

# ALTA® Wireless 500 AC Voltage Meters

## General Description

[ALTA® Wireless 500 AC Voltage Meters](#) measure the voltage of an AC power system in volts alternating current (VAC) Root Mean Square (RMS) on user-specified intervals. The meter can measure up to 500 VAC RMS.

## Key Features

- ▶ Measures voltage up to 500 VAC RMS
- ▶ Resolution: 0.1 VAC RMS
- ▶ Accuracy:
  - ▶ Uncalibrated:  $\pm (1 \text{ Volt} + 2\% \text{ of reading})$
  - ▶ Calibrated:  $\pm (0.5 \text{ Volt} + 1\% \text{ of reading})$
- ▶ Configurable thresholds for critical condition monitoring

## Principles of Operation

The ALTA Wireless 500 AC Voltage Meter measures the single-ended AC voltage across its two leads based on a user-configurable time interval or Heartbeat. On every Heartbeat, the sensor converts the analog voltage signal to a digital voltage measurement. This measurement is then sent to the gateway, making the data available in iMonnit or another approved data service.

The ALTA 500 AC Voltage Meter can be calibrated for improved accuracy. Also, remember to remove any active voltages from the measurement leads when replacing batteries or performing other maintenance.

## Example Applications

- ▶ Power Lines
- ▶ Machinery
- ▶ Electrical Motors
- ▶ Generators
- ▶ Additional applications

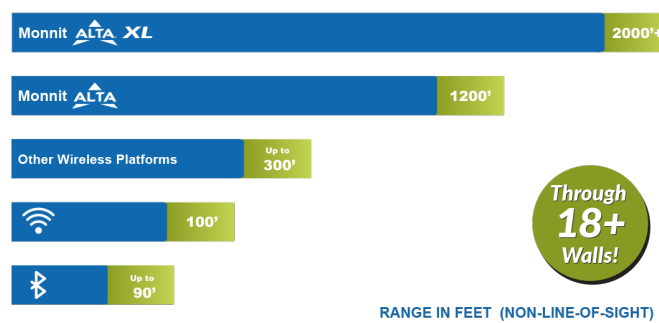
## Features of Monnit ALTA Sensors

- Wireless range of 2,000+ feet through 18+ walls<sup>1</sup>
- Frequency-Hopping Spread Spectrum (FHSS)
- Best-in-class interference immunity
- Best-in-class power management for longer battery life<sup>2</sup>
- Encrypt-RF® Security (Diffie-Hellman Key Exchange + Advanced Encryption Standard (AES)-128 Cipher Block Chaining (CBC) for sensor data messages)
- Sensor logs 2000 to 4000 readings if the gateway connection is lost (non-volatile flash, persists through power cycling):
  - 10-minute Heartbeats = ~ 22 days
  - 2-hour Heartbeats = ~ 266 days
- Automatic over-the-air updates to sensor firmware (future-proof)
- Free iMonnit Basic Online Wireless Sensor Monitoring and Notification System to configure sensors, view data, and send alerts via SMS text, email, and voice call

<sup>1</sup> Actual range may vary depending on the environment and gateway.

<sup>2</sup> Battery life is determined by the sensor reporting frequency and other variables. Other power options are also available.

## Wireless Range Comparison

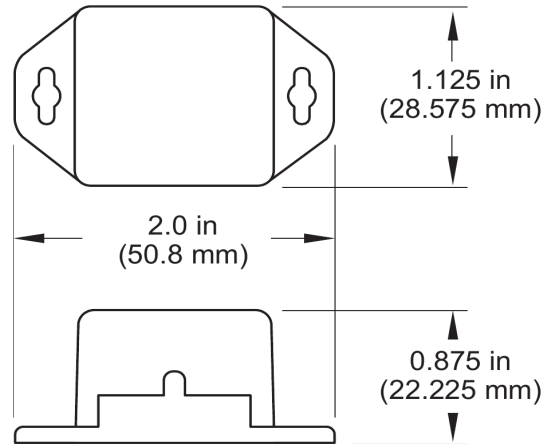
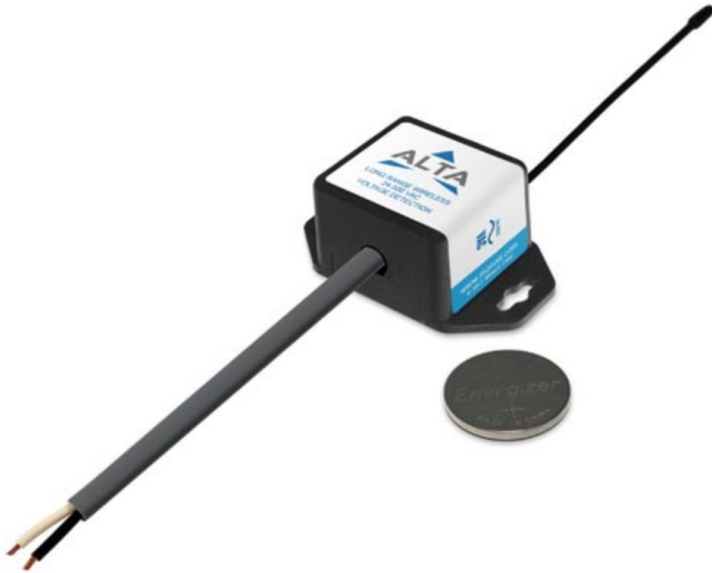


## Technical Specification | ALTA® Wireless 500 VAC Voltage Meters

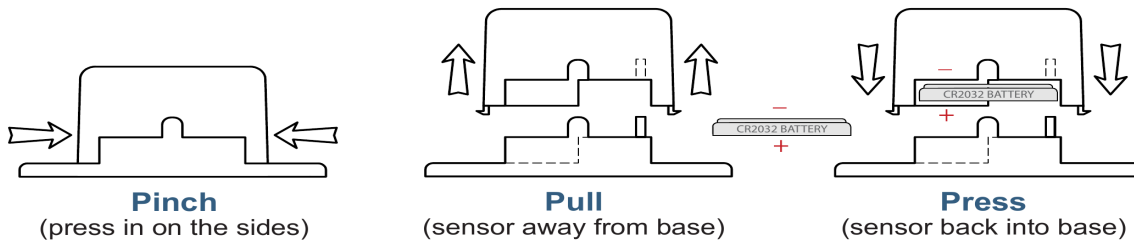
|               |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Voltage Meter | Accurate Range                                                                      | 0–500 VAC RMS                                                                                                                                                                                                                                                                                                                                                                                             |
|               | Absolute Maximum Input Voltage                                                      | 600 VAC RMS <sup>1</sup>                                                                                                                                                                                                                                                                                                                                                                                  |
|               | Accuracy                                                                            | +/- (1 Volt +2% of reading)                                                                                                                                                                                                                                                                                                                                                                               |
|               | Calibrated Accuracy                                                                 | +/- (0.5 Volt +1% reading)                                                                                                                                                                                                                                                                                                                                                                                |
|               | Resolution                                                                          | 0.1 VAC RMS                                                                                                                                                                                                                                                                                                                                                                                               |
|               | Input Impedance                                                                     | 2 MOhm                                                                                                                                                                                                                                                                                                                                                                                                    |
|               | Response Time                                                                       | ~ 1 Second                                                                                                                                                                                                                                                                                                                                                                                                |
| Lead          | Cable length                                                                        | Standard: 0.3 m (1 ft)                                                                                                                                                                                                                                                                                                                                                                                    |
|               | Wire count                                                                          | 2-conductor (black/white)                                                                                                                                                                                                                                                                                                                                                                                 |
|               | Wire gauge                                                                          | 18 AWG                                                                                                                                                                                                                                                                                                                                                                                                    |
|               | Conductor material                                                                  | Stranded Copper 7/30                                                                                                                                                                                                                                                                                                                                                                                      |
|               | Insulation                                                                          | PVC/Nylon THHN 0.045"                                                                                                                                                                                                                                                                                                                                                                                     |
|               | Shield                                                                              | Yes                                                                                                                                                                                                                                                                                                                                                                                                       |
|               | Shield Material                                                                     | Aluminum Foil/Polyester Shield w/100% coverage                                                                                                                                                                                                                                                                                                                                                            |
|               | Jacket                                                                              | PVC (black)                                                                                                                                                                                                                                                                                                                                                                                               |
|               | Overall Diameter                                                                    | 7.1 mm (0.280")                                                                                                                                                                                                                                                                                                                                                                                           |
|               | Ratings / Approvals                                                                 | UL                                                                                                                                                                                                                                                                                                                                                                                                        |
|               | Temperature Rating                                                                  | 90 °C (194°F)                                                                                                                                                                                                                                                                                                                                                                                             |
|               | Voltage Rating                                                                      | 600 V                                                                                                                                                                                                                                                                                                                                                                                                     |
| ALTA Wireless | Data logging                                                                        | Sensor logs 2000 to 4000 readings if gateway connection is lost (non-volatile flash, persists through power cycling): 10-minute Heartbeats = ~22 days - 2-hour Heartbeats = ~266 days                                                                                                                                                                                                                     |
|               | Wireless protocol                                                                   | ALTA Proprietary Frequency-Hopping Spread Spectrum (FHSS)                                                                                                                                                                                                                                                                                                                                                 |
|               | Wireless transmission power (EIRP)                                                  | 50 mW (900MHz), 25 mW (868 MHz), 10 mW (433 MHz)                                                                                                                                                                                                                                                                                                                                                          |
|               | Wireless range                                                                      | 2,000+ ft. through 18+ walls with the ALTA XL® Gateway                                                                                                                                                                                                                                                                                                                                                    |
|               | Security                                                                            | Encrypt-RF® (256-bit key exchange and AES-128 CTR)                                                                                                                                                                                                                                                                                                                                                        |
| General       | Battery voltage range                                                               | 2.0 to 3.8 VDC                                                                                                                                                                                                                                                                                                                                                                                            |
|               | Operating altitude (non-pressurized environments)                                   | -15.2 to 1,982 m (-50 to 6,500 ft) <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                           |
|               | Storage altitude (non-pressurized environments)                                     | -15.2 to 3,048 m (-50 to 10,000 ft) <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                          |
|               | Operating humidity                                                                  | 5 to 85% RH (non-condensing)                                                                                                                                                                                                                                                                                                                                                                              |
|               | Certifications                                                                      | 900 MHz sensors: FCC ID: ZTL-G2SC1 and IC: 9794A-G2SC1. 868 and 433 MHz sensors tested and comply with: EN 55032: 2015/A11:2020; EN 55035:2017/A11:2020; ETSI EN 300 220 V3.2.1 (2018-06); ETSI EN 301 489-3 V2.2.0. (2021-11); and ETSI EN 303 645. All sensors tested and comply with: EN 61010-1 and EN 60950 and meet RoHS 2015/863 and REACH 224 (June 2022), according to IEC 63000:2016/AMD1:2022. |
|               |  |                                                                                                                                                                                                                                                                                                                                                                                                           |

1. Connecting to power sources over 600 VAC RMS can damage the hardware.
2. Operating and storage altitude without DC power supply is -30.48 to 9144 m (-100 to 30000 ft).

The meter reports AC Voltage up to 500 VAC RMS.



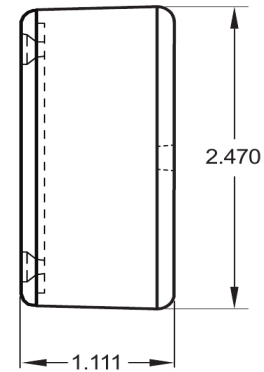
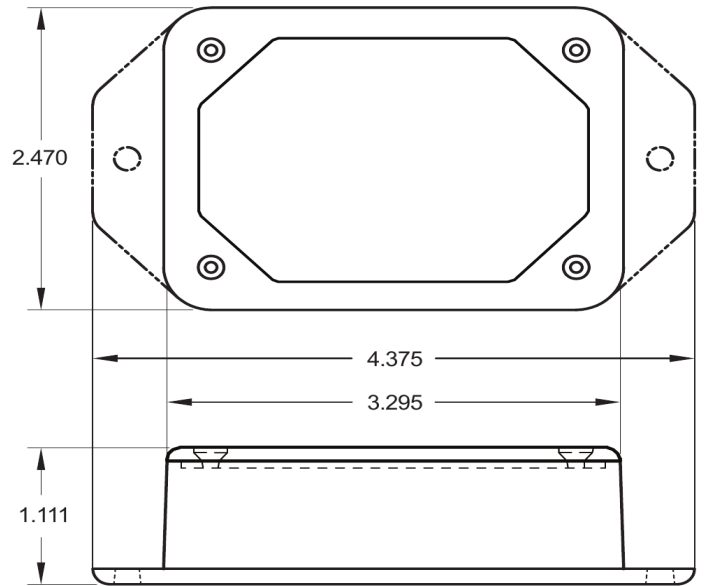
## PinchPower™ Enclosures



## Technical Specifications | ALTA® Commercial 500 VAC Voltage Meter

|                                                            |                                                              |
|------------------------------------------------------------|--------------------------------------------------------------|
| Battery <sup>1</sup>                                       | 1x 3.0V CR2032 Button Cell, 100 mAh                          |
| Battery Life                                               | 2+ years expected                                            |
| Operating temperature range (non-leaded measurement range) | 10°C to 50°C (50°F to 122°F)                                 |
| Wireless antenna type                                      | 1/4-wave, 20 gauge wire whip, 3.5" (900/868MHz), 7" (433MHz) |
| Weight                                                     | 1.0 oz. 28.35 g)                                             |

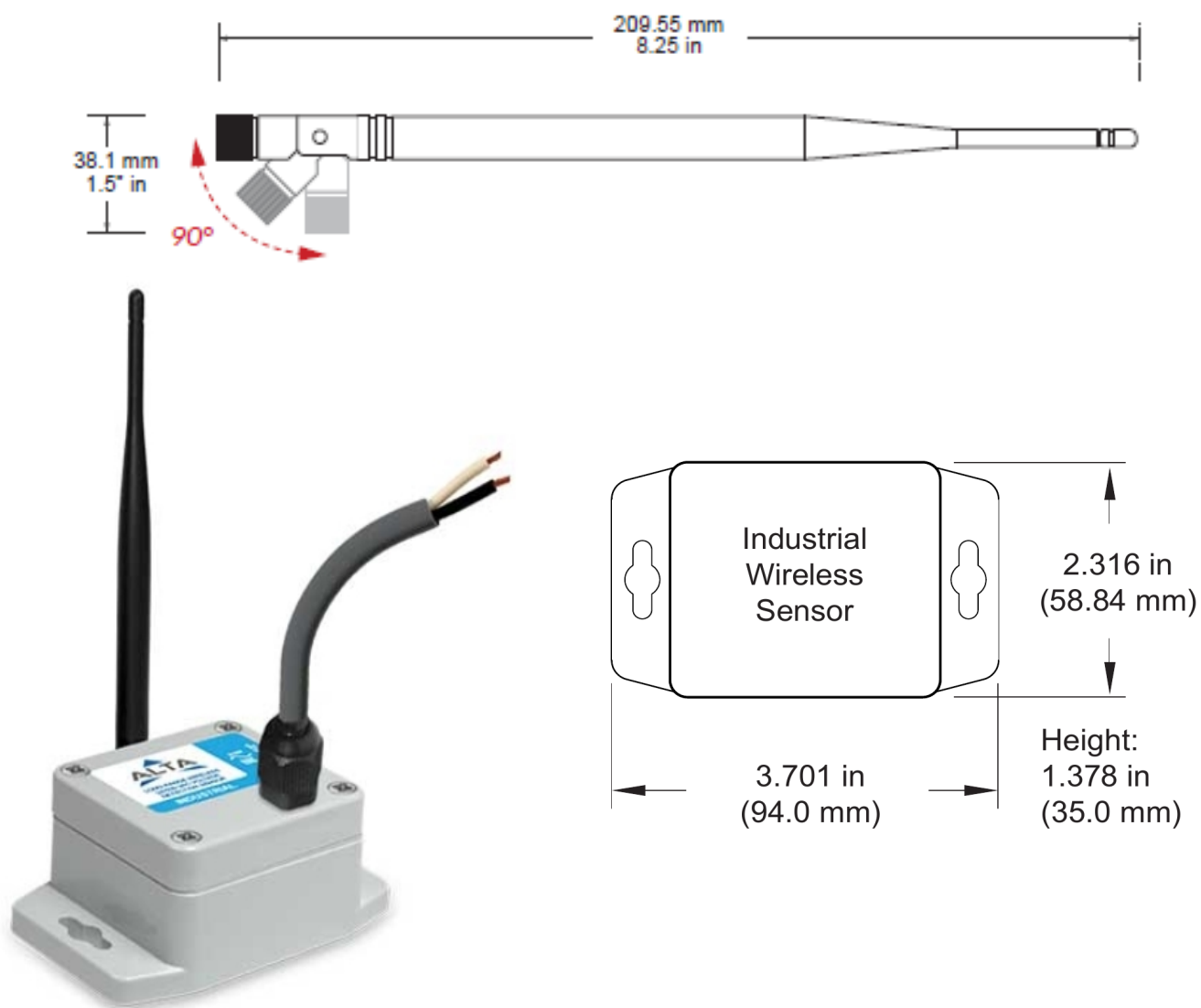
1. Hardware cannot withstand negative voltage. Please take care when inserting and removing battery.



#### Technical Specifications | ALTA® Enterprise 500 VAC Voltage Meter

|                                                                         |                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Battery <sup>1</sup>                                                    | 2x 1.5V AA Alkaline, 1500 mAh, (standard)<br>2x 1.5V AA Lithium, 3000 mAh, (optional)                                                                                                                                                 |
| Battery Life                                                            | 10+ years expected                                                                                                                                                                                                                    |
| Operating temperature range (non-leaded measurement range) <sup>2</sup> | -18°C to 55°C (0°F to 130°F) - AA Alkaline Batteries<br>-25°C to 60°C (-13°F to 140°F) - AA Lithium L91 Batteries<br>0°C to 40°C (32°F to 104°F) - US 5V Power Supply<br>10°C to 40°C (50°F to 104°F) - International 5V Power Supply |
| Wireless antenna type                                                   | 1/4-wave, 20 gauge wire whip, 3.5" (900/868MHz), 7" (433MHz)                                                                                                                                                                          |
| Weight                                                                  | 4 oz. (113.39 g)                                                                                                                                                                                                                      |

1. Hardware cannot withstand negative voltage. Please take care when inserting and removing batteries.
2. Operating below 0°C (-32°F) degrees will reduce battery life.



| Technical Specifications   ALTA® Industrial 500 VAC Voltage Meter       |                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Battery                                                                 | 1x 3.6V AA Lithium Thionyl Chloride, 1500mAh, pre-installed                                                                                                                                                             |
| Battery Life                                                            | 10+ years expected                                                                                                                                                                                                      |
| Operating temperature range (non-leaded measurement range) <sup>1</sup> | -40°C to 85°C (-40°F to 185°F)                                                                                                                                                                                          |
| Wireless antenna type                                                   | 1/2-wave waterproof dipole with RP-SMA connector and swivel neck; dBi of 3.0 (900/868MHz) or 2.5 (433 MHz); length of 8.27" (210mm) (900/868MHz) or 7.68" (195mm) (433 MHz); diameter at thickest point of 0.55" (14mm) |
| Weight                                                                  | 4.7 oz. (133 g)                                                                                                                                                                                                         |
| Enclosure rating                                                        | IP-65 (dust-proof and waterproof but not submersible)<br>NEMA 1, 2, 4, 4x, 12, and 13 rated, sealed, and weatherproof<br>UL Listed to UL508-4x specifications (File E194432)                                            |

1. Operating below 0°C (-32°F) degrees will reduce battery life.

## 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 oxide 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 temperatures 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 and the damaging effects of 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



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