Impeller Meters	Series 1500 Flow Monitor	Technical Brief

GENERAL

The Badger Meter Series 1500 Flow Monitor is an economical, full featured, digital flow monitor.

The two line x8 character alphanumeric display can be configured by the user to display flow rate and flow total separately or simultaneously.

The panel meter has a NEMA 4X rated front panel and conforms to DIN standard dimensions, 96 mm X 96 mm, for meter sizes and panel cutouts. Versions of the Series 1500 are also available in NEMA 4 wall mount or sensor mount configurations.

Like all Badger Meter flow monitors, the Series 1500 may be field calibrated by the user. Badger Meter sensors are calibrated by entering K and Offset numbers, while other pulse or frequency output sensors may only use a K factor. The Series 1500 accepts pulse, sine wave, or an optional 4-20 mA analog input signal.

PROGRAMMING

Programming is menu driven. All data is entered using the LCD/keypad interface. A password gate is included to prevent unauthorized access to system parameters. Programming flexibility is extended to units of measure. Series 1500 software contains eight flow rate and four total flow units of measure. There is also a provision for adding custom units for rate and total.

The Series 1500 provides two pulse outputs to interface with external data collection devices that accept electronic pulses. One is a function of flow rate, the other flow total. The resolution of this Transistor to Transistor Logic (TTL) compatible signal may be programmed via the user interface.

Two LEDs are located on the front panel. One is an indication of power. The other is programmed to represent impeller status, totalizer status, or alarm status.

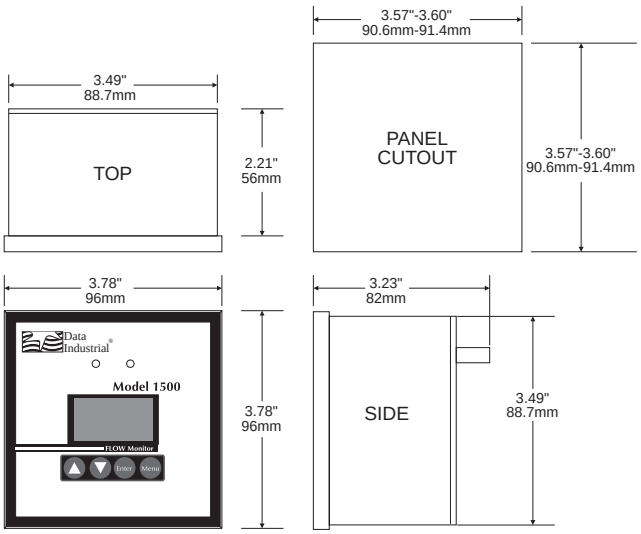
All calibration information, units of measure and flow totals are stored in a non-volatile memory that does not require battery backup for data retention.

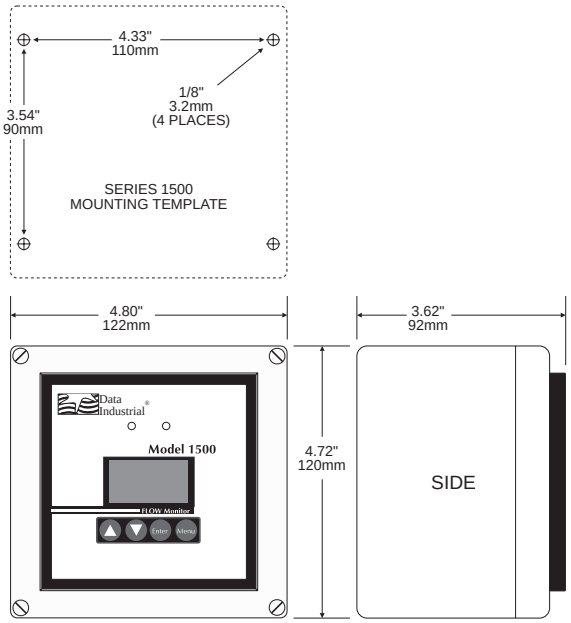
OPTIONS

· **Control Relays -** Form A Solid State (AC/DC), 2 available for rate alarm/setpoint and totalization functions.

· **Analog Output -** isolated current sinking 4-20 mA, programmed from the keypad.

· **Analog Input -** allows the use of other flow devices with analog outputs.





SPECIFICATIONS

Power

- Power supply :
  +12-24 VDC (10.5 to 26 VDC)
- Current draw:
  basic unit / 12VDC - 40mA
  basic unit / 24VDC - 50mA
  analog input option - deduct 6mA
  relay output option - add 25mA
  analog output
  wired as current sinking - add 2mA
  wired as current sourcing using common power supply - add 22mA

Display

- 8 characters by two lines, alphanumeric, dot matrix LCD display with variable contrast
- Super-Twisted Nematic (STN) display

Operating Temperature

-4°F to +158°F (-20°C to +70°C)

Storage Temperature

-40°F to +185°F (-40°C to +85°C)

Dimensions

- Panel mount
  3.78"W x 3.78"H x 3.23"D
- Wall mount
  4.80"W x 4.72"H x 3.62"D

Weight

- 8.5 oz. maximum (panel mount with DIN draw mounting brackets)

SENSOR INPUT

Digital Sensors

- Signal amplitudes:
  2.5 VDC threshold
- Signal limits:
  -24 volts < V_{in} < $V_{(power\ supply)}$
- Frequency input range:
  0.4 to 160 Hz
- Pull-up :
  2KΩ

Sine Wave Sensors

- Signal amplitude:
  10 mV p-p threshold
- Signal limits:
  -24 volts < V in < V (power supply)
- Frequency:
  0.4 to 160 Hz
- Input impedance:
  10 KΩ

Sensor Calibration

- Badger Meter K and Offset

Other Sensors

- K or K and Offset

Totalizer

- Range: 0.000001 to 1,000,000

Data Update Rate

- **Slow**, **medium**, or **fast** corresponding to 2 sec, 1 sec, and instantaneous.
- Adjustable averaging filter for smoothing erratic flow rates

Pulse Output

- Open collector transistor pulse user configurable to any units
- Adjustable 50 ms to 5.0 second pulse output width in 50 ms increments (totalizer only)
- Maximum sinking current:
  150 mA @ +24 VDC

UNITS OF MEASURE

Flow total

- 4 standard, 1 custom programmable
- Standard flow total units:

gallons	gallons
liters	liters
ft3	cubic feet
m3	cubic meters

Custom flow total unit:
7 character label
7 digit conversion factor from gallons to custom unit with a range from 0.000001 to 1,000,000

Flow rate

8 standard, 1 custom programmable

- Standard flow rate units:

gpm	gallons/minute
gph	gallons/hour
l/sec	liters/second
l/min	liters/minute
ft3/sec	cubic feet/second
ft3/min	cubic feet/minute
m3/sec	cubic meters/second
m3/min	cubic meters/minute

Custom flow rate unit:
7 character label
7 digit conversion factor from gallons/minute to custom unit with a range from 0.000001 to 1,000,000

OPTION SPECIFICATIONS

Relays

- 2 optional relays: rate alarm/setpoint and/or totalization functions
- Form A, 1AMP, AC/DC
  0-280 Vac (RMS)
  0-400 VDC

Rate Relay

- User configurable, high rate and low rate alarm functions
- Adjustable 0 to 120 second delay (in 10 second increments) for activation
- 0 to 50% (of set point) hysteresis
- Latched feature

Totalizer Relay

- User configurable output to any units, width and units/pulse are user set

Analog Input

- Accepts linear signals : 0 - 1 VDC, 0 - 5 VDC, 0 - 10 VDC, 4 - 20 mA
- Input impedance
  4 - 20 mA - 50 Ω
- Voltage inputs: 2 KΩ or greater

Analog Output

- Current sinking, isolated 4 - 20 mA
  minimum voltage: 7 VDC
  maximum voltage: 30 VDC

EXAMPLE:	1500	-	x	x	x
SERIES					
Flow Monitor	1500				
OPTION-TRANSMITTER					
No Option			0		
Analog Input 0-1 VDC			1		
Analog Input 0-5 VDC			2		
Analog Input 0-10 VDC			3		
Analog Input 4-20mA VDC			4		
Analog Output 4-20mA			5		
OPTIONS-DIGITAL OUTPUT					
No Relays				0	
2 Relays-1 Alarm/Set PT- 1-Totalizer				1	
2 Alarm/Set Point Relays				2	
2 Totalizer Relays				3	
2 Opto-Isolators- 1 Alarm - 1 Totalizer				4	
2 Alarm/Set Pt. Opto-Isolators				5	
2 Totalizer Opto-Isolators				6	
MOUNTING					
Panel Mount, NEMA 4X Front Panel					0
Wall Mount, NEMA 4X					1

1500 Series Ordering Matrix

Data Industrial®

Please see our website at **www.badgermeter.com** for specific contacts.

Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change product or system specifications without notice, except to the extent an outstanding contractual obligation exists.

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