

DESCRIPTION

APPLICATIONS: The Badger® GALAXY® Transmitter (TR3W) is designed for fixed network meter reading in indoor/outdoor remote installations as well as pit / vault installations that are subject to flooding or submergence. The transmitter can be mounted on an indoor or outdoor wall, basement floor joists, or beneath a plastic or composite lid.

CONSTRUCTION: The Badger GALAXY Transmitter is constructed in an engineered polymer enclosure with a Badger GALAXY RF board, battery, antenna and an integrated mounting bracket. To assure long-term performance, the enclosure is fully potted to withstand harsh application environments and to protect the electronics when exposed to flooded or submerged pit applications. The unit measures 5.2 inches long (6.3 inches with integrated mounting tabs), 3.8 inches high, and 2.4 inches thick.

MAGNETIC DRIVE: Direct drive, high-strength, magnetic coupling through the meter body to the wetted magnet provides reliable and dependable register coupling.

METER COMPATIBILITY: When assembled to the Badger Recordall® Transmitter Register (RTR®) or Badger Absolute Digital Encoder (ADE®) the Badger GALAXY Transmitter is compatible with Badger's Recordall Disc, Turbo, Compound, and Fire Series meters and assemblies as well as Magnetoflow® mag meters.

ENCODER COMPATIBILITY: The Badger GALAXY transmitter is suitable for use with all RTR registers, ADE encoders, or the following competitive encoders: Hersey®, AMCO®, Neptune® and Sensus®.

TRANSPORTATION: The Federal Aviation Administration prohibits operating transmitters and receivers on all commercial aircraft. When powered, the Badger GALAXY Transmitter is considered an operating transmitter and cannot be shipped by air.

FCC COMPLIANCE: This product complies with Part 90 of the Federal Communications Commission Rules. An FCC license is required for operation of the Badger GALAXY system.

CAUTION: Changes or modifications to the equipment not expressly approved by Badger Meter could void the user's authority to operate the equipment.

FUNCTIONALITY

OPERATION: The Badger GALAXY Transmitter continuously monitors the register circuit. At predetermined intervals the Badger GALAXY Transmitter broadcasts the counter or encoder value along with other metering data to the network receivers.

OUTPUT MESSAGE: The GALAXY transmitter stores and sends the last 24 hourly reads, four times per day. With our embedded real time clock, the 24 reads are top of the hour consumption reads, which will assist utilities with billing disputes, district meter-



Bronze LP with a
Badger® GALAXY® Transmitter

SPECIFICATIONS

Power Output:	One watt
Transmission Interval:	Every six hours
Interval Data:	Hourly top of the hour meter readings
Broadcast Frequency:	A licensed frequency in 450-470 MHz band
RF Operating Temperature Range:	-20° C to +60° C (-4° F to 140° F)
Humidity:	0% to 100% Condensing
Battery:	Lithium Thionyl Chloride C Cell
Battery Life:	20 years (calculated)

ing areas, as well as system leak detection. The 24 hourly reads also allow for system redundancy to contend with temporary utility power outages, system downtime or maintenance. The GALAXY transmitter also sends the following additional metering data with each RF message: unique transmitter ID, serial number, potential leak indication, reverse flow indication, wire tamper indication, and sequential transmission number (exact number of six-hour transmission intervals and initiated transmissions).

BROADCAST FREQUENCY: The Badger GALAXY Transmitter broadcasts on a licensed FCC-assigned frequency in the range of 450-470 MHz.

BROADCAST INTERVAL: The Badger GALAXY Transmitter has a factory programmed broadcast interval of every six hours.

BROADCAST POWER: The Badger GALAXY Transmitter has an RF conducted power output of one watt.



BATTERY: The transmitter is powered by one “C” size Lithium Thionyl Chloride battery in parallel with a Hybrid Layer Capacitor. The battery assembly is not replaceable. The battery has a calculated life of twenty years based on transmissions every six hours at an ambient temperature of 21° C.

TEMPERATURE: The operating range of the Badger GALAXY transmitter is -20° C to +60° C (-4° F to +140°F). The operating range between the transmitter and encoder is -40° C to +60° C (-40° F to +140° F). The water meter should not be subjected to temperatures below freezing.

RANGE: Reception of the transmitted signal is dependent on a number of external factors, including the location of the receiver or repeater. Other factors include topographical features, materials used in the construction of buildings, obstacles such as buildings, trees, vegetation, fences, and temporary conditions such as vehicles parked near the transmitter and weather conditions such as rain or snow. Badger Meter systems engineers will consider these factors when designing a system layout for your utility.

EXCEPTION INDICATORS

TAMPER INDICATION: The Badger® GALAXY® Transmitter sends a tamper indication flag to the network receivers when a tamper condition (cut wire) is sensed. A tamper condition is defined as either a short or open circuit in the transmitter's three-wire system. (Failed encoder reading is also a tamper.)

LEAK DETECTION: The Badger GALAXY Transmitter reports detection of a possible leak when a one-hour (RTR®) or two-hour (ADE®) window of no usage is not found within a 24-hour time period. The system automatically resets as soon as an appropriate window of no usage is found.

INSTALLATION

REMOTE INSTALLATION: The Badger GALAXY transmitter may be installed indoors or outdoors for remote applications.

Best radio frequency range is achieved with the unit mounted outdoors, as high as possible, with a line-of-sight signal path to the receiving antenna. When mounted indoors the transmitter should be located as high as possible and away from large metal objects that may block the signal path, such as water heaters, duct work or furnaces.

PIT INSTALLATION: The Badger GALAXY Transmitter is suitable for a submerged environment. For optimal system performance, the transmitter is to be mounted directly underneath a composite or plastic pit lid using the lid's transmitter installation mounting bosses along with the appropriate screws or using the pit lid's integrated transmitter hanger.

ACTIVATION: The Badger GALAXY Transmitter is shipped in a dormant, non-transmitting state. Many AMR/AMI transmitters require special programming when being installed. The GALAXY transmitter offers a Smart-Activation feature such that once a transmitter has been installed, it will begin to broadcast its metering data once the encoder senses the first usage of water. Therefore, no field programming or special tools are necessary at the time of installation.

DISABLING: A properly operating transmitter should not be turned off once it is activated. A transmitter can be disabled for special circumstances, such as return shipment of a defective unit for warranty purposes. To disable a transmitter, use the Badger® handheld tool and Badger GALAXY programming software in conjunction with the infrared port in the transmitter module.

FORCING A TRANSMISSION: After activation, a transmitter can be forced to send a transmission. To do so, use the Badger handheld tool and Badger GALAXY programming software in conjunction with the infrared port in the transmitter module.

WIRING: The Badger GALAXY Transmitter may be factory wired to a Badger encoder with a wire harness of up to 75 feet (3' or 10' standard). However, the transmitter module and the encoder may be supplied separately and connected by an installer. The three wires of the encoder and the three wires of the transmitter are color coded for easy matching and connecting of the pairs. (Wiring to competitive encoders may differ.)

PROGRAMMING: If the Badger GALAXY Remote transmitter is installed on an existing RTR encoder or a cut wire repair is performed, the current meter reading can be programmed into the internal counter of the transmitter using the Badger® handheld installation tool and programming software in conjunction with the infrared port (located under removable cover) in the transmitter module. No programming is needed when installed on an existing ADE or approved competitive encoder.

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