



TURBO-BAR WATER METER SERIES

Heavy duty and designed to handle high flow rates, the Turbo-Bar-E/M Magnetic Drive Water Meter with Electronic Register (Turbo-Bar-E) or Magnetic Register (Turbo-Bar-M), 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-E/M is a long-life product, easy to maintain at low cost.

Woltman Water Meter with Electronic Register

Turbo-Bar-E

Features and Benefits

- Digital display (LCD, 4-8 digits) of Flow Rate and Volume
- Electronically improves metering sensitivity
- Reduces reverse flow from accumulated volume
- Programmable Measuring units and Pulse rate
- Battery lifespan – 10 years
- Integrated two pulse outputs option
- Can easily upgrade any Standard meter
- Dry, IP68; NEMA 6P Sealed Register



Woltman Water Meter with Electronic Register

Turbo-Bar-M

Features and 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).



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APPROVED



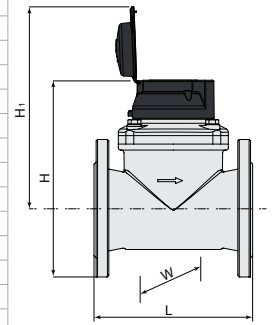
Turbo-Bar-E/M

Technical data

- **Body, Cover:** Ductile Iron
- **Coating:** Polyester Blue
- **End Connections - Flanged:** ISO PN16, ANSI Class 150
- **Pressure Rating:** ISO PN16
- **Operating Temperature:** water up to 50°C; 122°F

Dimensions and Weights

| | Unit | DN40 | DN50 | DN65 | DN80 | DN100 | DN125 | DN150 | DN200 | DN250 | DN300 | DN400 | DN500 |
|-----------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 1½" | 2"(*) | 2½" | 3" | 4" | 5" | 6" | 8" | 10" | 12" | 16" | 20" |
| L, length | mm | 260 | 200 | 200 | 225 | 250 | 250 | 300 | 350 | 450 | 500 | 500 | 500 |
| | inch | 10.24 | 12.20 | 7.87 | 8.86 | 9.84 | 9.84 | 11.81 | 13.78 | 17.72 | 19.69 | 19.69 | 19.69 |
| H, Height | mm | 268 | 252 | 262 | 272 | 281 | 295 | 343 | 370 | 489 | 511 | 646 | 742 |
| | inch | 10.55 | 9.72 | 10.31 | 10.71 | 11.06 | 11.61 | 13.50 | 14.57 | 19.25 | 20.12 | 25.43 | 29.21 |
| H1, Height | mm | 343 | 350 | 360 | 370 | 379 | 393 | 441 | 468 | 587 | 609 | 744 | 840 |
| | inch | 13.50 | 13.58 | 14.17 | 14.57 | 14.92 | 15.47 | 17.36 | 18.43 | 23.11 | 23.98 | 29.29 | 33.07 |
| h, Flange type | mm | 68 | 75 | 85 | 95 | 104 | 118 | 135 | 162 | 194 | 216 | 304 | 355 |
| | inch | 2.68 | 2.76 | 3.35 | 3.74 | 4.09 | 4.65 | 5.31 | 6.38 | 7.64 | 8.50 | 11.97 | 13.98 |
| h, Grooved type | mm | - | - | - | 56 | 60 | 71 | 95 | - | - | - | - | - |
| | inch | - | - | - | 2.20 | 2.36 | 2.80 | 3.74 | - | - | - | - | - |
| W, Flange type | mm | 160 | 170 | 190 | 200 | 230 | 250 | 285 | 340 | 395 | 445 | 600 | 700 |
| | inch | 6.30 | 6.30 | 7.48 | 7.87 | 9.06 | 9.84 | 11.22 | 13.39 | 15.55 | 17.52 | 23.62 | 27.56 |
| Weight | kg | 13 | 12 | 14 | 16 | 19 | 20 | 39 | 52 | 105 | 120 | 187 | 256 |
| | lbs | 28.7 | 26.5 | 0.6 | 0.6 | 0.7 | 0.8 | 1.5 | 2.0 | 4.1 | 4.7 | 7.4 | 10.1 |

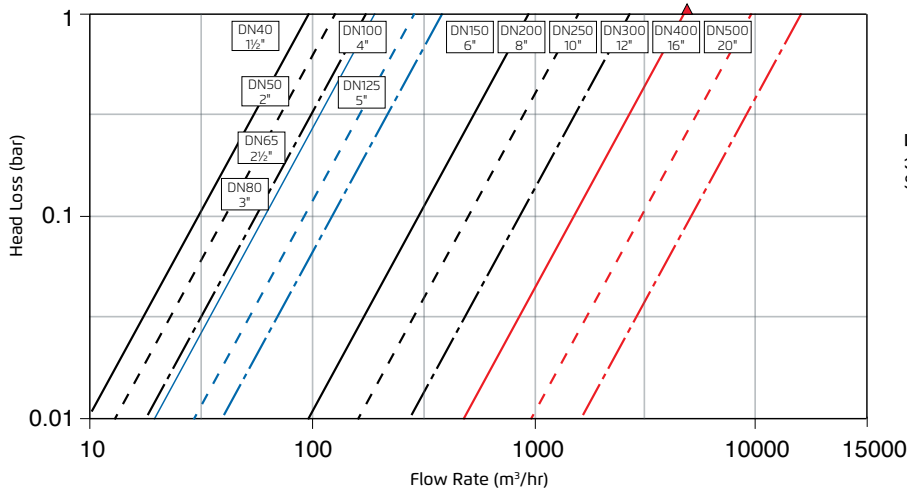


* 2" ANSI or BSTD have different dimensions comparing to DN50 ISO16

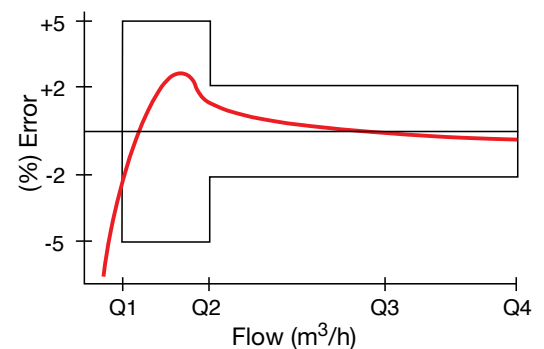
Metrological Data

| | Unit | DN40 | DN50 | DN65 | DN80 | DN100 | DN125 | DN150 | DN200 | DN250 | DN300 | DN400 | DN500 | |
|---|------|------------|------|------|------|-------|--------------|-------|-------|-------|-------|---------------|--------|--|
| | | 1½" | 2" | 2½" | 3" | 4" | 5" | 6" | 8" | 10" | 12" | 16" | 20" | |
| Qmin - Minimum flow | m³/h | 0.5 | 0.5 | 0.8 | 1.3 | 2 | 2 | 3.1 | 5 | 7.9 | 12.5 | 32 | 50 | |
| Accuracy ±5% | gpm | 2.2 | 2.2 | 3.5 | 5.7 | 8.8 | 8.8 | 13.6 | 22.0 | 34.8 | 55.0 | 141 | 220 | |
| Qt - Transitional flow | m³/h | 0.8 | 0.8 | 1.3 | 2 | 2 | 3.2 | 5 | 8 | 12.6 | 20 | 51 | 80 | |
| Accuracy ±2% | gpm | 3.5 | 3.5 | 5.7 | 8.8 | 8.8 | 14.1 | 22.0 | 35.2 | 55.5 | 88.1 | 224.5 | 352.2 | |
| Qn - Permanent flow, Accuracy ±2% | m³/h | 25 | 40 | 63 | 63 | 100 | 160 | 250 | 400 | 630 | 1,000 | 1,600 | 2,500 | |
| | gpm | 110 | 176 | 277 | 277 | 440 | 704 | 1,101 | 1,761 | 2,774 | 4,403 | 7,045 | 11,007 | |
| Qmax - Peak flow, short time Accuracy ±2% | m³/h | 31 | 50 | 79 | 79 | 125 | 200 | 313 | 500 | 788 | 1,250 | 2,000 | 3,125 | |
| | gpm | 136 | 220 | 348 | 348 | 550 | 881 | 1,378 | 2,201 | 3,469 | 5,504 | 8,806 | 13,759 | |
| Qt/Qmin | --- | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | |
| Qn/Qmin | --- | 50 | 80 | 80 | 50 | 50 | 80 | 80 | 80 | 80 | 80 | 50 | 50 | |
| Kv, CV =Q/Δp | m³/h | 95 | 125 | 170 | 190 | 280 | 380 | 950 | 1,580 | 2,688 | 4,700 | 9,500 | 15,000 | |
| | gpm | 110 | 144 | 196 | 219 | 323 | 439 | 1,097 | 1,825 | 3,105 | 5,429 | 10,973 | 17,325 | |
| Min reading unit | --- | 1 | | | | | 10 | | | | | 100 | | |
| Max register capacity | --- | 99,999.999 | | | | | - 999,999.99 | | | | | - 9,999,999.9 | | |

Flow Curve



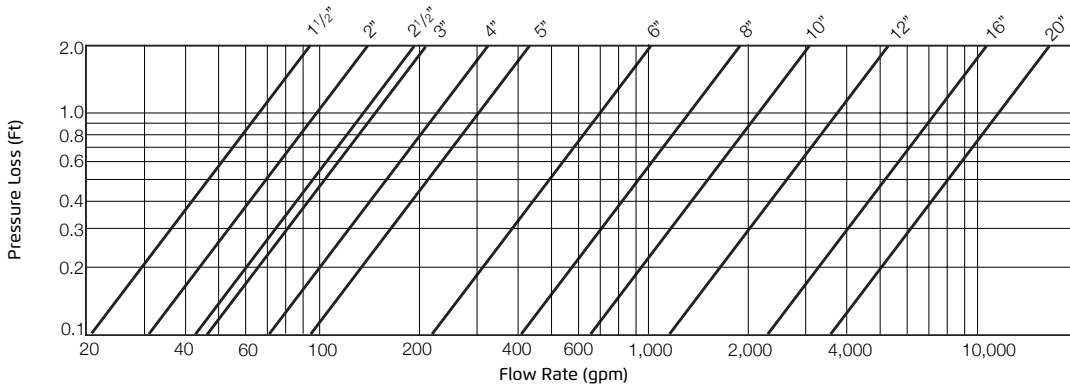
Accuracy Curve





Turbo-Bar-E/M

Flow Curve



Data Output Options

Water system management requires reliable data acquisition. BERMAD Turbo-Bar-E/M provides accurate data meeting all common pulse output specifications.

Electronic register

Output Type

Programmable open collector pulse output Data

Cable Characteristics

| | Wire | Function |
|--------------|-------|-------------|
| Output Cable | White | Pulse Out 1 |
| | Red | Pulse Out 2 |
| | Black | GND/COMMON |

Output Characteristics

| | | |
|-------------------------|-----|-------|
| Cable Length - supplied | 1.5 | meter |
| Maximum Cable Length | 50 | meter |
| Maximum Applied Voltage | 35 | Vdc |



Turbo-Bar-E Register

Magnetic register

Output Type

Dry contact output

Cable Characteristics

| | Wire | Function |
|--------------|-------|-------------|
| Output Cable | Red | Pulse Out 2 |
| | Black | GND/COMMON |

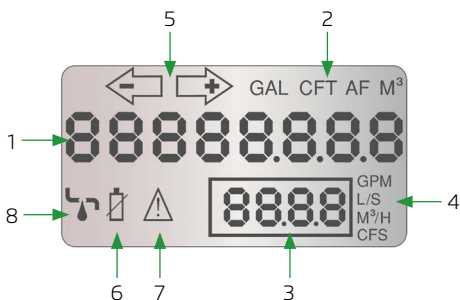
Output Characteristics

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



Turbo-Bar-M Register

E-Register Display



Applicable Icons

1. Volume
2. Volume units
3. Flow Rate
4. Flow Rate units
5. Volume direction
6. Battery level indication
7. General warning
8. Leakage alert



Turbo-Bar-E/M

Pulse Output Option - Electronic Register

Cubic meter Pulse Output Electronic transmission

| Model | Size | | Dry contact Reed Switch | | | | | Dual pulse output |
|-------------|---------|---------|-------------------------|-----------|--------------------|-------------------|--------------------|-------------------|
| | | | 1 Pulse for Each | | | | | |
| | In | mm | 10 liter * | 100 liter | 1.0 M ³ | 10 m ³ | 100 m ³ | |
| Turbo-BAR-E | 1½"-2½" | 40-65 | S4 | S3 | S2 | | | S34,S23 |
| | 3"-10" | 80-250 | | S3 | S2 | S1 | | S23, S12 |
| | 12"-20" | 300-500 | | | S2 | S1 | S8 | S12, S81 |

* 10 liter pulse works fine up to 360 m³/h

Gallon Pulse Output Electronic transmission

| Model | Size | | Dry contact Reed Switch | | | | | Dual pulse output |
|-------------|---------|---------|-------------------------|--------|---------|-----------|------------|-------------------|
| | | | 1 Pulse for Each | | | | | |
| | In | mm | 1 gal | 10 gal | 100 gal | 1,000 gal | 10,000 gal | |
| Turbo-BAR-E | 1½"-2½" | 40-65 | S4 | S3 | S2 | | | S34,S23 |
| | 3"-5" | 80-125 | | S3 | S2 | S1 | | S23, S12 |
| | 6"-20" | 150-500 | | | S2 | S1 | S8 | S12, S81 |

Pulse Output Option - Magnetic Register

Cubic meter Pulse Output Magnetic transmission

| Models | Size | | Dry contact Reed Switch | | | | Dual pulse output |
|-------------|---------|---------|-------------------------|------------------|-------------------|--------------------|-------------------|
| | | | 1 Pulse for Each | | | | |
| | In | mm | 100 liter | 1 m ³ | 10 m ³ | 100 m ³ | |
| Turbo-BAR-M | 1½"-5" | 40-125 | S3 | S2 | | | S23 |
| | 6"-8" | 150-200 | | S2 | S1 | | S12 |
| | 10"-20" | 250-500 | | | S1 | S8 | S81 |

Gallon Pulse Output Magnetic transmission

| Model | Size | | Dry contact Reed Switch | | | | Dual pulse output |
|-------------|---------|---------|-------------------------|---------|-----------|------------|-------------------|
| | | | 1 Pulse for Each | | | | |
| | In | mm | 10 gal | 100 gal | 1,000 gal | 10,000 gal | |
| Turbo-BAR-M | 1½"-5" | 40-125 | S3 | S2 | | | S23 |
| | 6"-8" | 150-200 | | S2 | S1 | | S12 |
| | 10"-20" | 250-500 | | | S1 | S8 | S81 |

Installation Recommendation

- 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-E/M must be filled with water to operate.

