

TM1 Wireless Tank Monitor

Instruction Manual

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Description

The TM1 Remote Tank level Monitor consists of a self contained battery operated cellular transceiver fitted into an enclosure with batteries, having a submersible pressure transducer attached, that is lowered into a tank of liquid to be monitored for level.

The plastic enclosure has a lower threaded mounting at its base that allows it to be fitted through a hole atop a tank, or onto an external flange.

A chemical resistant cable extends from the sensor to a lower entry point in the TM1 underbody.



A set of three “D” cells are enclosed that power the electronics and the Cellular modem. The TM1 utilizes the LTE CAT M1 service provided by Verizon Wireless in the USA that operates in the 750 MHz cellular 4G band.

The TM1 can be used to send a tank level report over the cellular link at repeated time intervals and on a schedule. The number of reports can be altered by command but is typically set to once every 4 hours.

Contact your supplier, agent or FLEET data service provider for changes to reporting schedules and times.

The data packet it sends is only several hundred bytes in length and includes pressure reading, battery health, temperature and signal level information.

It utilizes a CAT M1 Modem that allows transmissions over the Cellular network, permitting short burst data transfers to conserve battery life.

Installation and Activation

The TM1 must always be mounted upright, in the open, clear of any metallic shields or obstructions and within the propagation footprint of a Verizon LTE cell tower.

Drill a mounting hole that is 1.75" (45 mm) Diameter at the top of the tank such that it is at the highest point or above the maximum liquid level.

NOTE: The TM1 has slots at its mounting flange that will allow liquid to drain to the outside of the tank if the liquid level is above the lowest point on the TM1 body. This is to stop any liquid forcing its way past the gasket and into the TM1 body. If the filling port is above this level, fit an extension tube or fitting to the tank so that it holds the TM1 above the refilling port level.

Lower the transducer into the tank and as it feeds through the hole feed it through the tightening nut provided.

Allow the transducer to lay horizontally flat at the lowest part of the tank.
Tighten the mounting nut onto the TM1 mounting flange.

Once the TM1 is in place, remove the small magnetic keeper from the side of the TM1 body. This will initiate the transmission and registration with the FLEET server and should bring up a reading on the device page or dashboard on FLEET.

The Magnet can be used at any time to disable the TM1 for transporting or trouble shooting. To reboot the TM1 insert the magnetic keeper with the engagement slot facing downwards. Hold it there for about 15 seconds and then remove it.

Save the magnet for future use.

Servicing the TM1

From time to time, depending on the reporting frequency, local cell tower signal strength and climatic conditions, the three “D” cell batteries will require replacement.

- (i) If the TM1 is in a Hazardous location, remove it to a safe location first.
- (ii) Then insert the magnetic Keeper.
- (iii) Remove the four screws holding the base and the upper cover using a Philips screwdriver.
- (iv) With the top cover removed, observe the location of the batteries and the way they are held in place.
- (v) Cut away any zip ties allowing the batteries to be carefully removed. OBSERVE the battery polarity. Two on one side have POSITIVE facing UP and the single battery on the opposite side of the board should have the Negative facing DOWN.
- (vi) Replace the three “D” cells with top quality long life batteries such as Duracell “Quantum” or Energizer “Ultimate”. Select ones having at least 5 years shelf life.

Do NOT use rechargeable batteries.
Do NOT use old batteries.
Do NOT mix battery types or old ones with new.
- (vii) Make sure polarity is correct and use two zip ties thro holes in PCB provided to hold the three cells in place. Make sure the ties are clear of other components when tightened. Cut off any excess zip tie.
- (viii) With the two-battery set facing you, carefully refit the top cover with the magnetic keeper to your left. Screw the 4 screws tightly ensuring proper engagement of the top and the base.
- (ix) Make sure the magnetic keeper is installed correctly for 15 secs before removing for activation.

DO NOT TAMPER or ATTEMPT ANY REPAIRS YOURSELF.

Always contact your supplier for service, repairs or changing device factory settings.

FCC Compliance

Section 15.21 Information to user

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

Section 15.19 Labeling requirements:

This device 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.

Section 15.105 (b)

Note: This equipment 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.

IMPORTANT NOTE:

To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter"