

Piccolo TMX – Portable temperature monitoring

Packaged in an IP65 waterproof enclosure with integrated GPS and cellular antennas equipped with an 1800 mAh rechargeable lithium back up battery and an external digital temperature sensor with $\pm 0.5^{\circ}\text{C}$, $\pm 0.9^{\circ}\text{F}$ accuracy the unit monitors the temperature in a closed area such as a refrigerated truck and will transmit it periodically to the server.

The Piccolo TMX is based on the Wireless Links advanced low power technology developed for the Piccolo ATX for asset tracking as such the Piccolo TMX is charged with a 12VDC 1Ah wall charger.

Once placed in the refrigerated area the Piccolo TMX is normally in deep sleep mode configured to wake up once every XX minutes, read the temperature with the current GPS position and send it with a time stamp to the server. Or in order to preserve battery life wake up every XX minutes (for example every 5 minutes) read the temperature with the battery life and time stamp store it in the Piccolo TMX memory and send all accumulated reading with their respective time stamps to the server every YY minutes (for example every 60 minutes).

Assuming temperature reading every 5 minutes but send the accumulated 12 readings once an hour to the host the 1800 mAh battery life will be around 2000 temperature readings. A second 1800mAh battery can be added to double the battery life. With every transmission the Piccolo TMX will send the current battery level to the server.



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Technical Specifications

- GSM/GPRS or EDGE/HSPA+ (3G)
- Frequency bands – Quad-Band 850/900/1800/1900/2100MHZ
- Enclosure – Flame retardant ABS/PC
 - Flame rating UL94V-0
 - Waterproof IP65 enclosure with a blind cover, no LEDs
- GPS Technology – SIRF Star IV 48 receiving channels
- Dimensions – 4" x 2.3" x 1.2" LWD (100mm x 58mm x 30mm)
Additional 0.35" (9mm) on each side for mounting brackets
- Weight : 3.8oz (110g) without the cable

Environmental Specifications:

- Operating Temperature: -22° to 176°F (-30° to 80°C)
- Storage Temperature: -40° to 221°F (-40° to 105°C)
- Humidity: 0 to 99% 110°F(40°C), non-condensing
- Shock/Vibration/Mechanical: meets or exceeds EIA standard RS-316B 3G (operating), 20G (non-operating) XYZ 3 directions. Meets SAE J1455.

Electrical Specifications:

- Power source: 6VDC - 32VDC tethered to vehicle battery or portable with cigarette plug connector
- ESD 4kV contact,15kV air
- When external power is disconnected, the unit automatically switches to backup 1800mAh, 3.7 VDC lithium rechargeable battery. When fully charged, the unit can send up to 1200 GPS locations
- Optionally a second 1800mAh can be added for a total of around 2400 GPS transmissions when fully charged
- Protection - internal resettable 1A fuse



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Current Consumption:

- Transmit mode: 200mA at 12VDC
- Running mode: 70mA at 12VDC
- Standby (Hibernation mode: 20mA at 12VDC (when waiting for external event with GPS on)
- Sleep mode:45uA - (switching to sleep mode automatically when engine is off and/or when external power is disconnected)

Base Features

- Digital Inputs - two contact events, one ground sense and one 5VDC – 32VDC positive sense
- Analog Inputs – one 0-5VDC
- Internal analog temperature sensor

Installation

Piccolo TMX has an IP65 waterproof enclosure may be installed on the roof of a trailer or any other asset.



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