

FLOW 45

Battery-powered flow meter FLOW 45

This battery powered flow meter was developed for placing in spaces without supply voltages and it is ideal to be fitted in main pipelines, drainage or various sewage conduits.

The flow meter is excellent in high accuracy within full-scale flow rate. Before every measurement, automated diagnosis of all functions and parts necessary for correct measurement is carried out. Based on the results, the flow meter is able to identify empty pipes and invalidate the entire measurement, or conversely, the meter can evaluate the flow direction and include the results in relevant summary registers.

The battery discharge is directly dependent on the selected measurement period, in the case of a period of 10 seconds the life is 5 years.

MAIN BENEFITS

- internal lithium battery power or option of external powering
- nearly maintenance-free operation
- simple installation and operation
- no pressure losses
- 350° rotatable display for comfortable reading
- archivation on micro SD

**COMAC CAL**

TECHNICAL DATA

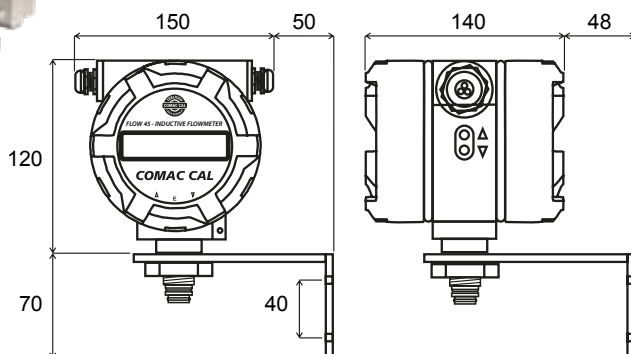
Power	Replaceable lithium battery power pack / external (12 VDC, max. 500 mA)
Power supply	M12 – 5p (external powering, UART) M12 – 8p (ImpOut, RS485)
Measurement period	1...60 s
Design	compact (T_{max} 90 °C), remote (standard cable length 3 m)
Electronics type	standard (Head – H)
Nominal diameter	DN 4...200
Lining material	Rubber (hard, soft, drinking water approved): DN 32...DN 200 (T_{max} 70 °C)
(maximal temperature of lining material)	Rilsan: DN 32 ... DN 200 (T_{min} = -20 °C, T_{max} = 70 °C) PVDF: DN 4 ... DN 8 (T_{min} = -40 °C, T_{max} = 140 °C) PFA: DN 10 ... DN 200 (T_{min} = -40 °C, T_{max} = 170 °C) PTFE: DN 15 ... DN 80 (T_{min} = -40 °C, T_{max} = 140 °C) ETFE: DN 100 ... DN 200 (T_{min} = -40 °C, T_{max} = 140 °C)
Electrodes material	Stainless Steel 316 Ti, Hastelloy C, Titanium, Tantalum
Construction	all-welded
Sensor material	Flanged – stainless steel and structural steel with polyurethane coating Sandwich, threaded, sanitary fitting – stainless steel
Process connection	Sandwich (PN25 only) Flanged DIN (EN1092) – carbon or stainless steel Threaded (EN 10226-1) Sanitary (DIN 11851 fitting, clamp)
Pressure and rating	PN10 (DIN), PN16 (DIN), PN25 (DIN), PN40 (DIN), PN64 (DIN), PN100 (DIN) 10K (JIS), 20K (JIS), 40K (JIS) Class 150 (ANSI), Class 300 (ANSI)
Minimum conductivity of medium	5 μ S/cm
Flow range (Q_{min}/Q_{max})	1/60
Accuracy of flowmeter	1 % for 1...10 m/s
Pressure loss	Negligible
Additional electrodes	Grounding and detection electrodes for empty piping
Empty pipe detection	DN 10...DN 200
Display	one line, alphanumeric LCD
Controls	3x buttons (external: ▲ and ▼, internal – ▲, E, ▼)
Outputs	M12 – 5p (external powering, UART) M12 – 8p (ImpOut, RS485)
External devices	IoT
Archivation	slot for micro SD card
Max. temperature of medium	150 °C (according to the lining and design)
Ambient temperature	5 to 55 °C
Ingress sensor protection	IP65, IP67, IP68
Ingress electronics protection	Standard unit (H - head) - IP65, IP67

ELECTRONICS

STANDARD UNIT (HEAD)



Setting of evaluation unit of the FLOW 45 can be done in two ways, setting via buttons or via PC. The two external buttons on the electronics housing side are used to view the values.



SANDWICH SENSOR



SANITARY SENSOR



THREADED SENSOR



FLOW RANGES

Instantaneous flow rate corresponding to flow velocity

DN [mm]	q_{min} [1/60] [m ³ /h]	q_{max} [m ³ /h]
DN 10	0,06	3,4
DN 15	0,13	7,6
DN 20	0,24	14,2
DN 25	0,35	21
DN 32	0,6	34
DN 40	0,9	54
DN 50	1,4	84
DN 65	2,4	144
DN 80	3,6	220
DN 100	5,6	340
DN 125	8,9	534
DN 150	13	760
DN 200	23	1350

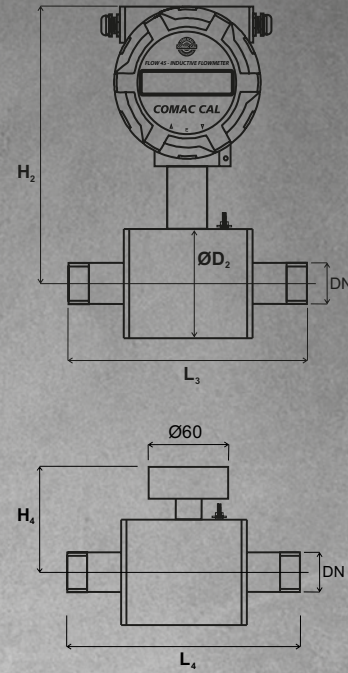
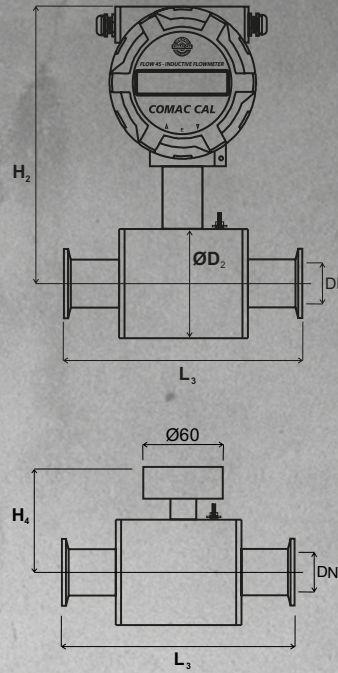
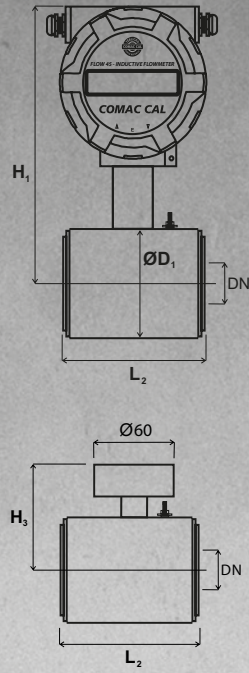
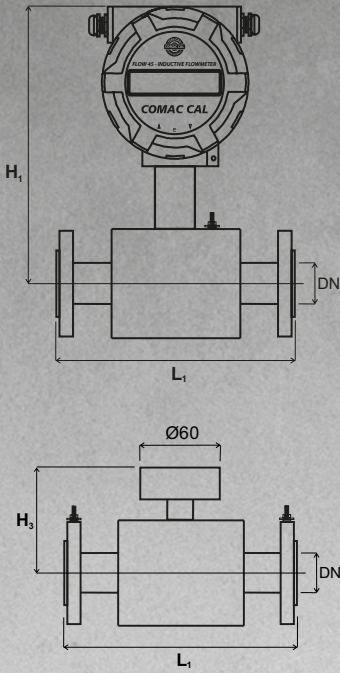
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FLANGE
(EN 1092)

SANDWICH CONNECTION

CLAMP/SANITARY FITTING
(DIN32676/DIN11851)

THREAD
(EN 10226-1)



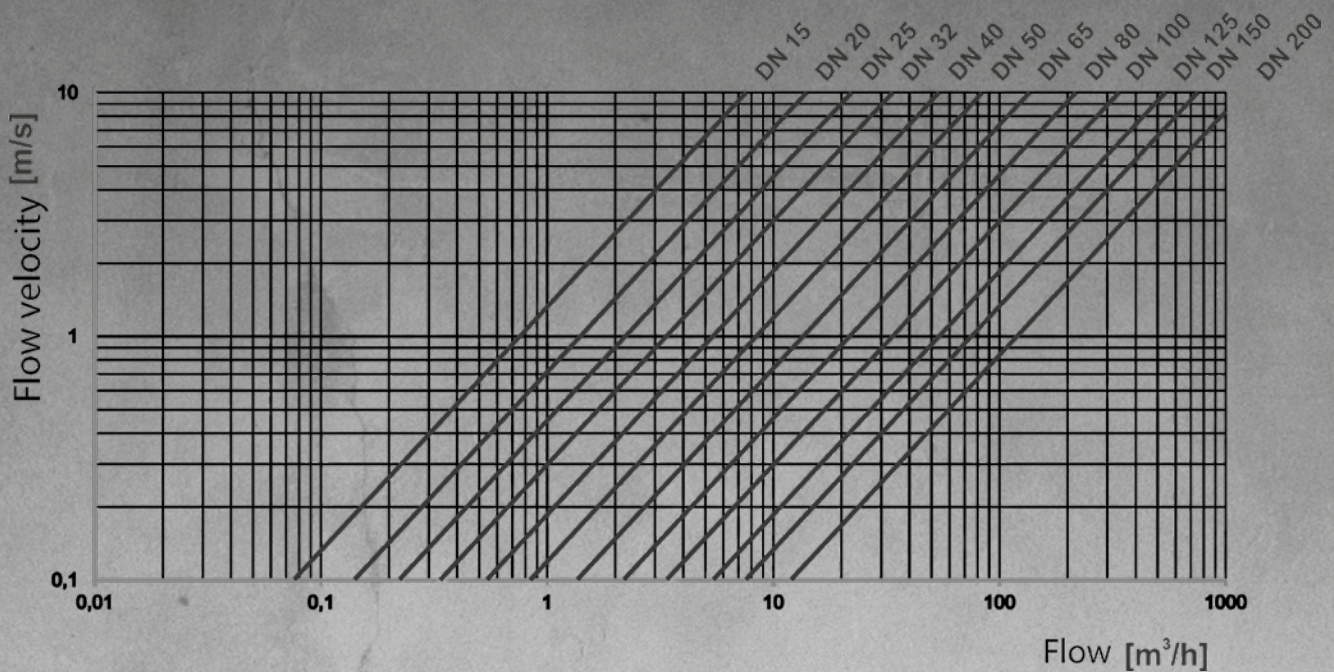
Constructional lengths can be modified upon agreement with the manufacturer.

DIMENSIONAL TABLE

Connection [mm]	Constructional length [mm]					Outside diameter [mm]		Total height [mm]			
						Sensor body		Compact design		Remote design	
	Flanged	Sandwich (PN25)	Sanitary Fitting	Sanitary Clamp	Threded	Sandwich (PN25)	Threaded	Flanged	Threaded	Flanged	Threaded
							Sanitary	Sandwich (PN25)	Sanitary	Sandwich (PN25)	Sanitary
						Clamp		Clamp		Clamp	
DN	L1	L2	L3	L3	L4	D1	D2	H1	H2	H3	H4
10	200	90	173	180	186 (3/8")	51	70	173	177	86	90
15	200	90	165	175	190 (1/2")	51	70	173	177	86	90
20	200	90	170	175	200 (3/4")	61	80	173	182	86	95
25	200	90	180	175	200 (1")	71	90	178	187	91	100
32	200	90	192	175	228 (1 1/4")	82	100	183	192	96	105
40	200	110	215	203	248 (1 1/2")	92	116	188	200	101	113
50	200	110	228	211	258 (2")	107	136	196	210	109	123
65	200	130	upon agreement	upon agreement	upon agreement	127	151	206	218	119	131
80	200	130	upon agreement	upon agreement	upon agreement	142	177	213	231	126	144
100	250	200	-	-	-	168	-	226	-	139	-
125	250	200	-	-	-	194	-	239	-	152	-
150	300	200	-	-	-	224	-	254	-	167	-
200	350	200	-	-	-	284	-	284	-	197	-

Note: D - The outside diameter corresponds to the required pressure class and standards.

VOLUMETRIC FLOW RATE VERSUS INSTANTANEOUS FLOW VELOCITY DIAGRAM



INTERNAL LITHIUM BATTERY

Inserted lithium battery has lifetime up to five years. For final lifetime of battery is important not only the measurement period but also the used outputs or communications. The more energy demanding outputs are, the shorter will be the battery life. Therefore, it is necessary to choose with a large carefulness the type of communication or outputs and measurement periode too.

At the end of the battery life, the customer has the option of ordering a spare battery which is part of our additional assortment.



PRODUCT ORDER CODE

FL45H/DNxxx/Ax(cl)/Bx/Cx/Dx/Ex/Fx/G1/H4/I1

FLOW45 (type)
H... head

DN (diameter nominal)
DN... 10...200

A (design)
A1... compact
A2... remote (cabel length 3...30 m, T_{max} 150 °C)
A3... remote (cabel length 3...30 m, T_{max} 80 °C)

B (connection)
B1... flanged B5... clamp
B2... sandwich B6... stainless steel flange SS304
B3... threaded B7... stainless steel flange SS316
B4... dairy fitting

C (pressure)
C1... PN10 (DIN) C5... PN63 (DIN) C9... 40K (JIS)
C2... PN16 (DIN) C6... PN100 (DIN) C10... Class 150 (ANSI)
C3... PN25 (DIN) C7... 10K (JIS) C11... Class 300 (ANSI)
C4... PN40 (DIN) C8... 20K (JIS)

D (lining)
D1... hard rubber D4... PTFE D8... PVDF*
D2... soft rubber D5... PFA D9... RILSAN*
D3... rubber with potable water test certificate D7... ETFE

I (measuring range Q_{min}/Q_{max})
I1... 1/60

H (power)
H4... internal lithium battery

G (output)
G1... impulse
G2... imp. + RS485

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

E (electrodes)
E1... stainless steel 316 Ti
E2... hastelloy C4
E3... titanium
E4... tantalum

* Upon agreement with the manufacturer.

ACCESSORIES/ Modules:

- micro SD card
- external power supply 230 VAC
- NB IoT module
- Spare battery pack



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