

FLOW 38

Industrial Electromagnetic Flow Meter FLOW 38

is designed for measuring a wide range of conductive liquids in industrial environments. The device offers multiple connection options to suit various installation needs.

The evaluation (transmitter) unit is available for all connection types in three versions:

- Head (H – standart)
- Front
- Panel

The **standard version** is the Head type, which can be easily rotated for convenient local reading. The **compact Front version** offers a front-facing display and user-friendly operation thanks to larger, easily accessible buttons—even when wearing gloves. In the **remote version**, the display unit can be mounted on a DIN rail. The **Panel version** allows installation of the display unit directly into a control cabinet door, for example. All versions feature a **backlit display**.

The device can be equipped with several configurable outputs: pulse, status (switching), analog **4–20 mA** current loop, **RS485 and M-bus, IoT, TCP/IP**.

The meter also includes a **daily data** archive (up to 176 days), accessible via the RS485 interface.

FLOW 38 is also available in a version with DNV certification, ensuring compliance with requirements for safety, reliability, and performance. This makes FLOW 38 an ideal solution for demanding marine and offshore applications.



MAIN ADVANTAGES

- High variety of connections
- Customizable installation length
- Option for all-stainless steel sensor design
- Large dynamic measuring range
- High accuracy and repeatability of measurement
- Wide selection of materials, linings, and electrodes
- Very simple and intuitive operation
- Flow-monitoring function (flow switch) available
- Freely rotatable evaluation unit (350°) for easy reading
- Certified by DNV upon request



COMAC CAL

TECHNICAL DATA

| | |
|--|---|
| Power Supply | 230 V AC (50/60 Hz), 24 V AC/DC with reverse polarity protection |
| Power Consumption | 4,6 VA |
| Electronics Type | H – Head (standard), F – Front, P – Panel |
| Design Options | Compact (T_{max} 90 °C), Remote - T_{max} depends on lining mat., (minimum cable length 3 m) |
| Nominal Diameter | DN 4 ... DN 600 (other sizes available upon request) |
| Lining Material (Minimum and maximum temperatures) | Rubber (hard, soft, certified for drinking water): DN 32 to DN 600 (T_{min} = 0 °C, T_{max} = 70 °C) Ceramic (upon request) Rilsan: DN 25 ... DN 600 (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 250 (T_{min} = -40 °C, T_{max} = 170 °C) PTFE: DN 15 ... DN 80 (T_{min} = -40 °C, T_{max} = 140 °C) ETFE: DN100 ... DN 600 (T_{min} = -40 °C, T_{max} = 140 °C) |
| Electrode Material | Stainless Steel 316 Ti, Hastelloy C, Titanium, Tantalum |
| Construction | All-welded design 226 |
| Sensor Body Materials | Flanged – Stainless steel or carbon steel with polyurethane coating Threaded/Sandwich – Stainless steel 304 Clamp/Sanitary fittings (DIN 32676/DIN1 1851) - Stainless steel 316 |
| Process Connections | Flanged (EN1092) Threaded /Sandwich (including NPT) Clamp/Sanitary fittings (DIN32676/DIN1 1851) |
| Pressure Ratings | PN 10 ... PN 100 (DIN) 10 K ... 40 K (JIS) Class150 (ANSI), Class 300 (ANSI) |
| Min. Conductivity of Medium | 5 μ S/cm |
| Measuring Range (Q_{min}/Q_{max}) | 1/60, 1/100, 1/200 |
| Flowmeter Accuracy | up to 0,5 %, repeatability up to 0,2 % |
| Pressure Loss | Negligible |
| Additional Electrodes | Grounding and empty pipe detection electrodes (DN 10 to DN 600) |
| Empty-pipe Detection | DN 10 ... DN 600 |
| Display | LCD 2 x 16 characters |
| Controls | 2x external buttons (for value viewing) 3x internal buttons (for viewing and parameter setting) |
| Outputs | 2x pulse / status outputs (max. 400 Hz) (passive/active) 1x current output (4...20 mA, passive/active) (active output can be powered by internal source) 1x RS485 interface (Modbus / M-Bus protocol) |
| Optional Modules* | 4–20 mA, frequency output, Ethernet module (Modbus TCP/IP, web server), IoT, micro SD card, HART, M-Bus |
| Ambient Temperature Range | 5 to 55 °C |
| Ingress Sensor Protection | IP65, IP67, IP68 |
| Ingress Electronics Protection | IP65, IP67 – standard design (H – Head) ; IP54 – front (F) a panel (P) |

* The communication module can only be inserted into the Head version.

DISPLAY UNIT CONTROL



The device is equipped with **two external buttons** located on the side of the electronics housing and **three internal buttons** accessible after unscrewing the front cover.

The external buttons allow **viewing of measured values** and settings. After removing the front cover, the three internal buttons enable **modification of the configuration parameters**.

For more convenient display reading in both **compact and remote versions**, the transmitter unit can be rotated up to 350°. Additionally, after loosening the screws beneath the cover, the display itself can be rotated up to 270° in all directions, by 90° at a time.

FLOW RANGES

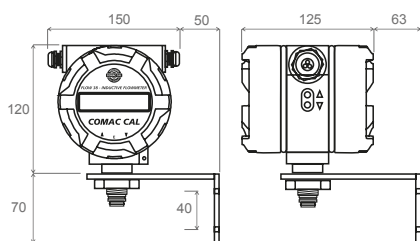
Table of flow ranges q_{min}/q_{max} for individual nominal diameter

| DN [mm] | q_{min} [1/200] [m³/h] (I3) | q_{min} [1/100] [m³/h] (I2) | q_{min} [1/60] [m³/h] (I1) | q_n [m³/h] | q_{max} [m³/h] |
|---------|-------------------------------|-------------------------------|------------------------------|--------------|------------------|
| DN 4* | – | – | 0,01 | 0,3 | 0,6 |
| DN 6 | – | – | 0,02 | 0,6 | 1,2 |
| DN 8 | – | – | 0,04 | 1,1 | 2,2 |
| DN 10 | – | 0,034 | 0,06 | 1,7 | 3,4 |
| DN 15 | 0,038 | 0,076 | 0,13 | 3,8 | 7,6 |
| DN 20 | 0,071 | 0,142 | 0,24 | 7,1 | 14,2 |
| DN 25 | 0,105 | 0,21 | 0,35 | 10,5 | 21 |
| DN 32 | 0,17 | 0,34 | 0,6 | 17 | 34 |
| DN 40 | 0,27 | 0,54 | 0,9 | 27 | 54 |
| DN 50 | 0,42 | 0,84 | 1,4 | 42 | 84 |
| DN 65 | 0,72 | 1,44 | 2,4 | 72 | 144 |
| DN 80 | 1,1 | 2,2 | 3,6 | 110 | 220 |
| DN 100 | 1,7 | 3,4 | 5,6 | 170 | 340 |
| DN 125 | 2,67 | 5,34 | 8,9 | 267 | 534 |
| DN 150 | 3,8 | 7,6 | 13 | 380 | 760 |
| DN 200 | 6,75 | 13,5 | 23 | 675 | 1350 |
| DN 250 | – | 21,1 | 35 | 1057,5 | 2115 |
| DN 300 | – | 30 | 51 | 1525 | 3050 |
| DN 350 | – | 41 | 70 | 2075 | 4150 |
| DN 400 | – | 54 | 90 | 2713 | 5426 |
| DN 500 | – | – | 141 | 4240 | 8480 |
| DN 600 | – | – | 203 | 6100 | 12200 |

* upon agreement with the manufacturer

ELECTRONICS

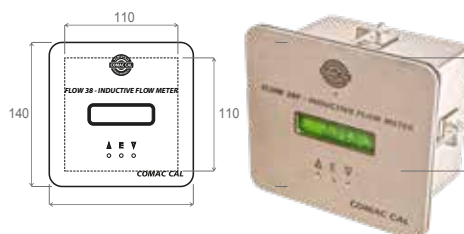
STANDARD UNIT (HEAD) - A1, A2, A3



FRONT UNIT - A1, A2, A3

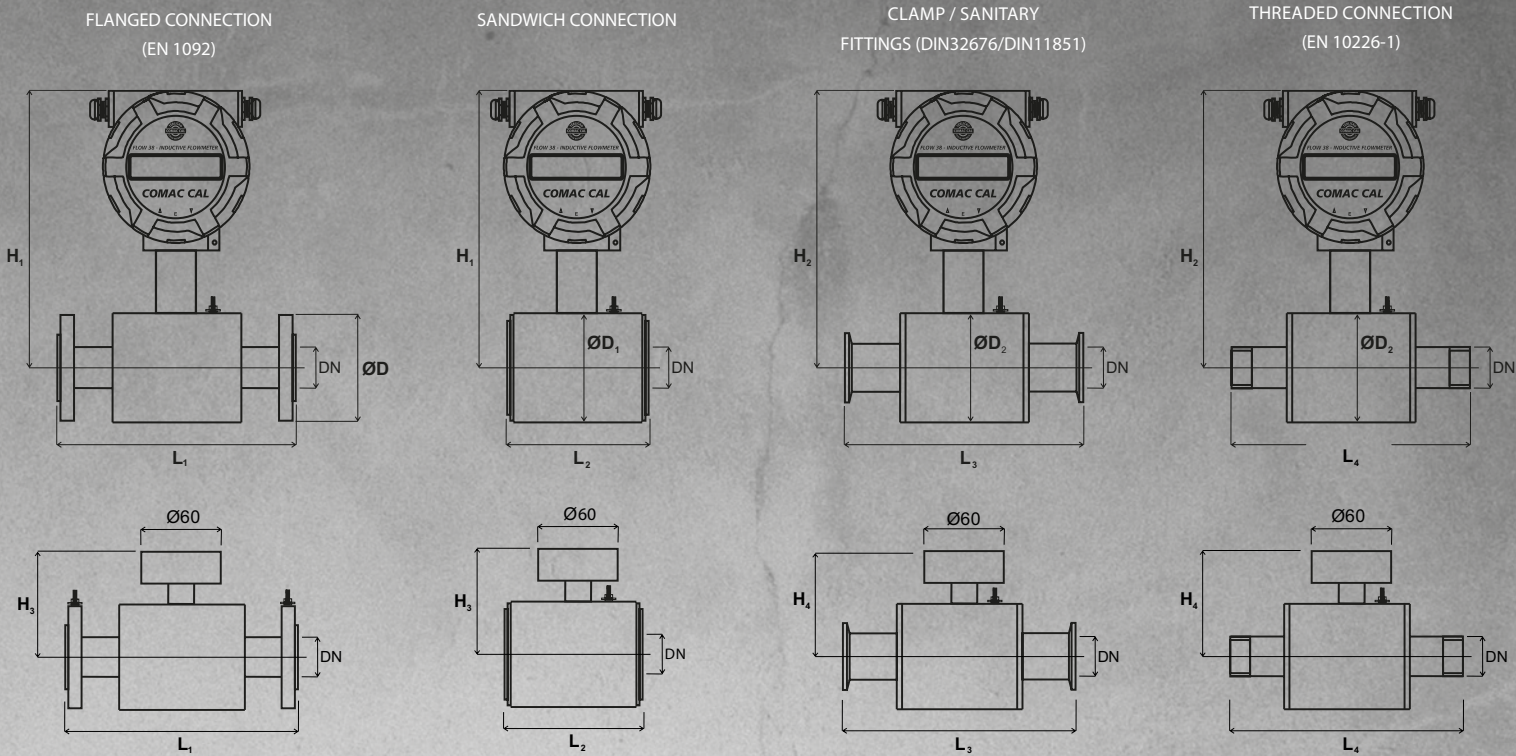


PANEL UNIT - A2, A3



*The required installation depth, including the cable connector from the flow meter sensor, is 200 mm

FLOW 38



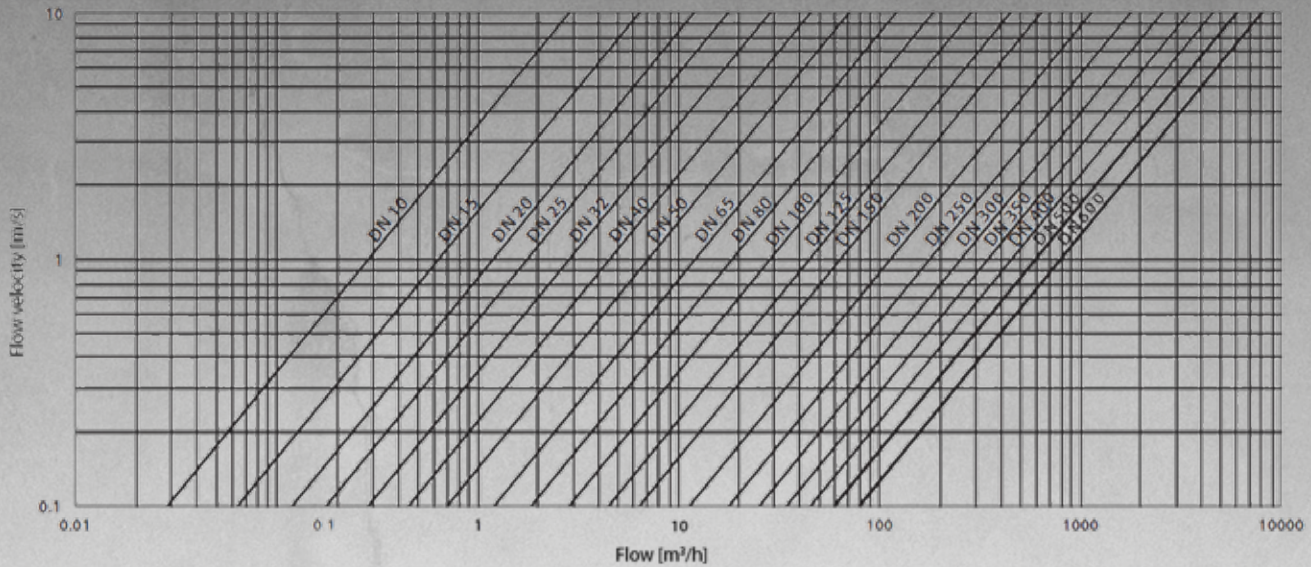
The installation lengths can be adjusted by agreement with the manufacturer.

DIMENSIONAL TABLE

| Connection [mm] | Installation length [mm] | | | | | Outer diameter [mm] | | Total height [mm] | | | |
|-----------------|--------------------------|-----------------|------------------|------------------------|--------------|---------------------|----------------|-------------------|----------------|-----------------|----------------|
| | | | | | | Body of sensor | | Compact version | | Remote version | |
| | Flanged | Sandwich (PN25) | Sanitary Fitting | Sanitary Clamp Fitting | Threaded | Sandwich (PN25) | Threaded | Flanged | Fitting | Flanged | Fitting |
| | | | | | | | Sanitary Clamp | Sandwich (PN25) | Sanitary Clamp | Sandwich (PN25) | Sanitary Clamp |
| DN | L1 | L2 | L3 | L3 | L4 | D1 | D2 | H1 | H2 | H3 | H4 |
| 4 | - | - | - | - | 161 (1/2") | - | 70 | - | 182 | - | 92 |
| 6 | - | - | - | - | 161 (1/2") | - | 70 | - | 182 | - | 92 |
| 8 | - | - | - | - | 161 (1/2") | - | 70 | - | 182 | - | 92 |
| 10 | 200 | 90 | 180 | 180 | 190 (3/8") | 51 | 70 | 173 | 177 | 86 | 90 |
| 15 | 200 | 90 | 180 | 180 | 190 (1/2") | 51 | 70 | 173 | 177 | 86 | 90 |
| 20 | 200 | 90 | 180 | 180 | 200 (3/4") | 61 | 80 | 173 | 182 | 86 | 95 |
| 25 | 200 | 90 | 180 | 180 | 200 (1") | 71 | 90 | 178 | 187 | 91 | 100 |
| 32 | 200 | 90 | 190 | 190 | 230 (1 1/4") | 82 | 100 | 183 | 192 | 96 | 105 |
| 40 | 200 | 110 | 210 | 210 | 245 (1 1/2") | 92 | 116 | 188 | 200 | 101 | 113 |
| 50 | 200 | 110 | 230 | 230 | 254 (2") | 107 | 136 | 196 | 210 | 109 | 123 |
| 65 | 200 | 130 | 277 | 277 | 277 (2 1/2") | 127 | 151 | 206 | 218 | 119 | 131 |
| 80 | 200 | 130 | 285 | 285 | 285 (3") | 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 | - |
| 250 | 450 | - | - | - | - | - | - | 327 | - | 240 | - |
| 300 | 500 | - | - | - | - | - | - | 352 | - | 265 | - |
| 350 | 550 | - | - | - | - | - | - | 382 | - | 295 | - |
| 400 | 600 | - | - | - | - | - | - | 412 | - | 325 | - |
| 500 | 600 | - | - | - | - | - | - | 892 | - | 797 | - |
| 600 | 600 | - | - | - | - | - | - | 1025 | - | 930 | - |

Note: D – the outer diameter of the flange corresponds to the required pressure class and standard

DIAGRAM OF VOLUME FLOW RATE VERSUS INSTANTANEOUS FLOW VELOCITY



PRODUCT ORDERING CODE

FL38x/DNxxx/Ax(m)/Bx/Cx/Dx/Ex/Fx/Gx/Hx/Ix

FLOW38 (type)

H... head
P... panel
F... front
DNV... marine and ship (type Head)

DN (nominal diameter)

DN... 4 ... 600**

A (design)

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

B (connection)

B1... flanged
B2... sandwich
B3... threaded
B4... dairy fitting
B5... clamp
B6... flanged SS304
B7... flanged SS316

C (pressure rating)

| | | |
|------------------|-------------------|-------------------------|
| 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 drinking water approved | D6... ceramic* | |
| | D7... ETFE | |

I (measuring range Q_{min}/Q_{max})

I1... 1/60
I2... 1/100
I3... 1/200

H (power supply)

H1... 230 VAC
H2... 24 VAC/VDC
H8... 110 VAC

G (output)

G1... impuls/switch (flow switch)
G2... impuls/switch + 4 ... 20 mA
G3... impuls/switch + RS485 (Modbus)
G4... impuls/switch + 4 ... 20 mA + RS485 (Modbus)

F (protection rating)

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

E (electrodes)

E1... stainless steel 316 Ti
E2... hastelloy C4
E3... titanium
E4... tantalum

* on request

** DN 4, 6, 8 only available in PVDF, accuracy 1 %, range 1/60.

ACCESSORIES

(Available for HEAD version only)

STANDALONE MODULES:

(CANNOT BE COMBINED)

- Additional analog output 4 ... 20 mA
- Ethernet module (Modbus TCP/IP protocol)
- Ethernet module (integrated web server)
- NB-IoT module

COMBINABLE MODULES:

- M-bus (available separately or combined with micro SD card)
- HART (available separately or combined with micro SD card)
- micro SD card (available separately)



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