

# FLOW 45



## Battery powered flow meter

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 MERITS

- 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

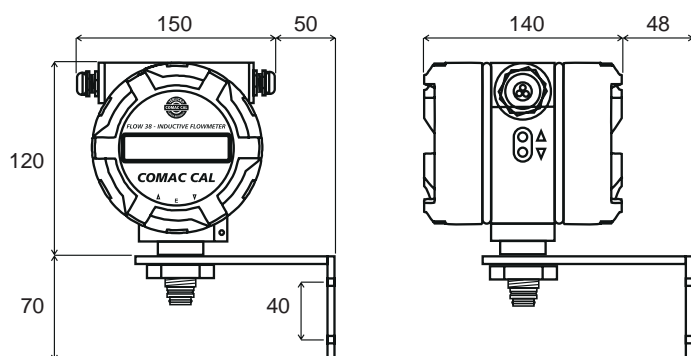
Power	Replaceable lithium battery power pack / external (12 VDC, max. 500 mA)
Input power	M12 – 5p (external powering, UART) M12 – 8p (ImpOut, RS485)
Measurement periode	1÷60 s
Design	compact ( $T_{max}$ 90 °C), separate (standard cable length 3 m)
Types of electronics	standard (Head – H)
Diameter	DN 10÷200
Lining material	Rubber (hard, soft, with potable water test certificate): DN 25÷DN 200 ( $T_{max}$ 80 °C) PTFE: DN 10÷DN 80 ( $T_{max}$ 150 °C for separate version), Rilsan: DN 25÷DN 200 ( $T_{max}$ 100 °C for separate version) ETFE: DN100÷DN 200 ( $T_{max}$ 150 °C), PFA, Ceramics (upon agreement with the manufacturer)
Electrodes material	CrNi steel DIN 1.4571, Hastelloy C4, Titan, Tantal
Frame	all-welded
Sensor material	Flanged – stainless steel and structural steel with polyurethane coating Sandwich, threaded, food grade – stainless steel
Process connection	Sandwich (PN25 only) Flanged DIN (EN1092) – carbon or stainless steel Threaded (EN ISO 228-1) Food grade (DIN 11851 fitting, clamp)
Pressure	PN10 (DIN), PN16 (DIN), PN25 (DIN), PN40 (DIN), PN64 (DIN), PN100 (DIN) 10K (JIS), 20K (JIS), 40K (JIS) 150lb (ANSI), 300lb (ANSI)
Minimum conductivity	50 $\mu$ S/cm
Flow range ( $Q_{min}/Q_{max}$ )	bidirectional 0,2 ÷ 12 m/s (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, ▼), micro USB
Outputs	M12 – 5p (external powering, UART) M12 – 8p (ImpOut, RS485)
Archivation	slot for micro SD card}
Max. temperature of medium	150 °C (according to the lining and design)
Max. ambient temperature	5÷55 °C
Degree protection os sensor	IP65, IP67, IP68
Degree protection of electronics	Standard unit (H – head) – IP 65, IP67

## ELECTRONICS

### STANDARD UNIT (HEAD)



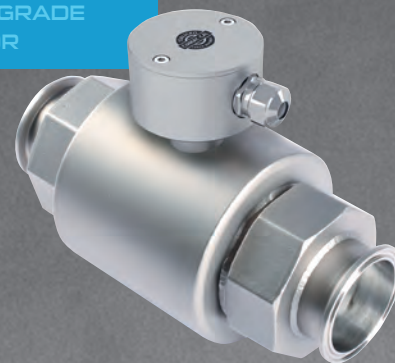
Setting of evaluation unit of the FLOW 45 can be done in two ways, via PC or NTB through MicroUSB connector or programming Boot record on the microSD card (it will be done reset when microSD will be inserted). The internal buttons are used to view the values.



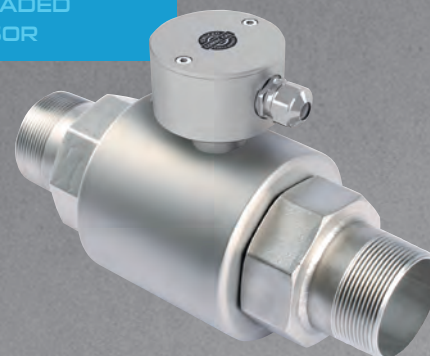
### SANDWICH SENSOR



### FOOD GRADE SENSOR



### THREADED SENSOR



## FLOW RANGES

Instantaneous flow rate corresponding to flow velocity

Diameter nominal [mm]	$Q_{min}$ [m <sup>3</sup> /h]	$Q_{max}$ [m <sup>3</sup> /h]
	1/60 (0,2 m/s)	(12 m/s)
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



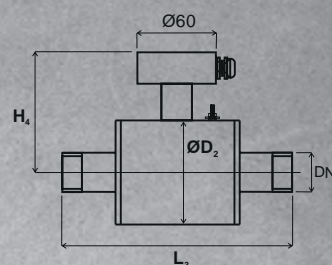
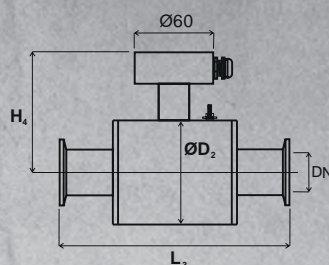
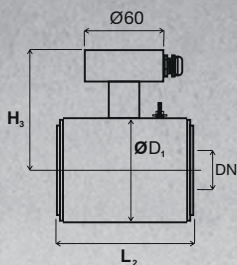
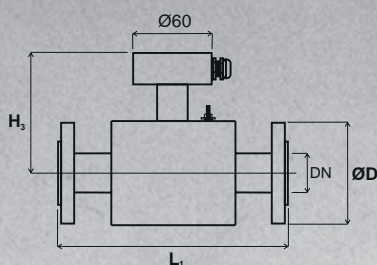
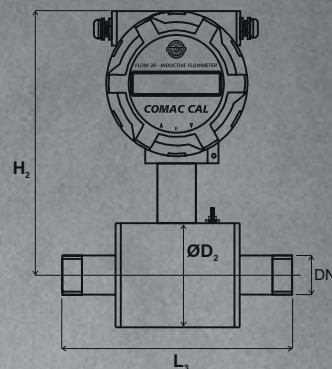
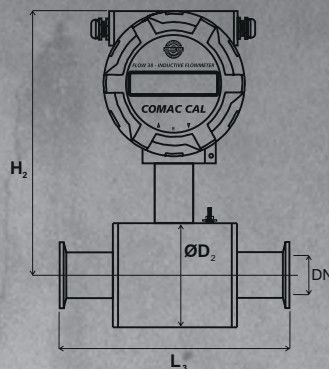
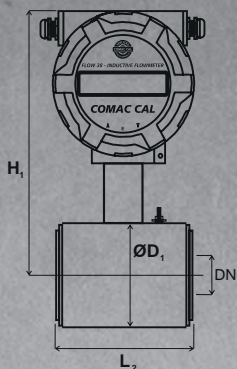
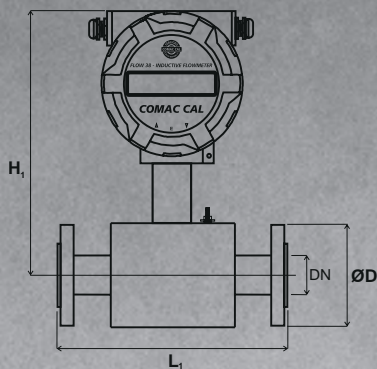
# FLOW 45

FLANGE  
(EN 1092)

SANDWICH

CLAMP/FOOD THREAD  
(DIN32676/DIN11851)

THREAD  
(EN ISO 228-1)



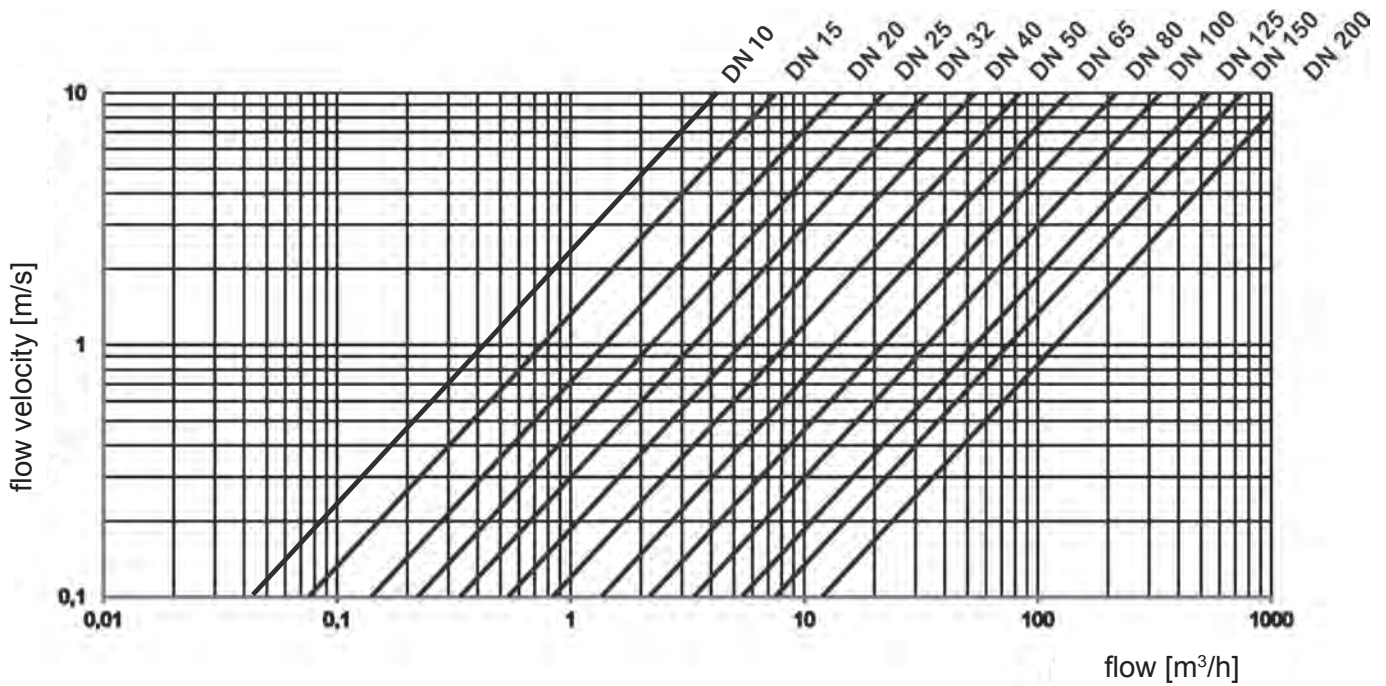
Constructional lengths can be modified upon agreement with the manufacturer.

## DIMENSIONAL TABLE

Connection [mm]	Constructional length [mm]					Outside diameter [mm]		Total height of [mm]			
	Flanged	Sandwich	Threaded (connection)	Food Thread	Food Clamp	Sensor body		Compact design		Separated design	
						Sandwich (PN25)	Threaded	Flanged	Threaded	Flanged	Threaded
							Food Thread	Sandwich	Food Thread	Sandwich	Food Thread
Food Clamp	Food Clamp	Food Clamp	Food Clamp	Food Clamp							
DN	L1	L2	L3	L3	L3	D1	D2	H1	H2	H3	H4
10	200	90	193 (3/8")	179	189	51	70	173	177	86	90
15	200	90	196 (1/2")	172	182	51	70	173	177	86	90
20	200	90	206 (3/4")	176	182	61	80	173	182	86	95
25	200	90	206 (1")	186	182	71	90	178	187	91	100
32	200	90	233 (1 1/4")	197	189	82	100	183	192	96	105
40	200	110	256 (1 1/2")	220	210	92	116	188	200	101	113
50	200	110	261 (2")	231	217	107	136	196	210	109	123
65	200	130	-	upon agreement	upon agreement	127	151	206	218	119	131
80	200	130	-	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 VERSUS INSTANTANEOUS 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 ORDERING CODE

FLOW 45

FL45H/DNxxx/Ax(c)/Bx/Cx/Dx/Ex/Fx/G1/H1/I1

### FLOW45 (type)

H... head

### DN (diameter nominal)

DN... 10÷200

### A (design)

A1... compact  
 A2... separated (cabel length 3÷30 m, T<sub>max</sub> 150 °C)  
 A3... separated (cabel length 3÷30 m, T<sub>max</sub> 80 °C)

### B (connection)

B1... flanged B5... clamp  
 B2... sandwich B6... stainless steel flange SS304  
 B3... threaded B7... stainless steel flange SS316  
 B4... diary fitting

### C (pressure)

C1... PN10 (DIN) C5... PN64 (DIN) C9... 40K (JIS)  
 C2... PN16 (DIN) C6... PN100 (DIN) C10... 150lb (ANSI)  
 C3... PN25 (DIN) C7... 10K (JIS) C11... 300lb (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 D6... ceramics DN 15-80\*  
 D7... ETFE

### I (measuring range Q<sub>min</sub>/Q<sub>max</sub>)

I1... 1/60

### H (power)

H1... internal lithium battery

### G (output)

G1... imp. + RS485

### F (sensor degree protection)

F1... IP65  
 F2... IP67  
 F3... IP68

### E (electrodes)

E1... stainless steel 316 Ti  
 E2... hastelloy C4  
 E3... titan  
 E4... tantal

Exclusive partner:



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Errata and technical changes reserved. The figures and photographs shown are only for illustration purposes.

Standard set include installation manual and calibration certificate. For other requirements, please contact the manufacturer directly.  
 \* Upon agreement with the manufacturer.