

# SOLENOID CONTROLLED HYDROMETER

## Model IR-910-M0-3W-KX

The BERMAD Hydrometer with solenoid control combines a turbine Woltman-type water meter and a hydraulically operated, diaphragm-actuated control valve. It functions as both a mainline flow meter and a solenoid-operated valve, opening and closing in response to an electric command from a control system. The Hydrometer features a magnetically coupled, vacuum-sealed register for precise volume measurement. An optional pulse output enhances system capabilities.



- [1] BERMAD IR-910-M0-3W-KX On/Off hydrometers are controlled and transmit flow data by one Omega controller.
- [2] Combination Air Valve Model C10
- [3] Pressure Reducing Valve Model IR-420-55-KX
- [4] Smart Irrigation Controller-OMEGA
- [5] Kinetic Air Valve Model K10

### Features & Benefits

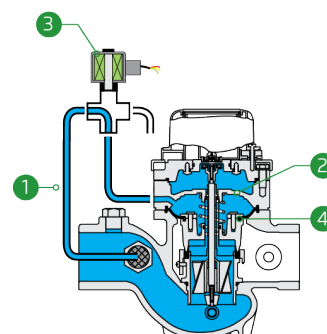
- Integrated "All-in-One" Control Valve & Flow Meter
  - Saves space, cost and maintenance
- Hydraulic Hydrometer with Solenoid Control
  - Line pressure driven
  - Electrically controlled On/Off
- Magnetic Drive with Vacuum-Sealed Register
  - Water-free gear train mechanism
  - Reed-switch tension free pulse output
  - Various pulse combinations
- Internal Inlet & Outlet Flow Straighteners
  - Saves on straightening distances
  - Maintains accuracy
- Integrated Flow Metering Calibration Device
  - Precise measurement

### Typical Applications

- Automated Irrigation Systems
- Remote and/or Elevated Systems
- Remote Flow Data Read-Out
- Flow Monitoring & Leakage Control

### Operation:

Line pressure [1] is applied to the Control Chamber [2] through the 3-Way Normally Open Solenoid [3], generating a hydraulic force that moves the Diaphragm Assembly [4] to the closed position. When the solenoid is electrically activated, it switches to release pressure from the control chamber, allowing the Hydrometer to open and measure flow. The solenoid also features a manual override for opening and closing.





### Technical Data

#### Pressure Rating:

10 bar

#### Operating Pressure Range:

0.5-10 bar

#### Materials

**Body & Cover:** Ductile Iron

**Diaphragm:** NR, Nylon fabric reinforced

**Seals:** NR, Nylon fabric reinforced

**Spring:** Stainless Steel

**Internals:** Stainless Steel & Plastic Reinforced Nylon

**Impeller:** Polypropylene

**Pivots and Bearings:**

Polypropylene

*\*Other materials are available on request*

#### Control Loop Accessories

##### Tubing and Fittings:

Polyethylene and Polypropylene

##### AC solenoid:

S-390-T-3W

##### DC latch solenoid:

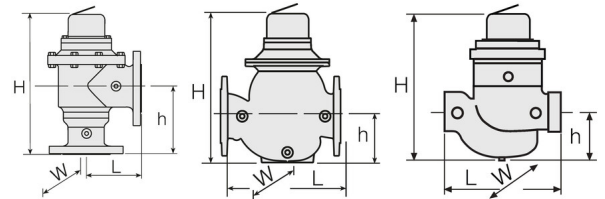
S-392-T-3W P.B

S-982-3W P.B.

*\*For other solenoids please consult [BERMAD](#)*

### Technical Specifications

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



| Size        | Pattern   | End Connection | Weight (Kg) | L (mm) | H (mm) | h (mm) | W   | CCDV (Lit) | KV  |
|-------------|-----------|----------------|-------------|--------|--------|--------|-----|------------|-----|
| 1½" ; DN40  | Globe     | Threaded       | 7.2         | 250    | 270    | 95     | 143 | 0.16       | 41  |
| 2" ; DN50   | Globe     | Threaded       | 7.3         | 250    | 277    | 95     | 143 | 0.16       | 46  |
| 2" ; DN50   | Angle 90° | Threaded       | 8.1         | 120    | 353    | 155    | 143 | 0.16       | 51  |
| 3"R ; DN80R | Globe     | Threaded       | 7.3         | 250    | 277    | 79     | 143 | 0.16       | 50  |
| 3"R ; DN80R | Globe     | Flanged        | 16          | 310    | 298    | 100    | 200 | 0.16       | 50  |
| 3" ; DN80   | Globe     | Flanged        | 23          | 300    | 382    | 123    | 210 | 0.49       | 115 |
| 3" ; DN80   | Angle 90° | Flanged        | 25.8        | 150    | 402    | 196    | 210 | 0.49       | 126 |
| 4" ; DN100  | Globe     | Flanged        | 31          | 350    | 447    | 137    | 250 | 1          | 147 |
| 4" ; DN100  | Angle 90° | Flanged        | 36.1        | 180    | 481    | 225    | 250 | 1          | 180 |

CCDV = Control Chamber Displacement Volume • **Threaded** = BSP & NPT are available.

• Extra length for male Threaded: 1½" Globe= 67(mm) ; 2" Globe & Angle= 77(mm)

### Flow Properties

| Size                         | Accuracy | DN40 | DN50 | DN80R | DN80 | DN100 |
|------------------------------|----------|------|------|-------|------|-------|
| Q @ (m³/h)                   |          | 1½"  | 2"   | 3"R   | 3"   | 4"    |
| Q1 Minimum Flow              | ±5%      | 0.8  | 0.8  | 1.2   | 1.2  | 1.8   |
| Q2 Transitional Flow         | ±2%      | 1.3  | 1.3  | 3     | 3    | 4.5   |
| Q3 Permanent Flow            | ±2%      | 25   | 40   | 100   | 100  | 160   |
| Q4 Maximum Flow (Short Time) | ±2%      | 31   | 50   | 125   | 125  | 200   |

\*ISO 4604

### Pulse Option

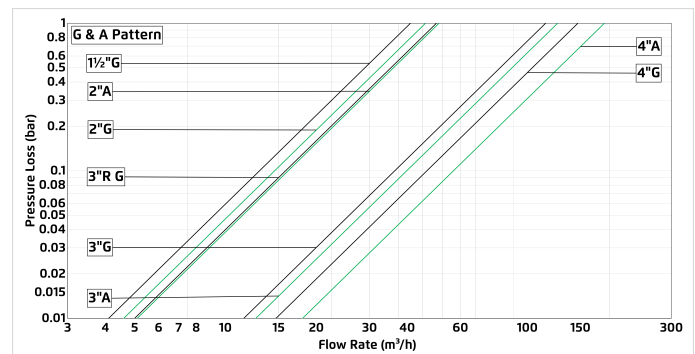
| Register Type     | Reed Switch - Single |      |     |      | Reed Switch - Combined |          |     |      | Electronic    |      |     |      |
|-------------------|----------------------|------|-----|------|------------------------|----------|-----|------|---------------|------|-----|------|
| Size              | One pulse per        |      |     |      | One pulse per          |          |     |      | One pulse per |      |     |      |
|                   | 10L                  | 100L | 1m³ | 10m³ | 10L+100L               | 1m³+10m³ | 10L | 100L | 1m³           | 10m³ | 10L | 100L |
| 1½"-4" ; DN40-100 | ✓                    | ✓    |     |      | ✓                      |          | ✓   | ✓    | ✓             |      | ✓   | ✓    |

- 10L pulse (only available with electronic register) suitable for flows up to 180 m³/h.
- Two parallel pulses are transmitted. other pulse rates are available on request.

### Additional Features

| Code | Description                                    |
|------|------------------------------------------------|
| Z    | Manual Selector                                |
| ME   | Electronic register (upgrade kit is available) |

### Flow Chart



### Differential Pressure & Flow Calculation

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

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