



Badger Meter

Industrial Flow Computer

Model FC-5000 Flow Monitor

DESCRIPTION

The Badger Meter® FC-5000 is a microprocessor-driven flow computer designed for flow monitoring. The FC-5000 flow computer is compatible with the complete line of Badger Meter industrial flow meters, creating a solution to totalize and indicate fluid flows. Many years of experience in the industrial market has allowed Badger Meter to incorporate features indispensable in control operations.

Features	Benefits
Large, backlit graphical display	Easy viewing
Integrated softkeys and full numerical keypad	Easier navigation and programming
100 point linearization	Higher resolution for improved linearization
Sensor data display screen	View raw and calculated flow data, as well as relay and digital I/O status
Plug-and-play terminals	Easier, user-friendly installation
User-programmable relay configuration	Enable flow and totalization alarms to trigger high, low and outside of range
User-programmable scaled outputs	Transmit flow or totalization data via dedicated output channels
Robust enclosure, keypad and mechanical relays	Application ruggedness

OPERATION

Input signal—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. Linearized volumetric flow rate and totals are examples of flow parameters that can be viewed on the panel display or through Modbus communications.

Units configured with temperature sensor inputs can compensate for changes in fluid viscosity when process temperature varies. The expansion and contraction of the flow meter housing is also compensated for, due to thermal effects, by means of proven Roshko/Strouhal algorithms.

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

FLEXIBILITY

- Non-volatile memory preserves all configured settings and totalization values during power failure
- Low voltage AC/DC power
- Default sets all functions to factory-programmed values
- Ability to restore to factory programmed settings

ACCESSORIES

- 110...230V AC line power adapters
- NEMA-4X enclosure (for wall-mount applications)
- PC programming interface / USB cable

CTL-DS-01771-EN-02 (September 2016)



VIEWING CAPABILITIES

Quickly toggle views on the *Home* screen to switch from or to:

- FLOW RATE CH 1 (*Figure 1*)
- FLOW TOTAL CH 1 (*Figure 1*)
- FLOW RATE CH 1 + FLOW TOTAL CH 1 (Dual Display) (*Figure 2*)

The Sensor Inputs option P2 also allows for a second flow sensor, indicated by rate/total CH2:

- FLOW RATE CH2
- FLOW TOTAL CH2
- FLOW RATE CH2 + FLOW TOTAL CH2 (Dual Display)

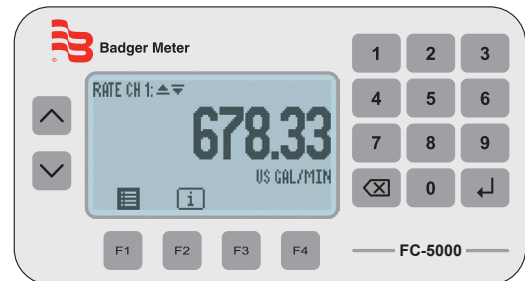


Figure 1: Single display

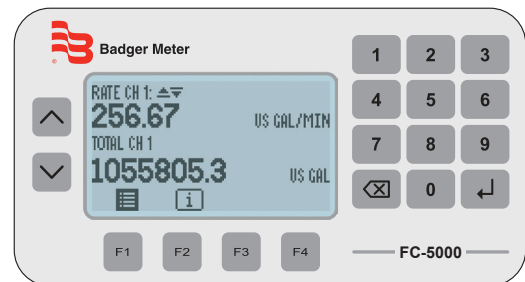


Figure 2: Dual display

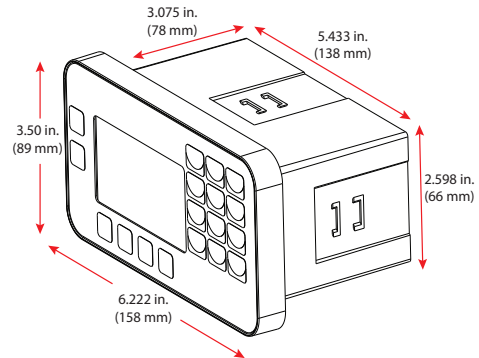
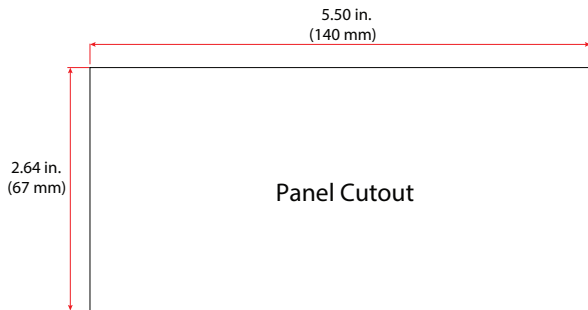
PROGRAMMABILITY

Fluid Properties	Custom fluid characteristics can be stored for calculations and reference.
Digital I/O	Reset relays, reset totals, reset relays and totals or inhibit flow channels, remotely via the 6 available I/O ports.
Scaled Outputs	Assignable to flow and/or total.
Relay Outputs	Assignable relay outputs that can be tied to flow or total. Option to enable/disable latching functionality.
Display Properties	Adjustable contrast and brightness for readability and controlling power consumption.
Stored or Custom Units of Measure	Select from a list of standardized units of measure, or complete the customized option with labels and quantity assignments.
Passwords	User-defined passcodes to manage configuration parameters and reset functions.
Sensor Inputs	Select from a predefined list of flow and temperature sensor input types.

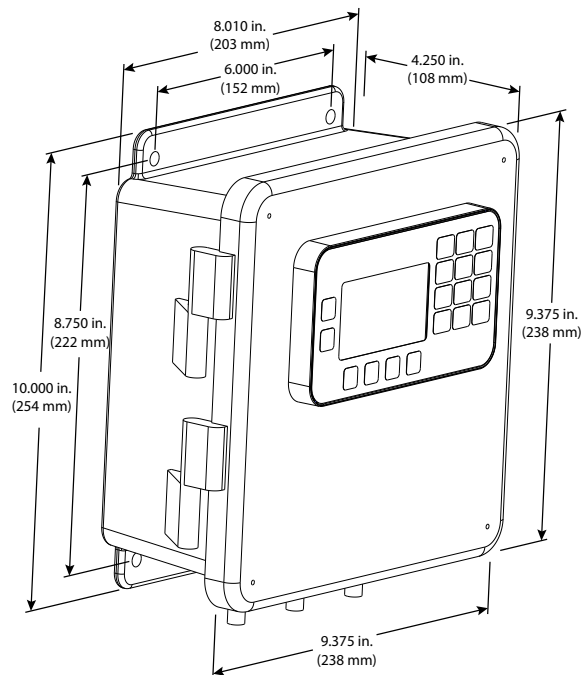
DIMENSIONS

Panel Mount Unit

Mounting clips can accommodate a maximum panel thickness of 1.5 in. (38.1 mm).



Wall Mount Unit



SPECIFICATIONS

Power Supply	Input range	10...40V DC and 9...28V AC RMS
	AC input voltage frequency range	50...60 Hz
	Maximum power consumption	8 Watts
	Isolation	Isolated from power ground
Flow Meter Input	Channels	1 or 2 independent channels
	Configurable as square wave pulse	0...30V pulse with 2.5 V threshold
	Configurable as sine wave	zero-centered with 200 mV amplitude and 45 mV threshold
	Frequency input range	0...10 kHz
	Debounce	Configurable
	Isolation	Isolated from power ground
Frequency Outputs (Output Option F)	Channels	2 independent channels
	Isolation	Isolated from power ground
	Signal	TTL, 1...4000 Hz, square wave
	Protection	Over-voltage, transient and reverse polarity protected
	Output	Output is multiplexed on the process out pins
	Resolution	0.01 Hz
	Uncertainty	±0.01% RDG
Analog Outputs (Output Option A)	Channels	2 independent channels
	Isolation	Isolated from power ground
	Output range	0...5V, 0...10V or 4...20 mA
	Protection	Over-voltage, transient and reverse polarity protected
	Output	Output is multiplexed on the process out pins
	Resolution	16-bit resolution (0...10V and 4...20 mA), 15-bit resolution (0...5V)
	Response	200 ms, 90-10% step response
Field Configurable Digital I/O (Optional)	Channels	6 independent channels
	Isolation	Isolated from power ground
	Protection	Over-voltage, transient and reverse polarity protected
	Input	0...30 Volts as input
	Debounce	Configurable
	Output	0...5V, TTL, 200 ms 90...10% step response, driving < 0.1 uF
Relay Outputs	Form	2 Form C mechanical
	Isolation	Isolated coil drivers
	Protection	Over-voltage, transient and reverse polarity protected
RS-485 Communications	Interface	4-wire interface/half duplex
	Protection	Over-voltage/ESD Protection
	Isolation	Isolated from power ground
USB Communications	Host interface	USB host interface (A connector)
	Device interface	USB device interface (mini B connector)
	Protection	Over-voltage/ESD/transient protected
Display/User interface	Keypad	Membrane keypad / domed tactile response
	Display	128 x 64 pixel backlit graphical display
	EMI/RFI	Protected from EMI/RFI
	ESD	Keypad interface is protected from ESD
Flow Calculation	Uncertainty	± 0.01%
	Filtering	Adjustable FIR/IIR filtering
Pollution Degree		2
Altitude Restriction		Up to 2000 m (6561 ft)
Over-Voltage Rating		Category II
Operator Functions	Relays	Unlatch Relays, Reset Totalizer, Unlatch Relays and Reset Totalizer, Inhibit Flow Channels
	Flow Rate	Flow Rate, Total, Flow Rate and Total
Flow Total or Flow Rate	Digits	8 digits
	Units	US Gallons (US GAL), Imperial Gallons (I GAL), Mega US Gallons (US MGAL), Mega Imperial Gallons (I MGAL), Liters (L), Mega Liters (ML), Cubic Meters (M ³), Cubic Feet (FT ³), Acre Feet (ACFT), Oil Barrels (OBBL), Liquid Barrels (LBBL), US Ounces (US OZ), Imperial Ounces (I OZ), Custom (user-specified)
	Decimals	0...4
Flow Rate Only	Time unit	second (S), minute (M), hour (H), day (D)
	Digits	8 digits
Temperature	Units	°F (Fahrenheit), °C (Celsius), °R (Rankine) or °K (Kelvin)
	Decimals	0...4

PART NUMBER MATRIX

	FC5	FM						
PERSONALITY								
Flow Monitor		FM						
SENSOR INPUTS								
One Pulse Only					P0			
Two Pulse / One Temp					P2			
SCALED OUTPUT								
Two Analog Outputs <i>Available with SENSOR INPUTS option "P2" Only</i>						A		
Two Frequency Outputs <i>Available with SENSOR INPUTS option "P0" Only</i>						F		
RELAY OUTPUT								
Two Form "C" Relays							C	
DIGITAL OUTPUT								
Six Programmable Inputs/Outputs								6
COMMUNICATIONS								
EIA-485 Modbus and USB								A
MOUNTING METHOD								
Panel Mount								P
Wall Mount (includes NEMA 4X rated box)								W

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