

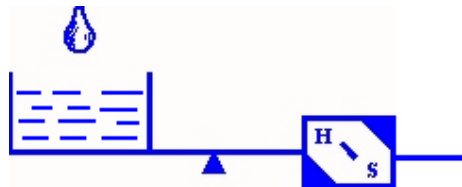


## *PVD100* Point Velocity Display



**Robust Construction &  
Adjustable Neck Strap**

- Direct Velocity Reading
- Digitally processes and 'cleans' signals from Catwhisker and Magnetic Head Meters
- Operates with two 'AA' batteries
- Works in high conductivity water( > 50,000 $\mu$ Siemens)
- Self contained unit with 2 x 8 character LCD display showing total meter counts and elapsed time
- RS232 Communication Interface (Bluetooth optional)
- Also operates with any Palm, PocketPC, or Field Computer.
- Uses simple single character commands for operating modes and setting
- Signal Driver for AquaCalc(s), Sutron DMX and Hydrological Services CMC Series Meter Counters
- Fully compatible with USGS QCALC Discharge Measurement Software
- Fully self calibrating
- 'Self Test' for Serial Interface setup
- Can be used to adjust Current Meter contacts (measures meter 'Dwell Angle')
- Can display and produce 'Spin Test' record
- Selectable 10 second to 90 second fixed measuring intervals; default is 40 seconds
- 'Starts' and 'Ends' measurement on a meter contact closure
- Total Counts to 999, Total Time to 999.9 seconds
- Range of Measurement from < 0.05 ft/sec to > 50 ft/sec (magnetic head meters)
- Continuous measuring mode (no time limit)
- Low battery indication
- Automatically indicates fault conditions



**HYDROLOGICAL SERVICES PTY LTD**

Design, Development & Manufacturing of Scientific Instruments & Equipment for Water Level, Water Flow & Meteorology



## DESCRIPTION:

The Hydrological Services Point Velocity Display (PVD100) is a small electronic device used to "clean" the signal from a mechanically rotating current meter such as a Price AA or Pygmy meter and directly reads the velocity on the LCD as well as interfacing to a PDA for computation of velocity and discharge. Meters using a cat whisker head and ball and wire contact to perform a mechanical switch closure can be used with the PVD100 to produce a clean, noise-free signal. Whenever the PVD100 is connected to a hand-held computer and the current meter bucket wheel completes a contact closure, the PVD100 can simultaneously produce four responses:

- 1) Sounds a buzzer tone;
- 2) Emits a flash from an LED indicator on the front panel,
- 3) Updates the LCD count and timer, and
- 4) Transmits a serial data value at 1-second intervals representing the number of contact closures and elapsed time through the serial interface.

The PVD100 uses two AA batteries for operation and is connected between the current meter and the hand-held computer using either a connecting lead or an optional Bluetooth wireless interface. A program running in the hand-held computer sends commands to the PVD100 to perform a measurement.

The most important operating features of the PVD100 are as follows:

- 1- Direct Velocity Reading
- 2- User Serial Interface Program for entering 2 current meters with up to 3 rating equations for each current meter.
- 3- The ability to signal process each contact closure from any type of meter. For cat whisker contacts, this becomes extremely important since cat whisker contacts offer the poorest quality for marking and counting rotations.
- 4- The PVD100 offers (2) modes of operation, i.e. NORMAL and SLOW speed mode. NORMAL is selected for meter rotations >0.25 ft/sec while SLOW mode is for velocities below 0.25ft/sec. To improve noise rejection, the sample rate of the input signal at the SLOW speed mode (lower velocities) is 1/10 of the sampling rate that occurs during NORMAL mode.
- 5- The ability to detect faulty connections from the meter through the wading rod to connected PVD100. During power up of the PVD100, a calibration of the input signal is performed.
- 6- The ability to detect a signal short during a measurement. If such a condition is detected, the "" symbol is displayed until the fault condition is removed.

## SPECIFICATIONS:

Bluetooth            Class 2 / Output power 2.5mW (4dBm)  
Compliant Bluetooth Spec V1.1  
Up to 30ft (10m) range (operating at 2.4GHz)

Communications    RS232 Port (Tx, Rx) @ 19200 baud 8/N/1

Indicators	8 character x 2 line LCD, 1 x Orange LED, 1 x Red/Green/Blue LED
Power Source	2 x Internal AA alkaline 1.5V batteries Low battery indication 2.8V
Dimensions Weight	90mm x 120mm x 55mm (L x W x D) 218 grams (with batteries)
Environmental	-20°C to + 70°C, Non Condensing (Splashproof – IP65 rating)

**Table 1: Water Velocity Flow (absolute maximum)**

Mode	Meter Type	Velocity
Normal	Price AA meter	- Mag 45 ft/s (13.7m/s) @ 99° to 204° dwell - CatW 22 ft/s (6.7m/s) @ 10° to 62° dwell
Normal	Pygmy meter	- CatW 9.4ft/s (2.8m/s) @ 10o to 62° dwell
Slow	Price AA meter	- Mag 2.5ft/s (0.76m/s) @ 54o to 265° dwell - CatW 2 ft/s (0.61m/s) @ 17° to 70° dwell (2-cup width) 1.1ft/s (0.33m/s) @ 120o dwell
Slow	Pygmy meter	- CatW 0.9ft/s (0.27m/s) @ 17° to 70° dwell (2-cup width) 0.5ft/s (0.15m/s) @ 120° dwell

**Table 2: Water Velocity Flow (absolute minimum)  
– before setting fault detection (1)**

Mode	Meter Type	Velocity
Normal	Price AA meter	- Mag 0.14ft/s(0.04m/s) @ 15° to 210° dwell - CatW 0.1 ft/s (0.03m/s) @ 10° to 90° dwell
Normal	Pygmy meter	- CatW 9.4ft/s (2.8m/s) @ 10o to 62° dwell - CatW 0.06ft/s(0.018m/s)@ 10° to 90° dwell
Slow	Price AA meter	- Mag 0.04ft/s(0.012m/s)@ 10° to 340° dwell - CatW 0.07ft/s(0.021m/s)@ 10° to 170° dwell
Slow	Pygmy meter	- CatW 0.04ft/s(0.012m/s)@ 10° to 90° dwell (2-cup width) 0.5ft/s (0.15m/s) @ 120° dwell

Maximum Conductivity > 50,000 µSiemens (max velocity ranges must be derated 20%)

### Contact time to Fault Detection (absolute maximum)

(Normal Mode)	Magnetic Head Contact	11 Secs
	Cat Whisker Head Contact	7 Secs
(Slow speed Mode)	Magnetic Head Contact	30 Secs
	Cat Whisker Head Contact	20 Secs

Minimum dwell angle for Cat Whisker Head 10°

Signal Output driver pulse (FET open drain O/P) (Fixed width)  
Normal mode: 100mS, active high to low pulse  
Slow mode: 1 Sec, active high to low pulse

**Note:**  
**Specifications are subject to change at anytime without notice.**

## HYDROLOGICAL SERVICES PTY.LTD.

48-50 SCRIVENER STREET, WARWICK FARM, 2170 SYDNEY, AUSTRALIA.  
A.B.N. 37 000 732 954  
PO Box 332 Liverpool BC 1871  
PH: 02 9601 2022 (INT.612 9601 2022)  
FAX: 02 9602 6971 (INT.612 9602 6971)  
Email: sales@hydrologicalservices.com  
Website: www. hydrologicalservices.com

## Distributed By: