

# Bulk Meters



## Axial helix Woltmann meter with interchangeable mechanism

WMAP EVO is the advanced range of Maddalena Woltmann water meters.

This range of dry dial, interchangeable mechanism water meters has been developed in order to meet the strict requirements of the Directive 2014/32/EU (MID) and European Standard ISO 4064.

WMAP EVO meters can be equipped with a static pulser or a radio module maintaining the mechanical and metrological features and without affecting readability.

The radio modules available support various transmission technologies.

The continuous improvement of hydraulic performance has made it possible to obtain a measuring range ( $Q_3/Q_1$ ) of R250.

WMAP EVO meters are guaranteed by Maddalena: manufacturer of high quality measuring instruments for a century.

# WMAP EVO WATER METER

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**WMAP EVO is an axial helix (the axis of the helix is coaxial to the axis of the pipe) Woltmann meter with removable mechanism.** The magnetically driven register operates in a dry compartment: the helix is the only component in contact with the network water. The register is housed in a copper can and glass lens enclosure for waterproof protection (IP68).

**WMAP EVO meters are pre-equipped for two pulse outputs (one inductive output and one reed switch output) as a standard. This allows the meters to be retrofitted with a pulser or radio module without affecting their functionality and design. The radio modules available support various transmission technologies (wireless M-Bus, LoRa™, Sigfox).** WMAP EVO meters can be installed both in horizontal and vertical position. Performance is unaffected by the installation conditions or the water characteristics.

WMAP EVO meters comply with the Directive 2014/32/EU (Annex MI-001) and have undergone conformity assessment procedure B+D. The maximum measuring range ( $Q_3/Q_1$ ) certified is 250. Lower measuring ranges are also available (R200, 160, 100, 80, etc.).

WMAP EVO meters are certified for use with potable water in accordance with Italian (Ministerial decree 6 April 2004 no. 174) and international regulations.

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## Structural and functional features

- Copper can register and glass lens (IP68)
- The register is housed in a dry compartment, which has no contact with the water, for continued readability
- The serial number is printed on the dial both in numbers and in barcode format
- The MID inscriptions are engraved on a metallic label applied on the flange
- Direct read dial with 7 numbered drums for cubic meters (8 on DN 150 and DN 200 meters) and 2 pointers for decimals
- Plastic cover and lid with magnetic shielding
- Spheroidal cast iron flanged body; internal and external epoxy powder coating
- Steel pivot, synthetic sapphire bearing
- Internal mechanism made of anhygroscopic, anti-scaling and hard-wearing plastic materials
- The pulsed version retains the metrological seal and is protected by a cover
- No upstream and downstream straight pipe requirements (U0-D0)
- Maximum operating temperature: 50 °C
- Nominal pressure (PN): 10 bar or 16 bar
- Hydraulic tests are carried out at three flow rates ( $Q_1$ ,  $Q_2$ ,  $Q_3$ ) on all the meters. Our testing benches comply with the Standards ISO 4064/3 and ISO 4185 (EN 14154/3) and are approved by a European notified body

## HYDRAULIC PERFORMANCE

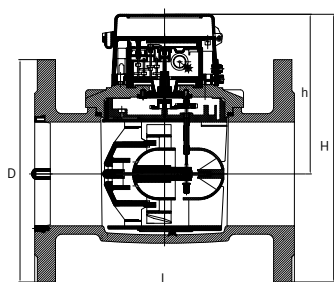
|                                                     |                              |     |       |       |       |       |                          |       |
|-----------------------------------------------------|------------------------------|-----|-------|-------|-------|-------|--------------------------|-------|
| Size                                                | mm                           | 50  | 65    | 80    | 100   | 125   | 150                      | 200   |
|                                                     | in                           | 2"  | 2.½"  | 3"    | 4"    | 5"    | 6"                       | 8"    |
| Module B no.                                        | TCM 142/17-5473              |     |       |       |       |       |                          |       |
| Module D no.                                        | 0119-SJ-A010-08              |     |       |       |       |       |                          |       |
| MID metrological class                              | H ↑ ≤ 250                    |     |       |       |       |       | H ↑; V ↑; inclined ≤ 250 |       |
| R Q <sub>3</sub> /Q <sub>1</sub>                    | H →; V ↑; V ↓ inclined ≤ 160 |     |       |       |       |       | H →; V ↓ ≤ 125           |       |
| Performance in accordance with Directive 2014/32/EU |                              |     |       |       |       |       |                          |       |
| Q <sub>3</sub>                                      | m³/h                         | 40  | 63    | 100   | 160   | 160   | 250                      | 400   |
| Q <sub>4</sub>                                      | m³/h                         | 50  | 78,8  | 125   | 200   | 200   | 312.5                    | 500   |
| R 250                                               |                              |     |       |       |       |       |                          |       |
| Q <sub>1</sub>                                      | l/h                          | 160 | 250   | 400   | 640   | 640   | 1,000                    | 1,600 |
| Q <sub>2</sub>                                      | l/h                          | 260 | 400   | 640   | 1020  | 1,020 | 1,600                    | 2,560 |
| R 100 (standard)                                    |                              |     |       |       |       |       |                          |       |
| Q <sub>1</sub>                                      | l/h                          | 400 | 630   | 1,000 | 1,600 | 1,600 | 2,500                    | 4,000 |
| Q <sub>2</sub>                                      | l/h                          | 640 | 1,010 | 1,600 | 2,560 | 2,560 | 4,000                    | 6,400 |

## TECHNICAL FEATURES

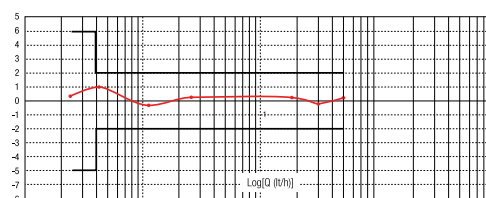
|                                                                                |                                                                                |            |            |            |            |            |             |             |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------|------------|------------|------------|------------|------------|-------------|-------------|
| Maximum permissible error between Q <sub>1</sub> and Q <sub>2</sub> (excluded) | +/- 5%                                                                         |            |            |            |            |            |             |             |
| Maximum permissible error between Q <sub>2</sub> (included) and Q <sub>4</sub> | +/- 2% with water temperature ≤ 30° C<br>+/- 3% with water temperature > 30° C |            |            |            |            |            |             |             |
| Temperature class                                                              | T50                                                                            |            |            |            |            |            |             |             |
| Flow profile sensitivity classes                                               | U0 - D0                                                                        |            |            |            |            |            |             |             |
| Starting flow rate                                                             | l/h                                                                            | 125        | 190        | 320        | 450        | 700        | 1200        | 1800        |
| Head loss (ΔP @ Q <sub>3</sub> )                                               |                                                                                | ΔP25       | ΔP40       | ΔP25       | ΔP40       | ΔP40       | ΔP16        | ΔP40        |
| Working pressure                                                               | bar                                                                            | 10/16      | 10/16      | 10/16      | 10/16      | 10/16      | 10/16       | 10/16       |
| Maximum registration                                                           | m³                                                                             | 10,000,000 | 10,000,000 | 10,000,000 | 10,000,000 | 10,000,000 | 100,000,000 | 100,000,000 |
| Minimum registration                                                           | m³                                                                             | 0.002      | 0.002      | 0.002      | 0.002      | 0.002      | 0.02        | 0.02        |
| Turbine revolutions/litre                                                      |                                                                                | 1.08       | 1.02       | 0.39       | 0.32       | 0.40       | 0.25        | 0.15        |
| Weight                                                                         | kg                                                                             | 10.0       | 11.2       | 15.2       | 17.2       | 22.4       | 29.0        | 42.6        |
| Pulse options<br>Reed switch pulser<br>V max. ≤ 24V; I max. 0.1A               | l/pulse                                                                        | 100        | 100        | 100        | 100        | 100        | 1,000       | 1,000       |
| Pulse options<br>Inductive pulser<br>V max. ≤ 24V; I max. 0.1A                 | l/pulse                                                                        | 10         | 10         | 10         | 10         | 10         | 100         | 100         |

## DIMENSIONS

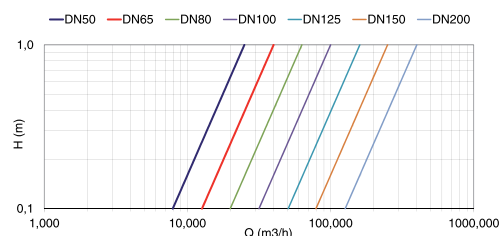
|   |    |     |     |     |     |     |     |     |
|---|----|-----|-----|-----|-----|-----|-----|-----|
| L | mm | 200 | 200 | 225 | 250 | 250 | 300 | 350 |
| H | mm | 209 | 218 | 249 | 258 | 271 | 316 | 345 |
| h | mm | 132 | 132 | 154 | 154 | 154 | 183 | 183 |
| D | mm | 165 | 185 | 200 | 220 | 250 | 280 | 340 |



## Typical error curve



## Head loss



## ACCESSORIES



### SINGLE REED SWITCH PULSER

Designed for communication of consumption data or industrial batching.



### PULSER

FlowPulse: bidirectional inductive pulser featuring alarm management.  
FlowPulse M-Bus: inductive bidirectional M-Bus pulser featuring a direct M-Bus output and alarm management.



### ARROW COMPACT RADIO MODULE

Clip-on radio module featuring a built-in inductive sensor. Wireless M-Bus radio operating in the 868 MHz frequency band.



### ARROW EXTERNAL RADIO MODULE

External radio module operating in the 868 MHz frequency band and featuring a pulse input. Wireless M-Bus communication protocol.



### ARROW<sup>WAN</sup> 169 MHz EXTERNAL RADIO MODULE

External radio module operating in the 169 MHz frequency band and featuring a pulse input. Wireless M-Bus communication protocol.



### ARROW<sup>WAN</sup> 868 MHz EXTERNAL RADIO MODULE

External radio module operating in the 868 MHz frequency band and featuring a pulse input. LoRaWAN<sup>TM</sup> communication protocol.



### COUNTERFLANGE KIT

It consists of two flanges, two rubber gaskets and screws.



### FLOW STRAIGHTENER

It allows the meter to be installed without straight pipe sections.  
To be fitted upstream of the meter.

For more information on the accessories please refer to the relevant data sheet.



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