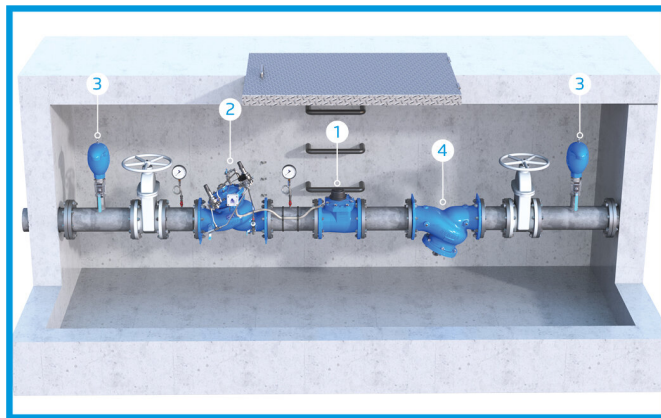


# WOLTMAN WATER METER

with Magnetic Drive & Magnetic Register

## Model Turbo-Bar-M

Heavy duty and designed to handle high flow rates, the Turbo-Bar-M Magnetic Drive Water Meter with Magnetic Register covers a very wide flow range, and is particularly suited to industrial, waterworks, water distribution, water monitoring, and Irrigation applications. Based on the Woltman principle, the helical blades of the turbine rotate around the axis of flow, the Turbo-Bar-M is a long-life product, easy to maintain at low cost.



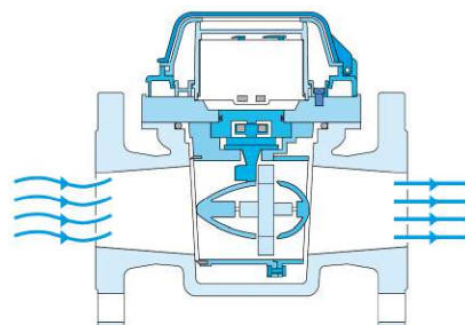
- [1] BERMAD Water Meter Model Turbo-Bar-M
- [2] Pressure Reducing Valve Model 720-45
- [3] Combination Air Valve Model C70
- [4] Strainer Model 70-F

### Features & Benefits

- Magnetic drive
- Dry, IP68; NEMA 6P Sealed Register
- "Reed switch" sensor allow one or two pulse outputs option
- Easy maintenance
- ID 2004/22/EEC Approved, according to OIML R49, EN14154 (sizes 40 - 300 mm)

### Operation:

BERMAD TURBO-BAR with magnetically driven register with high reliability hermetically sealed, the register is separated from the measuring element. Velocity type water meter counting the flow velocity, assuming a line profile full with water at known section.





### Technical Data

**Pressure Rating:**  
16 bar

**Operating Temperature:**  
Water up to 50°C

**End Connections - Flanged:**  
ISO PN16

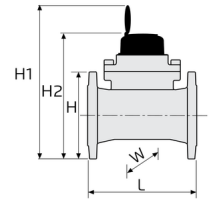
**Materials**

**Body & Cover:**  
Ductile Iron

**Coating:**  
Polyester Blue

### Technical Specifications

For other end connection types,  
Please refer to [BERMAD](#) full engineering page.



| Size (DN)   | Pattern       | End Connection | Weight (Kg) | L (mm) | H (mm) | H1 (mm) | H2 (mm) | W   | KV    |
|-------------|---------------|----------------|-------------|--------|--------|---------|---------|-----|-------|
| 1½" ; DN40  | Straight flow | Flanged        | 13          | 260    | 170.5  | 408     | 336     | 160 | 95    |
| 2" ; DN50   | Straight flow | Flanged        | 12          | 200    | 180.5  | 347.3   | 275.3   | 170 | 125   |
| 2½" ; DN65  | Straight flow | Flanged        | 14          | 200    | 190.5  | 357.3   | 285.3   | 190 | 170   |
| 3" ; DN80   | Straight flow | Flanged        | 16          | 225    | 200.5  | 367.3   | 295.3   | 200 | 190   |
| 4" ; DN100  | Straight flow | Flanged        | 19          | 250    | 215    | 377.3   | 305.3   | 230 | 280   |
| 5" ; DN125  | Straight flow | Flanged        | 20          | 250    | 245    | 392.3   | 320.3   | 250 | 380   |
| 6" ; DN150  | Straight flow | Flanged        | 39          | 300    | 277.5  | 436.6   | 364.6   | 285 | 950   |
| 8" ; DN200  | Straight flow | Flanged        | 52          | 350    | 335    | 466.6   | 394.6   | 340 | 1580  |
| 10" ; DN250 | Straight flow | Flanged        | 105         | 450    | 398    | 584.5   | 512.5   | 395 | 2688  |
| 12" ; DN300 | Straight flow | Flanged        | 120         | 500    | 452    | 611.5   | 539.5   | 445 | 4700  |
| 14" ; DN350 | Straight flow | Flanged        | 120         | 500    | 452    | 611.5   | 539.5   | 445 | 4700  |
| 16" ; DN400 | Straight flow | Flanged        | 187         | 500    | 647    | 731.5   | 659.5   | 600 | 9500  |
| 20" ; DN500 | Straight flow | Flanged        | 256         | 500    | 784.5  | 846.5   | 774.5   | 700 | 15000 |

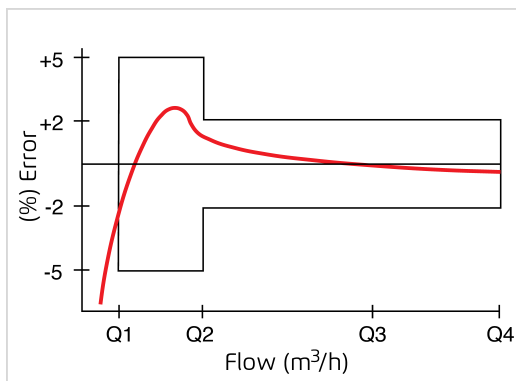
### Flow Properties

| Size (DN)                    | Accuracy | DN40    | DN50 | DN65 | DN80 | DN100 | DN125 | DN150     | DN200 | DN250      | DN300 | DN350 | DN400 | DN500 |
|------------------------------|----------|---------|------|------|------|-------|-------|-----------|-------|------------|-------|-------|-------|-------|
| Q @ (m³/h)                   |          | 1½"     | 2"   | 2½"  | 3"   | 4"    | 5"    | 6"        | 8"    | 10"        | 12"   | 14"   | 16"   | 20"   |
| Q1 Minimum Flow              | ±5%      | 0.5     | 0.5  | 0.8  | 1.3  | 1.3   | 2     | 3.1       | 5     | 8          | 12.5  | 12.5  | 32    | 50    |
| Q2 Transitional Flow         | ±2%      | 0.8     | 0.8  | 1.3  | 2    | 2     | 3.2   | 5         | 8     | 12.6       | 20    | 20    | 51    | 80    |
| Q3 Permanent Flow            | ±2%      | 25      | 40   | 63   | 63   | 100   | 160   | 250       | 400   | 630        | 1000  | 1000  | 1600  | 2500  |
| Q4 Maximum Flow (Short Time) | ±2%      | 31      | 50   | 79   | 79   | 125   | 200   | 313       | 500   | 788        | 1250  | 1250  | 2000  | 3125  |
| Q2/Q1                        |          | 1.6     | 1.6  | 1.6  | 1.6  | 1.6   | 1.6   | 1.6       | 1.6   | 1.6        | 1.6   | 1.6   | 1.6   | 1.6   |
| Q3/Q1                        |          | 50      | 80   | 80   | 50   | 50    | 80    | 80        | 80    | 80         | 80    | 80    | 50    | 50    |
| Max. reading, m³             |          | 999,999 |      |      |      |       |       | 9,999,999 |       | 99,999,999 |       |       |       |       |
| Min. reading, liter          |          | 1       |      |      |      |       |       | 10        |       | 100        |       |       |       |       |

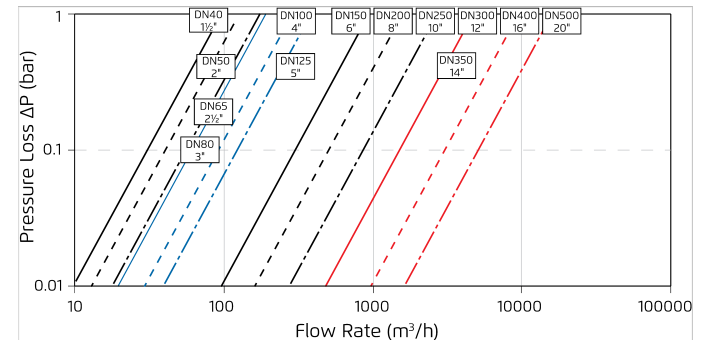
### Pulse Option

| Register Type          | Dry contact Reed Switch |     |      |       |
|------------------------|-------------------------|-----|------|-------|
| Size (DN)              | One pulse per           |     |      |       |
|                        | 100L                    | 1m³ | 10m³ | 100m³ |
| 1½"-2½" ;<br>DN40-65   | ✓                       | ✓   |      |       |
| 3"-10" ;<br>DN80-250   |                         | ✓   | ✓    |       |
| 12"-20" ;<br>DN300-500 |                         |     | ✓    | ✓     |

### Accuracy Curve



### Flow Chart



### Differential Pressure & Flow Calculation

$$\Delta P = \left( \frac{Q}{K_v} \right)^2$$

$K_v = \text{m}^3/\text{h} @ \Delta P \text{ of } 1 \text{ bar}$   
 $Q = \text{m}^3/\text{h}$   
 $\Delta P = \text{bar}$



### Magnetic Register



Turbo-Bar-M Register

#### Output Type

Dry contact output

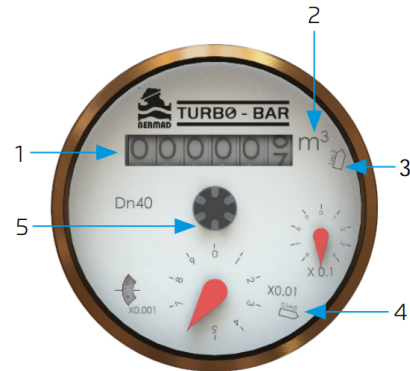
#### Output Cable Characteristic

| Wire  | Function   |
|-------|------------|
| Red   | Pulse Out  |
| Black | GND/COMMON |

#### Output Characteristic

|                         |                 |
|-------------------------|-----------------|
| Cable Length - supplied | 1.5 meter       |
| Maximum Cable Length    | 50 meter        |
| Maximum Applied Voltage | 24 AC/DC<br>Max |
| Switch Current          | 0.01 A max      |

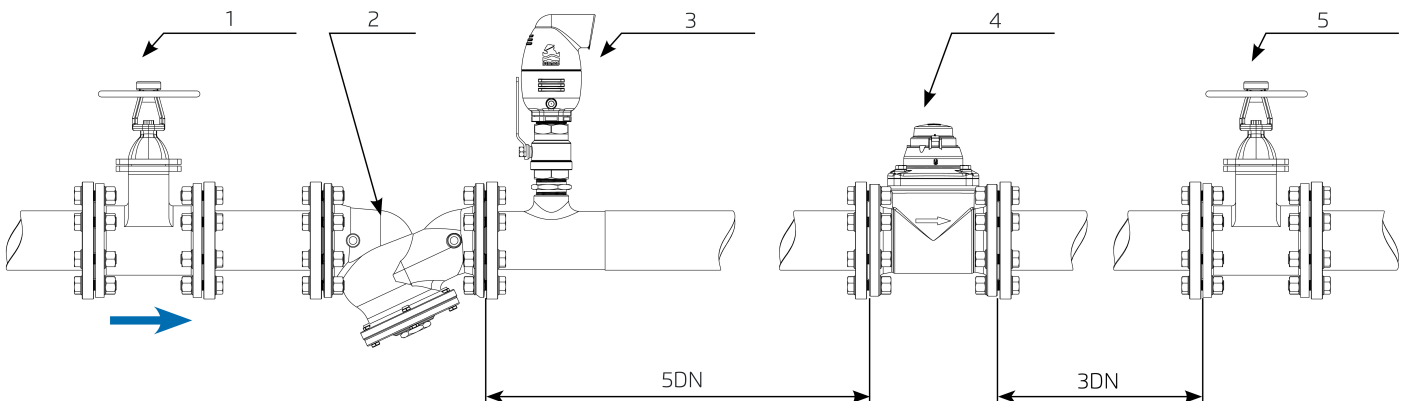
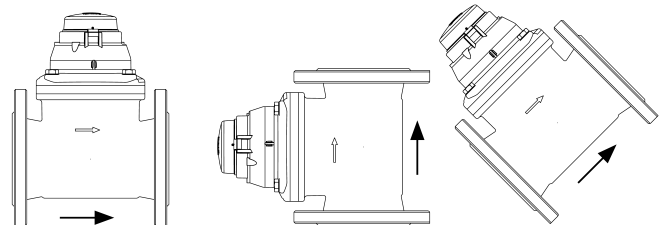
### Display



| Num | Description     |
|-----|-----------------|
| 1   | Volume          |
| 2   | Volume units    |
| 3   | Pulse output #1 |
| 4   | Pulse output #2 |
| 5   | Flow indicator  |

### Installation Recommendations

- The water meter can be installed in any orientation without interfering with metrological performance.
- The arrow on water meter body must be in the same direction with the flow.
- To avoid turbulence that may interfere with accurate measurement, it is recommended to have a length of straight pipe equal to 5 diameters upstream from the water meter.
- Prior to installation, flush the line to remove debris.
- The Turbo-Bar must be filled with water to operate.



[1] Isolation Valve

[2] Strainer

[3] Air Valve

[5DN] Unrestricted  
pipe, minimum  
5XDN

[4] Turbo-Bar

[5] Isolation Valve

[3DN] Unrestricted  
pipe, minimum  
3XDN