

ISOMAG [®]
The friendly magmeter

DATA SHEET MV800




CE

ISOIL 
I N D U S T R I A

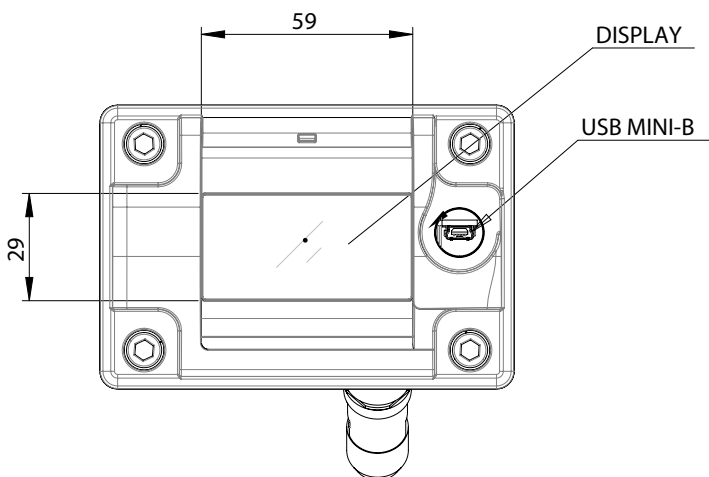
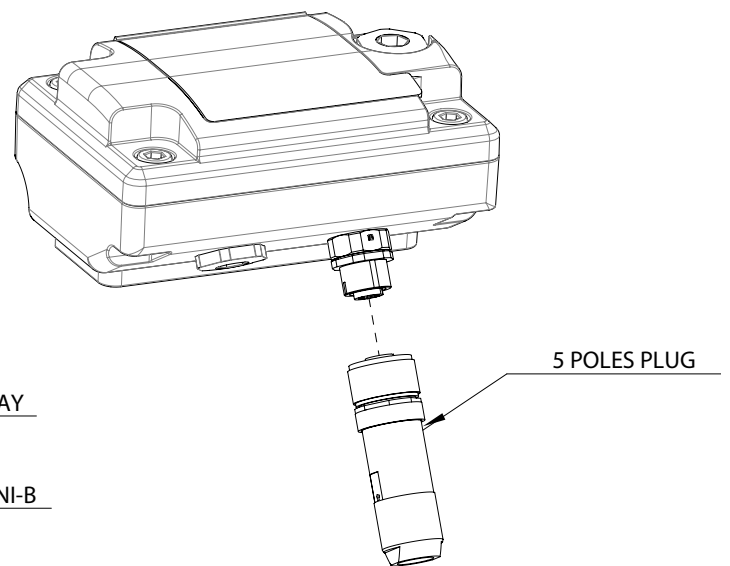
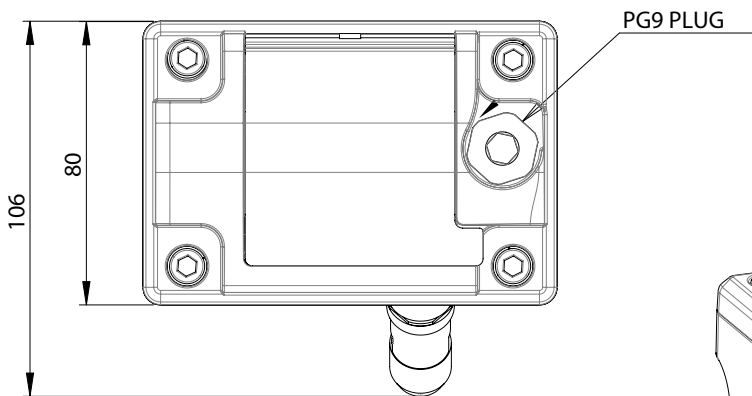
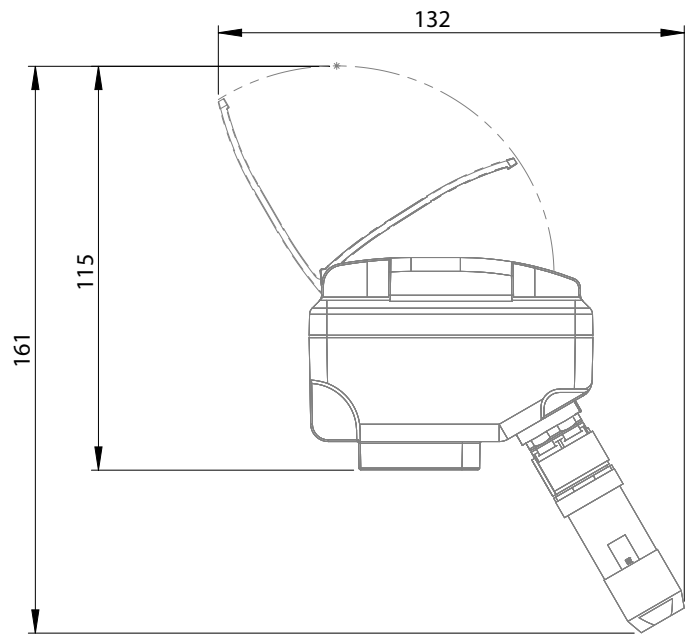
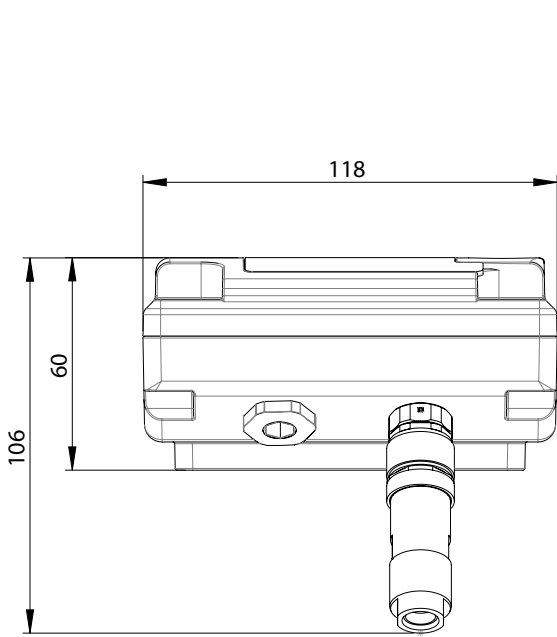
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TECHNICAL DATA

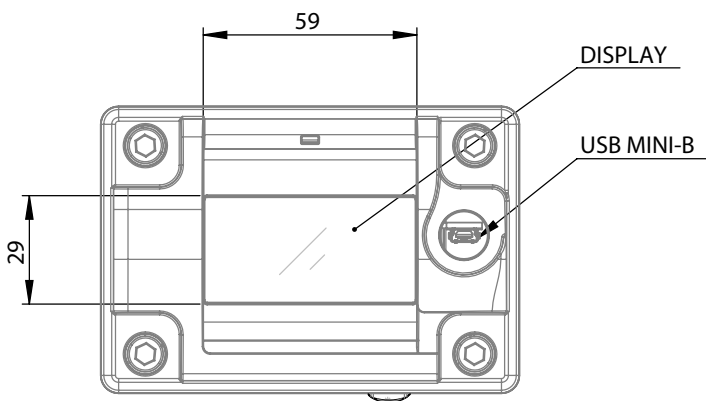
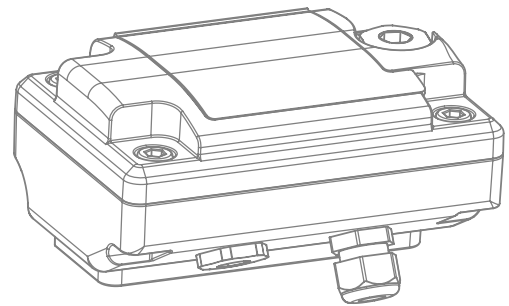
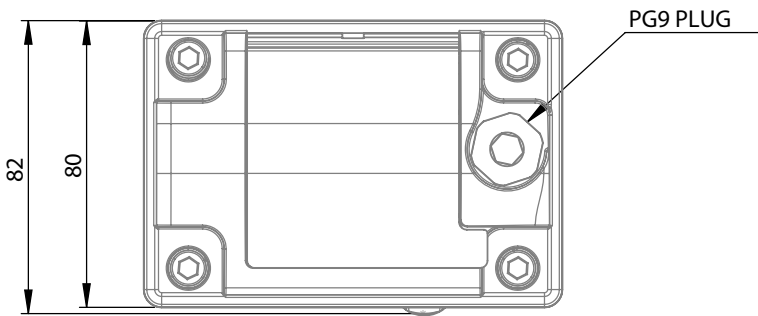
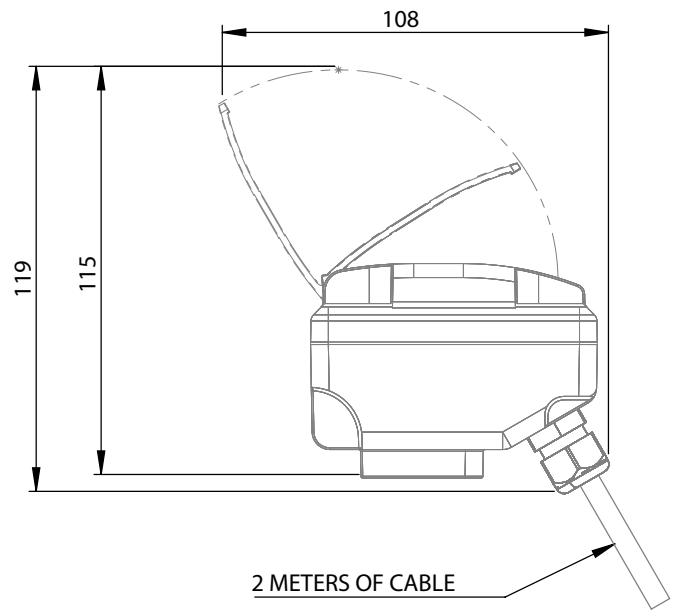
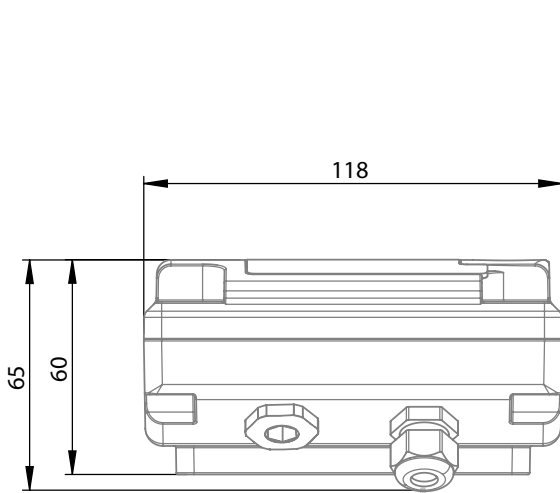
OVERALL FEATURES	
Suitable For	<input type="checkbox"/> All ISOMAG® sensors (MS1000-2500 up to ND 400)
Minimum conductivity	<input type="checkbox"/> 20 µS/cm
Altitude	<input type="checkbox"/> -200 m up to 2000 m
Ambient Temperature	<input type="checkbox"/> -20... +60°C / -4... +140 °F
Humidity Range	<input type="checkbox"/> 0÷100% (IP 67)
STANDARD FEATURES	
Housing materials	<input type="checkbox"/> Painted Aluminium die casting (Cover in PA6 with Display)
Protection Rate	<input type="checkbox"/> IP 67
Power Supply/Consumption	<input type="checkbox"/> min10 / max30 V --- - 1W
Electrical connections	<input type="checkbox"/> 5 pins connector M12X1 complete of plug/Cable
Full scale value	<input type="checkbox"/> 0,4...10m/s
Protocols	<input type="checkbox"/> MCP protocol Via USB Interface
Digital Input/Outputs	<input type="checkbox"/> N° 1 channel OUTPUT for volume pulses/alarms
Data Storage	<input type="checkbox"/> Eeprom values storing system in case of power failure
Programming Plug In	<input type="checkbox"/> Protected plug in for the connection to PC
Bidirectional	<input type="checkbox"/> Yes
CE Certification	<input type="checkbox"/> Yes
OPTIONAL FEATURES (CHECK HOW TO ORDER, AT LAST PAGE, FOR MORE DETAILS)	
Protection Rate	<input type="checkbox"/> IP 68
Display	<input type="checkbox"/> Display LCD Custom dimensions 60 x 40 mm
Housing materials	<input type="checkbox"/> Housing in AISI 304 JB RAW/POLISHED (Cover in PA6 with Display)
Outputs: Pulses/Frequence/Alarms	<input type="checkbox"/> N° 1 channel OUTPUT for volume pulses/alarms
Current Output	<input type="checkbox"/> N°1 , 0/4...20mA – RL= 500 Ohm (according to main power supply)
MID Certifications	<input type="checkbox"/> MI-001  <input type="checkbox"/> MI-004
ACCURACY	
Measurements tolerance (board)	<input type="checkbox"/> Volume = ±0,2% v.l. <input type="checkbox"/> Out 4/20 mA = ± 0,2 % v.l.
Accuracy (whole system converter+sensor)	<input type="checkbox"/> See table below

OVERALL DIMENSIONS WITH CONNECTOR



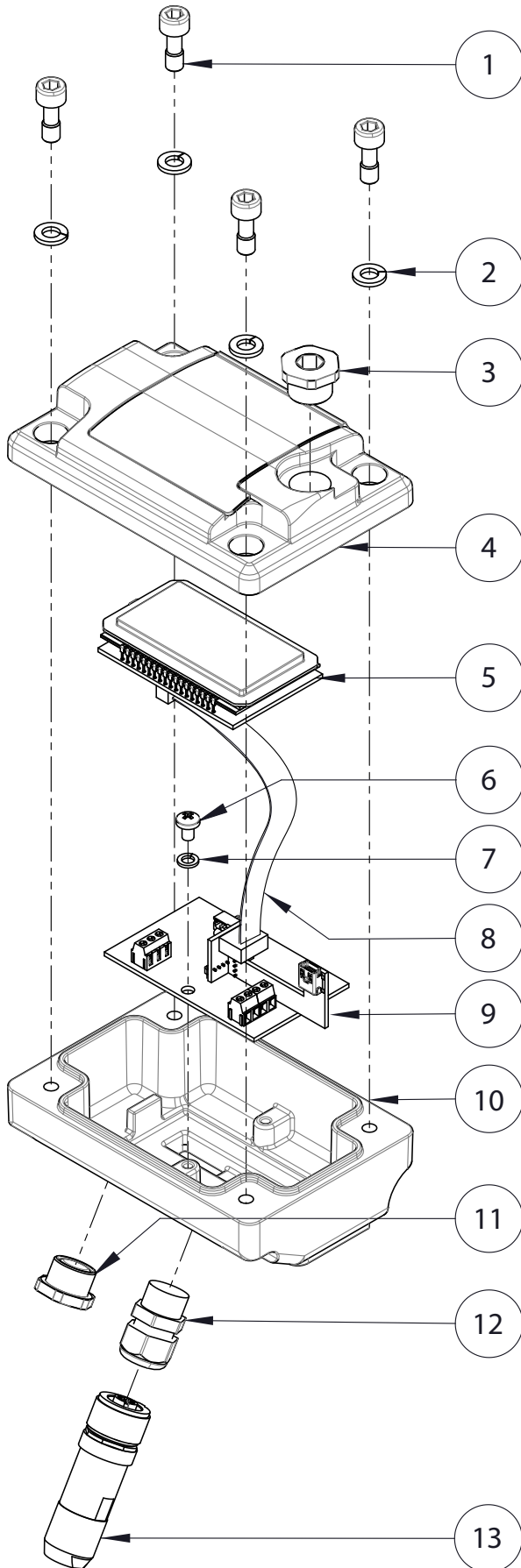
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OVERALL DIMENSIONS WITH CABLE GLAND



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MV800 LAYOUT

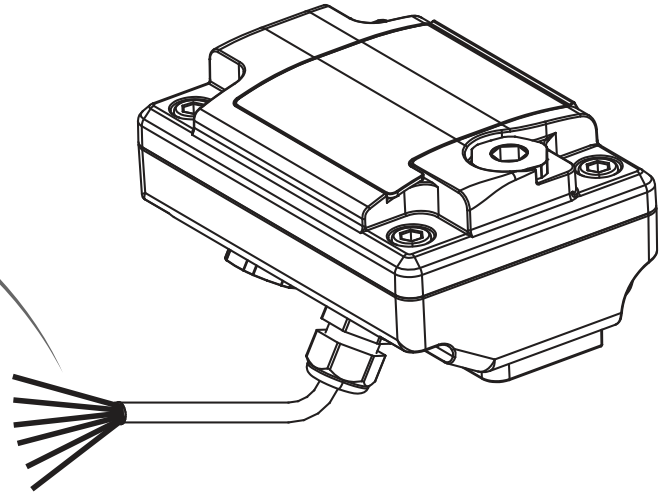
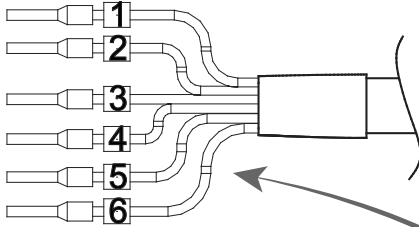


POS.	DESCRIPTION
1	SCREWS M6x16
2	GROWERS Ø6
3	PG9 PLUG
4	COVER PA06
5	DISPLAY
6	SCREWS M4X6 TC
7	GROWERS Ø 4
8	FLAT CABLE
9	MV800 PCB
10	HOUSING IN PA06/AISI 304 JB RAW OR POLISHED
11	PG9 PLUG
12	CABLE GLANDS
13	5 POLES CONNECTOR COMPLETE OF PLUG

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ELECTRICAL CONNECTIONS

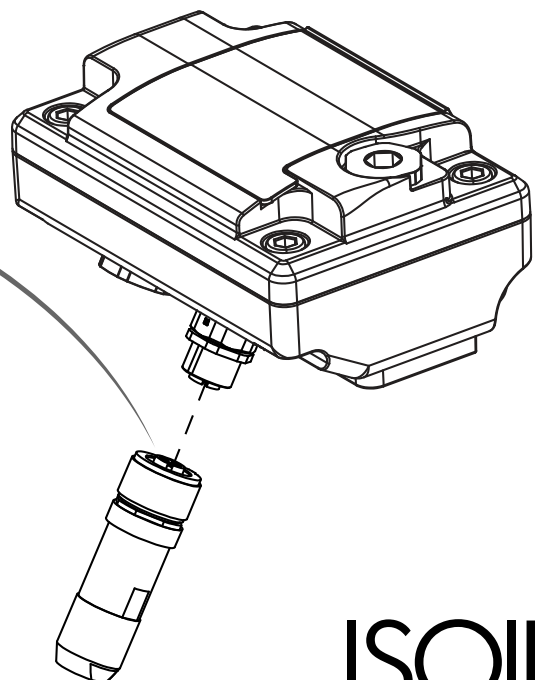
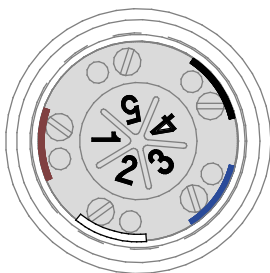
Version with cable



- 1 (+) POWER SUPPLY
- 2 (+) OUTPUT 1
- 3 (+) OUTPUT 2 (OPTIONAL)
- 4 (+) 4-20mA max load: 500 Ω OUTPUT (OPTIONAL)
- 5 (-) POWER SUPPLY / OUTPUTS
- 6 SHIELD (CONNECT TO GROUND)

PIN 5-6 TO BE CONNECT TO THE GROUND

Version with connector



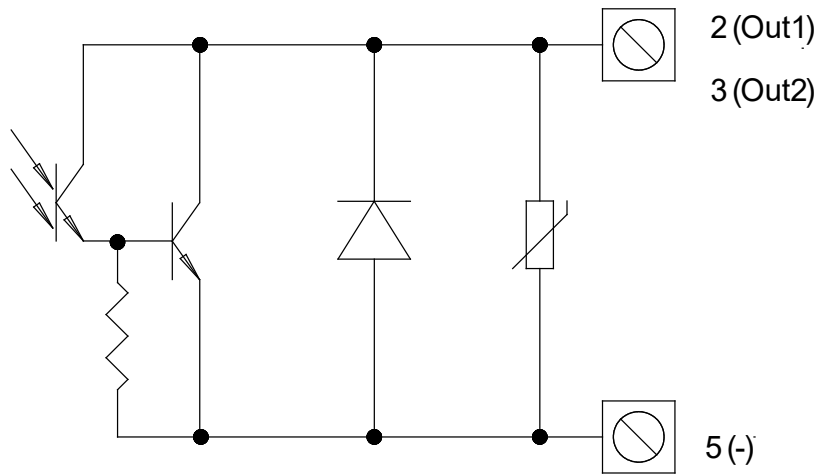
- 1 (+) POWER SUPPLY
- 2 (+) OUTPUT 1
- 3 (+) OUTPUT 2 (OPTIONAL)
- 4 (+) 4-20mA max load: 500 Ω OUTPUT (OPTIONAL)
- 5 (-) POWER SUPPLY / OUTPUTS

PIN 5 TO BE CONNECT TO THE GROUND

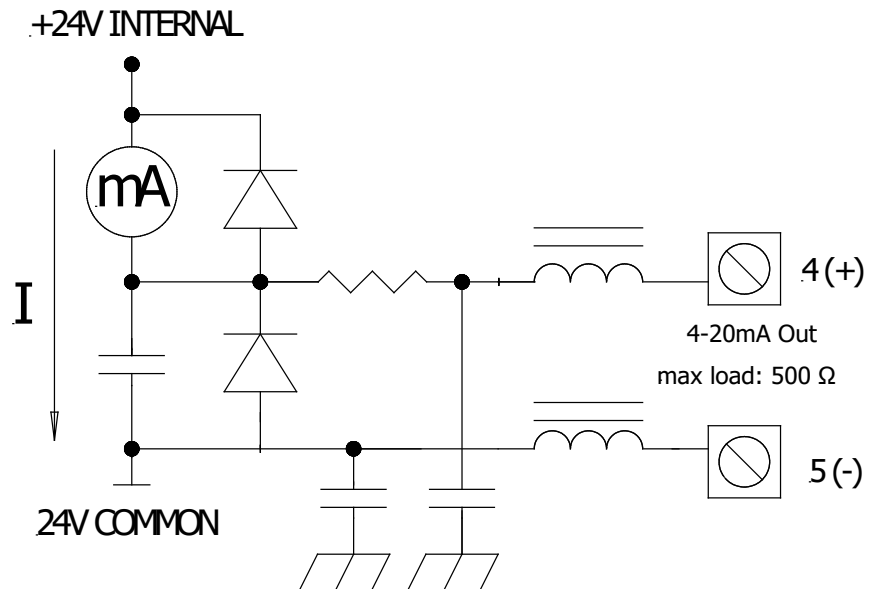
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OUTPUTS: DIGITAL /ANALOG

Digital Outputs

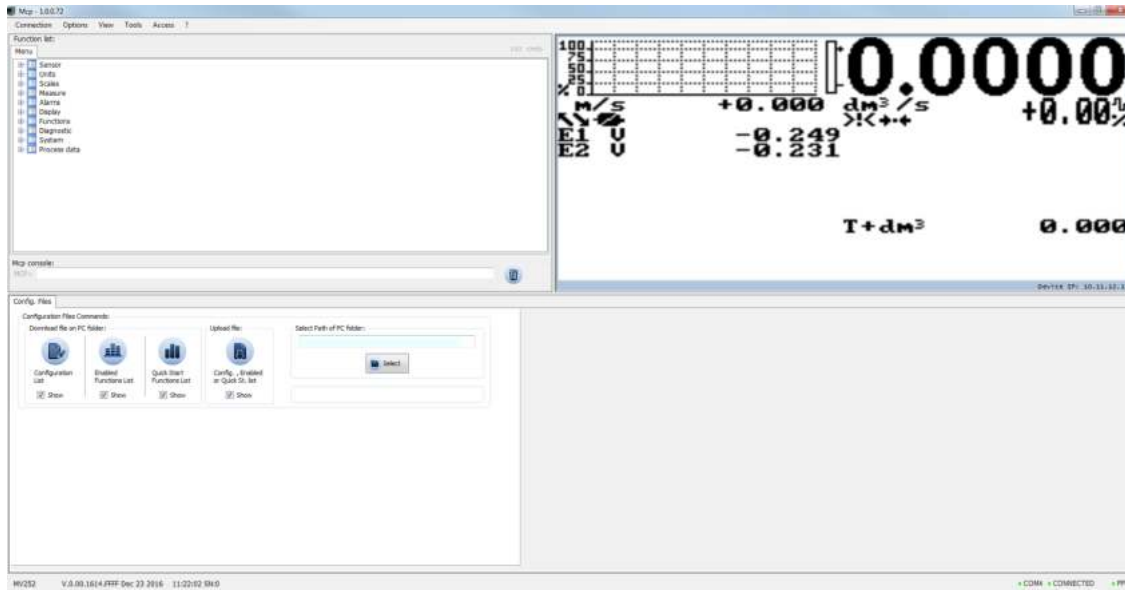


Analog Outputs

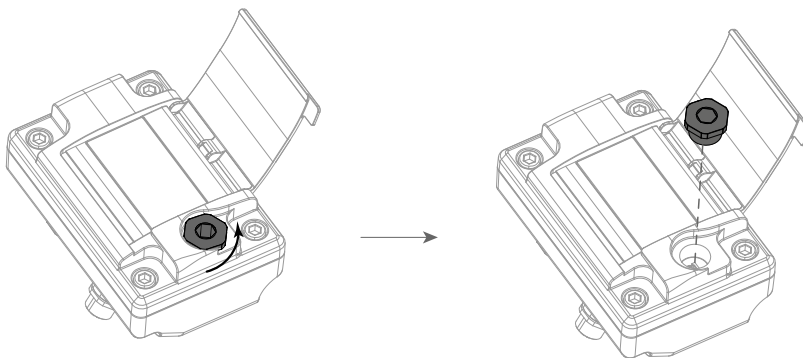


USER INTERFACE

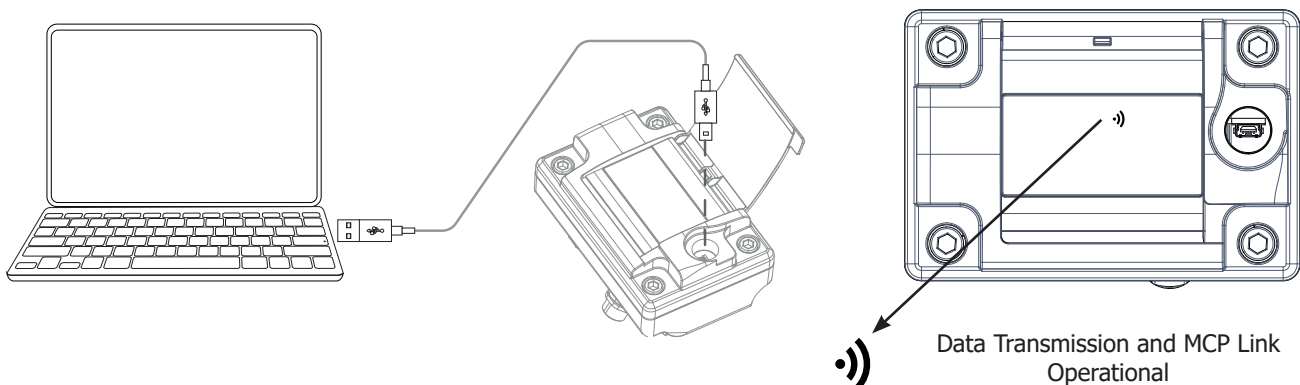
MCP is a Windows® software that allows to set all the converter functions and personalize the menu. To use MCP interface consult the relevant user manual.



To connect the converter to the computer, connect the USB cable as shown below.
Remove the PG9 PLUG.



Connect USB cable type mini B. Verify connection by symbol on display



DISPLAY VISUALIZATION



EMPTY PIPE WARNING



ALARM WARNING



PROCESS ALARM



DATA TRANSMISSION



FLOW DIRECTION



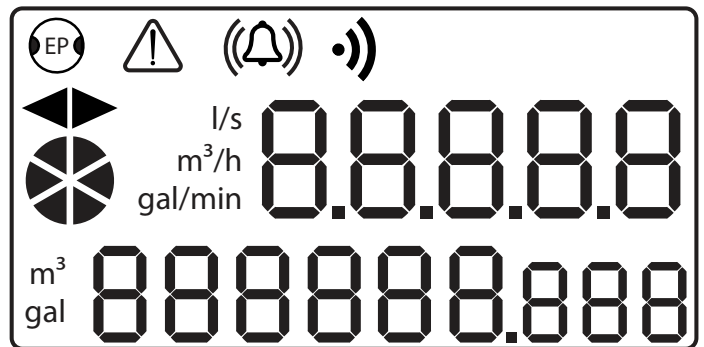
ACTIVE FLOW RATE

l/s
m³/h
gal/min

FLOW RATE MEASURE UNIT

m³
gal

TOTALIZER MEASURE UNIT



MENU FUNCTIONS

SENSOR

MAIN MENU			
1	1-Sensor		
2	2-Units		
3	3-Scales		
4	4-Flow		
5	5-Flow		
6	6-Flow		
7	7-Flow		
8	8-Flow		
9	9-Flow		
10	10-Flow		
11	11-Flow		
12	12-Flow		
13	13-Flow		
	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 000250	1.5 Insert ND of sensor (0-2500)
	HA =	+00.9637	1.6 Calibration data of sensor visualized on sensor's label
	HA- =	-04.4904	1.7 Calibration data of sensor for negative flow
	HZ =	+0000000	1.8 Sensor coefficient KZ (zero point)
	HD=	+0000000	1.9 Sensor coefficient KD
	Ins. position=	0	1.10 Insertion position
	HP DinaWmic=	OFF	1.11 KP dynamic, coefficient for insertion
	Hi=	01.8727	1.12 Sensor coefficient Ki
	Kp=	01.0000	1.13 Sensor coefficient Kp
	KC=	1.00000	1.14 Sensor coefficient KC
	C.curr =	025.0	1.15 CW volume total. decimal point position
	C.Reg.PB=	004	1.16 Current regulator proportional band
	C.Reg.DH=	008	1.17 Current regulator derivation constant
	S. Freq.= Hz	50	1.18 Measure sampling frequency
	E.P Detect=	ON	1.19 Enables the empty pipe detection feature
	R max= kohm	0500	1.20 Empty pipe detection threshold
	S. err. delay=	010	1.21 Signal error delay (n. sample)
	Sens. verify=	OFF	1.22 Automatic sensor verify enable
	HL =	00.00000000	1.23 Pipe hydraulic zero calibration
	Zero point cal.		1.24 Linearization coefficient

UNITS

MAIN MENU			
1	1-Sensor		
2	2-Units		
3	3-Scales		
4	4-Flow		
5	5-Flow		
6	6-Flow		
7	7-Flow		
8	8-Flow		
9	9-Flow		
10	10-Flow		
11	11-Flow		
12	12-Flow		
13	13-Flow		
	UNITS		
	Diam.	mm	2.1 Nominal diameter measure unit
	FR.unit	METRIC	2.2 Flowrate type measure unit: metric or not metric
	PI1 unit	METRIC	2.3 Pulse 1 type measure unit: metric or not metric
	PI2 unit	METRIC	2.4 Pulse 2 type measure unit: metric or not metric
	T+ unit	METRIC	2.5 Total direct totalizer measure unit type: metric or not metric
	T+ unit	g	2.6 Total direct totalizer measure unit
	P+ unit	METRIC	2.7 Partial direct totalizer measure unit type: metric or not metric
	P+ unit	g	2.8 Partial direct totalizer measure unit
	T- unit	METRIC	2.9 Total reverse totalizer measure unit type: metric or not metric
	T- unit	g	2.10 Total reverse totalizer measure unit
	P- unit	METRIC	2.11 Partial reverse totalizer measure unit type: metric or not metric
	P- unit	g	2.12 Partial reverse totalizer measure unit
	Temp.unit	°C	2.13 Temperature measure unit
	Mass units	ON	2.14 Enable/disable the selection of mass units on full scale set
	Sg=kg/dm3	1.0000	2.15 Specific gravity coefficient

The physical display provides the following units of measurement: l/s, m³/h, gal/mln, m³, gal. Other units available at menus, selectable by MCP interface, they will not be displayed on the physical display, but will only display their numeric values.

SCALES

```

MAIN MENU
1-Sensor
2-Units
3- Scales
4-Measure
5-
6-
7-
8-
9-
10-
11-
12-
13-
    
```

```

SCALES
11- FS1 g/s          4908.7
12- FS2 g/s          4908.7
13- 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
7- Outputs
9-
11-
12-
13-
    
```

```

MEASURES
11- Damping          SMART
12- Cut-off= %      00.1
13- DT Min.         ON
    Autorange       ON
    
```

- 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

ALARMS

```

MAIN MENU
1-Sensor
2-Units
3- Scales
4-Measure
5- Alarms
7- Outputs
9-
11-
12-
13-
    
```

```

ALARMS
11- Max+ = dm3/s     OFF
12- Max- = dm3/s     OFF
13- Min+ = dm3/s     OFF
    Min- = dm3/s     OFF
    Hysterisis=%     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

OUTPUTS

```

MAIN MENU
1-Sensor
2-Units
3- Scales
4-Measure
5- Alarms
7- Outputs
9-
11-
12-
13-
    
```

```

OUTPUTS
11- Out1            PULSES+
12- Out2            PULSES-
13- Out mA1         4_22 +/-
    A1S             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 Full Scale value for analog out1

DISPLAY

DISPLAY

Language	EN
Contrast	5
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

```

MAI
1-
2-
3-
4-
5-
6-
7-
8-
9- Outputs
10-
11- Display
12- Functions
13- Diagnostic
14- 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-
9- Display
10-
11- Functions
12- Diagnostic
13- System
    
```

DIAGNOSTIC

DIAGNOSTIC

Self test	
Sens. verify	
Flow sim. =	ON
Display measures	
Disp. Comm. Vars	
Display graphs	
Gen. sens. set	
Firmware info	
S/N=	999001
WT=	002:21:00 : 22

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

```

MAI
1-
2-
3-
4-
5-
6-
7-
8-
9-
10-
11- Functions
12- Diagnostic
13- System
    
```

SYSTEM

SYSTEM

```

L1 code = *****
L2 code = *****
L3 code = *****
L4 code = *****
L5 code = *****
L6 code = *****
Restr. Access=      ON
010.011.012.013
010.011.012.014
255.255.255.000
    
```

```

13.1 Access level 1 code
13.2 Access level 2 code
13.3 Access level 3 code
13.4 Access level 4 code
13.5 Access level 5 code
13.6 Access level 6 code
13.7 Restricted access level
13.8 Device IP network address
13.9 Client IP network address
13.10 Network mask
13.11 Calibration coefficient KT
13.12 Calibration coefficient KF
13.13 Calibration coefficient KR
13.14 DAC1 out 4mA calibration point
13.15 DAC1 out 20mA calibration point
13.16 firmware update
    
```

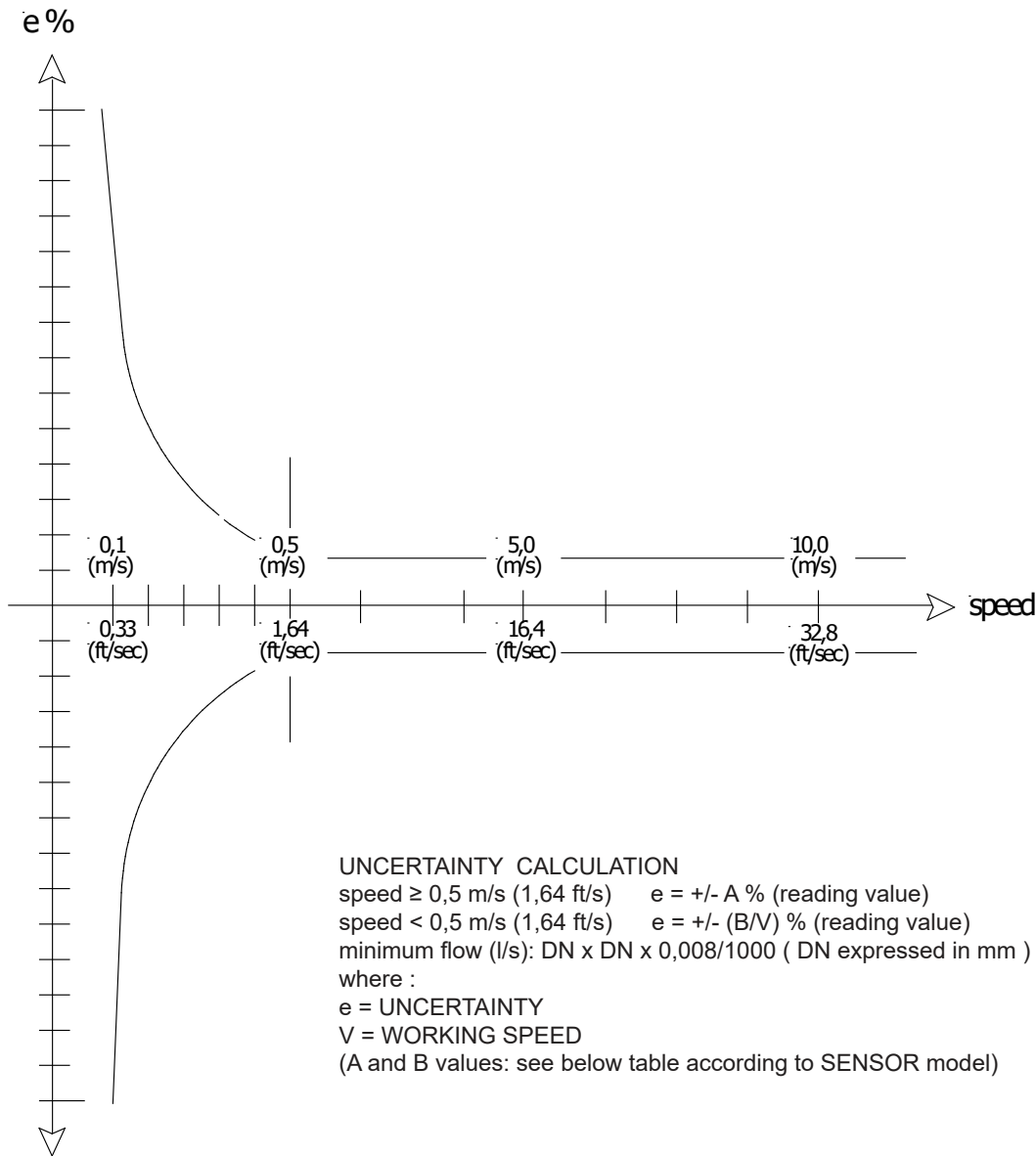
```

MA 1 RT 0.96469
1 HS 1.00000
2 HR 1.00000
3 DAC1 (°C)
4 DAC1 (°C)
5 FW update 14718
    
```

```

11-Functions
12-Diagnostic
13-System
    
```

ACCURACY TABLE



MS1000/MS2500		
A	B(m/s)	B(ft/s)
0,5	0,25	0,82

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 $\pm 0,005$ %

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MI-001 OIML R49 CLASS1: MV800

The **MS2500** sensor's diameters listed below, coupled with **MV800**, are certified according to European Directive 2014/32/EU category MI-001 (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	0,4	
50	2	63	1,01	0,63	
65	2 ½	100	1,60	1	
80	3	160	2,56	1,6	
100	4	250	4,00	2,5	
125	5	400	6,40	4	
150	6	630	10,08	6,3	

SIZE		Q3	Q2	Q1	R
mm	inch	m3/h			Q3/Q1
25	1	16	0,102	0,064	250
32	1 ¼	25	0,16	0,1	
40	1 ½	40	0,256	0,16	
50	2	63	0,403	0,252	
65	2 ½	100	0,64	0,4	
80	3	160	1,024	0,64	
100	4	250	1,6	1	
125	5	400	2,56	1,6	
150	6	630	4,032	2,52	

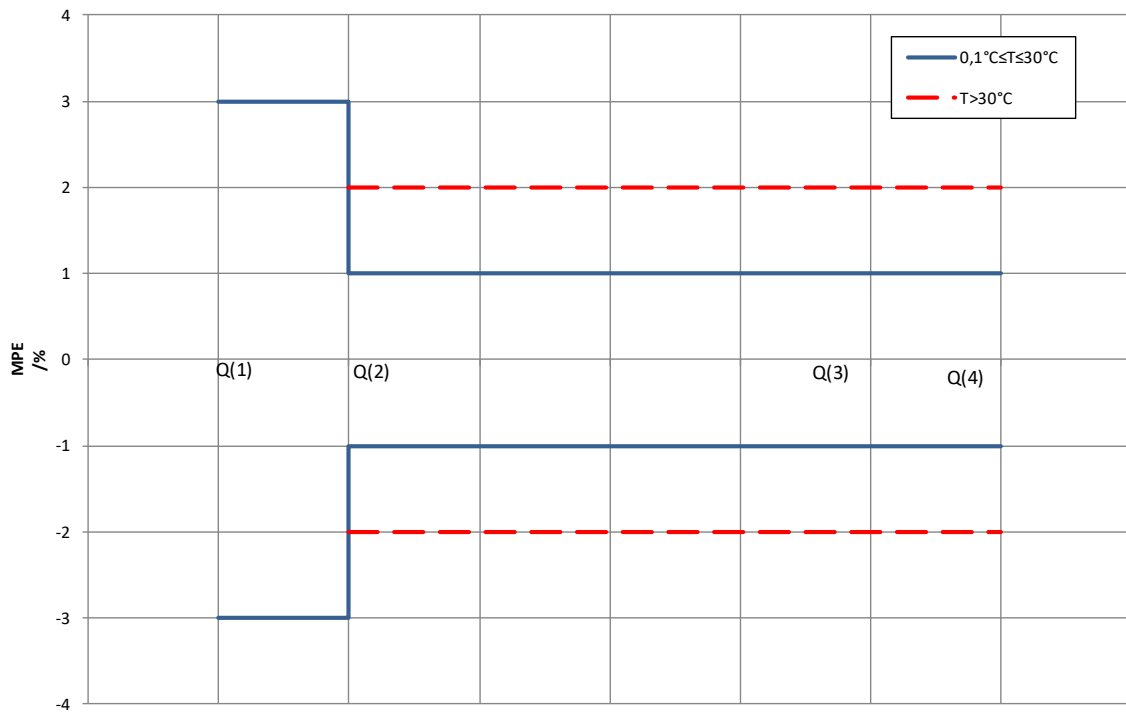
MI-001 OIML R49 CLASS2: MV800

The **MS2500** sensor's diameters listed below, coupled with **MV800**, are certified according to European Directive 2014/32/EU category MI-001 (OIML R49)

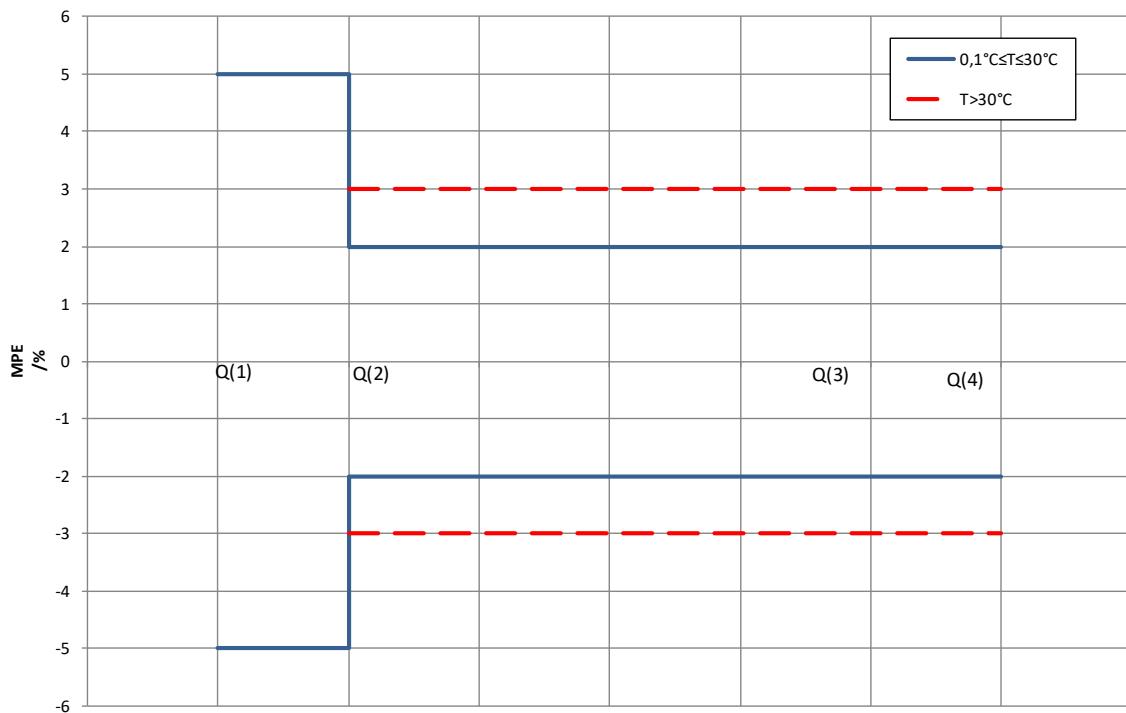
SIZE		Q3	Q2	Q1	R
mm	inch	m3/h			Q3/Q1
25	1	16	0,16	0,1	160
32	1 ¼	25	0,25	0,16	
40	1 ½	40	0,4	0,25	
50	2	63	0,63	0,39	
65	2 ½	100	1	0,63	
80	3	160	1,6	1	
100	4	250	2,5	1,6	
125	5	400	4	2,5	
150	6	630	6,3	3,9	
200	8	630	6,3	3,9	
250	10	630	6,3	3,9	

SIZE		Q3	Q2	Q1	R
mm	inch	m3/h			Q3/Q1
25	1	16	0,064	0,04	400
32	1 ¼	25	0,1	0,06	
40	1 ½	40	0,16	0,1	
50	2	63	0,252	0,16	
65	2 ½	100	0,4	0,25	
80	3	160	0,64	0,4	
100	4	250	1	0,63	
125	5	400	1,6	1	
150	6	630	2,5	1,6	

MPE - MI 001 - 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)



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MI-004 CLASS1: MV800

The **MS2500** sensor's diameters listed below, coupled with **MV800**, are certified according to European Directive 2014/32/EU category MI-004

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	

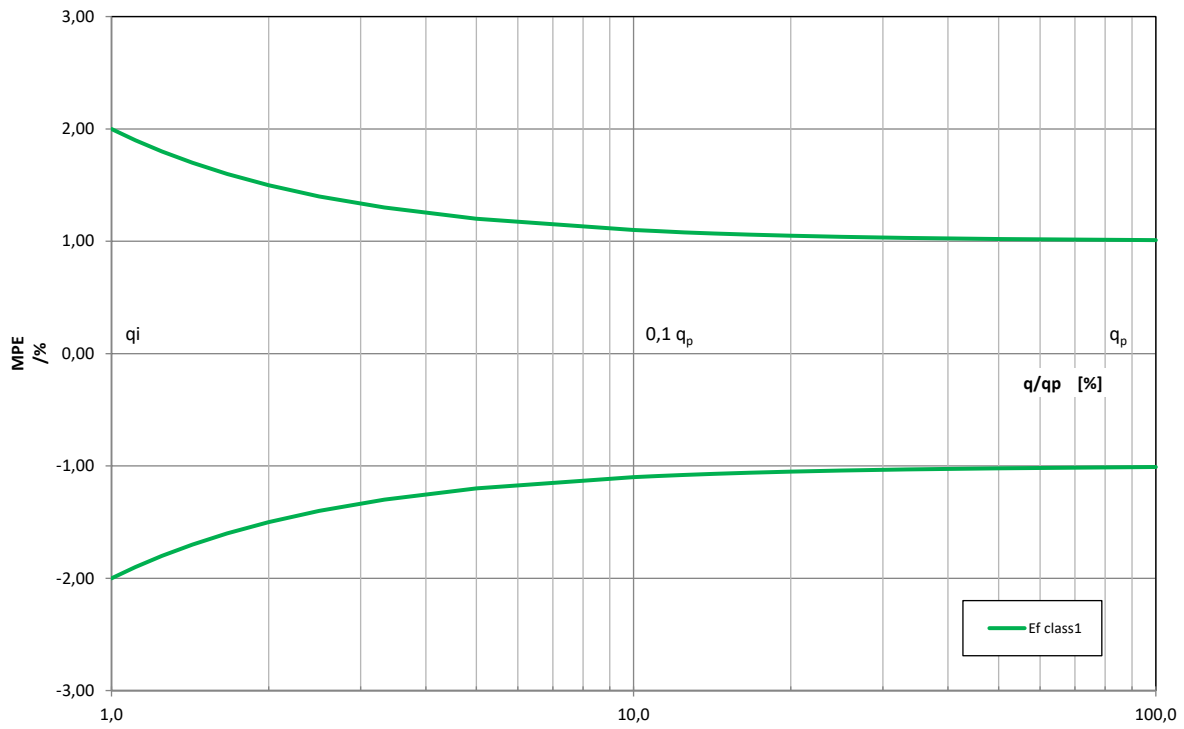
SIZE		q _p	q _s	0,1 q _p	q _i	MC
mm	inch	m3/h				q _p /q _i
25	1	10	16	1	0,2	50
32	1 ¼	16	25	1,6	0,32	
40	1 ½	25	40	2,5	0,5	
50	2	40	63	4	0,8	
65	2 ½	63	100	6,3	1,26	
80	3	100	160	10	2	
100	4	160	250	16	3,2	
125	5	250	400	25	5	
150	6	400	630	40	8	
200	8	630	1000	63	12,6	
250	10	1000	1600	100	20	
300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

(*): Reduced flowrates to the test rig limits

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



The manufacturer guarantees only English text available on our web site www.isoil.com

HOW TO ORDER

CODE EXAMPLE	CODE / DESCRIPTION	
MV 800		
A	A	MV800 - Blind, N°1 freely programmable digital OUT
	B	MV800 - Complete of DISPLAY LCD and N°1 freely programmable digital OUT (mandatory for MI001)
Housing material / Protection rate		
0	0	Housing in painted Alluminum (with PA6 plastic cover for version with display) - IP67
	1	Housing in AISI304 JB RAW (with PA6 plastic cover for version with display) - IP67
	2	Housing in AISI304 JB POLISHED (with PA6 plastic cover for version with display) - IP67
	3	Housing in painted Alluminum-IP68 (ONLY ELECTRICAL CONNECTIONS B and BLIND VERSION)
	4	Housing in AISI304 RAW-IP68 (ONLY ELECTRICAL CONNECTIONS B and BLIND VERSION)
	5	Housing in AISI304 POLISHED-IP68 (ONLY ELECTRICAL CONNECTIONS B and BLIND VERSION)
DIGITAL Output		
A	A	without Additional Digital Out
	B	n° 1 additional digital out
ANALOG Output		
0	0	Without Analog Out
	1	With Analog Out
Electrical Connections		
A	A	5 poles connector complete of plug
	B	2 meters of N° 5 poles cable ALREADY CONNECTED
Special Features		
0	0	None
MID Approval		
A	A	NONE
	B	MI-001/OIMLR49-CLASS 1
	C	MI-001/OIMLR49-CLASS 2
	D	MI-004-CLASS 1

Example of
complete code
to order



MV800-A0A0A0A

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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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