BILLING FLOW METER

FLOW 38 MID

FLOW 38 MID for billing purpose for water only

Its application is wherever there is a supply of liquids between two entities for a fee. The FLOW 38 MID then serves as a sensing element forming the basis for the calculation of the invoiced amount. It is characterized by high reliability, accuracy and stability of metrological parameters. The output of the flow meter is a pulse output or a 4...20 mA current output.

The device can also communicate via the RS485 interface with the M-BUS or Mod-Bus protocols. The display shows the instantaneous flow rate, volume flow rate, back flow volume, user-resettable volume counter, date and time, and in the event of a failure, its description and more.

MAIN MERITS

- High measurement accuracy over the entire flow range
- Long-term stability of metrological parameters
- Remote and local total data readout
- Simple, trouble-free operation and maintenance
- It doesn't cause pressure losses
- High abrasion resistance
- Possibility of data transmission via GSM

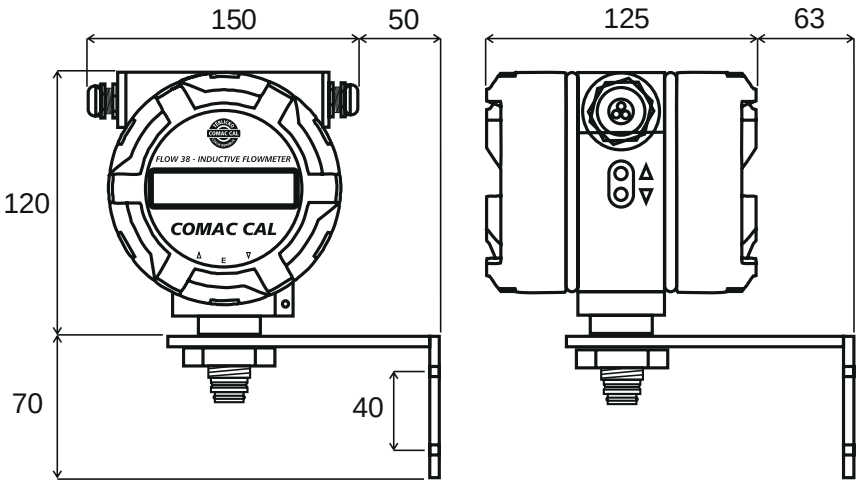
COMAC CAL

TECHNICAL DATA

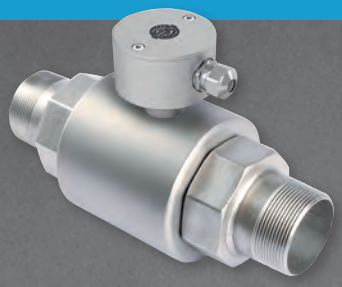
Power	230 VAC / 50 Hz, 24 V DC
Input power	4.6 VA
Type of electronics	Standard (H – head)
Design	Compact, seprated (standard cable lengh 3 m)
Diameter nominal	DN 10...400
Lining material	Rubber (hard, soft, with potable water test certificate): DN25..DN400 (T_{max} 70 °C)
	fluoroplast (PTFE: DN 15...DN 80 (T_{max} 150 °C)
	ETFE: DN 100...DN 400 (T_{max} 150 °C)
	PFA: upon agreement with the manufacturer
Electrode material	CrNi steel DIN 1.4571, Hastelloy C4, Titanium, Tantalum
Frame	All-welded
Sensor material	Stainless steel and structural steel with polyurethane coating
Process connections	Flanged DIN (EN1092)
	Threaded (EN 10226-1)
Pressure	PN10, PN16
Min. conductivitty of the measured fluid	20 µS/cm (at a lower conductivity, upon agreement with the manufacturer)
Flow meter measuring range(Q_3/Q_1)	R40, R50
Flow meter accuracy	accuracy class 2 (accuracy up to 0.5%, repeatability up to 0.2%)
Pressure loss class	Δp 10
Additional electrodes	Grounding and detection electrodes for empty piping (DN 10...DN 400)
Empty piping detection	DN 10...DN 400
Display unit	LCD 2×16 characters
Controls	2× external button (viewing values)
	3× internal button (viewing + parameter changing)
Outputs	2x Impulse/flow switch (max. 400 Hz), 4...20 mA, Interface RS485 (protocols M-BUS/Mod-Bus)
Max. ambient temperature	50 °C
Flow sensor degree of protection	IP65, IP67, IP68
Electronics degree of protection	Stadard unit (H – head) – IP67

ELECTRONICS

STANDARD UNIT (HEAD)



THREADED SENSOR



DISPLAY UNIT OPERATION

The meter is equipped with two external buttons on the electronics housing side and three internal buttons accessible after removing the front cover with glass. Using the external buttons, it is possible to scroll individual quantities and settings. After removing the cover, it is possible to change settings as well.

The unit can be swivelled within 350° for more comfortable re-ading of values on the display both in compact and separated designs.

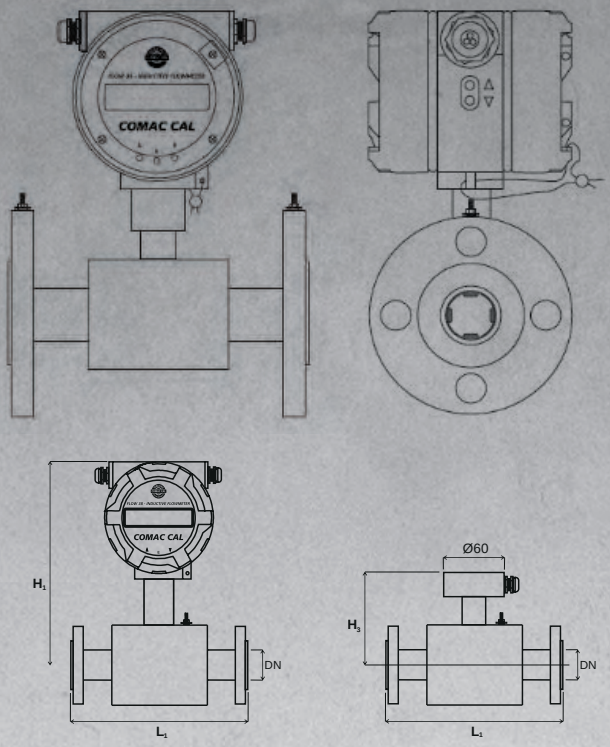
FLOW RANGES

Table with flow ranges for undividual DN size

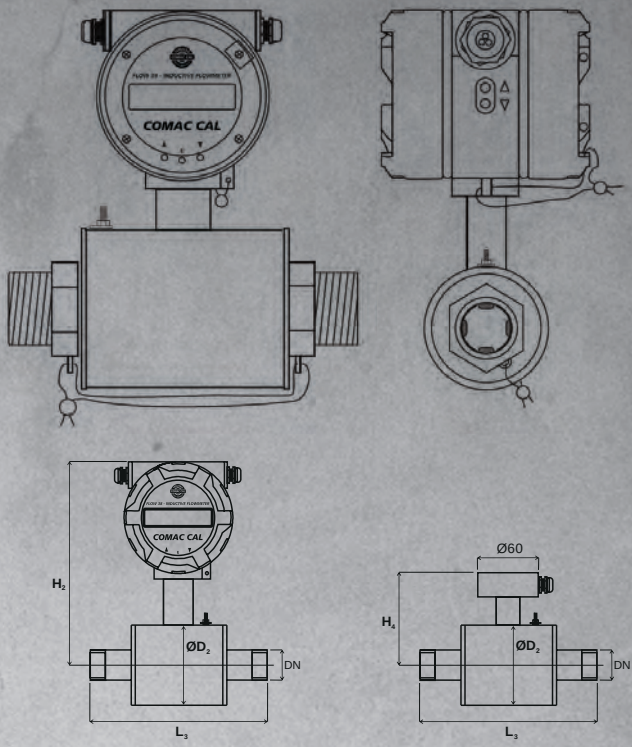
DN [mm]	Q_3	R50 (H1) Q_1	R40 (H↓V1) Q_1	Q_4
DN 10	1.6	0.03	0.04	2.0
DN 15	4.0	0.08	0.10	5.0
DN 20	6.3	0.13	0.16	7.9
DN 25	10.0	0.20	0.25	12.5
DN 32	16.0	0.32	0.40	20.0
DN 40	25.0	0.50	0.63	31.3
DN 50	40.0	0.80	1.00	50.0
DN 65	63.0	1.26	1.58	78.8
DN 80	100.0	2.00	2.50	125.0
DN 100	160.0	3.20	4.00	200.0
DN 125	250.0	5.00	6.25	315.5
DN 150	400.0	8.00	10.00	500.0
DN 200	630.0	12.60	15.75	787.5
DN 250	1000.0	20.00	25.00	1250.00
DN 300	1600.0	32.00	40.00	2000.00
DN 350	1600.0	32.00	40.00	2000.00
DN 400	1600.0	32.00	40.00	2000.00

FLOW 38 MID

FLANGE (EN 1092)



THREAD (EN 10226-1)



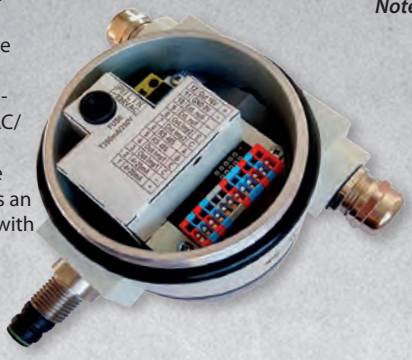
DIMENSIONAL TABLE

Connection [mm]	Constructional length [mm]		Outside diameter [mm]	Total height of [mm]			
			Sensor body	Compact design		Separated design	
	Flanged	Threaded (connection)	Threaded	Flanged	Threaded	Flanged	Threaded
DN	L1	L3	D2	H1	H2	H3	H4
10	200	190 (3/8")	70	173	177	86	90
15	200	190 (1/2")	70	173	177	86	90
20	200	200 (3/4")	80	173	182	86	95
25	200	200 (1")	90	178	187	91	100
32	200	230 (1 1/4")	100	183	192	96	105
40	200	245 (1 1/2")	116	188	200	101	113
50	200	254 (2")	136	196	210	109	123
65	200	–	151	206	218	119	131
80	200	–	177	213	231	126	144
100	250	–	–	226	–	139	–
125	250	–	–	239	–	152	–
150	300	–	–	254	–	167	–
200	350	–	–	284	–	197	–
250	450	–	–	327 / –	–	240 / –	–
300	500	–	–	352 / –	–	265 / –	–
350	550	–	–	382 / –	–	295 / –	–
400	600	–	–	412 / –	–	325/ –	–

EVALUATION UNIT TERMINAL BOARD WIRING

Standard connection:

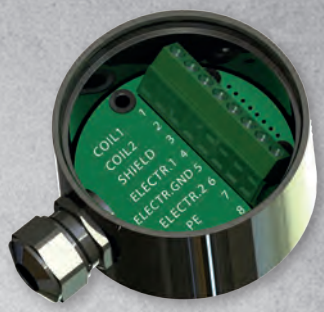
Terminals 1, 2	– current output 4...20 mA
Terminals 3, 4	– OUT1 (Imp/FlowSwitch)
Terminals 5, 6	– RS485 communication
Terminals 7, 8	– OUT2 (Imp/FlowSwitch/Status)
Terminals 9, 10	– reset Total V register (resettable counter) by external button
Terminals 11, 12	– output voltage 16 V/100 mA (power supply for changing to active current and impulse outputs)
Terminals L, N, PE	– mains voltage 230 VAC (standard), available also in 24 VAC/VDC version which does not matter on the polarity of the power connection. (Install as an independent supply circuit with its own protection 0.5...1 A)



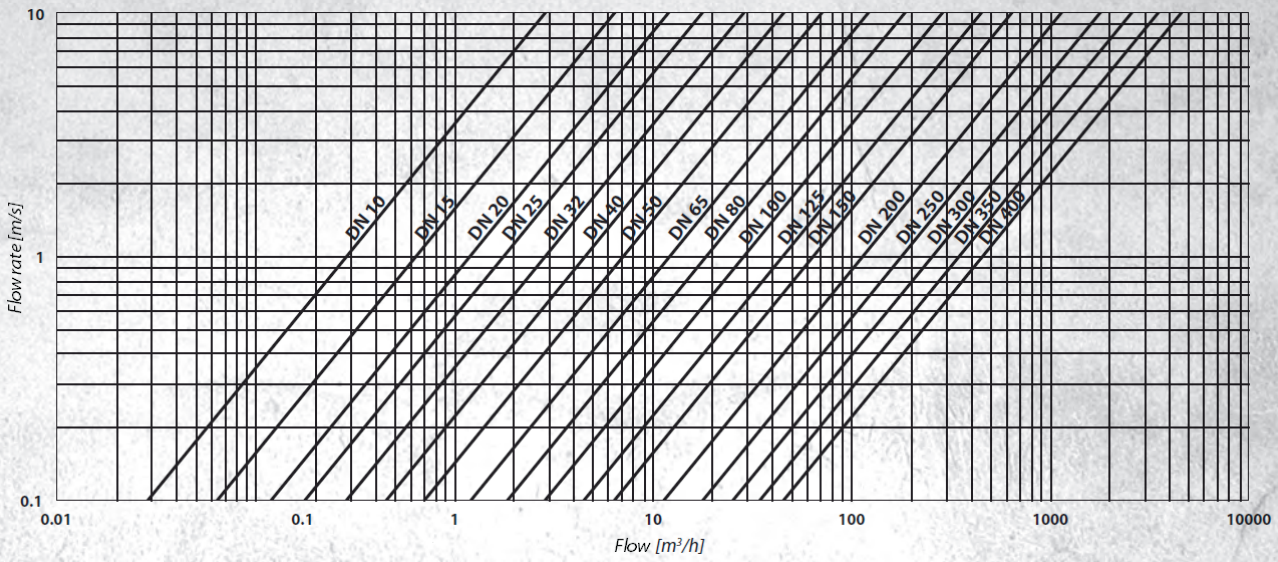
FLOW SENSOR TERMINAL BOARD CONNECTION FOR SEPARATED VERSION

Terminal 1	– coil 1 (black)
Terminal 2	– coil 2 (white)
Terminal 3	– shading (not connected)
Terminal 4	– electrode 1 (red)
Terminal 5	– electrode GDN (shading of violet)
Terminal 6	– electrode 2 (blue)
Terminal 7	– PE (shading red – blue – white and black)
Terminal 8	– electrode TEST (violet)

Note: *Connection of terminal is always described on DPS.*



VOLUMETRIC FLOW VERSUS INSTANTANDEOUS FLOW RATE DIAGRAM



PRODUCT ORDERING CODE

FLOW 38 MID — **FL38H/DNxxx/Ax(cl)/Bx/Cx/Dx/Ex/Fx/Gx/Hx/Ix**

FLOW38 (type)
H… head

DN (diameter nominal)
DN… 10...400

A (design)
A1… compact
A2… separated (cable length min. 3 m)

B (connection)
B1… flanged
B3… threaded
B6… stainless steel flange SS304
B7… stainless steel flange SS316

C (pressure)
C1… PN10 (DIN)
C2… PN16 (DIN

D (lining)
D1… hard rubber
D2… soft rubber
D3… rubber with potable water test certificate
D4… PTFE
D5… PFA
D7… ETFE

E (electrodes)
E1… nerez 316 Ti
E2… hastelloy C4
E3… titanium
E4… tantalum

F (sensor degree protection)
F1… IP65
F2… IP67
F3… IP68

G (output)
G1… impulse/flow switch
G2… imp./sw. + 4...20 mA
G3… imp./sw. + RS485
G4… imp./sw. + 4...20 mA + RS485
G5… imp./sw. + 4...20 mA + HART
G6… imp./sw. + 4...20 mA + HART + RS485
(RS485 protocol M-BUS/MOD-BUS RTU)

H (power)
H1… 110...230 VAC
H2… 24 VAC/VDC

I (measuring range Q_3/Q_1)
I4… R40
I5… R50

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