

FLOW CONTROL HYDROMETER, HYDRAULIC CONTROLLED

Model IR-970-M0-50-2W-RVZ

The BERMAD flow control Hydrometer with hydraulic remote control and manual selector combines a Woltman-type turbine water meter with a hydraulically operated, diaphragm-actuated control valve. Functioning as both a mainline flow meter and a flow control valve, it operates in response to a remote pressure command, limiting the demand to a preset max. It features a vacuum-sealed register for precise volume measurement. An optional pulse output is available to further enhance system capabilities. The Hydrometer can be closed locally.



[1] BERMAD Model IR-970-M0-50-2W-RVZ opens upon pressure drop command, limiting fill-up rate and consumer over demand.

Operation:

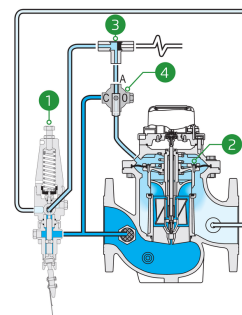
The Paddle Flow Control Pilot (FCP) **[1]** hydraulically connects to the Control Chamber **[2]** through the Shuttle Valve **[3]** and the Manual Selector **[4]**. Switching Manual Selector to AUTO enables Remote Command. When Remote Command is vented, the FCP throttles the Hydrometer closed if demand exceeds setpoint and to modulate open if demand drops. Upon pressure rise command, the Shuttle Valve switches, pressurizing the control chamber and closing the Hydrometer. Switching the Manual Selector to CLOSE, overrides the Remote Command and shuts the Hydrometer.

Features & Benefits

- Integrated "All-in-One" Control Valve & Flow Meter
 - Saves space, cost and maintenance
- Line Pressure Driven, Hydraulically Controlled On/Off
 - Limits fill-up rate and consumer excessive demand
- 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
 - Negligible head loss
 - Precise measurement
- Paddle-Type Hydro-Mechanical Flow Pilot
 - Wide setting range
- User-Friendly Design
 - Easy flow setting
 - Simple in-line inspection and service

Typical Applications

- Automated Irrigation Systems
- Flow Monitoring & Leakage Control
- Multiple Independent Consumer Systems
- Line Fill-Up Control
- Irrigation Machines
- Filter Stations





Technical Data

Pressure Rating:

16 bar

Operating Pressure Range:

0.5-16 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

FC Pilot: PC-70-MP

Flow Pilot spring range:

Spring: E-Purple

Flow Velocity (m/sec): 1.5-3.5

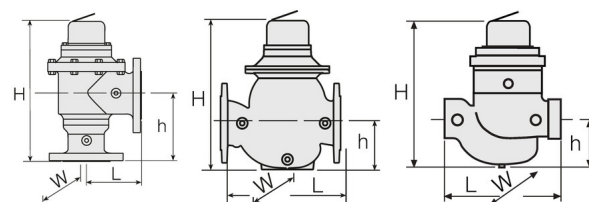
Tubing and Fittings:

Reinforced Nylon and Brass

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
6" ; DN150	Globe	Flanged	71	500	602	216	380	3.8	430
6" ; DN150	Angle 90°	Flanged	76.7	250	585	306	380	3.8	473
8" ; DN200	Globe	Flanged	93	600	617	228	380	3.8	550
8" ; DN200	Angle 90°	Flanged	82.5	250	585	280	380	3.8	605

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	DN150	DN200
Q @ (m³/h)		1½"	2"	3"R	3"	4"	6"	8"
Q1 Minimum Flow	±5%	0.8	0.8	1.2	1.2	1.8	4	6.3
Q2 Transitional Flow	±2%	1.3	1.3	3	3	4.5	10	15.8
Q3 Permanent Flow	±2%	25	40	100	100	160	250	400
Q4 Maximum Flow (Short Time)	±2%	31	50	125	125	200	313	500

*ISO 4604

Pulse Option

Register Type	Reed Switch - Single				Reed Switch - Combined				Electronic			
	One pulse per				One pulse per				One pulse per			
Size	10L	100L	1m³	10m³	10L+100L	1m³+10m³	10L	100L	1m³	10m³	10L	100L
1½"-4" ; DN40-100		✓	✓		✓		✓	✓	✓		✓	✓
6"-10" ; DN150-250			✓	✓		✓		✓	✓		✓	✓

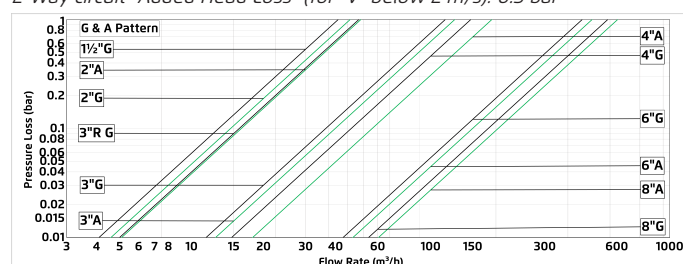
- 10L pulse (only available with electronic register) suitable for flows up to 180 m³/h.
- Two parallel pulses are transmitted. other pulse rates are available on request.

Additional Features

Code	Description
ME	Electronic register (upgrade kit is available)

Flow Chart

2-Way circuit "Added Head Loss" (for "V" below 2 m/s): 0.3 bar



Differential Pressure & Flow Calculation

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

$K_v = m^3/h$ @ ΔP of 1 bar

$Q = m^3/h$

$\Delta P = \text{bar}$