W - back light display, point matrix 128 x 64, 8 line/16 characters and 3 programming keys (mandatory for MI001)
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 (CONNECTORS SUPPLIED: MALE + FEMALE)
	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 (CONNECTORS SUPPLIED: MALE + FEMALE)
	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 (CONNECTORS SUPPLIED: MALE + FEMALE)
	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 (CONNECTORS SUPPLIED: MALE + FEMALE)
	6	AISI304 Stainless Steel housing, protection rate IP67 (DISPLAY NOT ROTABLE) - NO CONNECTORS AVAILABLE
	7	Painted aluminum die casting, ONLY COMPACT, protection rate IP68 (NO CONNECTORS)
Version		
A	A	Compact version with sensor MS.... (liquid maximum temperature 100 °C)
	B	Separate version (CABLE C014) for wall mounting, complete with mounting accessories in Aluminum
	C	Compact version with display visible from the top
	D	Separate version (CABLE C014) for wall mounting, complete with mounting accessories in AISI 304
Power supply		
1	1	Power supply : 100 ... 240 VAC 44/66 Hz (NOT FOR MI001)
	2	Power supply : 24 ... 36 VAC/VDC 0...44/66 Hz (NOT FOR MI001)
	3	Power supply : 12...48 VDC (NOT FOR MI001)
	4	Power supply : 100 ... 240 VAC 44/66 Hz + 1 Rechargeable back-up Battery (the use of battery supports only the measure UP TO 30 days; all the outputs are set to OFF) (NOT FOR MI001)
	5	Power supply : 24 ... 36 VAC/VDC 0...44/66 Hz + 1 Rechargeable back-up Battery (the use of battery supports only the measure UP TO 30 days; all the outputs are set to OFF) (NOT FOR MI001)
	6	Power supply : 12...48 VDC + 1 Rechargeable back-up Battery (the use of battery supports only the measure UP TO 30 days; all the outputs are set to OFF) (NOT FOR MI001)
	7	Power supply : 100 ... 240 VAC 44/66 Hz + n° 1 SETTINGS FOR Rechargeable back-up Battery (the Rechargeable Battery is NOT included) (NOT FOR MI001)
	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) (NOT FOR MI001)
	9	Power supply : 12...48 VDC + n° 1 SETTINGS FOR Rechargeable back-up Battery (the Rechargeable Battery is NOT included) (NOT FOR MI001)
	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) Suitable for MI001
	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) Suitable for MI0011
	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) Suitable for MI001
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 PROGRAMMABLE Digital Output/n°1 Digital Input (mandatory for MI004)
	2	With n° 2 PROGRAMMABLE 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)
	D	Wi-Fi (for programming)
	E	M-Bus Module
	Z	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 Verifactor)
	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° 5 CABLE GLAND 1/2" NPT - Nickel plated brass CODE 1.609.1200.70 (CABLE 6 - 12 mm)
	D	n° 5 HOLES FOR CABLE GLAND 1/2" NPT (WITHOUT CABLE GLAND)
MID Approval		
0	0	NONE
	1	MI-001/OIMLR49-CLASS 1 (Pover Supply Code shall be a or b or c)
	2	MI-001/OIMLR49-CLASS 2 (Pover Supply Code shall be a or b or c)
	3	MI-004-CLASS 1
	4	MI-004-CLASS 2
	5	PTB K 7.2-CLASS 2

Complete code
example for
order

MV110-A0A1A0A0A0A0

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<http://www.isoil.it/en>



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