



# Optimag

## Electromagnetic flow meter suitable for any industrial water metering application

Optimag is a mains supplied electromagnetic flow meter suitable for any water metering application.

Available in sizes DN 50 to 1000, with integral or remote converter, Optimag is suitable for any metering application all along the water cycle:

- raw water extraction,
- treatment plant process control,
- distribution network management,
- bulk billing,
- sewage.

### Ease of use

Its compact metering tube allows easy integration in existing piping systems. Flow meter configuration can easily be tailored to needs through a user-friendly

programming mode. Function menus are fully accessible through four push-buttons located under the sealable front cover.

### Communication

The functionalities offered by its micro-processor based converter allows analog and pulse outputs, bi-directional flow measurement, volume totalization display as well as various alarm activation modes.

### Robustness

High-quality materials used, such as teflon or hard rubber coating for lining and stainless steel for electrodes, offer very good resistance to the toughest water environments. Converter housing is fully metallic for optimal protection of the electronics.





## Description

Optimag flow meter is made of:

1. a full-bore lined and coated steel tube with two signal stainless steel electrodes offering the following features:
  - good resistance to abrasion and pressure,
  - negligible head loss,
  - floodable IP68 version in remote converter execution,
2. an integral or remote electronic converter which micro-processor allows:
  - empty pipe detection,
  - display of instant flow-rate and volume,
  - bi-directional measurements,
  - various signal outputs and alarms modes.

## Main Characteristics

### Converter characteristics

|                                      |  |
|--------------------------------------|--|
| Installation                         | Integral or remote (cable length: 200m max)  |
| Power supply                         | 90 to 250 V ac 50-60 Hz: standard<br>17 to 45 V ac 50-60 Hz: optional<br>20 to 55 V dc: optional   |
| Housing protection degree & material | IP 67 - aluminium alloy housing / stainless steel cable glands   |
| Display                              | Alphanumeric - 2 lines, 16 digits - backlit<br>Instant flow-rate and totalization<br>Totalization: forward, reverse, net                         |
| Bi-directional flow-rate             | Yes  |
| Auto-zero                            | Yes  |
| 3 programmable outputs               | Open collectors pulses (max.frequency 1 KHz)<br>0/4-20 mA powered<br>Open collector output for flow direction or flow-rate or totalization alarm |
| 1 programmable input                 | Remote auto-zero or<br>Totalizer reset and preset or<br>Outputs locking (i.e. when washing)  |
| Serial communication                 | RS 485 standard  |
| Self-diagnostic functions            | Erroneous settings<br>Empty pipe detection   |
| Languages                            | Various built-in languages   |
| Working temperature range            | -15°C to + 60°C  |

### Measuring tube characteristics

|                         |   |
|-------------------------|---|
| Available sizes         | DN 50 to 1000   |
| Protection degree       | IP 65 standard - IP 68 on request   |
| Electrodes              | Aisi 316 standard   |
| Lining                  | PTFE up to DN 125 mm, hard rubber from DN 150   |
| Max water temperature   | Integral converter: 70°C<br>Remote converter: 110°C (PTFE lining) - 70°C (hard rubber lining) |
| Max admissible pressure | Matching PN version (PN 10-16-25-40 available)  |
| Min fluid conductivity  | 30 microS/cm  |

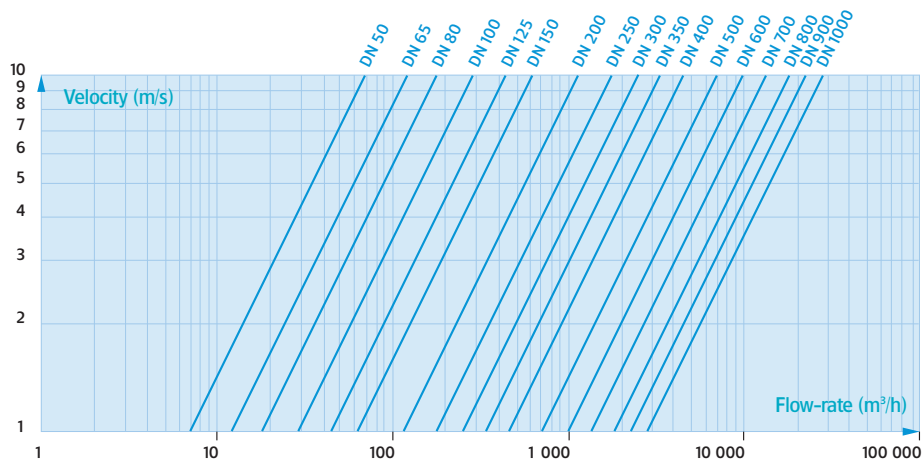
## Working Principle

Faraday's law states a conductor in motion in a magnetic field generates an induced voltage. The conductor is materialized by the liquid in motion in the flow meter tube. The magnetic field (B) is generated by two mains powered coils (B1, B2). The induced voltage (e) proportional to the flow velocity (V) is detected by two electrodes (E1, E2) then transmitted to the electronic converter before being processed for flow-rate, volume display, output signal, etc.

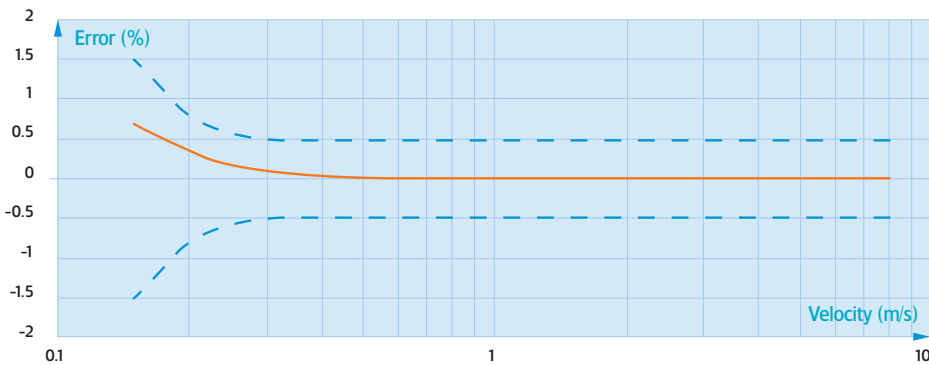
## Flow Ranges

Optimag is able to withstand flow-rates up to a fluid velocity of 10 m/s for the corresponding DN.

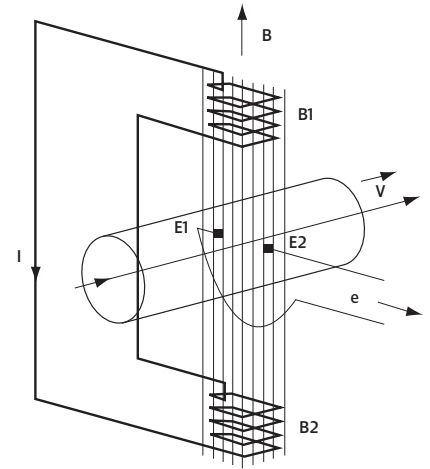
It is always recommended to size the flow meter based on real flow-rates expectations and not on DN of piping.

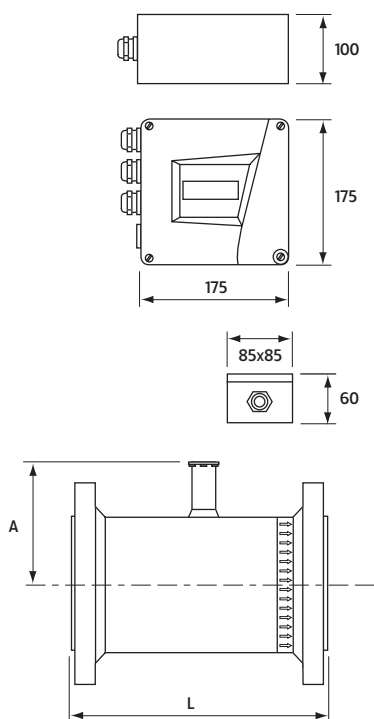


## Typical Accuracy Curve\*



\* Given under reference conditions of EN 29104 for sizes up to DN 500.





## Dimensions

| Nominal Diameter  | mm | 50                | 65  | 80  | 100 | 125 | 150 | 200                   | 250 | 300 |
|-------------------|----|-------------------|-----|-----|-----|-----|-----|-----------------------|-----|-----|
| Connexion end     |    | Flange PN 10 / 16 |     |     |     |     |     | Flange PN 10 or PN 16 |     |     |
| L compact PN10/16 | mm | 140               | 160 | 160 | 160 | 200 | 300 | 300                   | 300 | 300 |
| L ISO PN10/16     | mm | 200               | 200 | 200 | 250 | 250 | 300 | 350                   | 450 | 500 |
| A                 | mm | 90                | 100 | 107 | 119 | 130 | 147 | 166                   | 194 | 219 |
| Weight            | kg | 12                | 14  | 15  | 17  | 21  | 28  | 41                    | 50  | 61  |

| Nominal Diameter | mm | 350                   | 400 | 450 | 500 | 600 | 700 | 800 | 900 | 1000 |
|------------------|----|-----------------------|-----|-----|-----|-----|-----|-----|-----|------|
| Connexion end    |    | Flange PN 10 or PN 16 |     |     |     |     |     |     |     |      |
| L compact PN10   | mm | 350                   | 400 | 450 | 500 | 600 | 700 | 800 | 900 | 1000 |
| L compact PN16   | mm | 350                   | 412 | 466 | 516 | 616 | 716 | 816 | 916 | 1016 |
| L ISO PN10/16    | mm | -                     | 600 | -   | 800 | -   | -   | -   | -   | -    |
| A                | mm | 249                   | 274 | 300 | 325 | 380 | 437 | 488 | 540 | 595  |
| Weight           | kg | 85                    | 100 | 135 | 143 | 192 | 264 | 420 | 580 | 635  |

PN 25 - PN 40 on request, please consult us.

## Installation Requirements

- An upstream/downstream straight length of at least 5 DN/3 DN at least is recommended to take advantage of claimed accuracy performances.
- Grounding instructions given in operation manual should be followed carefully for optimal performances.
- Tapers to be selected for installation on bigger piping diameter should always have a top angle below or equal to 8°.
- Flow meter should always be installed at the lowest point of the piping.

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