

## DESCRIPTION

**APPLICATIONS:** The Badger® GALAXY Pit Transmitter is designed for water meter pit or vault installations that are subject to flooding or submergence. The Pit Transmitter is offered in a through the pit lid mounting configuration for maximum performance.

The Badger GALAXY pit transmitter is suitable for use with all Badger Recordall® Transmitter Register (RTR®) registers, Badger Absolute Digital Encoder (ADE®) or the following competitive encoders: Hersey®, AMCO®, Neptune® and Sensus®.



Figure 1 - Badger GALAXY Pit Transmitter

**OPERATION:** The Badger GALAXY Pit Transmitter continuously monitors the register circuit. At predetermined intervals the Badger GALAXY transmitter broadcasts the counter or encoder value as well as other meter data to the network receivers.

**TAMPER INDICATION:** The Badger GALAXY Pit 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 Pit Transmitter reports detection of a possible leak when a one-hour (RTR®) or two-hour (absolute encoder) 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.

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

**BROADCAST INTERVAL:** The Badger GALAXY Pit Transmitter has a broadcast interval that is factory programmed. Typically the interval is every six hours but can be as often as every hour. However, battery life is reduced at intervals shorter than every six hours.

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

**CONSTRUCTION:** The Badger GALAXY Pit Transmitter is constructed in a plastic enclosure with a Badger GALAXY RF board, battery and antenna. To assure long-term performance, the enclosure is fully potted for use in flooding or submerging applications.

**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.



Bronze M35 with a  
Badger® GALAXY® Pit Transmitter

## SPECIFICATIONS

<b>Transmission Interval:</b>	Typically every six hours
<b>Broadcast frequency:</b>	A licensed frequency in 450-470 MHz band
<b>Operating Temperature Range:</b>	-20° C to +60° C (-4° F to 140° F)
<b>Battery:</b>	Lithium Thionyl Chloride C cell
<b>Battery Life:</b>	20 years (calculated)
<b>Compatibility:</b>	Any Badger meter with an RTR, ADE, Magnetoflow® Mag meter, or any of the following competitive encoders: Hersey®, AMCO®, Neptune®, and Sensus®.

**TEMPERATURE:** The operating range of the Badger GALAXY pit transmitter is -20° C to +60° C (-4° 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.

**INSTALLATION:** The Badger GALAXY Pit Transmitter is suitable for a submerged environment. The transmitter is to be mounted **under** the lid of a non-metal pit lid.

**METER COMPATIBILITY:** When assembled to the Badger RTR or ADE® the Badger GALAXY Pit Transmitter is compatible with Badger Meter's Recordall Disc, Turbo, Compound, and Fire Series meters and assemblies and Magnetoflow® Mag meters. Compatibility is also available to competitive meters when using the proper encoder.



BadgerMeter, Inc.



If the Badger® GALAXY® Pit Transmitter is installed on an existing RTR® register, the current meter reading can be entered into the internal counter of the transmitter using the Badger® handheld installation tool in conjunction with the infrared port in the transmitter module (see Figure 2).



Figure 2 - Location of infrared ports

**WIRING:** The Badger GALAXY Pit Transmitter may be factory wired to the 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.)

**ACTIVATION:** The Badger GALAXY Pit Transmitter is shipped in a dormant, non-transmitting state. To activate the transmitter, hold it so that the infrared ports are in the 12 o'clock position (Figure 2). Hold the magnet to the right (3 o'clock position) of the infrared ports for three seconds.



Figure 3 - Activation of Badger GALAXY® Pit Transmitter

**FORCING A TRANSMISSION:** After activation, a transmitter can be forced to send a transmission. To do so, hold it so that the infrared ports are in the 12 o'clock position (Figure 3). Hold the magnet to the right (3 o'clock position) of the infrared ports for three seconds.

**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 in conjunction with the infrared port in the transmitter module.

**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.

**FCC Statement:** The Galaxy transmitter product complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The **Galaxy Pit** transmitter has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

#### Warning!

Changes or modifications to this equipment not expressly approved by Badger Meter / Miltel Communications could void the user's authority to operate the equipment.

**Licensing Notice:** The FCC rules require the equipment user to obtain a site license before operation of this equipment. Licensing of the equipment is the user's responsibility. The user is required to contact an authorized FCC coordinator for the purpose of obtaining the proper license for the specific location/site where the equipment is to be installed. We strongly recommend that the user should obtain the proper frequency license before ordering of the equipment.



Copyright © Badger Meter, Inc. 2008. All rights reserved.

Please see our website at  
[www.badgermeter.com](http://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.



**BadgerMeter, Inc.**

P.O. Box 245036, Milwaukee, WI 53224-9536  
(800) 876-3837 / Fax: (888) 371-5982  
[www.badgermeter.com](http://www.badgermeter.com)