

DESCRIPTION

Applications: The Badger® GALAXY® Transmitter (TR3) is designed to provide hourly consumption data for fixed-network meter reading in indoor/outdoor remote installations and in pit/vault installations that are subject to flooding or submergence. The unit can be mounted on an indoor or outdoor wall, basement floor joist or beneath a plastic or a composite lid.

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

Meter Compatibility: When attached to the Badger Recordall® Transmitter Register (RTR®) or Badger Absolute Digital Encoder (ADE®), the GALAXY Transmitter is compatible with the Badger Meter Recordall Disc, Turbo, Compound, and Fire Series meters and assemblies, as well as Magnetoflow® meters.

Encoder Compatibility: The GALAXY Transmitter is suitable for use with all RTR registers, ADE encoders or the following three-wire competitive encoders: Hersey®, AMCO®, Neptune® and Sensus®.

Transportation: The Federal Aviation Administration prohibits operating transmitters and receivers on all commercial aircraft. When powered, the 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 to operate the GALAXY system.

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

FUNCTIONALITY

Operation: The GALAXY Transmitter continuously monitors the encoder circuit. At predetermined intervals, the transmitter broadcasts the hourly counter or encoder values 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



Bronze LP Meter with a 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	-30° C to +60° C (-22° F to 140° F)
Humidity	0% to 100% condensing
Battery	Lithium Thionyl Chloride C Cell
Battery Life	20 years (calculated)

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

Broadcast Frequency: The GALAXY Transmitter broadcasts on a licensed and protected FCC-assigned frequency in the range of 450-470 MHz.

Broadcast Interval: The GALAXY Transmitter has a factory-programmed broadcast interval of every six hours.

Broadcast Power: The 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 transmitter is -30° 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). However, the water meter should not be subjected to temperatures below freezing.

Range: Transmission reception depends on a number of factors, including the location of the network receiver. Other factors include topographical features, a building's construction materials and obstacles such as buildings, trees, vegetation and fences. Temporary conditions, such as a vehicle parked near the transmitter or heavy rain or snow, could also affect reception. These factors need to be considered when designing a network system layout.

EXCEPTION INDICATORS

Tamper Indication: The 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. (A failed encoder reading is also a tamper.)

Leak Detection: The 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.

Reverse Flow (ADE only): When utilizing an ADE encoder, the GALAXY Transmitter sends a reverse flow indication to the network receivers when reverse flow is detected. Indication of reverse flow will present itself if the current interval of consumption is less than the previous interval.)

INSTALLATION

Remote Installation: The GALAXY Transmitter may be installed indoors or outdoors for remote applications.

You will achieve optimum radio transmission by mounting the unit outdoors, as high as possible, with a line-of-sight signal path to the receiving antenna. Indoors, the transmitter should be mounted as high as possible and away

from large metal objects, such as water heaters, ducts or furnaces that could block or reflect the signal path.

Pit Installation: The GALAXY Transmitter is suitable for a submerged environment. For optimal system performance, mount the transmitter directly underneath a composite or plastic pit lid at the lid's transmitter mounting bosses. Fasten the unit with the appropriate screws or use the pit lid's integrated transmitter hanger.

Activation: The GALAXY Transmitter is shipped in a dormant, non-transmitting state. The transmitter offers a Smart Activation feature. After the transmitter has been installed, it will begin broadcasting data when the encoder senses the first usage of water. No field programming or special tools are required to activate the system.

Disabling: A properly operating transmitter should not be turned off. However, a transmitter can be disabled in special situations, such as for a return shipment of a defective unit. To disable a transmitter, use the Badger Meter handheld tool and GALAXY programming software in conjunction with the transmitter module's infrared port. The infrared port is located under the module's removable cover.

Forcing a Transmission: After activation, you can force the unit to send a transmission with the Badger Meter handheld tool and the GALAXY software in conjunction with the transmitter module's infrared port.

Wiring: The GALAXY Transmitter can be factory-wired to a Badger Meter encoder with a wire harness of up to 75 feet (three feet or ten feet standard). However, the transmitter module and the encoder can also be supplied separately and connected on-site by a service technician. The three wires of the encoder and the three wires of the transmitter are color-coded for easily matching and connecting the pairs. (When wiring to competitive encoders, the color codes may differ. See the installation data sheet for details.)

Programming: If the GALAXY Transmitter is installed on an existing RTR encoder, or if a cut-wire repair is performed, the current meter reading can be programmed into the internal counter of the transmitter using the Badger Meter handheld installation tool and programming software in conjunction with the transmitter module's infrared port. No programming is required when installed on an existing ADE or approved competitive encoder.

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