



ISOMAG

The friendly magmeter

DATA SHEET

MV210



CE

ISOIL 
I N D U S T R I A



INDEX

TECHNICAL DATA	4
OVERALL DIMENSIONS	5
OVERALL DIMENSIONS (STAINLESS STEEL VERSION)	8
MV210 EXPLODED LAYOUT	10
MV210 CONSTRUCTION (STAINLESS STEEL VERSION)	11
MAIN PAGES VISUALISATION	12
ELECTRICAL CONNECTIONS	13
DIGITAL INPUT	14
DIGITAL OUTPUTS	14
ANALOG OUTPUTS	15
FUNCTIONS MENU	16
ACCURACY	21
OIML R49	22
HOW TO ORDER	26

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 / 14... +122 °F - Reinforced Nylon
Humidity Range	☐ 0÷100%

STANDARD FEATURES

Housing materials	☐ Painted Aluminium die casting ☐ Nylon reinforced with 15% of fiber glass ☐ AISI304 Stainless Steel
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 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
Batching Funct.	☐ Yes
CE Certification	☐ Yes

OPTIONAL FEATURES (CHECK HOW TO ORDER, AT LAST PAGE, FOR MORE DETAILS)

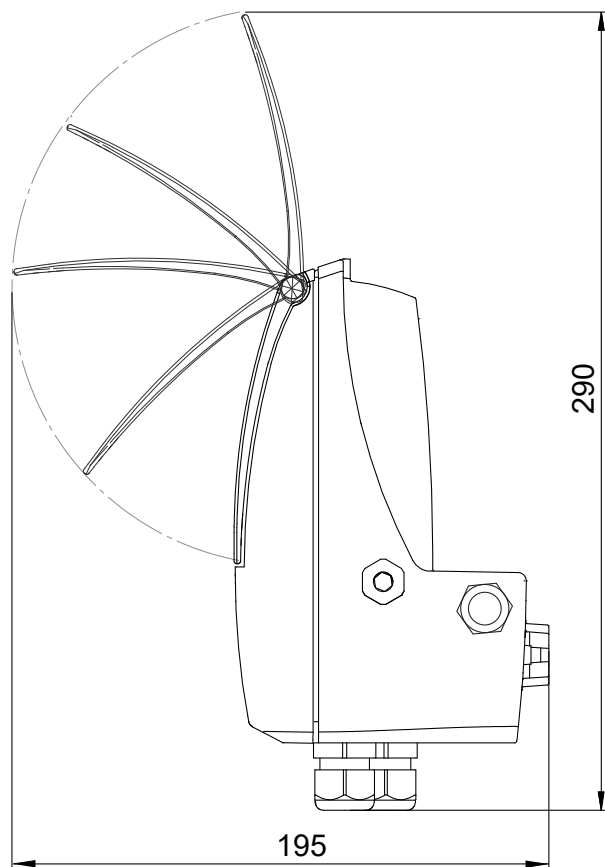
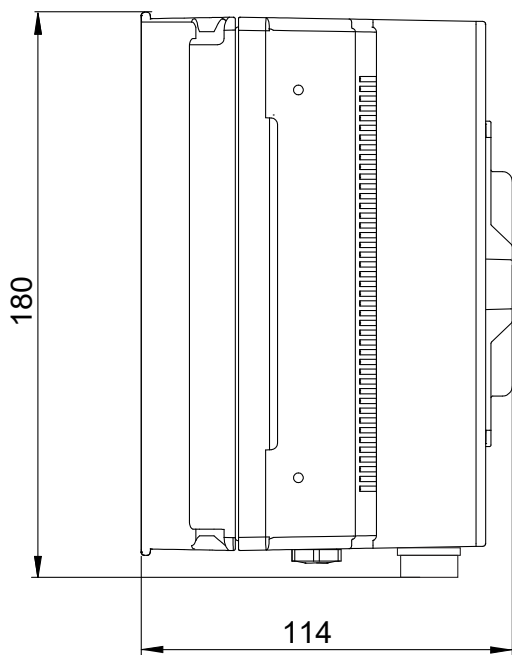
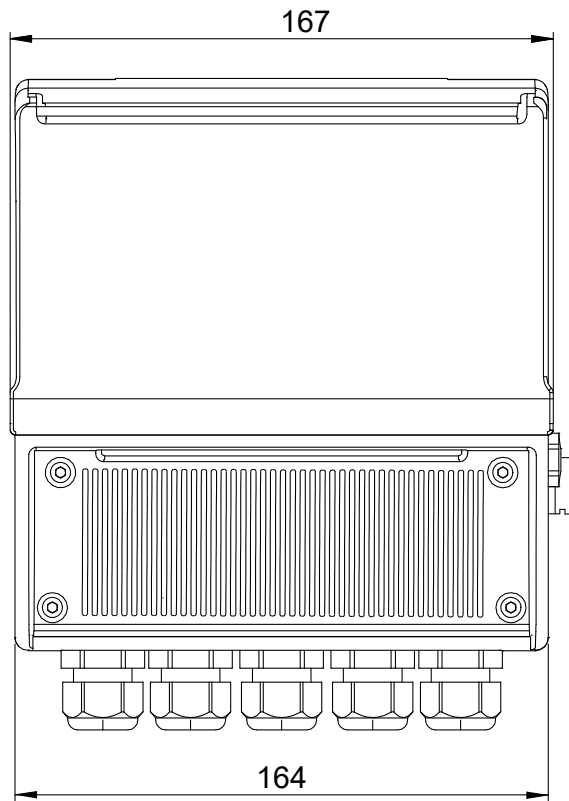
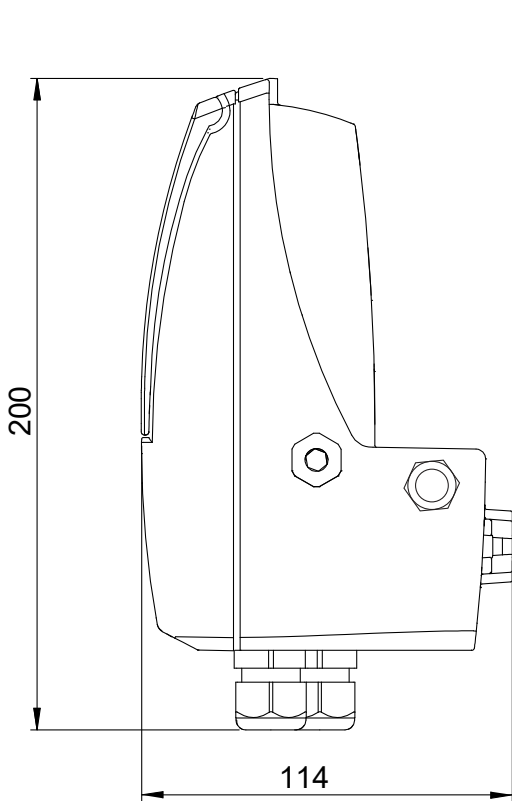
Version	☐ Compact ☐ Separate
Protection Rate	☐ IP 68
Conn. Sensor Cable	☐ CABLE C015/C016 for separate version
LCD Display	☐ Graphic display 128x64 pixels back light, 3 programming keys
Power Supply/Consumption	☐ Power supply : 100 ... 240 VAC 44/66 Hz ☐ Power supply : 24 ... 36 VAC/VDC 0...45/66 Hz ☐ 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
Outputs: Pulses/Frequency/Alarms/Batch	☐ 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 ☐ BACnet
Certificazioni	☐ OIML R49



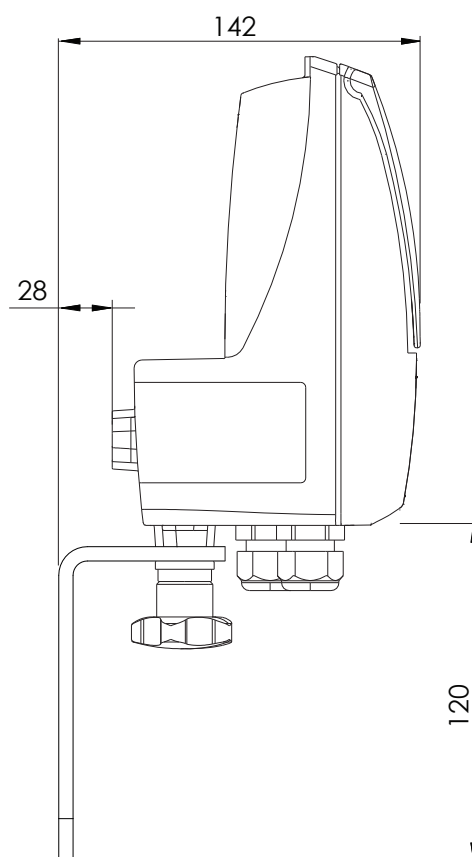
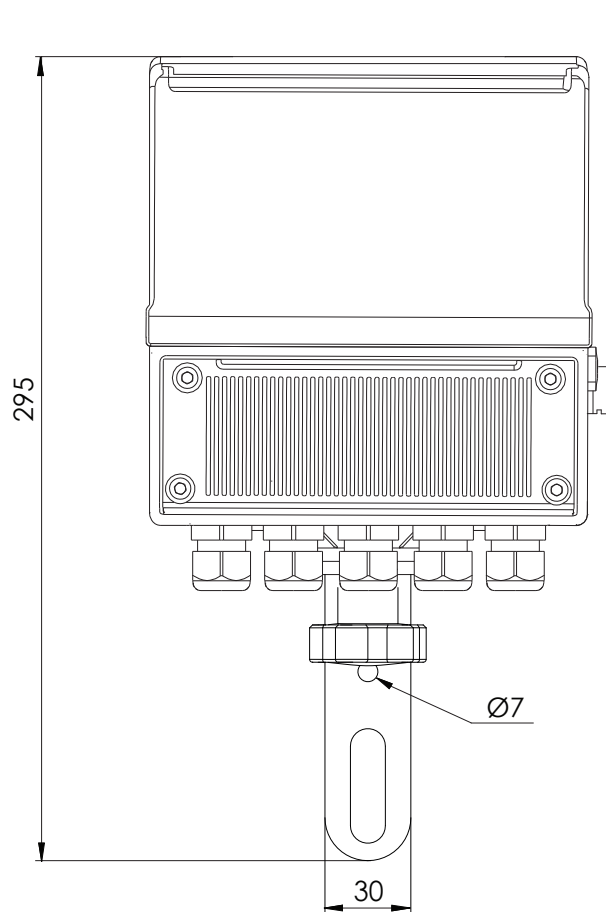
ACCURACY

Accuracy (whole system converter+- sensor)	☐ See table below
---	--

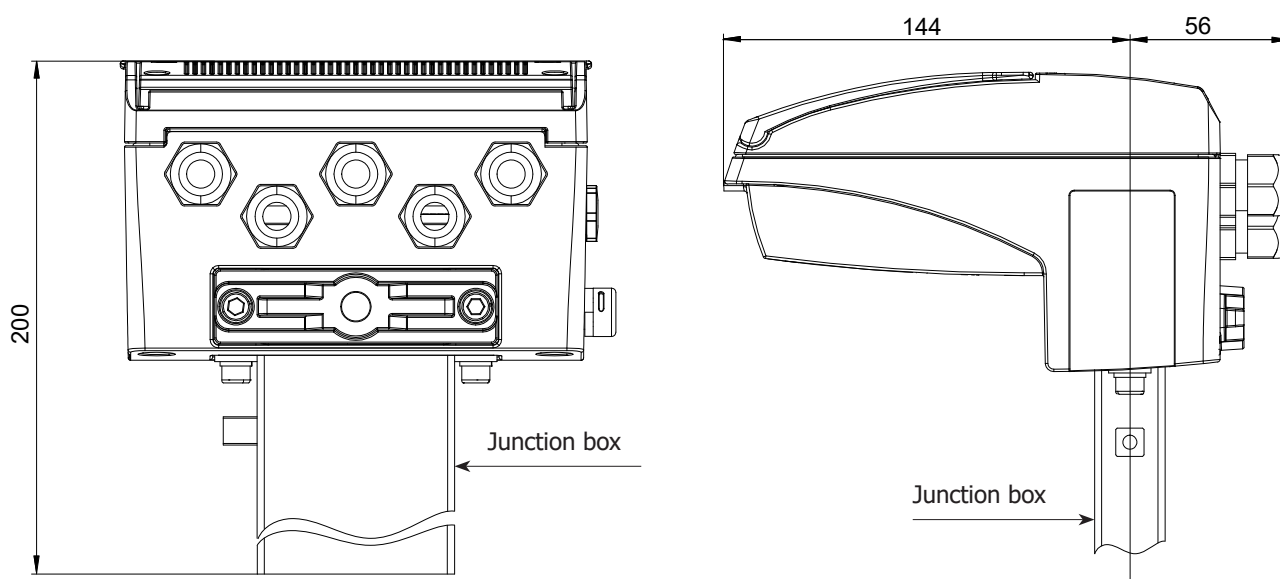
OVERALL DIMENSIONS
Compact version



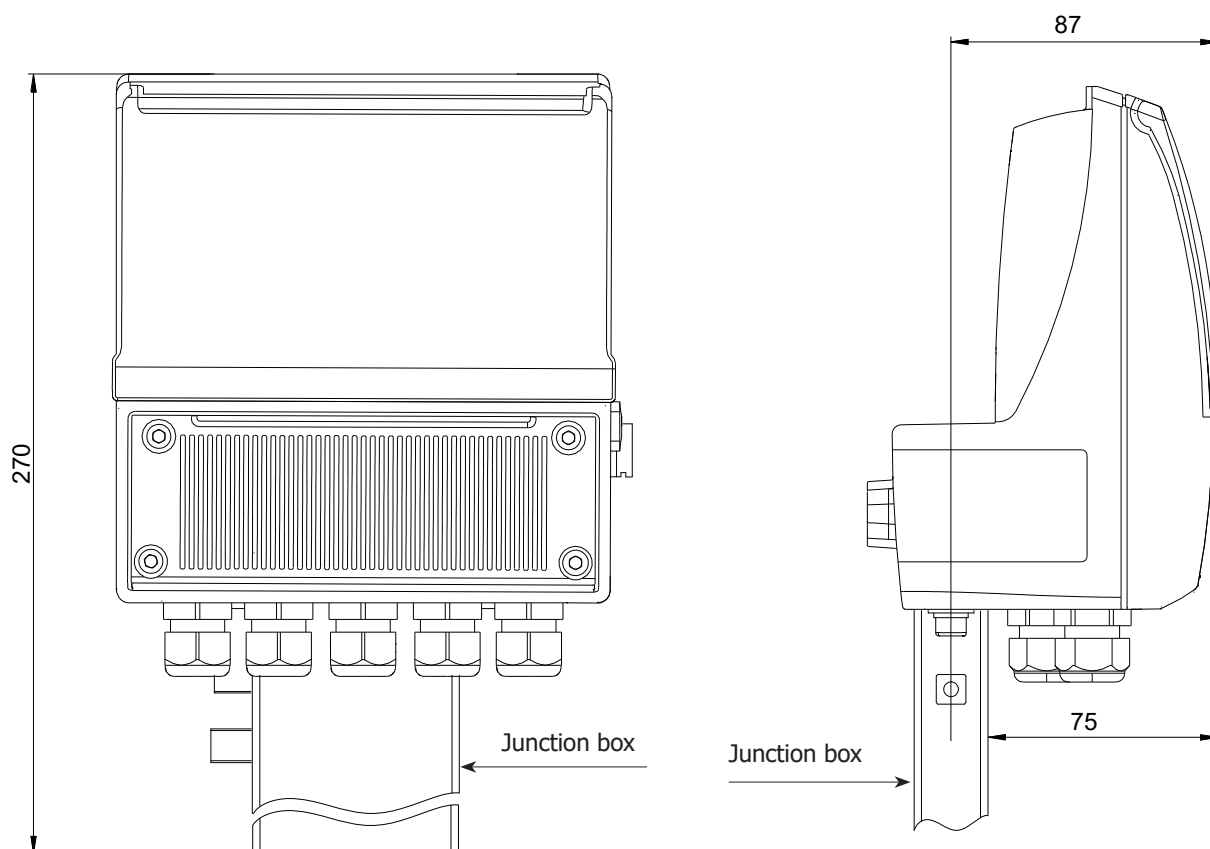
Separate (wall) version



Horizontal version

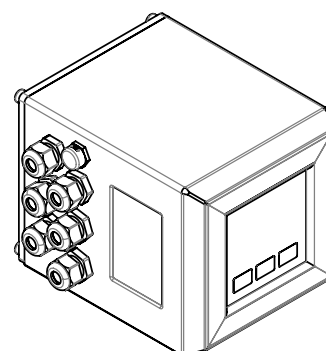
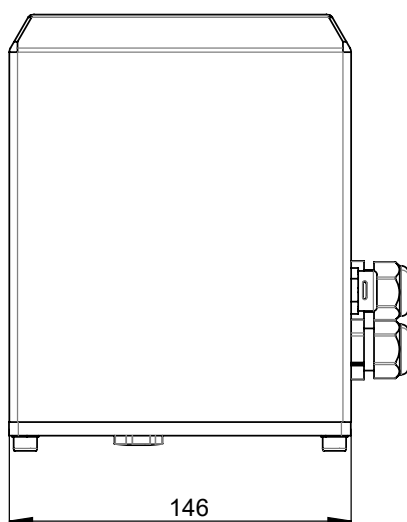
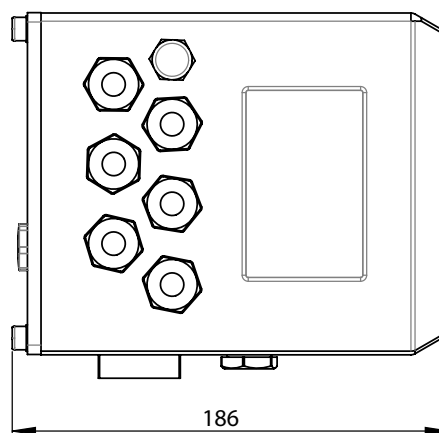
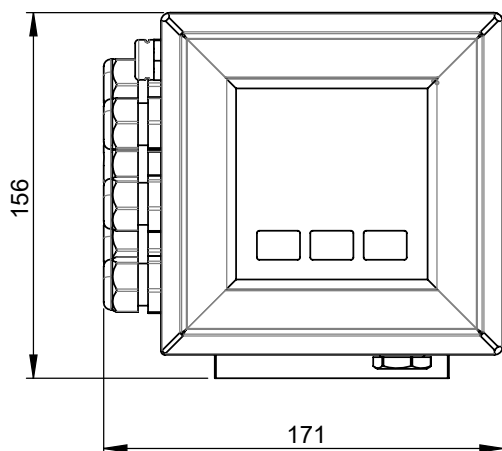


Vertical version

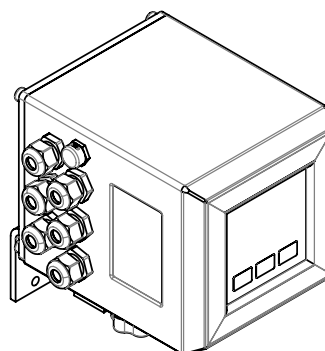
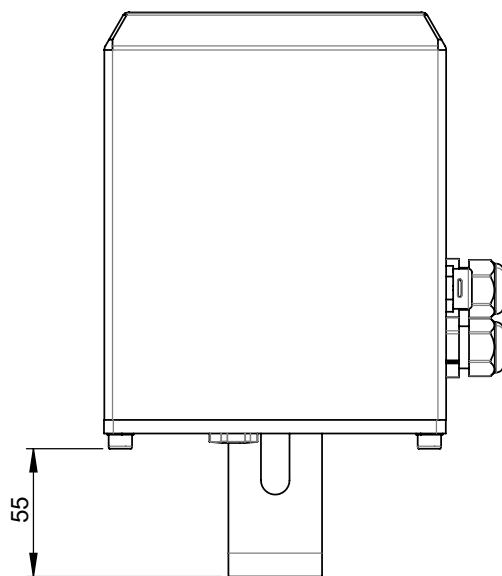
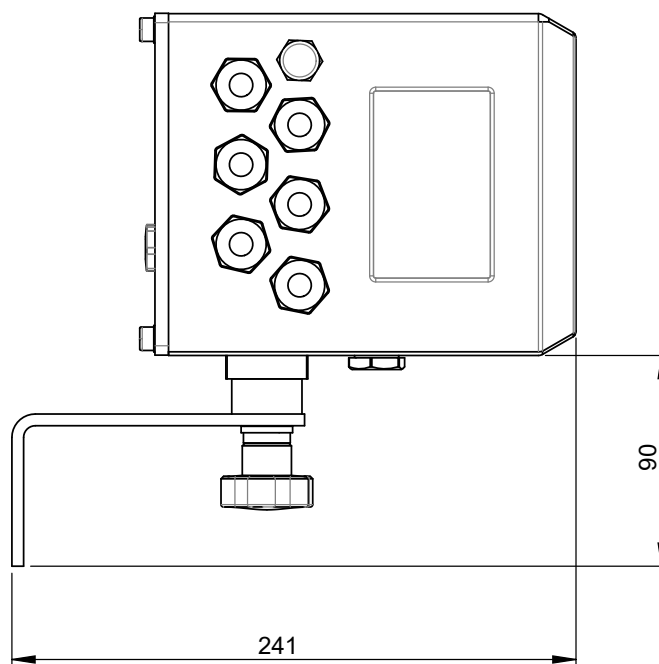
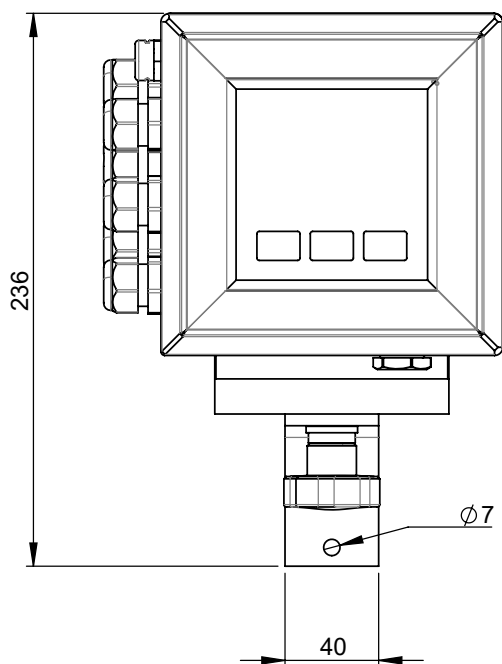


OVERALL DIMENSIONS (STAINLESS STEEL VERSION)

Compact Version

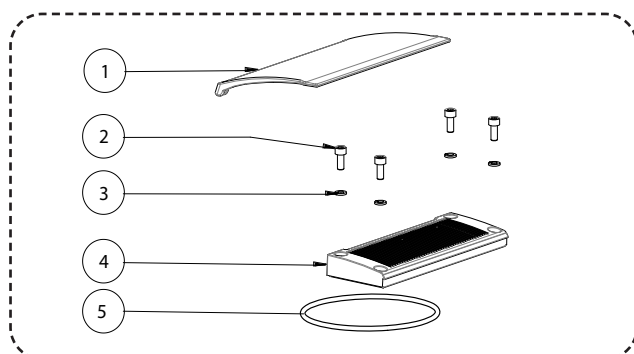


Separate Version

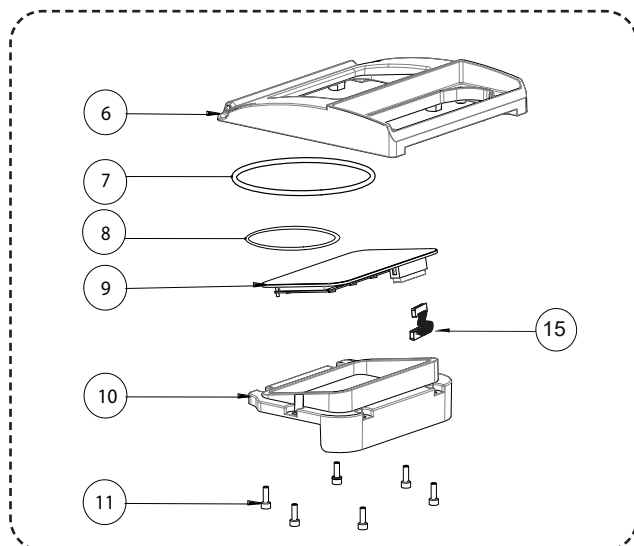


MV210 EXPLODED LAYOUT

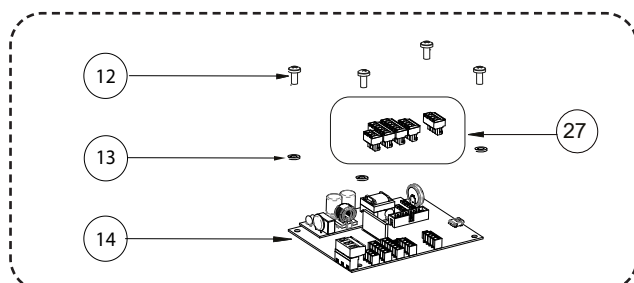
TERMINAL BLOCK COVER



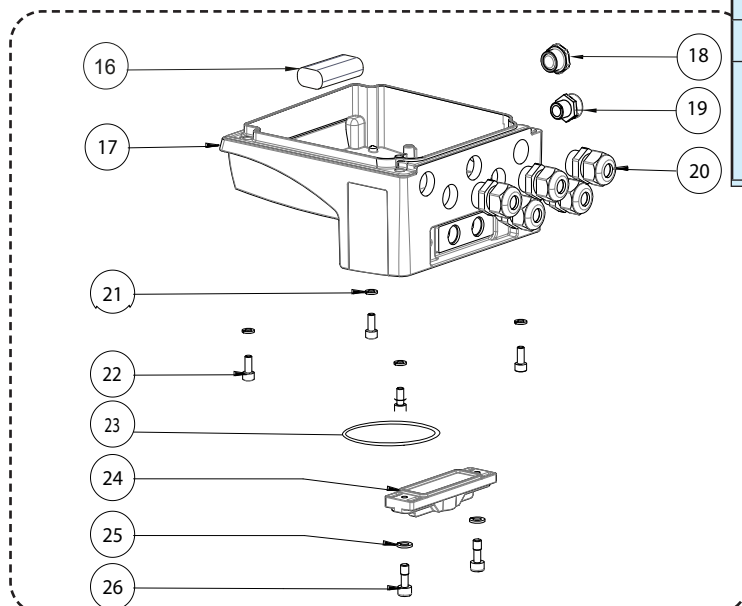
MAIN HOUSING COVER



PCB MV210

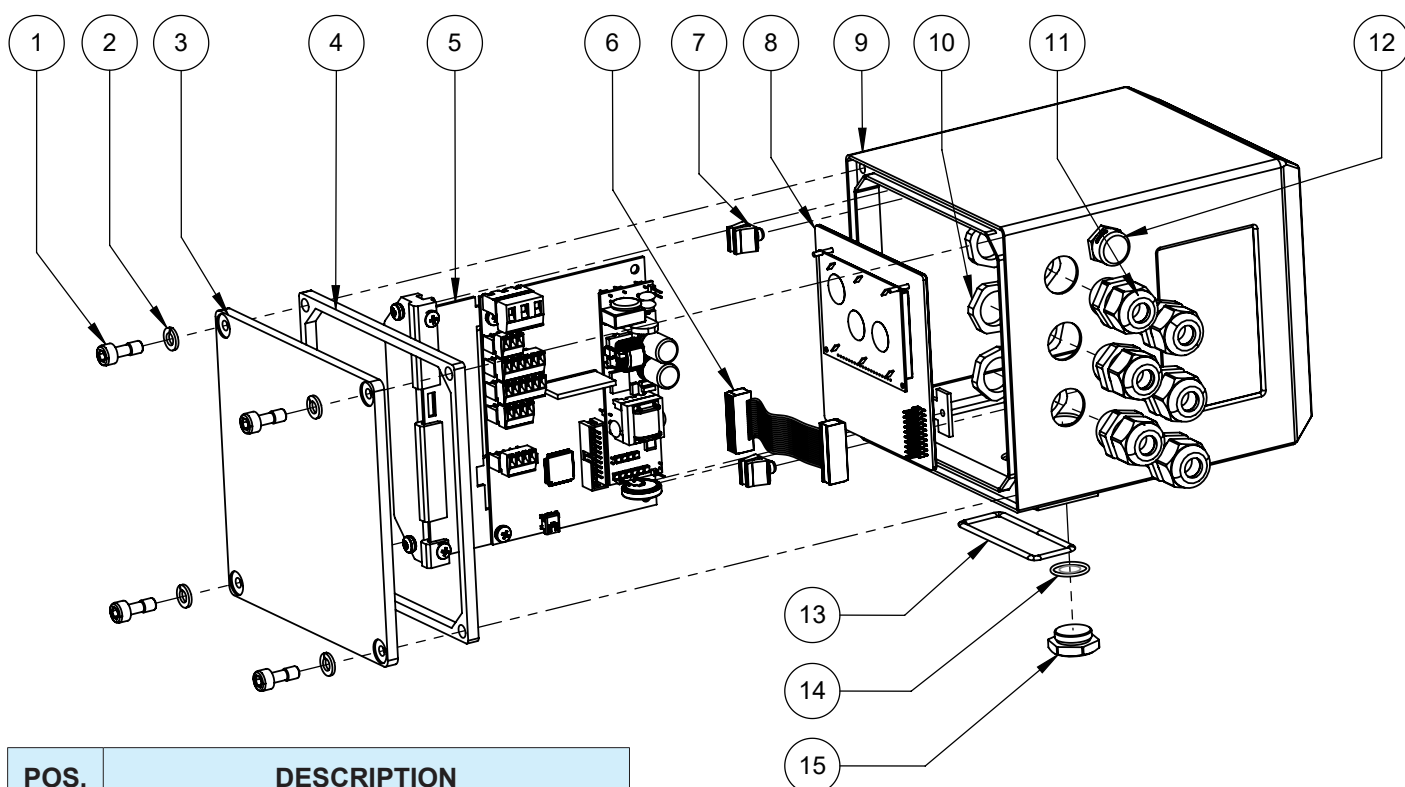


MAIN HOUSING

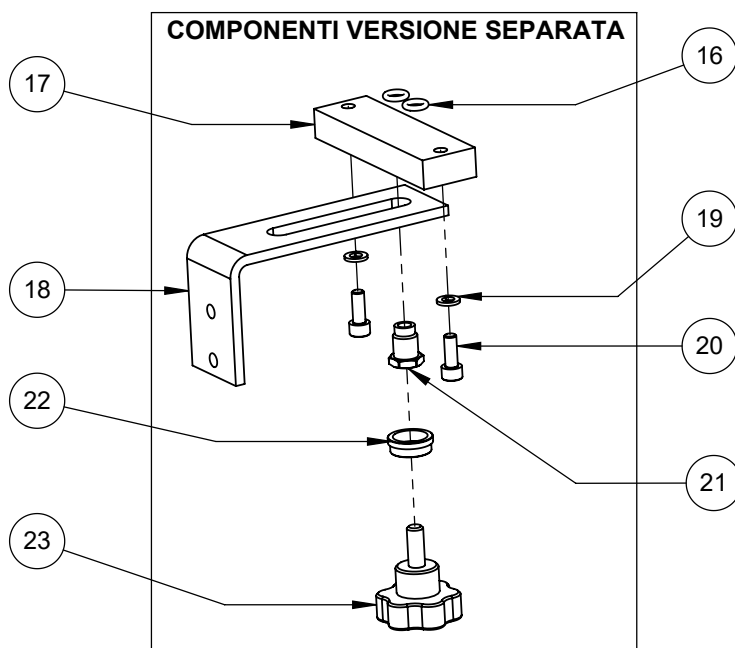


POS.	DESCRIPTION	
	PA6 VERSION	ALLUMINIUM VERSION
1	PROTECTION COVER	
2	VITE M4x12	VITE M5x12
3	GROWER Ø4	GROWER Ø5
4	TERMINAL COVER	TERMINAL COVER
5	O-RING-4400	
6	HOUSING COVER	HOUSING COVER
7	O-RING-4700 (HOUSING COVER)	
8	O-RING-117x3 (DISPLAY)	
9	DISPLAY	
10	FIXING DISPLAY FRAME (MATERIAL PA06)	
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 mm ² STRANDED WIRE: 26-16 AWG / 0.129-1.31 mm ² TORQUE: 3.0 Lb.In / 0.34 Nm	

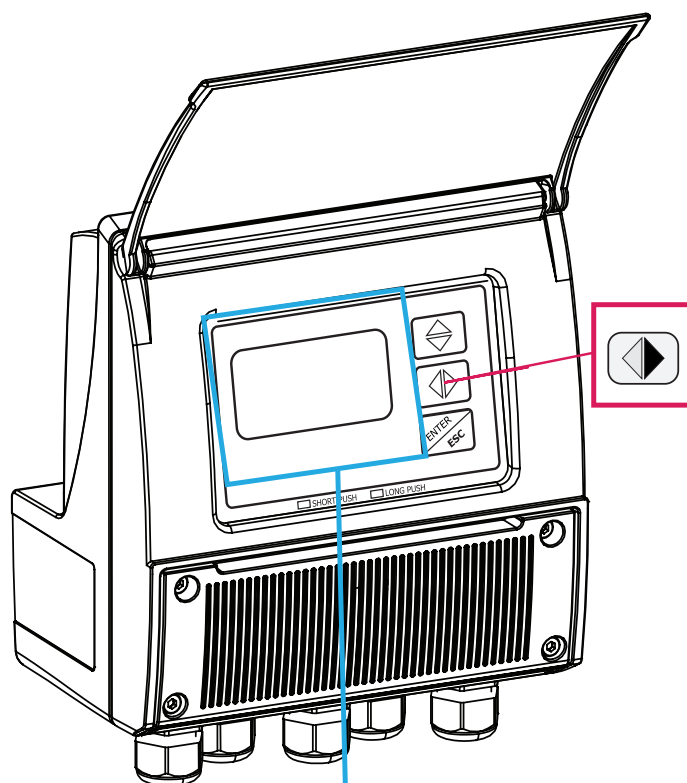
MV210 CONSTRUCTION (STAINLESS STEEL VERSION)



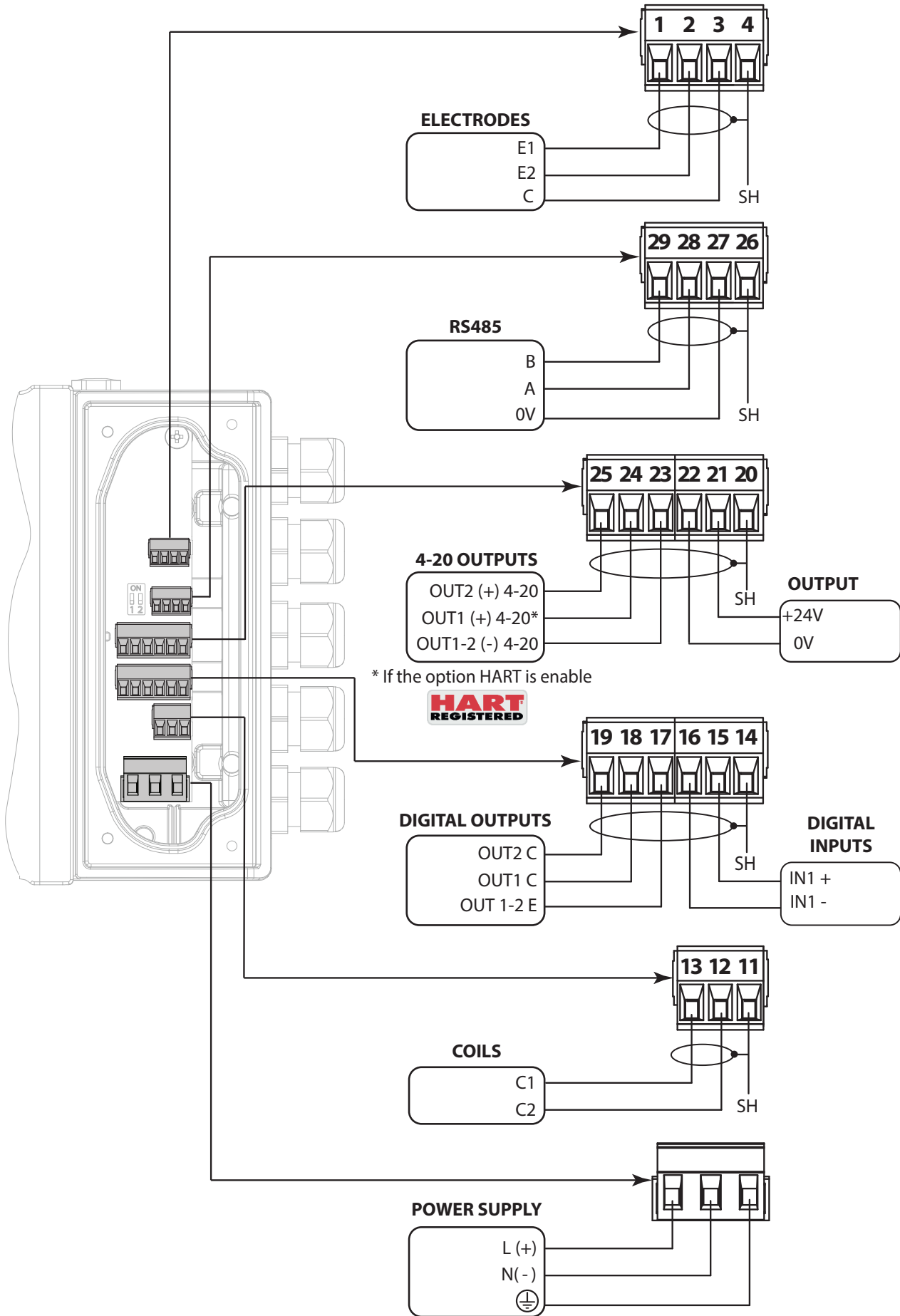
POS.	DESCRIPTION
1	SCREW M6X16
2	GROWER Ø 6
3	POLISHED COVER
4	GASKET FOR Stainless steel HOUSING
5	BOARD FRAME M3C
6	FLAT CABLE
7	BOARD FIXING CLIPS
8	DISPLAY/BLIND
9	POLISHED Stainless steel HOUSING
10	PG11 NUT
11	FLAT GASKET O-RING 155
12	O-RING ORM 0160-15 Ø16X1.5
13	STAINLESS STEEL CAP M18X0.75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



Different visualization possibilities by simply pressing of a key.

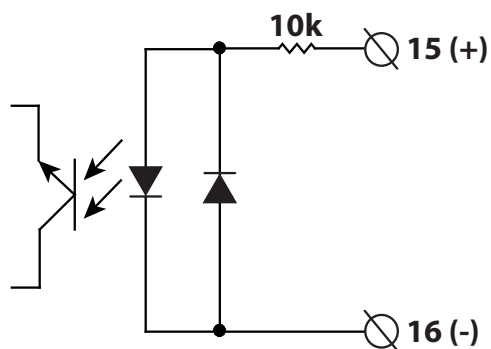


ELECTRICAL CONNECTIONS

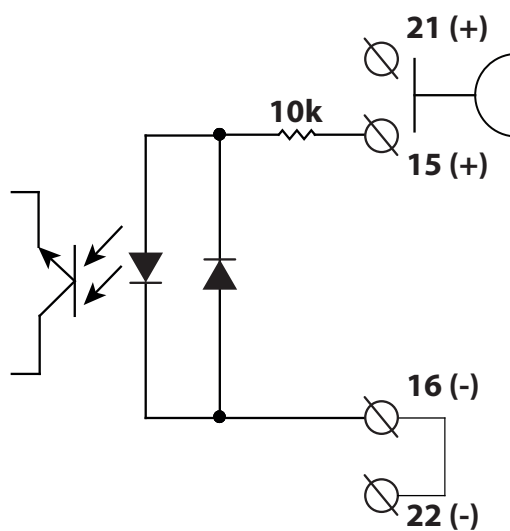


DIGITAL INPUT

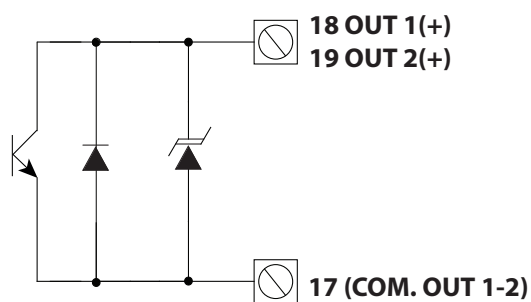
on/off input
(external power supply)



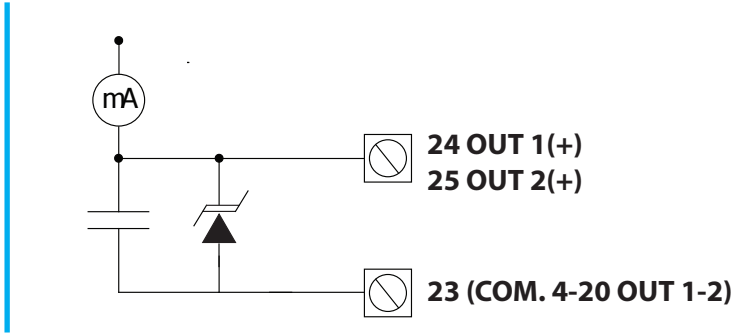
on/off input
(internal power supply)



DIGITAL OUTPUTS



ANALOG OUTPUTS



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

FUNCTIONS MENU

SENSOR

MAIN MENU			
1	1-Sensor		
2	2-Units		
3	3-Scales		
4	4-Flow		
5	5-Totalizer		
6	6-Alarm		
7	7-Display		
8	8-Factory		
9	9-About		
10	10-Exit		
11	11-Reset		
12	12-Factory		
13	13-About		
14	14-Exit		
15	15-Reset		
16	16-Factory		
17	17-About		
18	18-Exit		
19	19-Reset		
20	20-Factory		
21	21-About		
22	22-Exit		
23	23-Reset		
24	24-Factory		
25	25-About		
26	26-Exit		
27	27-Reset		
28	28-Factory		
29	29-About		
30	30-Exit		
31	31-Reset		
32	32-Factory		
33	33-About		
34	34-Exit		
35	35-Reset		
36	36-Factory		
37	37-About		
38	38-Exit		
39	39-Reset		
40	40-Factory		
41	41-About		
42	42-Exit		
43	43-Reset		
44	44-Factory		
45	45-About		
46	46-Exit		
47	47-Reset		
48	48-Factory		
49	49-About		
50	50-Exit		
51	51-Reset		
52	52-Factory		
53	53-About		
54	54-Exit		
55	55-Reset		
56	56-Factory		
57	57-About		
58	58-Exit		
59	59-Reset		
60	60-Factory		
61	61-About		
62	62-Exit		
63	63-Reset		
64	64-Factory		
65	65-About		
66	66-Exit		
67	67-Reset		
68	68-Factory		
69	69-About		
70	70-Exit		
71	71-Reset		
72	72-Factory		
73	73-About		
74	74-Exit		
75	75-Reset		
76	76-Factory		
77	77-About		
78	78-Exit		
79	79-Reset		
80	80-Factory		
81	81-About		
82	82-Exit		
83	83-Reset		
84	84-Factory		
85	85-About		
86	86-Exit		
87	87-Reset		
88	88-Factory		
89	89-About		
90	90-Exit		
91	91-Reset		
92	92-Factory		
93	93-About		
94	94-Exit		
95	95-Reset		
96	96-Factory		
97	97-About		
98	98-Exit		
99	99-Reset		
100	100-Factory		
101	101-About		
102	102-Exit		
103	103-Reset		
104	104-Factory		
105	105-About		
106	106-Exit		
107	107-Reset		
108	108-Factory		
109	109-About		
110	110-Exit		
111	111-Reset		
112	112-Factory		
113	113-About		
114	114-Exit		
115	115-Reset		
116	116-Factory		
117	117-About		
118	118-Exit		
119	119-Reset		
120	120-Factory		
121	121-About		
122	122-Exit		
123	123-Reset		
124	124-Factory		
125	125-About		
126	126-Exit		
127	127-Reset		
128	128-Factory		
129	129-About		
130	130-Exit		
131	131-Reset		
132	132-Factory		
133	133-About		
134	134-Exit		
135	135-Reset		
136	136-Factory		
137	137-About		
138	138-Exit		
139	139-Reset		
140	140-Factory		
141	141-About		
142	142-Exit		
143	143-Reset		
144	144-Factory		
145	145-About		
146	146-Exit		
147	147-Reset		
148	148-Factory		
149	149-About		
150	150-Exit		
151	151-Reset		
152	152-Factory		
153	153-About		
154	154-Exit		
155	155-Reset		
156	156-Factory		
157	157-About		
158	158-Exit		
159	159-Reset		
160	160-Factory		
161	161-About		
162	162-Exit		
163	163-Reset		
164	164-Factory		
165	165-About		
166	166-Exit		
167	167-Reset		
168	168-Factory		
169	169-About		
170	170-Exit		
171	171-Reset		
172	172-Factory		
173	173-About		
174	174-Exit		
175	175-Reset		
176	176-Factory		
177	177-About		
178	178-Exit		
179	179-Reset		
180	180-Factory		
181	181-About		
182	182-Exit		
183	183-Reset		
184	184-Factory		
185	185-About		
186	186-Exit		
187	187-Reset		
188	188-Factory		
189	189-About		
190	190-Exit		
191	191-Reset		
192	192-Factory		
193	193-About		
194	194-Exit		
195	195-Reset		
196	196-Factory		
197	197-About		
198	198-Exit		
199	199-Reset		
200	200-Factory		
201	201-About		
202	202-Exit		
203	203-Reset		
204	204-Factory		
205	205-About		
206	206-Exit		
207	207-Reset		
208	208-Factory		
209	209-About		
210	210-Exit		
211	211-Reset		
212	212-Factory		
213	213-About		
214	214-Exit		
215	215-Reset		
216	216-Factory		
217	217-About		
218	218-Exit		
219	219-Reset		
220	220-Factory		
221	221-About		
222	222-Exit		
223	223-Reset		
224	224-Factory		
225	225-About		
226	226-Exit		
227	227-Reset		
228	228-Factory		
229	229-About		
230	230-Exit		
231	231-Reset		
232	232-Factory		
233	233-About		
234	234-Exit		
235	235-Reset		
236	236-Factory		
237	237-About		
238	238-Exit		
239	239-Reset		
240	240-Factory		
241	241-About		
242	242-Exit		
243	243-Reset		
244	244-Factory		
245	245-About		
246	246-Exit		
247	247-Reset		
248	248-Factory		
249	249-About		
250	250-Exit		
251	251-Reset		
252	252-Factory		
253	253-About		
254	254-Exit		
255	255-Reset		
256	256-Factory		
257	257-About		
258	258-Exit		
259	259-Reset		
260	260-Factory		
261	261-About		
262	262-Exit		
263	263-Reset		
264	264-Factory		
265	265-About		
266	266-Exit		
267	267-Reset		
268	268-Factory		
269	269-About		
270	270-Exit		
271	271-Reset		
272	272-Factory		
273	273-About		
274	274-Exit		
275	275-Reset		
276	276-Factory		
277	277-About		
278	278-Exit		
279	279-Reset		
280	280-Factory		
281	281-About		
282	282-Exit		
283	283-Reset		
284	284-Factory		
285	285-About		
286	286-Exit		
287	287-Reset		
288	288-Factory		
289	289-About		
290	290-Exit		
291	291-Reset		
292	292-Factory		
293	293-About		
294	294-Exit		
295	295-Reset		
296	296-Factory		
297	297-About		
298	298-Exit		
299	299-Reset		
300	300-Factory		
301	301-About		
302	302-Exit		
303	303-Reset		
304	304-Factory		
305	305-About		
306	306-Exit		
307	307-Reset		
308	308-Factory		
309	309-About		
310	310-Exit		
311	311-Reset		
312	312-Factory		
313	313-About		
314	314-Exit		
315	315-Reset		
316	316-Factory		
317	317-About		
318	318-Exit		
319	319-Reset		
320	320-Factory		
321	321-About		
322	322-Exit		
323	323-Reset		
324	324-Factory		
325	325-About		
326	326-Exit		
327	327-Reset		
328	328-Factory		
329	329-About		
330	330-Exit		
331	331-Reset		
332	332-Factory		
333	333-About		
334	334-Exit		
335	335-Reset		
336	336-Factory		
337	337-About		
338	338-Exit		
339	339-Reset		
340	340-Factory		
341	341-About		
342	342-Exit		
343	343-Reset		
344	344-Factory		
345	345-About		
346	346-Exit		
347	347-Reset		
348	348-Factory		
349	349-About		
350	350-Exit		
351	351-Reset		
352	352-Factory		
353	353-About		
354	354-Exit		
355	355-Reset		
356	356-Factory		
357	357-About		
358	358-Exit		
359	359-Reset		
360	360-Factory		
361	361-About		
362	362-Exit		
363	363-Reset		
364	364-Factory		
365	365-About		
366	366-Exit		
367	367-Reset		
368	368-Factory		
369	369-About		
370	370-Exit		
371	371-Reset		
372	372-Factory		
373	373-About		
374	374-Exit		
375	375-Reset		
376	376-Factory		
377	377-About		
378	378-Exit		
379	379-Reset		
380	380-Factory		
381	381-About		
382	382-Exit		
383	383-Reset		
384	384-Factory		
385	385-About		
386	386-Exit		
387	387-Reset		
388	388-Factory		

SCALES

MAIN MENU	
1-Sensor	
2-Units	
3-Scales	
4-Measure	
5- Alarms	
6-Inputs	
7-Outputs	
8-Factory	
9-About	
10-Exit	
11-Back	
12-Forward	
13-Exit	

SCALES	
FS1 g/s	4908.7
B.qty dm3	1.00000
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	Batching quantity
3.3	Full scale flow rate 2
3.4	Pulse value on channel 1
3.5	Duration of the pulse generated on channel 1
3.6	Pulse value on channel 2
3.7	Duration of the pulse generated on channel 2
3.8	Full scale frequency for channel 1 (0.1Hz-1000.0Hz)
3.9	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	
7-Outputs	
8-Factory	
9-About	
10-Exit	
11-Back	
12-Forward	
13-Exit	

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	
7-Outputs	
8-Factory	
9-About	
10-Exit	
11-Back	
12-Forward	
13-Exit	

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	
7-Outputs	
8-Factory	
9-About	
10-Exit	
11-Back	
12-Forward	
13-Exit	

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	
Out1	PULSES+
Out2	PULSES-
Out mA1	4_22 +/-
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	
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

DATA LOGGER

DATA LOGGER		
D.logger en.	ON	10.1 Data logger enabling
Meas. units	ON	10.2 Measure units recording enable
Field separat.	;	10.3 Field separator character
Decimal separat.	.	10.4 Decimal separator character
Interv.	01:01:00	10.5 Sampling interval
Log T+	ON	10.6 Enable logging of total direct totalizer
Log P+	ON	10.7 Enable logging of partial direct totalizer
Log T-	ON	10.8 Enable logging of total reverse totalizer
Log P-	ON	10.9 Enable logging of partial reverse totalizer
Log TN	ON	10.10 Enable logging of total net totalizer
Log PN	ON	10.11 Enable logging of partial net totalizer
Log Q (UM)	ON	10.12 Enable logging of flow rate in measure unit
Log Q (%)	ON	10.13 Enable logging of flow rate in percentage
Log AL.EV	ON	10.14 Enable logging of alarm events
Log STR	ON	10.15 Enable logging of sensor test results
Log BTS	ON	10.16 Enable logging of board temperature
Log IBV	ON	10.17 Enable logging of internal board voltage
Log EDC	ON	10.18 Enable logging of electrodes DC voltage
Log EAC	ON	10.19 Enable logging of electrodes AC voltage
Log EIZ	ON	10.20 Enable logging of electrodes impedance
Log SCV	ON	10.21 Enable logging of sensor coils value

MAIN MENU

0-Outputs
8-Communication
9-Display
10-Data logger
11-Functions
12-Diagnostic
13-System

FUNCTIONS

FUNCTIONS		
T+ reset		11.1 Execute immediate reset of total direct totalizer
P+ reset		11.2 Execute immediate reset of partial direct totalizer
T- reset		11.3 Execute immediate reset of total reverse totalizer
P- reset		11.4 Execute immediate reset of partial reverse totalizer
Load Sens. F. def		11.5 Load sensor factory default
Load Conv. F. def		11.6 Load converter factory default
Save Sens. F. def		11.7 Save sensor factory default values
Save Conv. F. def		11.8 Save converter factory default values
Calibration		11.9 Execute immediate internal circuit calibration

MAIN MENU

9-Display
10-Data logger
11-Functions
12-Diagnostic
13-System

DIAGNOSTIC

DIAGNOSTIC		
Self test		12.1 Self test diagnostic function
Test display		12.2 Function tests physical display
Sens. verify		12.3 Sensor verify diagnostic function
Flow sim. =	ON	12.4 Flow rate simulation enabling
Display measures		12.5 Display internal measured value
Disp. Comm. Vars		12.6 Display comm. diagnostic values
Display graphs		12.7 Display measure as graphs
Gen. sens. set		12.8 Generic sensor parameters set
SD card info		12.9 Sd card status informations
Firmware info		12.10 Firmware version/revision
S/N=	999001	12.11 Board serial number
WT=	002:21:00 : 22	12.12 Total working time

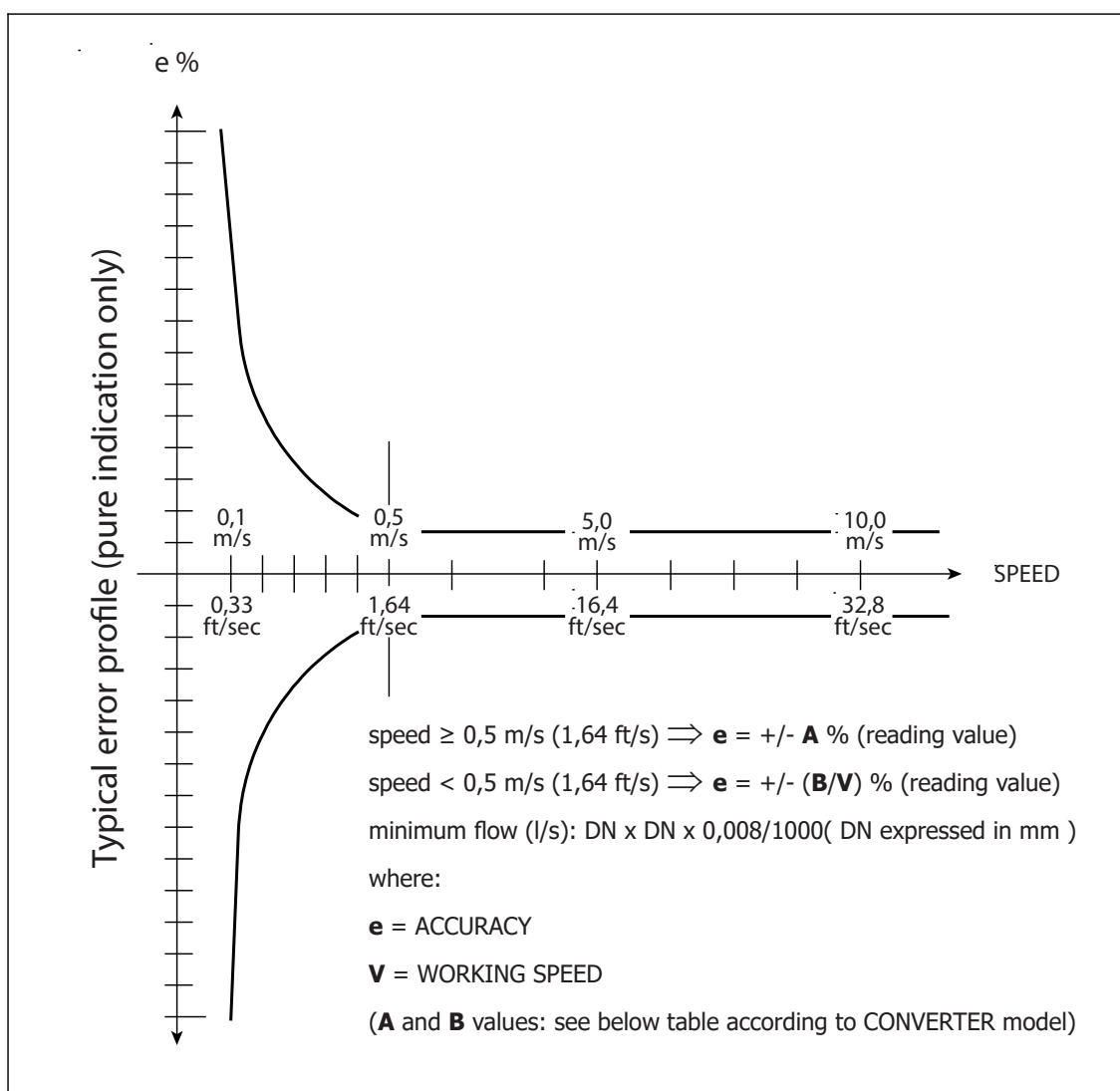
MAIN MENU

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
99-Display		
10-Data logger		
11-Functions		
12-Diagnostic		
13-System		

ACCURACY



Full bore 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)
0,2	0,1	0,66	0,4	0,2	1,32	2	1	3,28

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 %

OIML R49

The sensor **MS2500** diameters below, coupled with **MV210** 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	250
650	26	10000	40	25	
700	28	10000	64	40	160
750	30	10000	64	40	
800	32	16000	160	100	100
900	36	16000	160	100	
1000	42	16000	256	160	80
1200	48	16000	320	200	
1400	56	16000	320	200	
1600	64	16000	320	200	40
1800	72	16000	640	400	
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	100
750	30	10000	64	40	
800	32	16000	160	100	80
900	36	16000	160	100	
1000	42	16000	256	160	40
1200	48	16000	320	200	
1400	56	16000	320	200	
1600	64	16000	320	200	40
1800	72	16000	640	400	
2000	80	16000	640	400	

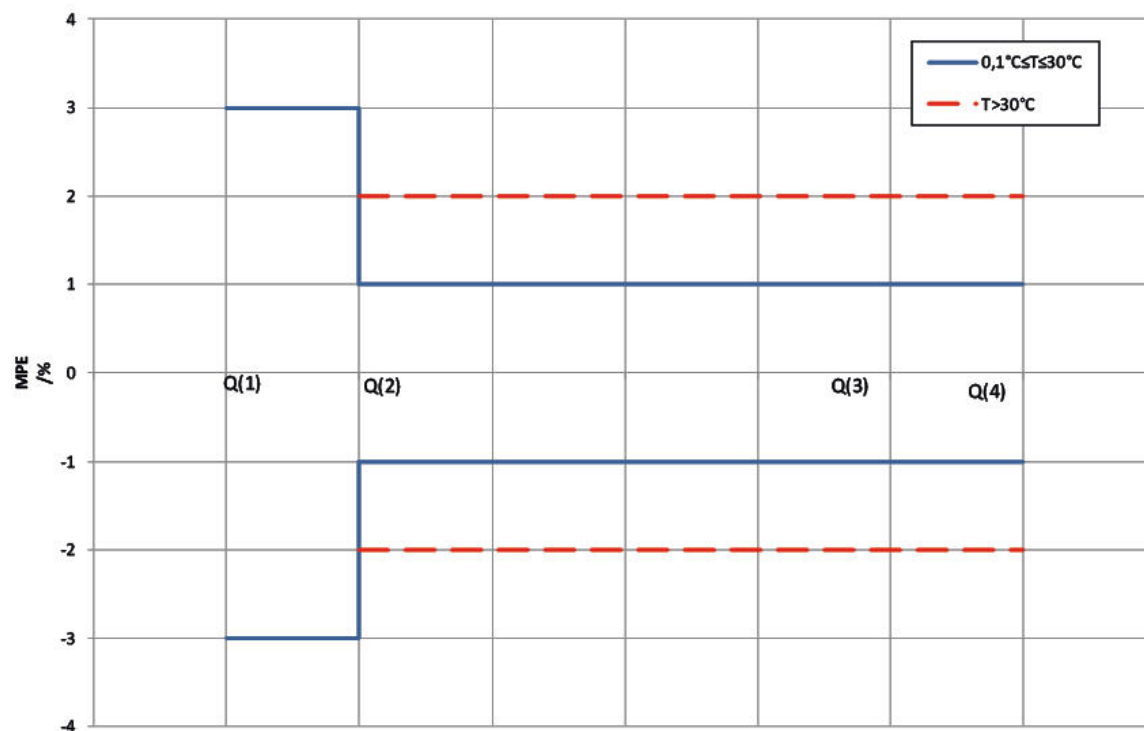
CLASS 2

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	

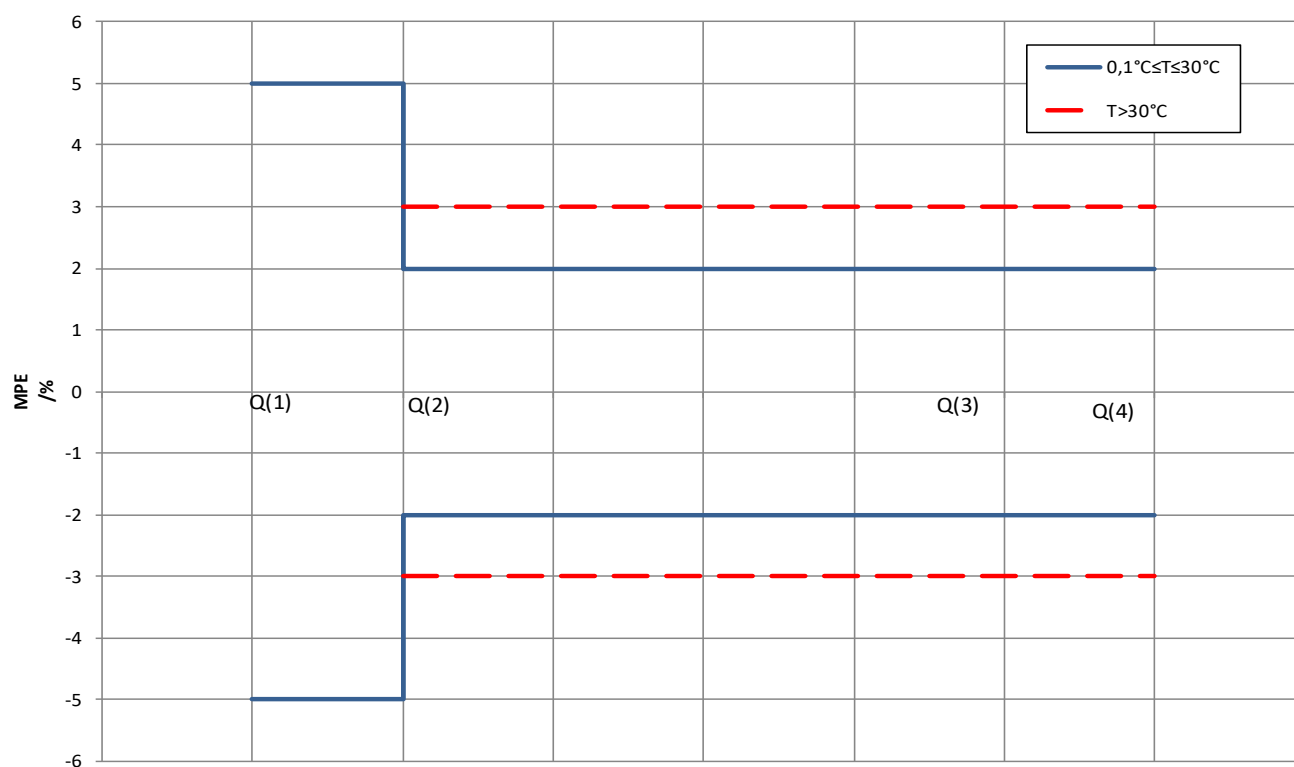


Due to limitation of the test bench calibration starting from DN800 would be calibrated at the maximim capacity of the test bench at Q3.

OIML R49 ACCURACY CLASS 1
OIML R 49-1:2013 (E)



OIML R49 ACCURACY CLASS 2
OIML R 49-1:2013 (E)



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° 2 IP 68 MIL connectors for cables 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° 2 IP 68 MIL connectors for cables 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 for wall mounting, complete with mounting accessories (CABLE C015/C016)
	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 (the use of battery supports only the measure UP TO 15 days; all the outputs are set to OFF)
	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 15 days; all the outputs are set to OFF)
	6	Power supply : 12...48 VDC + 1 Rechargeable back-up Battery (the use of battery supports only the measure UP TO 15 days; 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) (NOT FOR MID MI-001/OIML)
	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 MID MI-001/OIML)
	9	Power supply : 12...48 VDC + n° 1 SETTINGS FOR Rechargeable back-up Battery (the Rechargeable Battery is 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
	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 0,2 %
	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
Approval		
0	0	NONE
	1	OIML-R49 CLASS 1
	2	OIML-R49 CLASS 2

Complete code
example for
order



MV210-A0A1A0A0A0A0

ISOIL INDUSTRIA S.p.A.

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

If you want to find the complete list of our distributors access at the following link:

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



Due to the constant technical development and improvement of its products, the manufacturer reserves the right to make changes and/or modify the information contained in this document without notice.