

FLOW 38

Industrial inductive flow meter with display unit.

The flow meter is designed for a wide range of fluid measurements in various industries. Various process connections such as flange, sandwich (waffle), threaded and dairy fittings (DIN 11851) or clamp types are available.

The evaluation unit is made in three versions. It includes the standard design (head) and the unit is also made in front and panel designs. It is advantageous in the compact front version that the evaluation unit (display unit) is placed from the front part of the sensor and in case of the separated version, the display unit can be mounted in DIN rail. The panel mounted electronics offers the installation of the display unit in the electric box door.

The flow meter offers a wide range of outputs and the communication for connection to various control systems.



MAIN MERITS

- Extensive variability of process connection
- Possibility of the constructional length made to customer needs
- Possibility of the sensor made in full stainless steel design
- Big dynamic measuring range
- High measurement accuracy and repeatability
- Wide choice of materials for liners and electrodes
- Very simple and intuitive operation
- Possibility of flow monitoring function (flow switch)
- 350° swivel display for comfortable reading

**COMAC CAL**

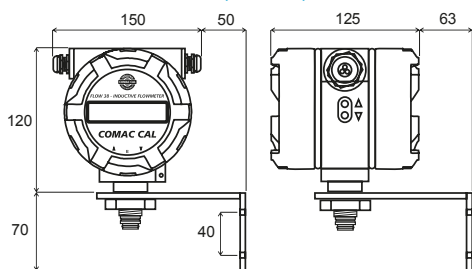
TECHNICAL DATA

Power	230 VAC (50/60 Hz), 24 VAC/VDC with polarity reversal protection
Input power	4.6 VA
Type of electronics	Head (H – standard), front (F), panel (P) versions
Design	Compact (T_{max} 90 °C), separated (standard cable length 3 m)
Diameter nominal	DN 10÷400 (other DN upon agreement with the manufacturer)
Lining material	Rubber (hard, soft, with potable water test certificate): DN 20÷DN 400 (T_{max} 80 °C) PTFE: DN 15÷DN 250 (T_{max} 150 °C), PFA: DN 300÷DN 400 (T_{max} 130 °C) Ceramics, PEAK, PVDF (upon agreement with the manufacturer)
Electrode material	CrNi steel DIN 1.4571, Hastelloy C4, Titanium, Tantalum, Platinum*
Frame	All-welded
Sensor material	Flanged – stainless steel and structural steel with polyurethane coating Sandwich, threaded, food grade – stainless steel
Process connections	Sandwich Flanged DIN (EN1092) Threaded (EN1092) Food grade (DIN 11851 fitting, clamp)
Pressure	PN10, PN16, PN25, PN40
Min. conductivity of the measured fluid	20 μ S (at a lower conductivity, upon agreement with the manufacturer)
Flow meter measuring range (Q_{min}/Q_{max})	bi-directional for 0.2 to 12 m/s (1/60); 0.12 to 12 m/s (1/100); 0.06 to 12 m/s (1/200)
Flow meter accuracy	Accuracy up to 0.5 %, repeatability up to 0.2 %
Pressure loss	Negligible
Additional electrodes	Grounding and detection electrodes for empty piping (DN 15÷DN 400)
Empty piping detection	DN 15÷DN 400
Display unit	LCD 2×16 characters
Controls	2× external button (viewing values) 3× internal button (viewing + parameter changing)
Outputs	Impulse/flow switch (max. 400 Hz), 4÷20 mA, RS485 (M-BUS/Mod-Bus protocol) (Impulse and current outputs are passive with a possibility of being powered from internal power supply of the meter)
Max. ambient temperature	55 °C
Flow sensor degree of protection	IP65, IP67, IP68
Electronics degree of protection	IP67

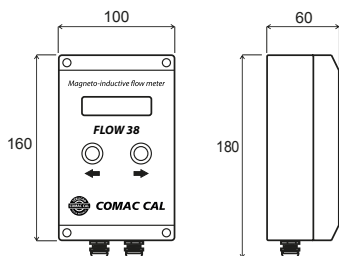
* With PVDF lining only.

ELECTRONICS

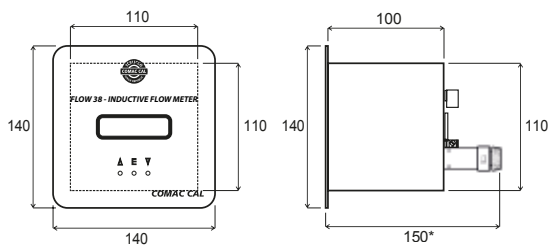
STANDARD UNIT (HEAD)



FRONT UNIT



PANEL UNIT

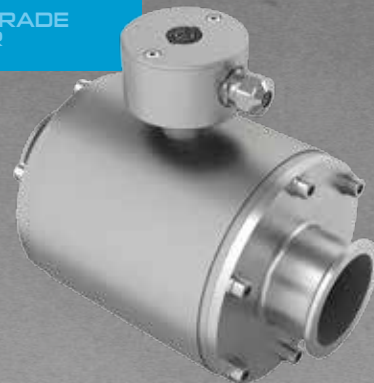


* required installation depth including cable connector's flowmeter sensor is 200 mm

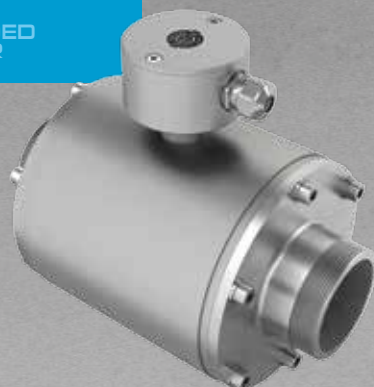
SANDWICH SENSOR



FOOD GRADE SENSOR



THREADED SENSOR



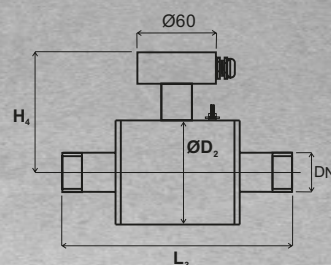
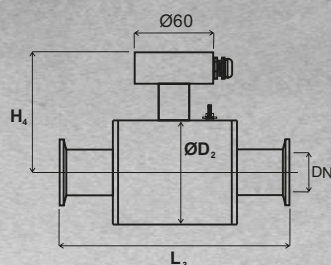
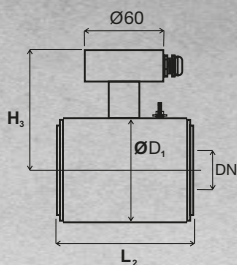
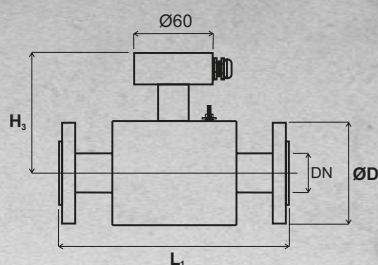
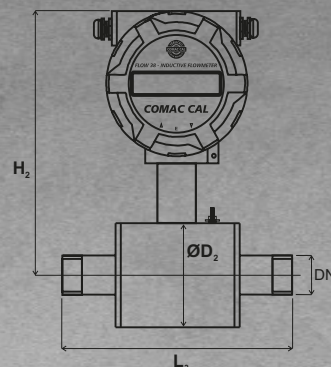
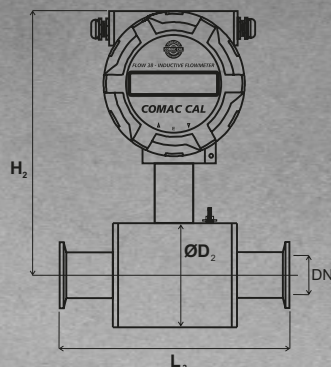
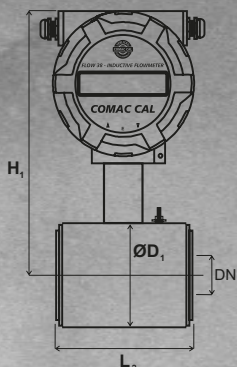
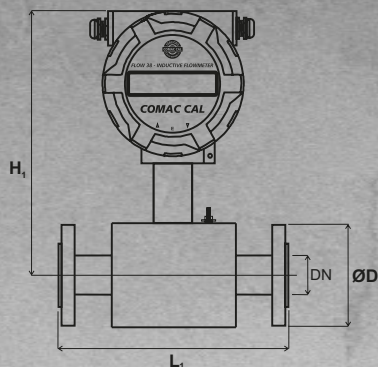
FLOW RANGES

Instantaneous flow rate corresponding to flow velocity

Diameter nominal [mm]	Q_{min} [m³/h] us Q_{min}/Q_{max}			Q_{max} [m³/h]
	1/60 (0.2 m/s)	1/100 (0.12 m/s)	1/200 (0.06 m/s)	– (12 m/s)
DN 6	0.02	0.012	–	1.2
DN 8	0.04	0.022	–	2.2
DN 10	0.06	0.034	–	3.4
DN 15	0.13	0.076	0.038	7.6
DN 20	0.24	0.142	0.071	14.2
DN 25	0.35	0.21	0.105	21
DN 32	0.6	0.34	0.17	34
DN 40	0.9	0.54	0.27	54
DN 50	1.4	0.84	0.42	84
DN 65	2.4	1.44	0.72	144
DN 80	3.6	2.2	1.1	220
DN 100	5.6	3.4	1.7	340
DN 125	8.9	5.34	2.67	534
DN 150	13	7.6	3.8	760
DN 200	23	13.5	6.75	1350
DN 250	35	21.1	–	2115
DN 300	51	30	–	3050
DN 350	70	41	–	4150
DN 400	90	54	–	5426

FLANGE
(EN 1092)

SANDWICH

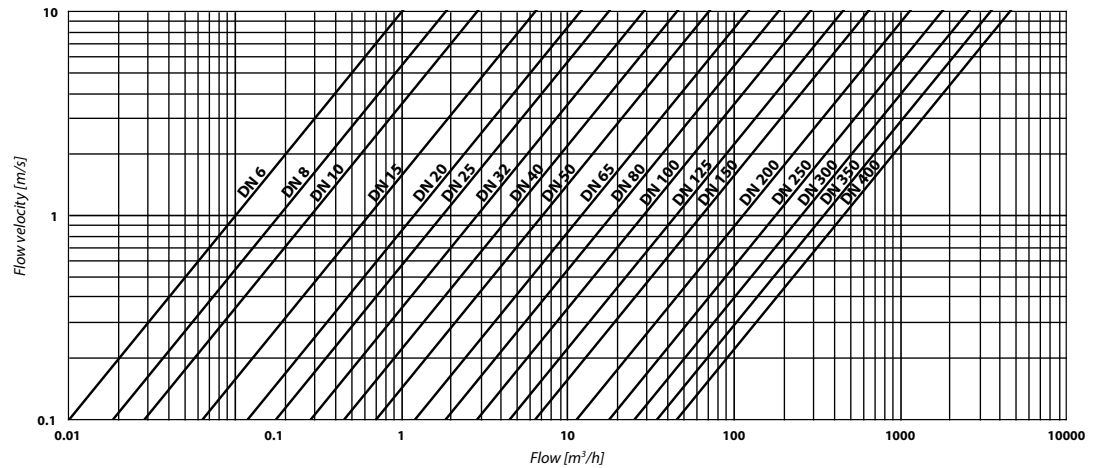
CLAMP/FOOD THREAD
(DIN32676/DIN11851)THREAD
(EN 1092)

Constructional lengths can be modified upon agreement with the manufacturer.

DIMENSIONAL TABLE

Connection [mm]	Constructional length [mm]					Outside diameter [mm]			Total height of [mm]			
						Flange	Sensor body		Compact design		Separated design	
	Flanged	Sandwich	Threaded	Food Thread	Food Clamp	Flanged	Sandwich	Threaded	Flanged	Threaded	Flanged	Threaded
								Food Thread Food Clamp				Food Thread Food Clamp
DN	L1	L2	L3	L3	L3	D	D1	D2	H1	H2	H3	H4
6	–	90	–	–	–	–	51	–	173	–	86	–
8	–	90	–	–	–	–	51	–	173	–	86	–
10	–	90	–	–	–	–	51	–	173	–	86	–
15	200	90	133	133	161	95	51	70	173	177	86	90
20	200	90	141	139	161	105	61	80	173	182	86	95
25	200	90	147	149	169	115	71	90	178	187	91	100
32	200	90	155	155	169	135	82	100	183	192	96	105
40	200	110	175	177	189	145	92	116	188	200	101	113
50	200	110	–	181	193	160	107	136	196	210	109	123
65	200	130	–	211	229	180	127	151	206	218	119	131
80	200	130	–	221	229	195	142	177	213	231	126	144
100	250	200	–	–	–	215	168	–	226	–	139	–
125	250	200	–	–	–	245	194	–	239	–	152	–
150	300	200	–	–	–	280	224	–	254	–	167	–
200	350	200	–	–	–	335	284	–	284	–	197	–
250	450	–	–	–	–	405	–	–	327 / –	–	240 / –	–
300	500	–	–	–	–	440	–	–	352 / –	–	265 / –	–
350	550	–	–	–	–	500	–	–	382 / –	–	295 / –	–
400	600	–	–	–	–	565	–	–	412 / –	–	325 / –	–

VOLUMETRIC FLOW VERSUS INSTANTANEOUS FLOW VELOCITY DIAGRAM



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 reading of values on the display both in compact and separated designs.

EVALUATION UNIT TERMINAL BOARD ELECTRICAL CONNECTION

Standard connection:

- Terminals 1, 2 – 4 to 20 mA current output terminals
- Terminals 3, 4 – OUT IMP (impulse output) terminals
- Terminals 5, 6 – RS485 communication terminals
- Terminals 7, 8 – according to J1 jumper configuration
 - Output power supply 16 V/100 mA (power to changing active current and pulse outputs)
 - resetting the registry RESET TOTAL V (resettable counter) via external signal
- Terminals L, N, PE – 230 VAC mains power (standard), it is also possible in 24 VAC/VDC version (install as a dedicated power circuit with its own fuse 1A)

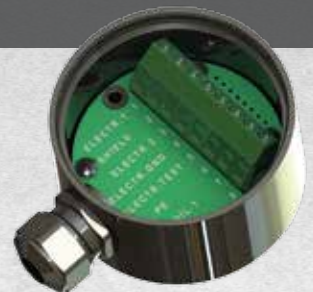
Note: flow sensor terminal board connection



FLOW SENSOR TERMINAL BOARD CONNECTION

- Terminal 1 – blue (measuring electrode 1)
- Terminal 2 – shield of electrodes 1 and 2
- Terminal 3 – red (measuring electrode 2)
- Terminal 4 – yellow (grounding electrode)
- Terminal 5 – violet (empty piping detection electrode)
- Terminal 6 – green (sensor grounding)
- Terminal 7 – white (exciting coil 1)
- Terminal 8 – black (exciting coil 2)

Note: The terminal board connection is always indicated on the PCB.



PRODUCT ORDERING CODE



FLOW38X/DNXXX/AX(CL)/BX/CX/DX/EX/FX/GX/HX/IX									
FLOW38 (type)							I (measuring range Q_{min}/Q_{max})		
H... head							I1... 1/60		
P... panel							I2... 1/100		
F... front							I3... 1/200		
DN (diameter nominal)							H (power)		
DN... 6÷400							H1... 230 VAC		
A (design)							H2... 24 VAC/VDC		
A1... compact							G (output)		
A2... separated (cabel length 3÷30 m)							G1... impulse/flow switch		
B (connection)			B3... threaded				G2... imp./sw. + 4÷20 mA		
B1... flanged			B4... diary fitting				G3... imp./sw. + RS485*		
B2... sandwich			B5... clamp				G4... imp./sw. + 4÷20 mA + RS485*		
C (pressure)							<i>* For RS485, M-BUS/MOD-BUS RTU protocol is possible.</i>		
C1... PN10			C3... PN25				F (degree of protection)		
C2... PN16			C4... PN40				F1... IP65		
D (lining)			D4... PTFE				F2... IP67		
D1... hard rubber			D5... PFA				F3... IP68		
D2... soft rubber			D6... ceramics*				E (electrodes)		
D3... rubber with potable water test certificate			D7... PEEK**				E1... stainless steel 316 Ti		
			D8... PVDF**				E2... hastelloy C4		
							E3... titanium		
							E4... tantalum		
							E5... platinum		
<i>* DN 15–80</i>									
<i>** Always for DN 6–10, standard EPDM sealing</i>									

* DN 15–80

** Always for DN 6–10, standard EPDM sealing

Standard set include installation manual and calibration certificate.
For other requirements, please contact the manufacturer directly.