ALTA by MONNIT

The Leading Enterprise Internet of Things Solution

0-50 VDC

# Wireless 0–50 VDC Voltage Meters

## General Description

The ALTA Wireless Voltage Meter measures the voltage between two electrical points. It can be connected to the power and ground of any voltage source and measure within stated accuracy up to 50 VDC. Perfect for measuring battery voltage at specified intervals where sensor data will be wirelessly sent to iMonnit, the online sensor monitoring system.

- Wireless interface for measuring voltage
- Available in multiple voltage ranges. Measures voltage up to 50 VDC

## Principle of Operation

By connecting the leads on the ALTA Wireless Voltage Meter to the positive and ground terminals of a battery, users can measure battery voltage through the iMonnit Online Sensor Monitoring and Notification System. Notifications can be set up through the online system to alert the user when battery levels reach a certain point. The data is also stored in the online system and can be reviewed and exported as a data sheet or graph.

## Example Applications

- Car battery monitoring
- Boat and marine battery monitoring
- RV battery monitoring
- ATV/motorcycle battery monitoring
- Lawn mower and utility vehicle battery monitoring
- Many additional applications

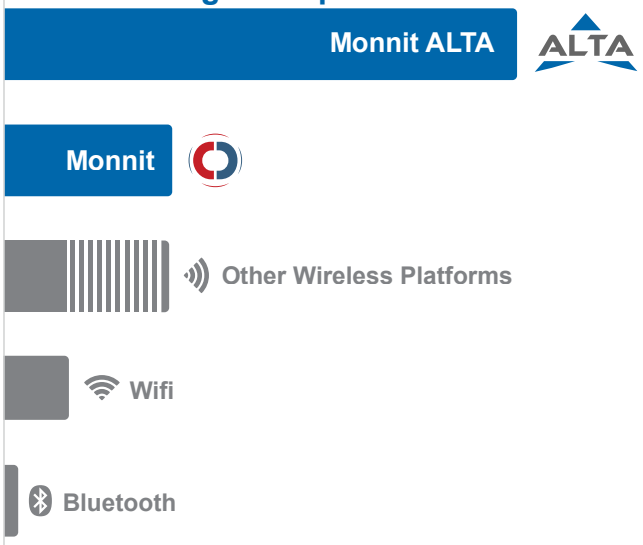
## Features of Monnit ALTA Sensors

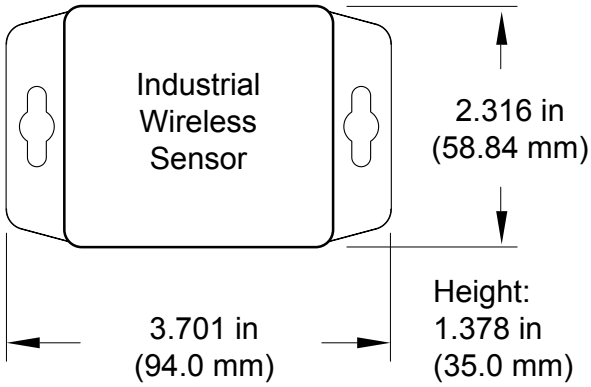
- Wireless range of 1,200+ feet through 12+ walls *
- Frequency-Hopping Spread Spectrum (FHSS)
- Improved interference immunity
- Improved power management for longer battery life ** (12+ years on AA batteries)
- Encrypt-RF® Security (Diffie-Hellman Key Exchange + AES-128 CBC for sensor data messages)
- Datalogs 2000 to 4000 readings if gateway connection is lost (non-volatile flash, persists through the power cycle):
  - 10-minute heartbeats = ~ 22 days
  - 2-hour heartbeats = ~ 266 days
- Over-the-air updates (future proof)
- Free iMonnit basic online wireless sensor monitoring and notification system to configure sensors, view data and set alerts via SMS text and email

* Actual range may vary depending on environment.

** Battery life is determined by sensor reporting frequency and other variables. Other power options are also available.

## Wireless Range Comparison






| ALTA Industrial Wireless 0–50 VDC Voltage Meter \| Technical Specifications | | |
|---|---|---|
| Supply voltage | | 2.0–3.8 VDC (3.0–3.8 VDC using power supply) * |
| Current consumption | | 0.2 µA (sleep mode), 0.7 µA (RTC sleep), 570 µA (MCU idle), 2.5 mA (MCU active), 5.5 mA (radio RX mode), 22.6 mA (radio TX mode) |
| Operating temperature range (board circuitry and battery) | | -40°C to +85°C (-40°F to +185°F) |
| Included battery | Max temperature range | -40° to +85°C (-40° to +185°F) |
| | Capacity | 1800 mAh |
| Optional solar feature | Solar panel | 5VDC/30mA (53mm x 30mm) |
| | Charging temperature range | 0° to 45°C (32° to 113°F) |
| | Max temperature range | -20° to 60°C (-4° to 140°F) |
| | Included rechargeable battery | 600 mAh/>2000 charge cycles (80% of initial capacity) |
| | Solar efficiency | Optimized for high and low-light operation *** |
| | Charging efficiency | 40% ** |
| | Luminous sustainability | Minimum of 250 LUX ** |
| Accurate Voltage Range | | 0–50 VDC **** |
| Absolute maximum voltage | | 75 VDC **** |
| Sensor resolution | | 0.025 VDC |
| Conversion time | | 1ms |
| Accuracy | | +/- (0.5 V + 3% of Reading) ***** |
| User-calibrated accuracy | | +/- (0.3 V + 1% of Reading) ****** |
| Input Impedance | | 1 MOhm |
| Datalogging | | Datalogs 2000 to 4000 readings if gateway connection is lost (non-volatile flash, persists through the power cycle):<br>- 10-minute heartbeats = ~ 22 days<br>- 2-hour heartbeats = ~ 266 days |
| Wireless range | | 1,200+ ft non-line-of-sight |
| Security | | Encrypt-RF® (256-bit key exchange and AES-128 CTR) |
| Weight | | 4.7 ounces |
| Enclosure rating | | NEMA 1, 2, 4, 4x, 12 and 13 rated, sealed and weather proof |
| UL rating | | UL Listed to UL508-4x specifications (File E194432) |
| Certifications | | 900 MHz product; FCC ID: ZTL-G2SC1 and IC: 9794A-G2SC1. 868 and 433 MHz product tested and found to comply with: EN 300 220-2 V3.1.1 (2017-02), EN 300 220-2 V3.1.1 (2017-02) and EN 60950 |

* Hardware cannot withstand negative voltage. Please take care when connecting a power device.

** Solar feature's energy harvesting circuitry works indoors with low light. Sensor with solar circuitry requires minimum light level to start-up

*** Light present 25% of day yields 125% of operating power to support 10-minute heartbeats.

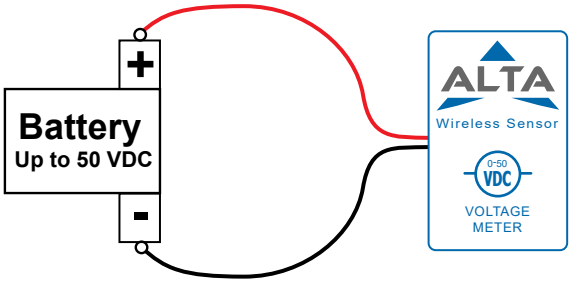
**** The sensor is capable of measuring above 50 volts but may not meet the specified accuracy above this value.

***** Due to diode reverse voltage protection the sensor typically has a -0.3 volt offset between 0 and 5 Volts.

****** For best results calibrate at a voltage between 50% and 90 % of the voltage range. If the max application voltage is below 50% of the voltage range (25V) calibrate to the max application voltage instead. It is not recommended to calibrate the sensor below 6 Volts.

## Proper Installation

If the sensor is not connected to the battery (power source) properly, it will appear that the sensor is broken. Please follow this wiring diagram to ensure proper performance and detection.




## Commercial Grade Sensors

Monnit commercial grade sensors are designed for applications in ordinary environments (normal room temperature, humidity and atmospheric pressure). Do not use these sensors under the following conditions as these factors can deteriorate the product characteristics and cause failures and burnout.

- Corrosive gas or deoxidizing gas: chlorine gas, hydrogen sulfide gas, ammonia gas, sulfuric acid gas, nitric oxides gas, etc.
- Volatile or flammable gas
- Dusty conditions
- Low-pressure or high-pressure environments
- Wet or excessively humid locations
- Places with salt water, oils chemical liquids or organic solvents
- Where there are excessively strong vibrations
- Other places where similar hazardous conditions exist

Use these products within the specified temperature range. Higher temperature may cause deterioration of the characteristics or the material quality.

## Industrial Grade Sensors | Type 1, 2, 4, 4X, 12 and 13 NEMA Rated Enclosure

Monnit's Industrial sensors are enclosed in reliable, weatherproof NEMA-rated enclosures. Our NEMA-rated enclosures are constructed for both indoor or outdoor use and protect the sensor circuitry against the ingress of solid foreign objects like dust as well as the damaging effects of water (rain, sleet, snow, splashing water, and hose-directed water).

- Safe from falling dirt
- Protects against wind-blown dust
- Protects against rain, sleet, snow, splashing water, and hose-directed water
- Increased level of corrosion resistance
- Will remain undamaged by ice formation on the enclosure

MONNIT®

For more information about our products or to place an order, please contact our sales department at 801-561-5555.

Visit us on the web at www.monnit.com.

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