Tech Spec

# PT5002 Flow Monitor/ Transmitter

The PT5002 Flow Monitor/Transmitter is a state-of-the-art instrument that translates flow sensor and anemometer wind speed data to display instantaneous and total flow or windspeed in multiple formats and transmits data to Maxicom and SiteControl Central Control Systems.

## Operation

Input signals, in the form of sine waves or pulses from open collector transistors or dry contact closures, can be scaled to any unit of measure for totalization and instantaneous rate-of-flow indication. Flow rate and flow total are examples of parameters that can be viewed on the panel display or through a communications protocol such as BacNET.

Additionally, dedicated analog or frequency output channels provide scaled outputs that are assignable to parameters such as flow rate and flow total. A user defined damping function can be applied for improved stability of the flow readings.

## Features

- Large, backlit graphical display enhances viewing capabilities, near and far from the monitor
- Dynamic menu selection and programming reduces potential programming errors
- Integrated softkeys and numeric keypad promotes intuitive navigation and programming
- Raw and calculated flow data display with relay, output, and digital I/O status
- 10-point linearization electronically corrects for variance in K-factor over the flow meter's usable range
- User-programmable relay configuration enables alarms or totalizing flow rate output
- Non-volatile memory preserves all configured settings and totalization values during power failure
- Ability to restore to factory programmed settings

## Programming

- Pre-programmed Rain Bird Flow Sensor K-factor and Offset parameters provide accurate and fast programming
- Remote reset option for relay and/or flow totals through 6 digital I/O ports
- Fully configurable scaled outputs that can be assigned to flow rates or totals
- Fully configurable relays that can be assigned to rates or totals as totalizing output or alarm indication
- Form C and Form A relays can enable/disable latching solenoids and pump start relays
- Select from a list of standardized units of measure or customize with labels and quantity assignments.
- User defined passcodes to manage advanced configuration parameters and reset functions

## Power Supply

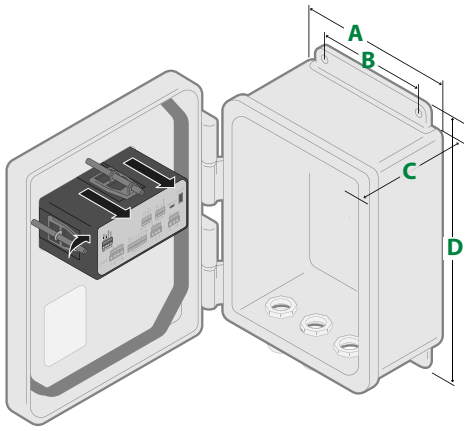
- Input range: 10 to 40V DC and 9 to 28V AC RMS (50 to 60 Hz)
- Maximum power consumption: 8 watts (power supply must provide 8 watts at minimum)
- Isolated from power ground
- Over-voltage, transient protected and reverser polarity protected

## Weights (Approx.)

- Panel Mount: 1.25 lb (0.57 kg)
- Wall Mount (Including Unit): 4.54 lb (2.06 kg)

## Wall Mount Dimensions

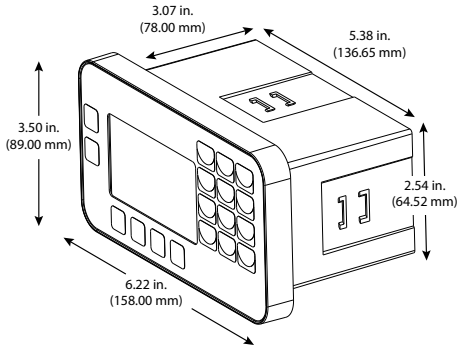
| | | |
|---|---|---|
| A | Width | 8.00 in. (203.20 mm) |
| B | Distance between mounting holes | 6.00 in. (152.40 mm) |
| C | Total depth | 4.88 in. (123.95 mm) |
| D | Height | 9.38 in. (238.25 mm) |




## Panel Mount Dimensions

Mounting clips can accommodate a maximum panel thickness of 1.5 in. (3.8 mm)

**Panel Cutout:**
5.40in (137.16mm) W x 2.65in (67.31mm) H




## Flow Meter Input

- Input Range: 0.3 Hz to 10 kHz
- One (1) or two (2) independent channels
- Configurable as square wave 0 to 30V pulse with 2.5V threshold
- Configurable as sine wave, zero-centered with 45 mV threshold
- Configurable debounce
- Excitation Output: 12V DC source
- Voltage:
  - Low: -3 to 1.85V DC
  - High: 2.5 to 25V DC
- Impedance: Pullup to 12V DC
- VDC Current: ±50 mA, short circuit current
- Response: 100 µs/3.5 ms min pulse (high/low speed)

## How to Specify

| Model | PT5002 PM | PT5002 WM |
|---|---|---|
| Product ID | M80208 | M80210 |
| Description | PT5002 FLOW MONITOR PANEL MOUNT | PT5002 FLOW MONITOR WALL MOUNT |
| Included in Kit | PT5002 Monitor<br>Mounting Hardware<br>Power Supply<br>User Manual | PT5002 Monitor<br>NEMA enclosure<br>Mounting Hardware<br>Power Supply<br>User Manual |

## Scaled Outputs

- Two (2) independent channels
- Isolated from power ground
- Over-voltage, transient and reverse polarity protected
- Output is on the process out pins

## Analog Output

- Configurable to 0 to 5V, 0 to 10V, or 4 to 20 mA
- Uncertainty: ±0.01% of reading
- 16-bit resolution (0 to 10V and 4 to 20 mA), 15-bit resolution (0 to 5V)
- 200 ms, 90 to 10% step response
- Sourcing analog output signal

## Digital I/O

- Six (6) independent channels
- Isolated from power ground
- Over-voltage, transient and reverse polarity protected
- 0 to 30V as input
- Debounce
- 0 to 5V, TTL 200 ms, 90 to 10% step response, driving < 0.1 uF

## Calculations

- Flow Calculation
  - ± 0.01% Uncertainty
  - Adjustable FIR/IIR filtering

## Relay Outputs

- Isolated coil drivers
- Over-voltage, transient and reverse polarity protected
- Form C Relay
  - Load: Resistive
  - Rated Carry Current: 5 A (N.C. or N.O.)
  - Maximum Switching Voltage: 250V AC, 30V DC
  - Minimum Permissible Load: 10 mA at 5V DC
  - Coil Rating: 5 to 24V DC
  - Life Expectancy: 5,000,000 operations
- Form A Relay (N.O. SPST)
  - Switching Speed: On (0.25 ms), Off (0.02 ms)
  - Current Rating ($1_o$): 1 A
  - Maximum Output Voltage ($V_o$): 60V
  - Output On-Resistance ($R_{(ON)}$): 0.5 Ohms (Ω) @ $I_F$ =5 mA, $1_o$ = 1 A
  - Output Withstand ($V_{O(OFF)}$): 60 to 65V @ $V_F$= 0.8V, $I_O$ = 250 µA, $T_A$ =77° F (25° C)

## Network Communications

- Network Types/Communication Protocols: BACnet
- Physical Layer: EIA-485 (RS-485)
- Baud Rates: 1200 to 115.2K
- Two-wire (half-duplex)
- Over-voltage/ESD Protection
- Isolated from power ground

## USB Communications

- USB (HOST): Type-A Receptacle, Currently not supported
- USB (DEVICE): Mini-B Receptacle (used for field updates)
- Over-voltage/ESD/transient protected

## Display/User interface

- Keypad: Membrane overlay, domed tactile response keys
- Display: 128 x 64 pixel LCD graphical display, LED backlit
- Protected from EMI/RFI
- Keypad interface is protected from ESD

## Environmental Ratings

- Pollution Degree: 2
- Altitude Restriction: Up to 2000 m (6561 ft)
- Over-Voltage Rating: Category II (CAT II)
- Ambient Temperature Range: 32 to 130° F (0 to 55° C)
- Storage Temperature Range: -40 to 160°F (-40 to 70°C)
- Humidity: 0 to 85%, non-condensing

## Operator Functions

- Unlatch Relays, Reset Totalizers, Unlatch Relays and Reset Totalizers

## Parameters

- Maximum Displayed Digits
  - Rates: Max 8 (7 with decimal)
  - Totals: Max 9 (8 with decimal)
- Resolution/Display Precision: Configurable, 0 to 4
- Volumetric Flow Rate Units: Seconds (S), Minute (MIN), Hour (H), Day (D)
  - US Gallons (US GAL), Cubic Meters ($M^3$), Liters (L) Custom (user-specified)
- Volumetric Flow Total Units:
  - US Gallons (US GAL), Cubic Meters ($M^3$), Liters (L) Custom (user-specified

## Specifications

The flow monitor shall be a microprocessor-based digital unit capable of calculating and displaying both rate of flow and total flow on a two line by sixteen character alpha-numeric LCD. The flow monitor shall accept digital inputs or optional sine wave or analog signal and may be field configured to display rate and total values in any unit of measure. All data shall be entered via keys mounted on the front panel. The monitor shall feature a software lock to protect the entered data from unauthorized changes.

A nonvolatile memory, requiring no battery backup shall protect the data from electronic losses.

The Model PT5002 shall conform to DIN standard dimensions for panel mounting, and shall feature a NEMA 4X rated front panel, in a NEMA 4 wall mount cabinet. Monitor shall operate on power of 12-24 VAC/VDC. The flow monitor shall feature standard open collector transistor outputs, one based on rate and one based on total. Set points or time delays for rate, scaling or pulse width for total may be configured in the field.

Options shall include analog inputs, analog output, or control relays, all programmable from the keypad.

The flow monitor shall be Rain Bird Model PT5002.

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