

Model RET™

Recordall® Electronic Transmitter

Technical Brief

DESCRIPTION

APPLICATIONS: The Recordall® Electronic Transmitter (RET™) is designed for use with all Recordall Disc, Compound and Turbo Series meters as well as Turbo II meters to provide output compatibility with standard industry instrumentation devices. The RET is equipped with an LCD display that can be calibrated in either gallons, cubic feet, cubic meters, liters or imperial gallons.

OPERATION: The Recordall Electronic Transmitter provides a variety of information via the display such as Totalization, Rate of Flow, Meter Identification, Test Mode Totalization, Backflow Totalization, Scaled Pulse Resolution, 20 mA set point, and an Alarm Screen. The operator can toggle through this information using a magnet. The RET provides scaled and unscaled open collector outputs (30V @ 1 mA) with an optional 4 to 20 mA analog signal representing flow rate. The scaled output resolution and the 20 mA set point are programmable. The 4 to 20 mA output is programmed and digitally controlled requiring no zero or span adjustments. The RET is a totally electronic device that can be operated with or without external power. An internal long life lithium battery is used to provide power when external power is lost or not used. Programmed parameters are stored in non-volatile memory.

RESOLUTION: The totalization resolution, scaled pulse output resolution, and 20 mA set point are programmable. The displayed information is accomplished using a 6 digit liquid crystal display. The information table in this brochure lists the limits of the resolutions. There are default values listed for each meter size and type. The default scaled output is 1/10th the totalization resolution. The 20 mA set point is typically set for the maximum flow of the meter unless specified differently. The Test Mode Totalization and Backflow Totalization resolutions are 1/1000th of the totalization display. The unscaled output is meter specific. Changing the programmed resolutions does not change meter accuracy.

RESPONSE TIME: From 10 - 100% of maximum flow, the response time of the flow rate display and the 4-20 mA output signal is 6 seconds to record any change in flow. For flow rates less than 10% of maximum flow, the response time is programmable allowing for improved readings and the ability to monitor low flow rates.

MOUNTING: The RET in its shroud uses a bayonet mount compatible with all Recordall Disc, Turbo, Compound, and Fire Series Meters. A Torx® seal screw is provided to allow positioning of the register for most convenient reading and to secure the register to the meter body in a tamper resistant mode. The RET can be removed from the meter without disrupting water service.

MAGNETIC SENSING: The RET detects the movement of the wet side meter magnet with magnetic sensors. The RET uses no moving parts to measure water flow so there is no wear, and loading on the meter is reduced.

WIRE CONNECTIONS: The RET comes with a waterproof plug-in connector making it easy to install and is field programmable with the use of an RS-232 interface package, a laptop computer, and proprietary software.

ENVIRONMENTAL: The operating temperature of the RET is -10 to +60°C (14 to +140°F). The register is completely sealed to protect the electronics from moisture, dirt, and other contaminants. The RET is designed for use in flooded pits or vaults.

MOISTURE: The RET achieves true water resistance due to the adhesive technology used in the sealing process. Leak rates less than 10⁻⁶ cc/sec as tested by a helium mass spectrometer, are comparable to a true hermetic seal. Due to this unique sealing process the



SPECIFICATIONS

Transmitter/Register	Liquid crystal display, permanently sealed, magnetic pick-ups, multiple outputs, water proof connection
Liquid Crystal Display	Six digits with 1/4" numerals
Weight	13 Ounces
Humidity	0% to 100% Condensing
Operating Temperature	-10 to 60°C (14 to 140°F)
Unit of Measure	U.S. Gallons, Cubic Feet, Cubic Meters, Liter, Imperial Gallons clearly identified on LCD display
Rate of Flow	Units per Minute or Units per Hour
Rate of Flow Response	6 seconds when flow rate is 10% to 100% of maximum flow. Response time is programmable when flow rates are < 10% of maximum flow.
Test Mode Totalization	1/1000th of totalization display
Backflow Totalization	1/1000th of totalization display
Internal Power Source	One lithium, 2.4 A hr. battery
External Power	9.0V 0- 50VDC (required to use optional 4-20 mA output) max loop resistance 50 Ohm + 50 Ohm (V supply - 9V)
Electrical Criteria	Immunity to electrical surges and transient per IEC 1000-4-2 & IEC 1000-4-4. The electronic circuitry is designed to provide immunity to electrical surges and transient per IEC 1000-4-2 and IEC 1000-4-4.
FCC Compliance	FCC Part 15 Subpart J
Digital Signal Characteristics	Open Drain (FET)
Reverse Flow	1/1000th of totalization display
Resolution	Scaled is programmable with unscaled fixed to meter size and type
On State Resistance	<50 Ohms @ 25°C (77°F) for scaled output <400 Ohms for unscaled output @0.1 ma
Off State Resistance	>5 MOhms @ 25°C (77°F)
Power Source	Internal with External Option
Maximum Switching	30 VDC @ 1 mA @ 25°C (77°F)



BadgerMeter, Inc.

RET-T-01

1-02

RET exceeds all applicable requirements of AWWA Standards C706 and C707 regarding moisture intrusion. The waterproof connector protects the external wiring connection.

TAMPER-PROOF FEATURES: Customer removal of the RET can be prevented using a tamper resistant Torx seal screw. Torx seal screws are provided as standard accessories. Optional tamper detection seal wire screws are also available. The waterproof connector uses a locking band to show tampering. A magnetic shield ring is used to provide resistance to magnetic tampering.

CONSTRUCTION: The housing of the RET is constructed of a strengthened glass lens top and a copper metal alloy bottom. Internal support materials are thermoplastics for long-life and high reliability. The outer shroud and water proof connector are polycarbonate. The integrity of the adhesive seal joining the glass top to metal base provide unmatched protection in water meter applications. A corrosion and tamper resistant Torx seal screw is provided to secure the RET to the meter.

OUTPUT CAPABILITIES: Default parameters of the RET calibrated in gallons for Recordall® Disc and Turbo Series meters are noted below. Other Default parameters are listed in RET-IOM-01. To request specific requirements for your application, contact your Badger Meter regional sales office, or representative.

Recordall Disc Series	Size	Unscaled Pulse Output (Gal/Pulse)	Default Scaled Output (Gal/Pulse)	Default Flow Rate at 20 mA (Gal/Min)
25	5/8	0.00252	1	25
35	3/4	0.00395	1	35
40	1	0.00557	1	40
70	1	0.01070	1	70
120	1 1/2	0.02095	10	120
170	2	0.03433	10	170
180	2	0.04983	10	180

Turbo Series	Size	Unscaled Pulse Output (Gal/Pulse)	Default Scaled Output (Gal/Pulse)	Default Flow Rate at 20 mA (Gal/Min)
160	1 1/2	0.32538	10	200
200	2	0.32538	10	310
450	3	0.31286	10	550
1000	4	0.30031	10	1250
2000	6	3.33217	100	2500
3500	8	3.30176	100	4500
5500	10	2.52488	100	7000
6200	12	3.88442	1000	8800
6600	16	32.16460	1000	13200
10000	20	55.43655	1000	19800

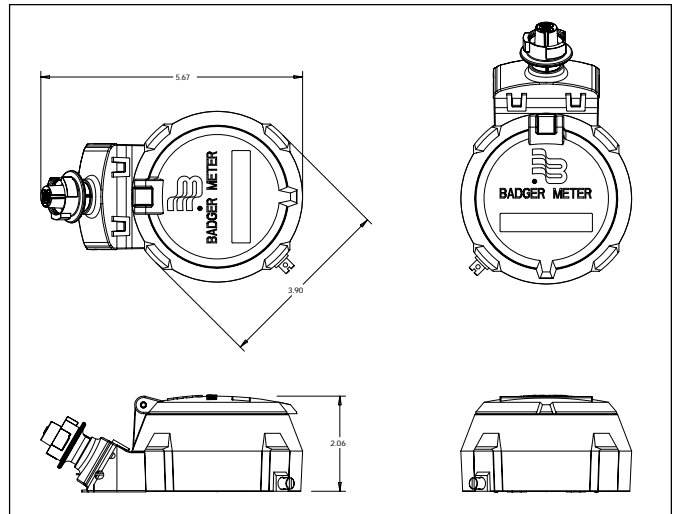
Battery Life Expectancy (Years)

	Unpowered	Powered
Recordall Disc Series	6	15
Turbo Series	8	15

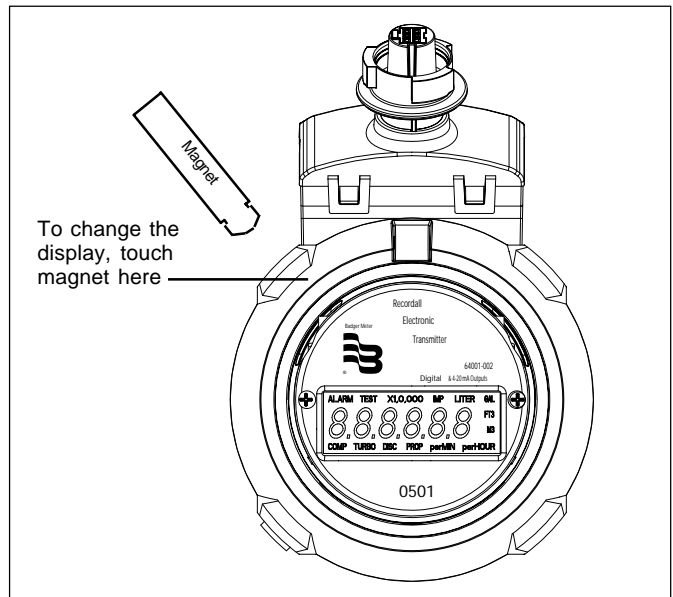
Recordall® is a registered trademark of Badger Meter, Inc. TORX® is a registered trademark of Camcar, Division of Textron, Inc.



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



Dimensional Drawing

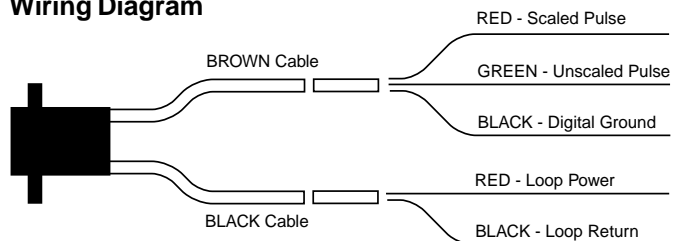


RET Register

CAUTION

The RET is only designed to be used with Recordall Disc, Compound, Fire and Turbo Series meters manufactured by Badger Meter, Inc.

Wiring Diagram



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 bid obligation exists.



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