



ISOMAG 

The friendly magmeter

DATA SHEET

MV110



CE

ISOIL 
I N D U S T R I A

INDEX

TECHNICAL DATA	3
OVERALL DIMENSIONS	4
OVERALL DIMENSIONS (STAINLESS STEEL VERSION)	7
MV110 EXPLODED LAYOUT	9
MV110 CONSTRUCTION (STAINLESS STEEL VERSION)	10
MAIN PAGES VISUALISATION	11
ELECTRICAL CONNECTIONS	12
DIGITAL OUTPUTS	13
DIGITAL INPUT	13
ANALOG OUTPUTS	14
FUNCTIONS MENU	15
ACCURACY	20
OIML R49	21
MI-001	24
MI-004 OIML R75 CLASS1	27
HOW TO ORDER	29

TECHNICAL DATA

OVERALL FEATURES

Minimum conductivity	☐ 5 μ S/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 Insulation	☐ All the inputs/outputs are galvanically insulated
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 Analog output 0/4...20/22 mA (Hart optional) ☐ n° 2 Analog 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 ☐ BACnet
MID Certifications	☐ OIML R49 ☐ MI-001 ☐ MI-004 

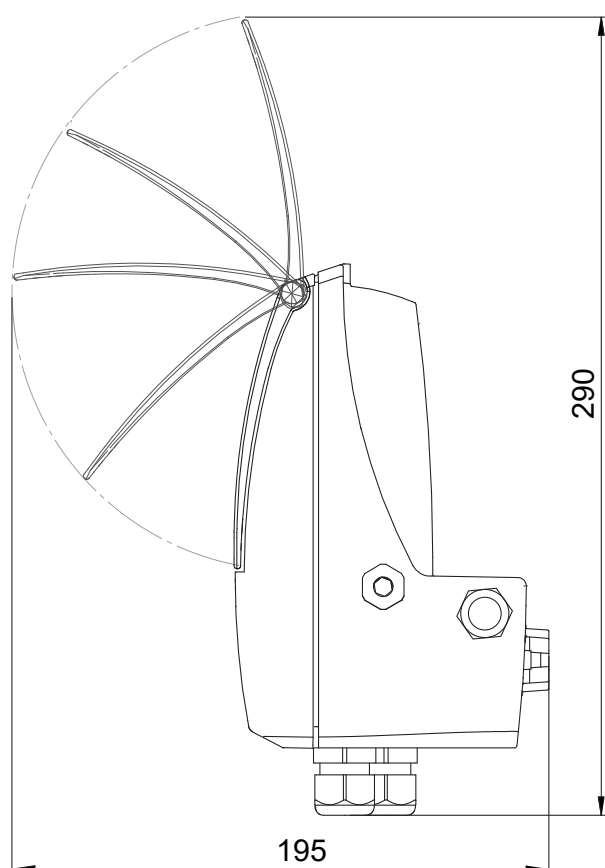
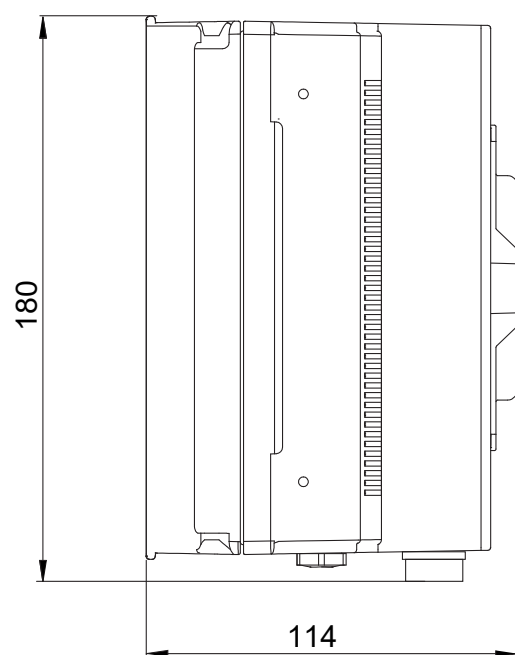
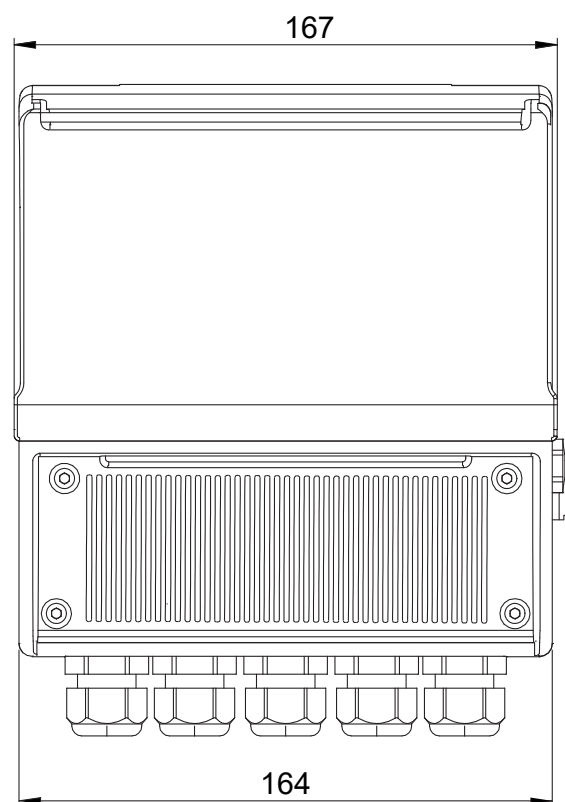
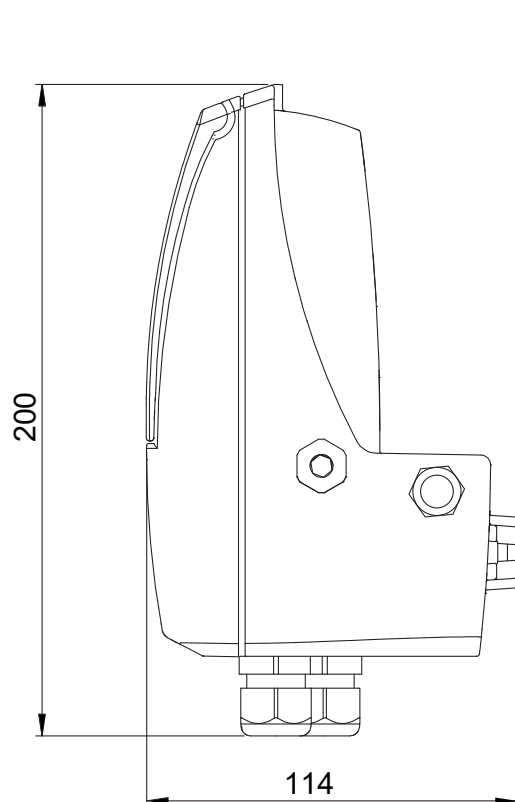


ACCURACY

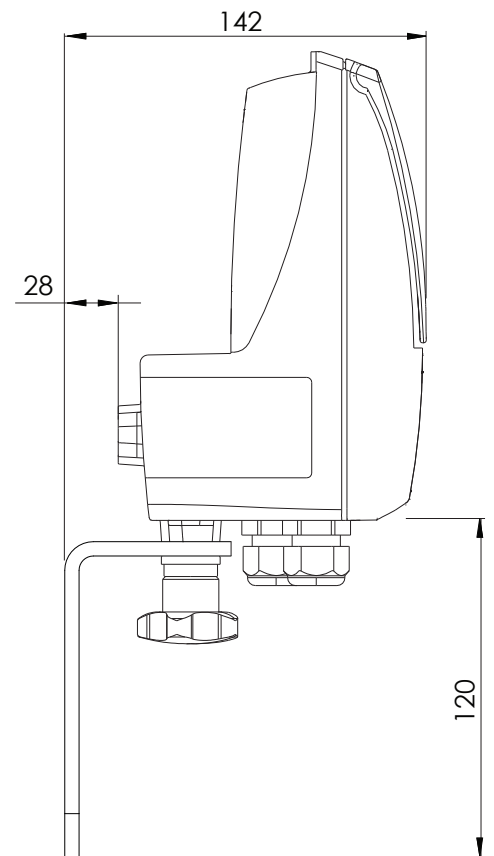
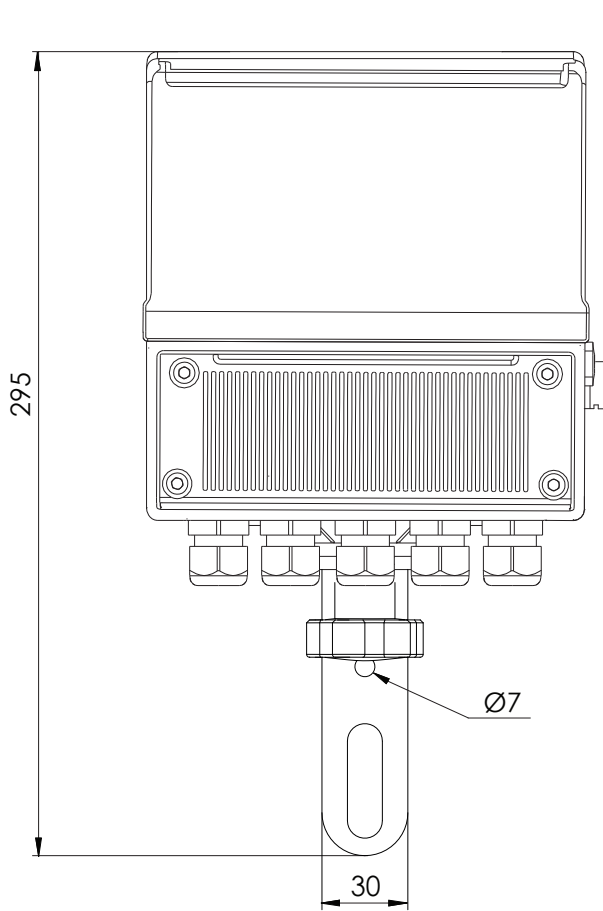
Accuracy (Whole System Converter+Sensor)	☐ See table below
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OVERALL DIMENSIONS

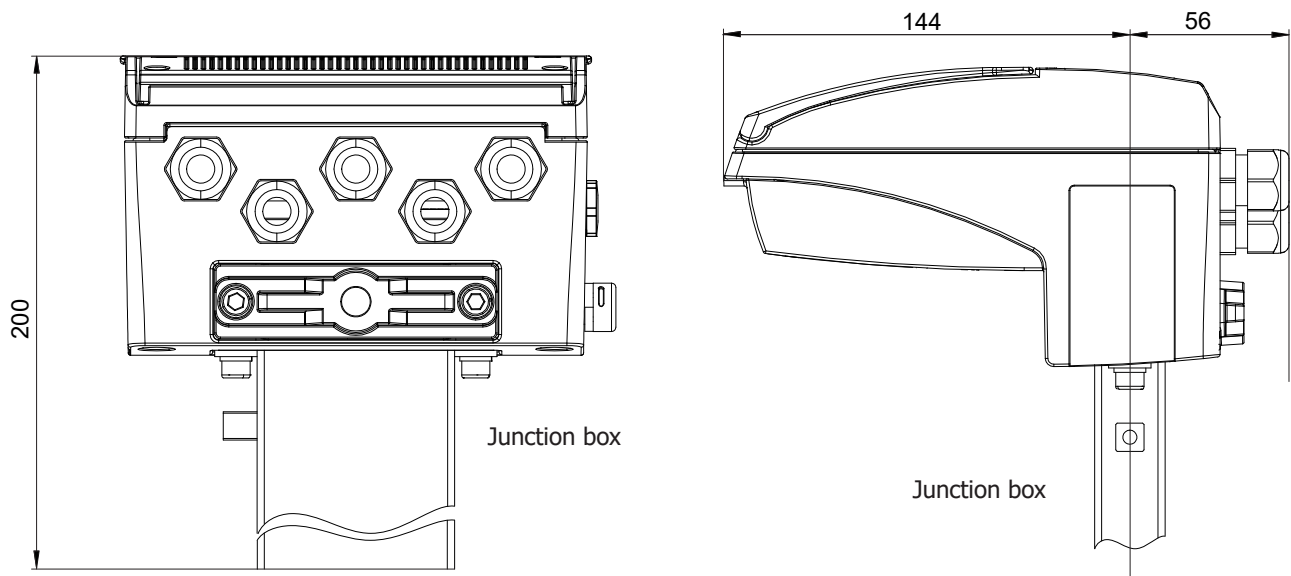
Compact version



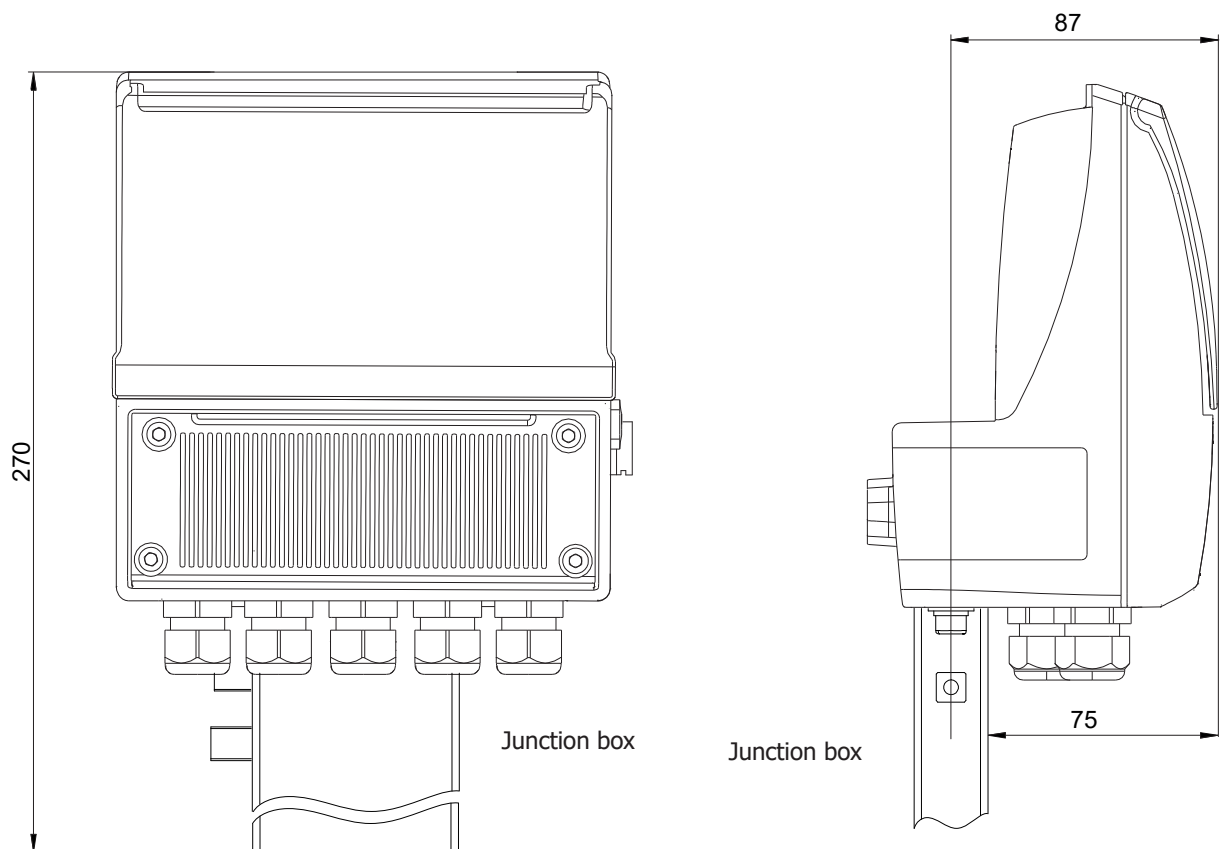
Separate (wall) version



Horizontal version

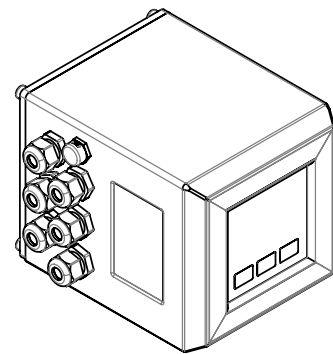
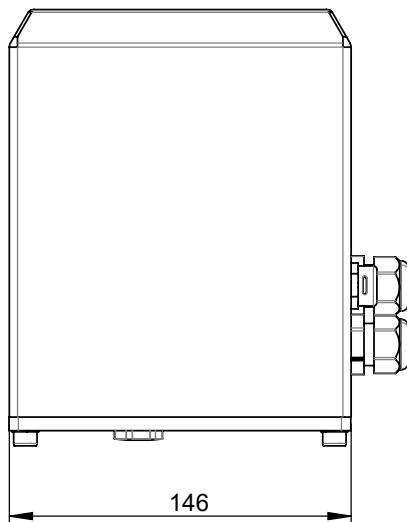
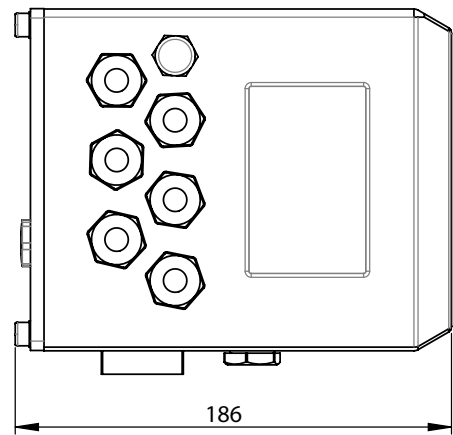
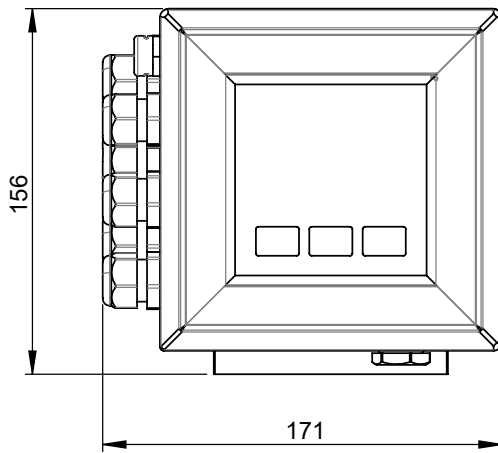


Vertical version

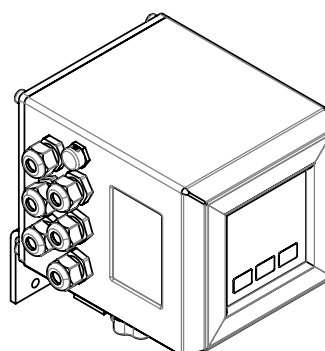
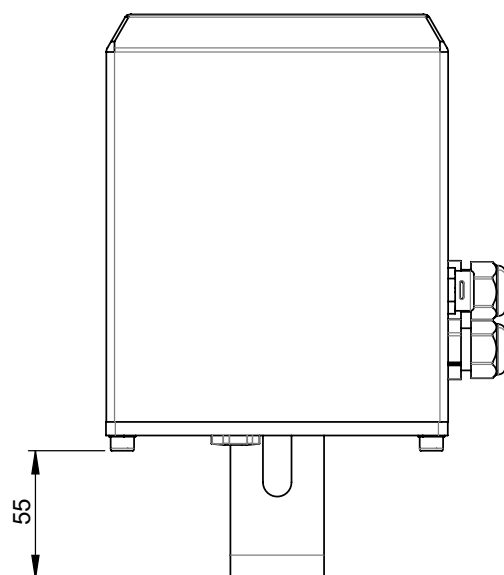
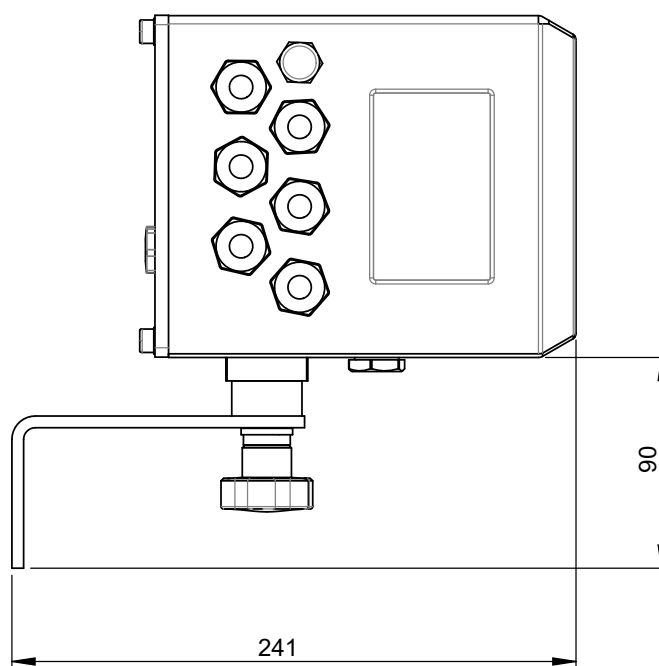
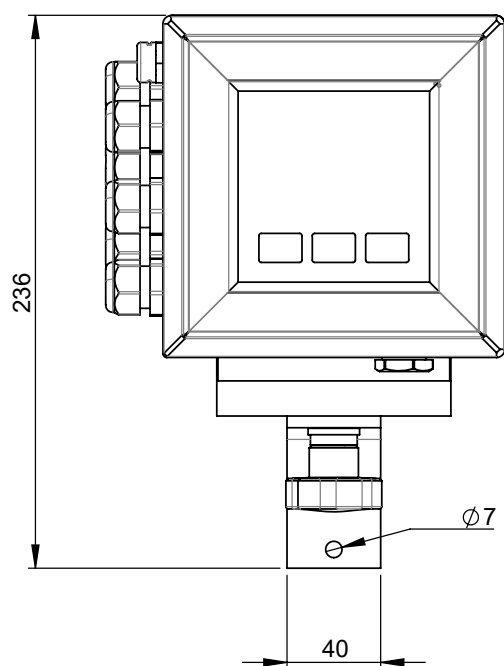


OVERALL DIMENSIONS (STAINLESS STEEL VERSION)

Compact Version

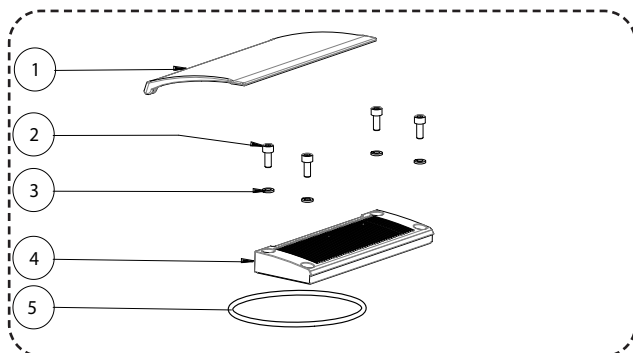


Separate Version

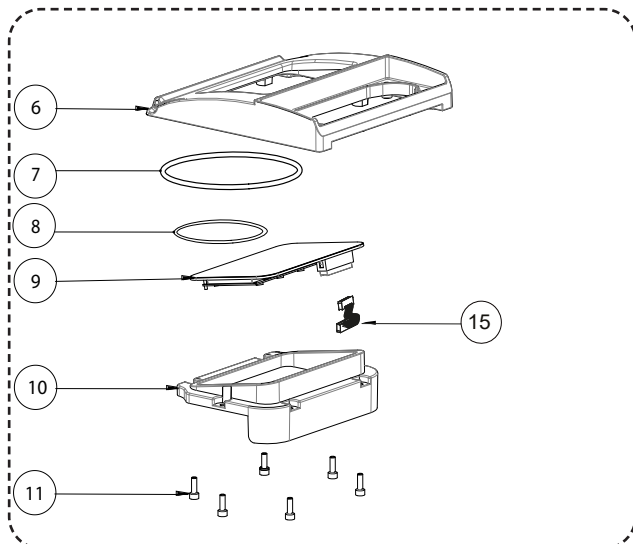


MV110 EXPLODED LAYOUT

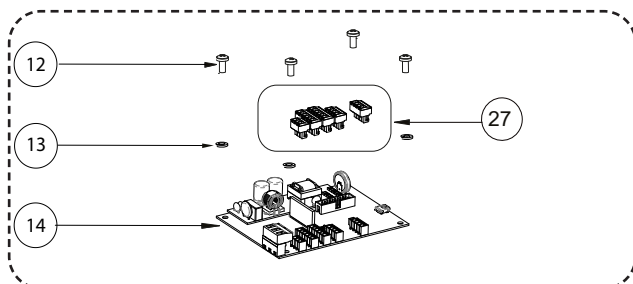
Terminal block cover



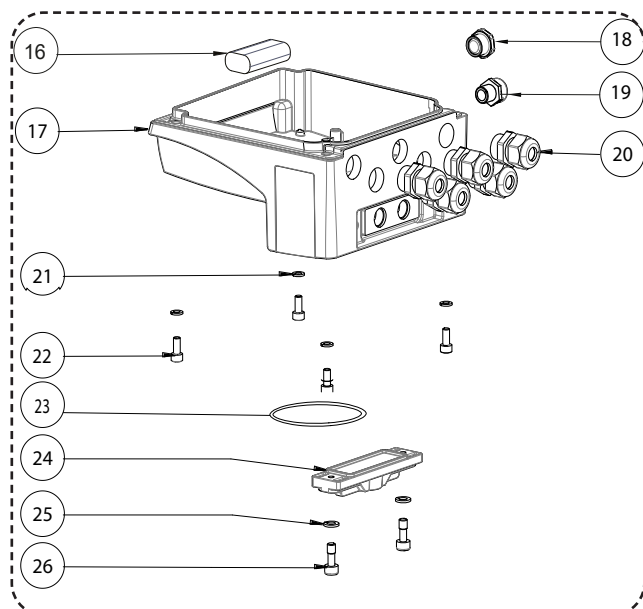
Main housing cover



PCB MV210

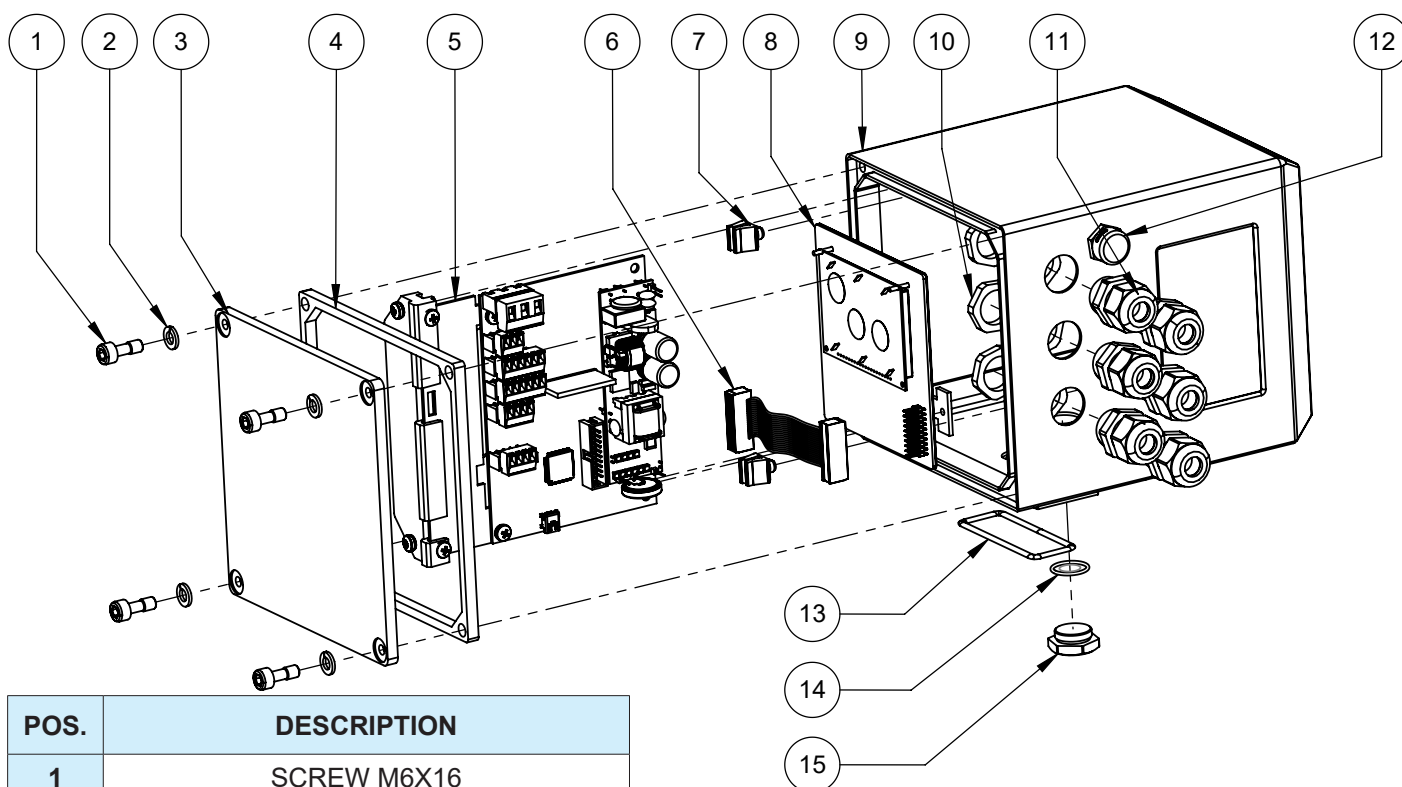


Main housing

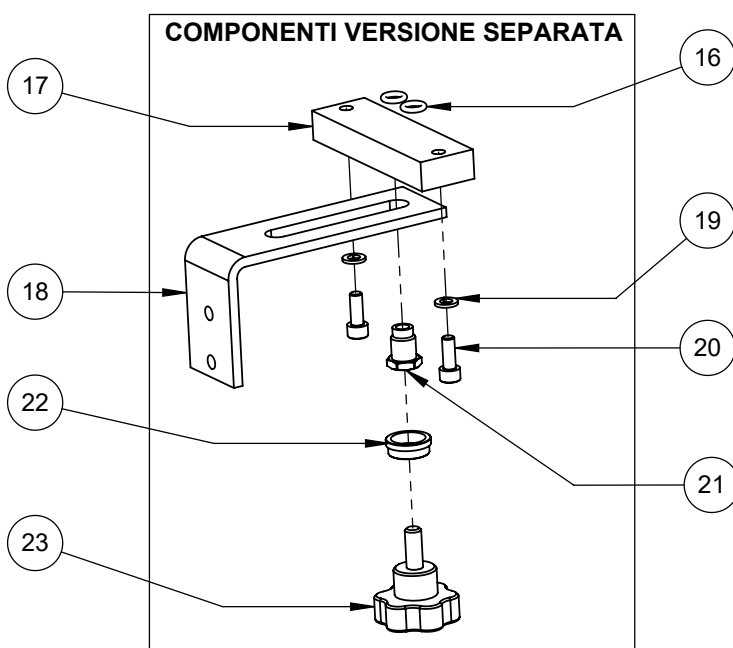


POS.	DESCRIPTION	
	PA6 VERSION	ALLUMINIUM VERSION
1	PROTECTION COVER	
2	VITE M4x12	VITE M5x12
3	GROWER Ø4	GROWER Ø5
4	TERMINAL COVER	TERMINAL COVER
5	O-RING-4400	
6	HOUSING COVER	HOUSING COVER
7	O-RING-4700 (HOUSING COVER)	
8	O-RING-117x3 (DISPLAY)	
9	DISPLAY	
10	FIXING DISPLAY FRAME (MATERIAL PA06)	
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	PRESSURE COMPENSATION PLUG	
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)

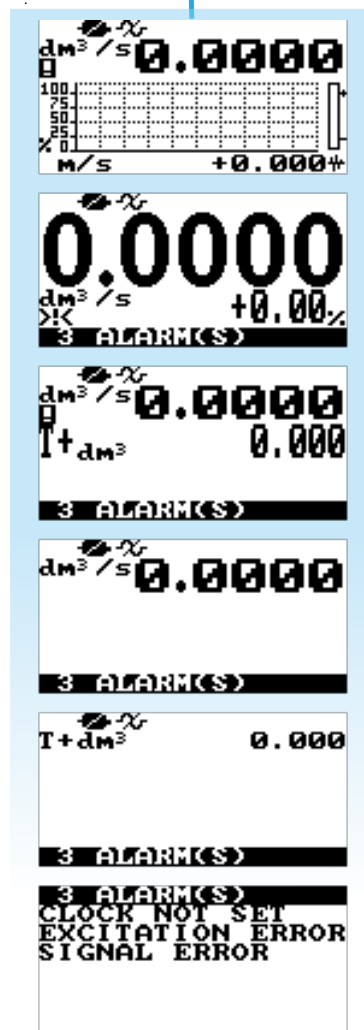
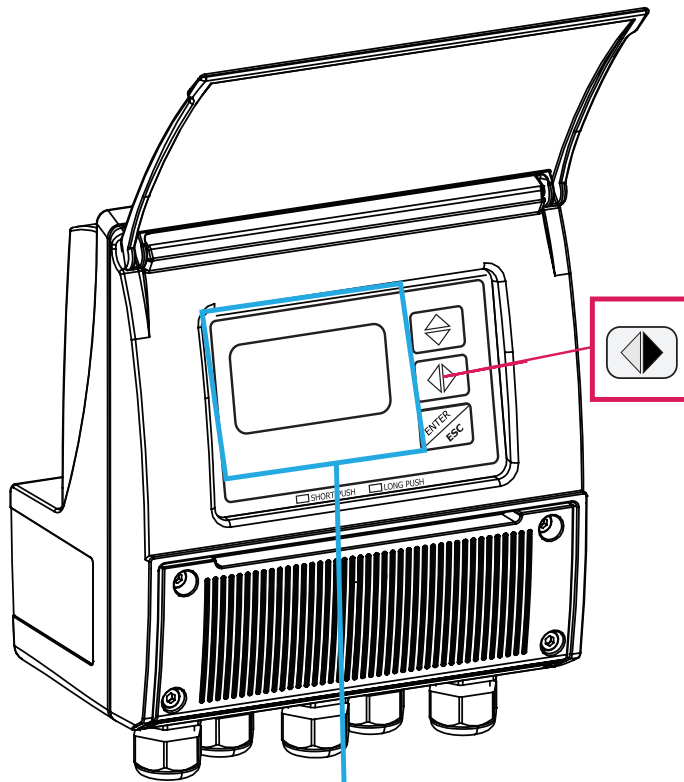


POS.	DESCRIPTION
1	SCREW M6X16
2	GROWER Ø 6
3	POLISHED COVER
4	GASKET FOR Stainless steel HOUSING
5	BOARD FRAME M3C
6	FLAT CABLE
7	BOARD FIXING CLIPS
8	DISPLAY/BLIND
9	POLISHED Stainless steel HOUSING
10	PG11 NUT
11	FLAT GASKET O-RING 155
12	O-RING ORM 0160-15 Ø16X1.5
13	STAINLESS STEEL CAP M18X0.75
14	PG11 CABLE GLANDS
15	ANTICONDENSATION CAP
16	O-RING 109
17	BRACKET FIXING PLATE
18	WALL BRACKET
19	GROWER Ø6
20	SCREW M6 x 16
21	FIXING SCREW
22	FIXING BUCKLE
23	FIXING KNOB 8X20

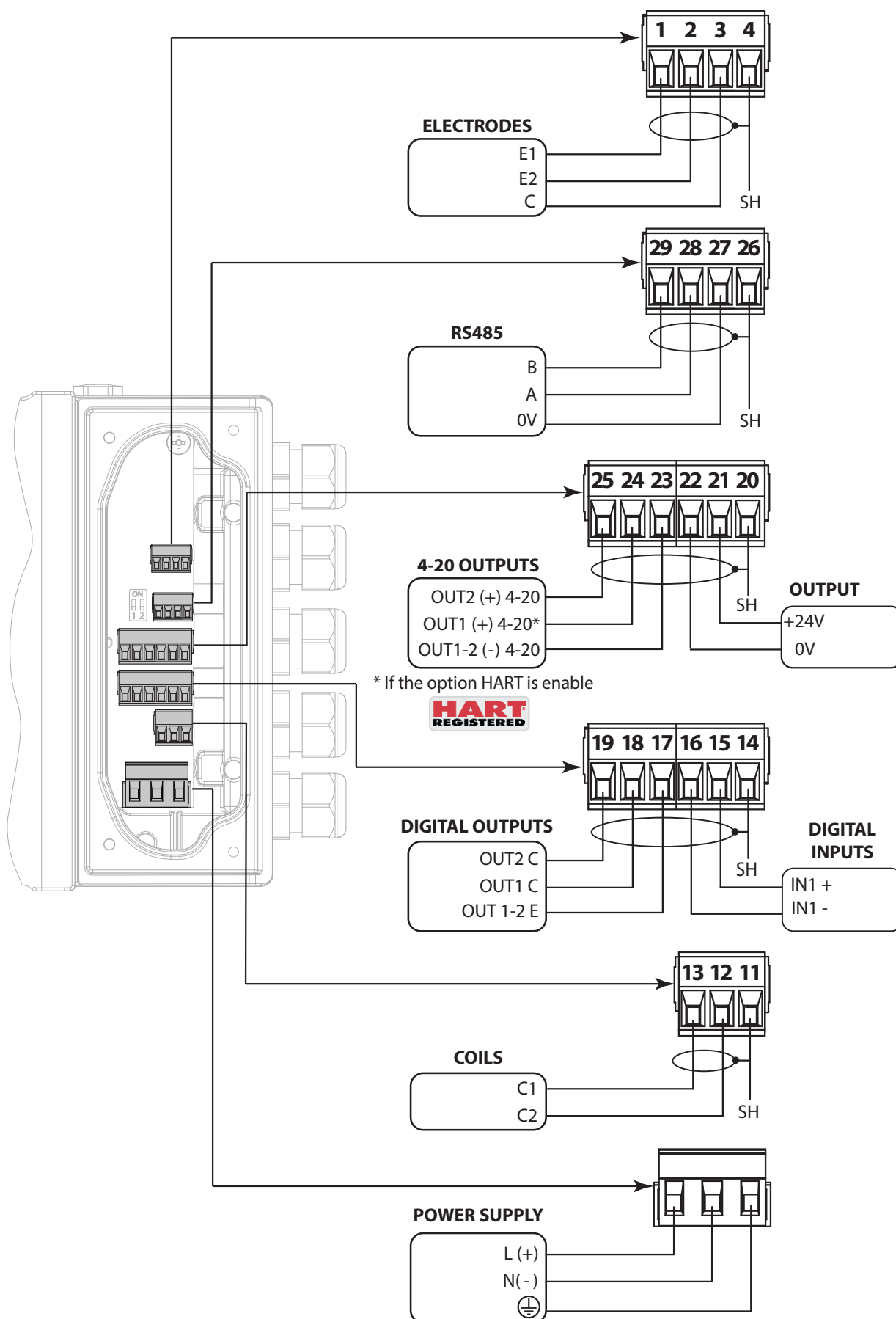


MAIN PAGES VISUALISATION

Different visualization possibilities by simply pressing of a key.

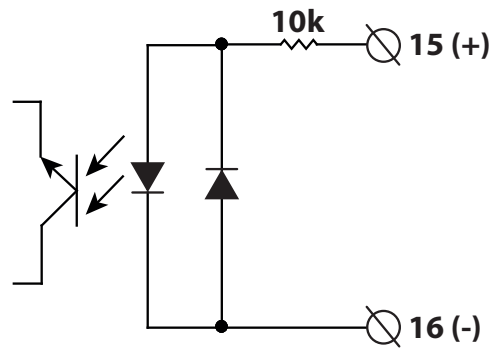


ELECTRICAL CONNECTIONS

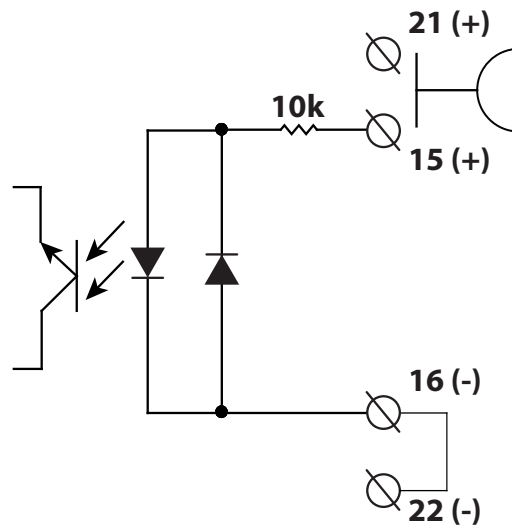


DIGITAL INPUT

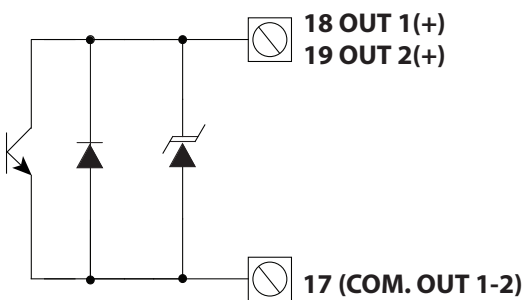
on/off input
(external power supply)



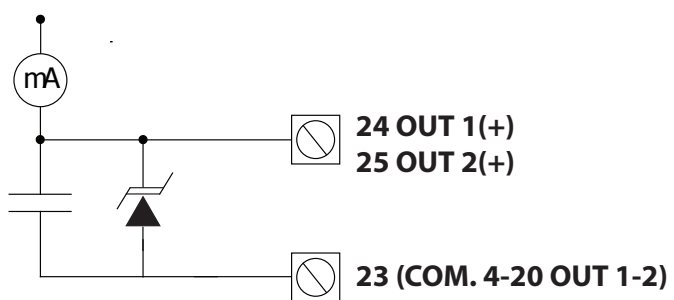
on/off input
(internal power supply)



DIGITAL OUTPUTS



ANALOG OUTPUTS



FUNCTIONS MENU

SENSOR

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

UNITS

MAIN MENU			
1	1-Sensor		
2	2-Units		
3	3-Flow		
4	4-Totalizer		
5	5-Flowrate		
6	6-Flowrate		
7	7-Flowrate		
8	8-Flowrate		
9	9-Flowrate		
10	10-Flowrate		
11	11-Flowrate		
12	12-Flowrate		
13	13-Flowrate		
UNITS			
	Diam.	mm	2.1 Nominal diameter measure unit
	S.cable	m	2.2 Cable length on separate version
	FR.unit	METRIC	2.3 Flowrate type measure unit: metric or not metric
	PI1 unit	METRIC	2.4 Pulse 1 type measure unit: metric or not metric
	PI2 unit	METRIC	2.5 Pulse 2 type measure unit: metric or not metric
	T+ unit	METRIC	2.6 Total direct totalizer measure unit type: metric or not metric
	T+ unit	g	2.7 Total direct totalizer measure unit
	T+ D.P	3	2.8 Total direct totalizer decimal point position
	P+ unit	METRIC	2.9 Partial direct totalizer measure unit type: metric or not metric
	P+ unit	g	2.10 Partial direct totalizer measure unit
	P+ D.P	3	2.11 Partial direct totalizer decimal point position
	T- unit	METRIC	2.12 Total reverse totalizer measure unit type: metric or not metric
	T- unit	g	2.13 Total reverse totalizer measure unit
	T- D.P	3	2.14 Total reverse totalizer decimal point position
	P- unit	METRIC	2.15 Partial reverse totalizer measure unit type: metric or not metric
	P- unit	g	2.16 Partial reverse totalizer measure unit
	P- D.P	3	2.17 Partial reverse totalizer decimal point position
	Temp.unit	°C	2.18 Temperature measure unit
	Mass units	ON	2.19 Enable/disable the selection of mass units on full scale set
	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	
FS1 g/s	4908.7
FS2 g/s	4908.7
Pls1=g	1000.00
Tpls1=ms	0050.0
Pls2=g	1000.00
Tpls2=g	0050.0
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	
Damping	SMART
Cut-off= %	00.1
DT Min.	ON
T1HC enable	ON
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	
Max+ = dm3/s	OFF
Max- = dm3/s	OFF
Min+ = dm3/s	OFF
Min- = dm3/s	OFF
Hysteresis=%	03
mA v.alarm=%	000
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	
T+ reset	OFF
P+ reset	OFF
T- reset	OFF
P- reset	OFF
Count lock	OFF
Meas.lock	OFF
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-Functions
12-Diagnostic
13-System

```

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-Functions
12-Diagnostic
13-System

```

The Communication menu contains the functions related to the communication protocols. For further details regarding the Hart, MBus, MODbus and BACnet communication protocols and the description of the related functions, see the separate manuals.

N.B: the numbering of the functions in the communication menu depends on the communication protocol selected during the order phase

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-Functions
12-Diagnostic
13-System

```

DISPLAY

```

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

```

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

```

MAI
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

```

MAI
1
2
3
4
5
6
7
8-Communication
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

```

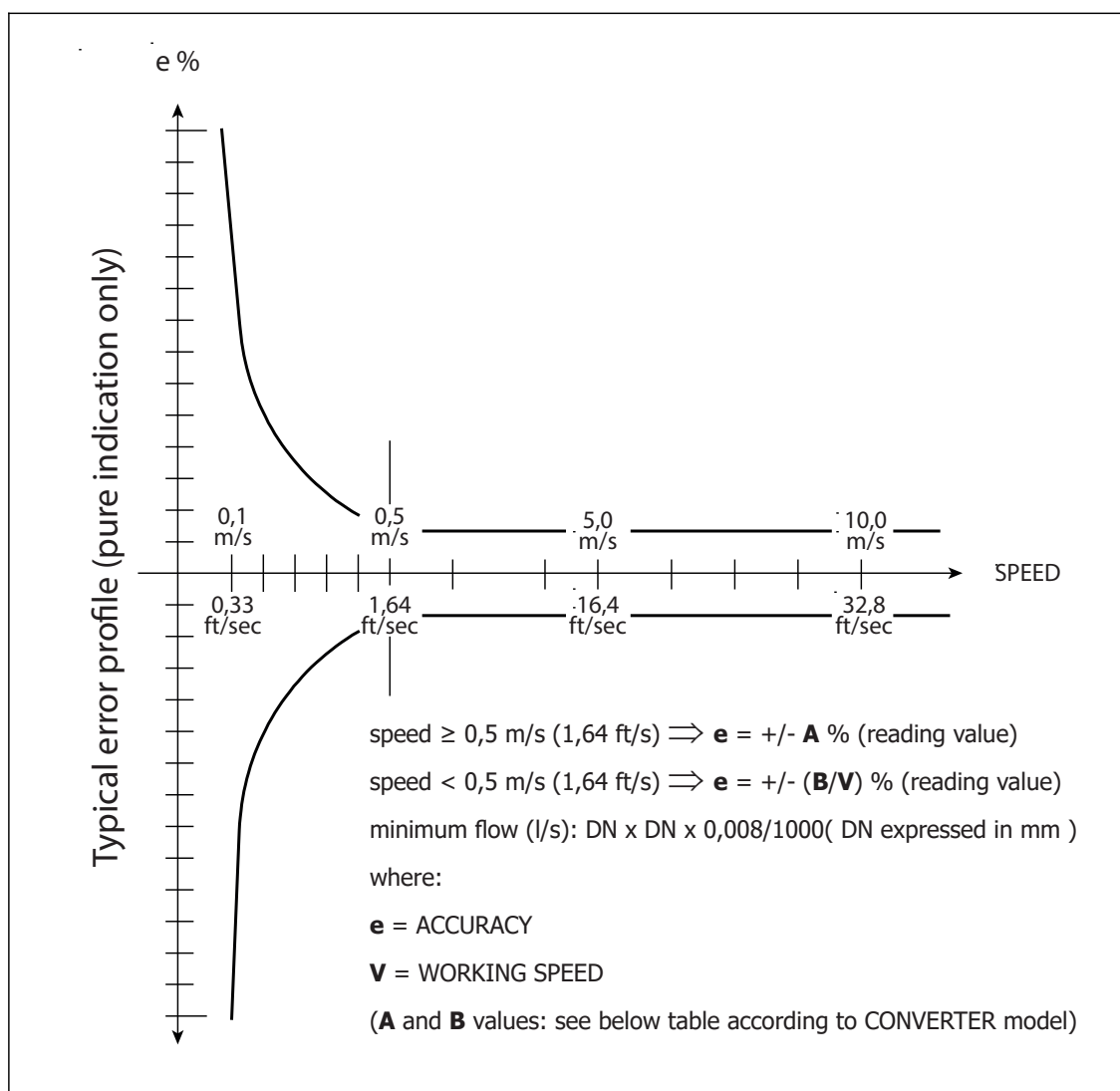
MAI
1
2
3
4
5
6
7
8-Communication
9-Display
10-Data logger
11-Functions
12-Diagnostic
13-System

```

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
Display		
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 %

OIML R49

The sensor **MS2500** diameters below, coupled with **MV110** are certified in accordance with OIML R49:2013

CLASS 1

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	

SIZE		Q3	Q2	Q1	R
mm	inch	m3/h			Q3/Q1
25	1	16	0.26	0.16	100
32	1 ¼	25	0.4	0.25	
40	1 ½	40	0.64	0.4	
50	2	63	1.01	0.63	
65	2 ½	100	1.6	1	
80	3	160	2.6	1.6	
100	4	250	4	2.5	
125	5	400	6.4	4	
150	6	630	10.1	6.3	
200	8	1000	16	10	
250	10	1600	26	16	
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	

SIZE		Q3	Q2	Q1	R
mm	inch	m3/h			Q3/Q1
25	1	16	0.32	0.2	80
32	1 ¼	25	0.5	0.31	
40	1 ½	40	0.8	0.5	
50	2	63	1.3	0.79	
65	2 ½	100	2	1.25	
80	3	160	3.2	2	
100	4	250	5	3.13	
125	5	400	8	5	
150	6	630	13	7.88	
200	8	1000	20	12.5	
250	10	1600	32	20	
300	12	2500	50	31.25	
350	14	2500	50	31.25	
400	16	4000	80	50	
450	18	4000	80	50	
500	20	6300	126	78.75	
600	24	10000	200	125	

CLASS 2

SIZE		Q3	Q2	Q1	R
mm	inch	m3/h			Q3/Q1
25	1	16	0.064	0.040	400
32	1 ¼	25	0.10	0.063	
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	
650	26	10000	40	25	250
700	28	10000	64	40	
750	30	10000	64	40	160
800	32	16000	160	100	
900	36	16000	160	100	100
1000	42	16000	256	160	
1200	48	16000	320	200	80
1400	56	16000	320	200	
1600	64	16000	320	200	
1800	72	16000	640	400	40
2000	80	16000	640	400	

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	
650	26	10000	64	40	160
700	28	10000	64	40	
750	30	10000	64	40	100
800	32	16000	160	100	
900	36	16000	160	100	80
1000	42	16000	256	160	
1200	48	16000	320	200	40
1400	56	16000	320	200	
1600	64	16000	320	200	
1800	72	16000	640	400	40
2000	80	16000	640	400	

CLASS 2

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	0.40	
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	4.0	
200	8	1000	10	6.3	
250	10	1600	16	10	
300	12	2500	25	16	
350	14	2500	25	16	
400	16	4000	40	25	
450	18	4000	40	25	
500	20	6300	63	40	
600	24	10000	100	63	
650	26	10000	100	63	
700	28	10000	100	63	
750	30	10000	160	100	
800	32	16000	160	100	
900	36	16000	160	100	
1000	42	16000	250	160	100
1200	48	16000	320	200	80
1400	56	16000	320	200	
1600	64	16000	320	200	40
1800	72	16000	640	400	
2000	80	16000	640	400	

MI-001

The sensor **MS2500** diameters below, coupled with **MV110** are certified in accordance with European directive 2014/32/EU category MI-001

SIZE		Q3	Q2	Q1	R
mm	inch	m3/h			Q3/Q1
25	1	16	0.064	0.040	400
32	1 ¼	25	0.10	0.063	
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	250
650	26	10000	40	25	
700	28	10000	64	40	
750	30	10000	64	40	160
800	32	16000	160	100	
900	36	16000	160	100	100
1000	42	16000	256	160	
1200	48	16000	320	200	80
1400	56	16000	320	200	
1600	64	16000	320	200	
1800	72	16000	640	400	40
2000	80	16000	640	400	

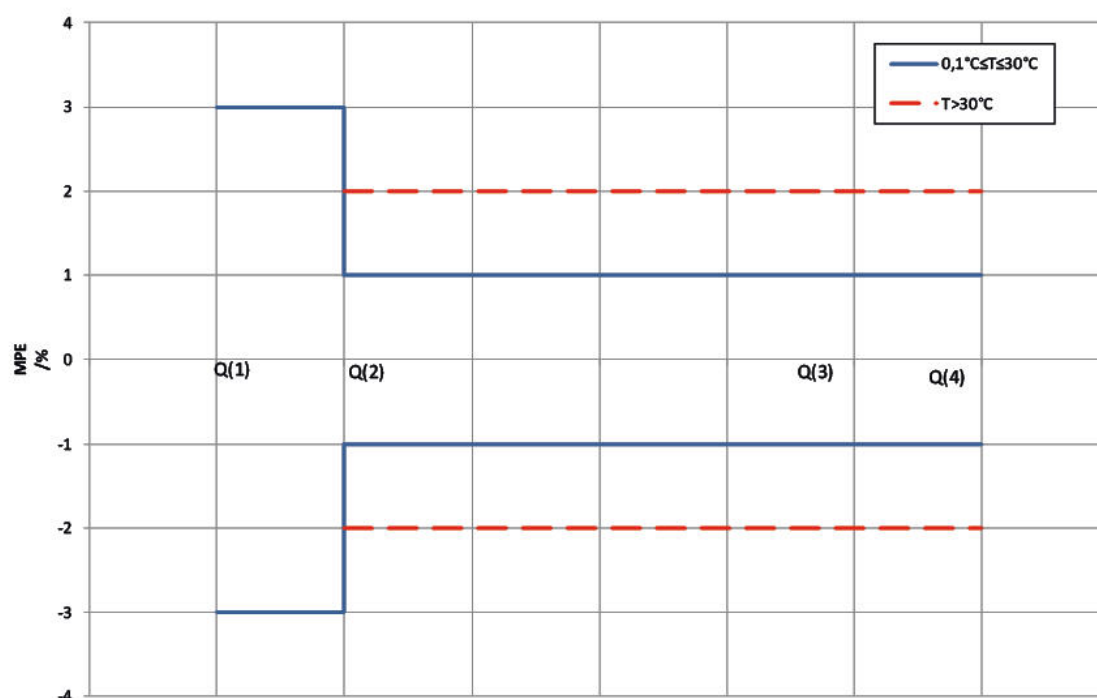
SIZE		Q3	Q2	Q1	R
mm	inch	m3/h			Q3/Q1
25	1	16	0.10	0.064	250
32	1 ¼	25	0.16	0.10	
40	1 ½	40	0.26	0.16	
50	2	63	0.40	0.25	
65	2 ½	100	0.64	0.40	
80	3	160	1.0	0.64	
100	4	250	1.6	1.0	
125	5	400	2.6	1.6	
150	6	630	4.0	2.5	
200	8	1000	6.4	4.0	
250	10	1600	10	6.4	
300	12	2500	16	10	
350	14	2500	16	10	
400	16	4000	26	16	
450	18	4000	26	16	
500	20	6300	40	25	
600	24	10000	64	40	160
650	26	10000	64	40	
700	28	10000	64	40	
750	30	10000	64	40	100
800	32	16000	160	100	
900	36	16000	160	100	80
1000	42	16000	256	160	
1200	48	16000	320	200	
1400	56	16000	320	200	40
1600	64	16000	320	200	
1800	72	16000	640	400	
2000	80	16000	640	400	

The sensor **MS2500** diameters below, coupled with **MV110** are certified in accordance with European directive 2014/32/EU category MI-001

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	0.40	
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	4.0	
200	8	1000	10	6.3	
250	10	1600	16	10	
300	12	2500	25	16	
350	14	2500	25	16	
400	16	4000	40	25	
450	18	4000	40	25	
500	20	6300	63	40	
600	24	10000	100	63	
650	26	10000	100	63	
700	28	10000	100	63	
750	30	10000	160	100	
800	32	16000	160	100	
900	36	16000	160	100	
1000	42	16000	250	160	100
1200	48	16000	320	200	80
1400	56	16000	320	200	
1600	64	16000	320	200	40
1800	72	16000	640	400	
2000	80	16000	640	400	

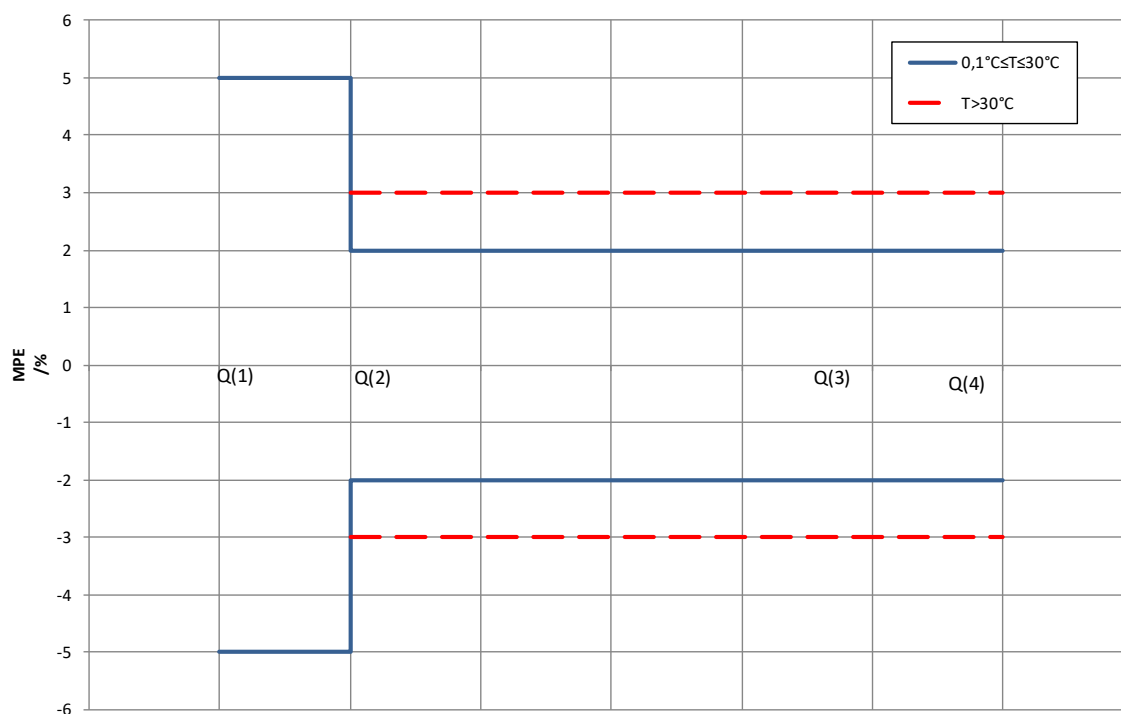
MPE - OIML R49 ACCURACY CLASS 1

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



MPE - MI 001 - OIML R49 ACCURACY CLASS 2

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



MI-004 OIML R75 CLASS1

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	

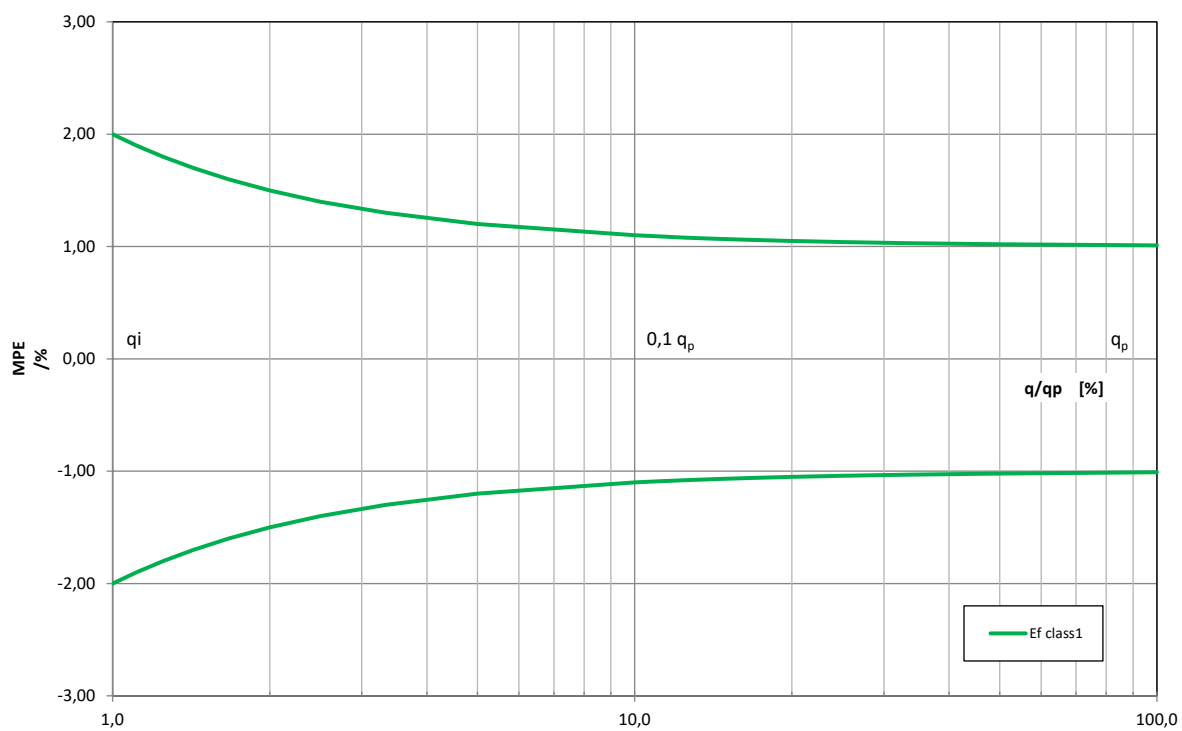
SIZE		q _p	q _s	0,1 q _p	q _i	MC
mm	inch	m3/h				q _p /q _i
25	1	10	16	1	0,2	50
32	1 ¼	16	25	1,6	0,32	
40	1 ½	25	40	2,5	0,5	
50	2	40	63	4	0,8	
65	2 ½	63	100	6,3	1,26	
80	3	100	160	10	2	
100	4	160	250	16	3,2	
125	5	250	400	25	5	
150	6	400	630	40	8	
200	8	630	1000	63	12,6	
250	10	1000	1600	100	20	50
300	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	25
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)
	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)
	8	Painted aluminum die casting, protection rate IP68 1,5 meters under water, Separate Version, Complete of n° 2 IP 68 MIL connectors for cable from the sensor, and n° 1 IP 68 MIL connector for power supply (CONNECTORS SUPPLIED: MALE + FEMALE)
	9	Painted aluminum die casting, protection rate IP68 1,5 meters under water, Separate Version, Complete of n° 2 IP 68 MIL connectors for cable from the sensor, n° 1 IP68 MIL connector (outputs connections to be specified) and n° 1 IP 68 MIL connector for power supply (CONNECTORS SUPPLIED: MALE + FEMALE)
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 MID MI-001/OIML)
	2	Power supply : 24 ... 36 VAC/VDC 0...44/66 Hz (NOT FOR MID MI-001/OIML)
	3	Power supply : 12...48 VDC (NOT FOR MID MI-001/OIML)
	4	Power supply : 100 ... 240 VAC 44/66 Hz + 1 Rechargeable back-up Battery (battery supports only the measure, outputs are OFF)
	5	Power supply : 24 ... 36 VAC/VDC 0...44/66 Hz + 1 Rechargeable back-up Battery (battery supports only the measure, outputs are OFF)
	6	Power supply : 12...48 VDC + 1 Rechargeable back-up Battery (battery supports only the measure, outputs are OFF)
	7	Power supply : 100 ... 240 VAC 44/66 Hz - Ready for back-up Battery (Battery NOT included) (NOT FOR MID MI-001/OIML)
	8	Power supply : 24 ... 36 VAC/VDC 0...44/66 Hz - Ready for back-up Battery (Battery NOT included) (NOT FOR MID MI-001/OIML)
	9	Power supply : 12...48 VDC - Ready for back-up Battery (Battery NOT included) (NOT FOR MID MI-001/OIML)
	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 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
	2	BACnet MS-TP (RS485)
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° 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)
	E	For SANITARY sensors (MS2410/MS2420) In COMPACT Version
MID Approval		
0	0	NONE
	2	MI-001/OIMLR49-CLASS 2
	3	MI-004-CLASS 1
	5	PTB - TR-K7.5 [Only for Integra]
	6	OIML-R49 CLASS 1
	7	OIML-R49 CLASS 2

Complete code
example for
order

MV110-A0A1A0A0A0A0

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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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