

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

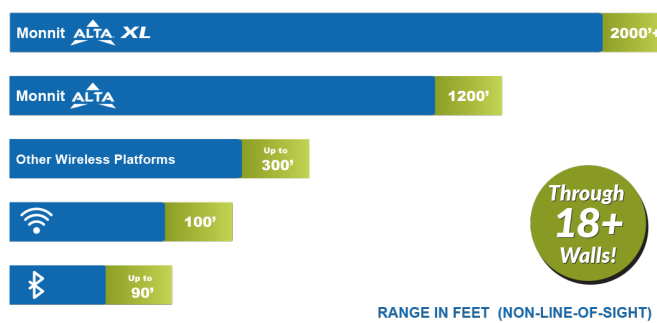
Features of Monnit ALTA Sensors

- Wireless range of 2,000+ feet through 18+ walls¹
- Frequency-Hopping Spread Spectrum (FHSS)
- Best-in-class interference immunity
- Best-in-class power management for longer battery life²
- 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

¹ Actual range may vary depending on the environment and gateway.

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

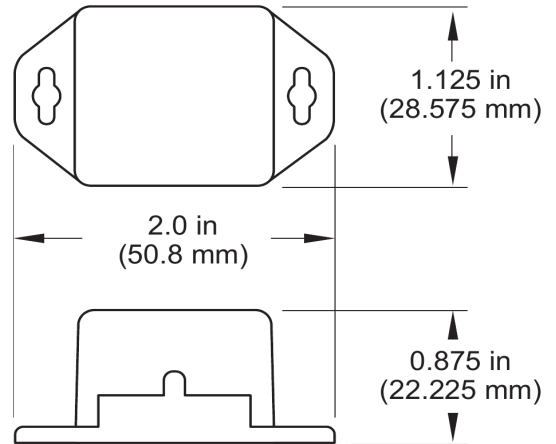
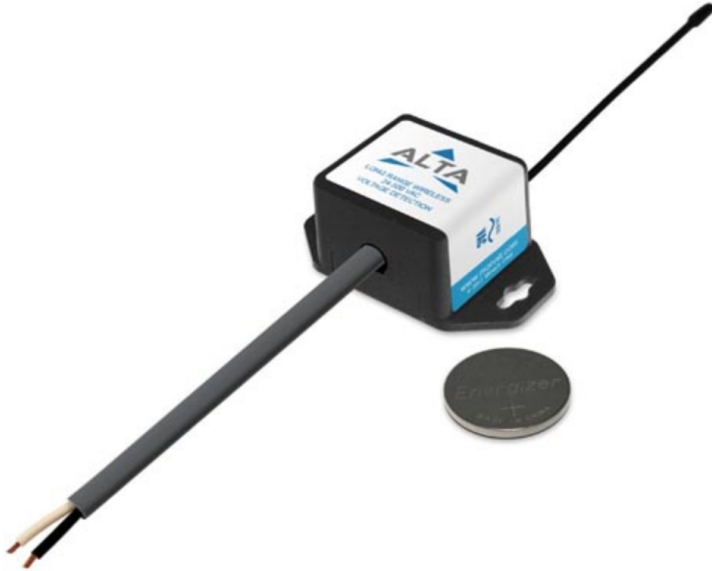
Wireless Range Comparison



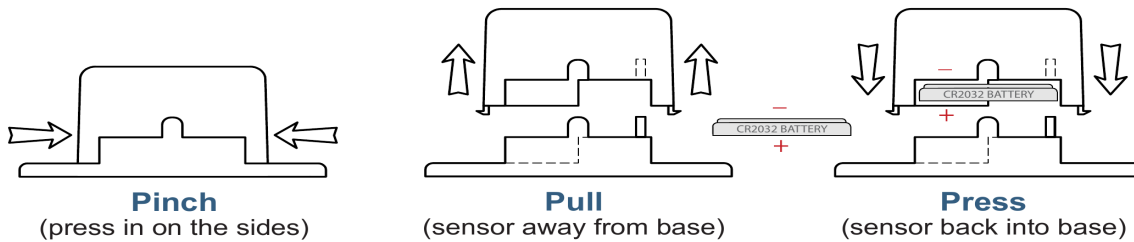
Technical Specification ALTA® Wireless 500 VAC Voltage Meters		
Voltage Meter	Accurate Range	0–500 VAC RMS
	Absolute Maximum Input Voltage	600 VAC RMS ¹
	Accuracy	+/- (1 Volt +2% of reading)
	Calibrated Accuracy	+/- (0.5 Volt +1% reading)
	Resolution	0.1 VAC RMS
	Input Impedance	2 MOhm
	Response Time	~ 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) ²
	Storage altitude (non-pressurized environments)	-15.2 to 3,048 m (-50 to 10,000 ft) ²
	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.



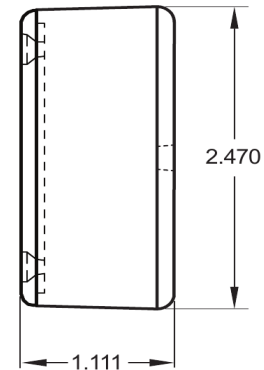
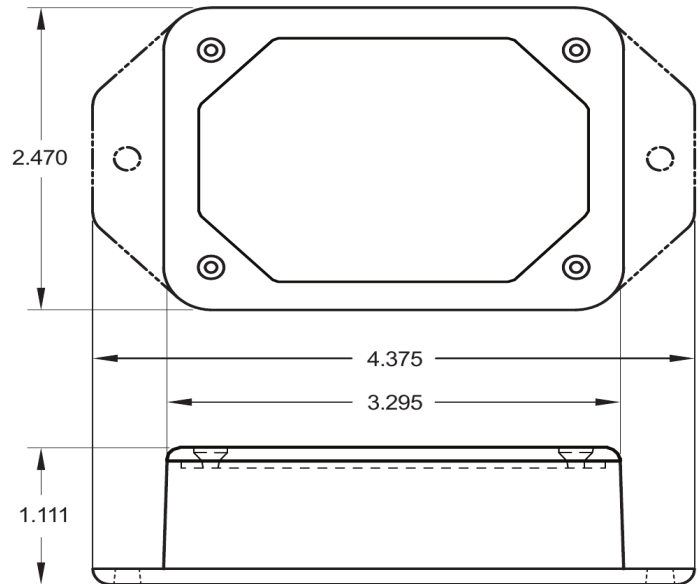
PinchPower™ Enclosures



Technical Specifications | ALTA® Commercial 500 VAC Voltage Meter

Battery ¹	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)

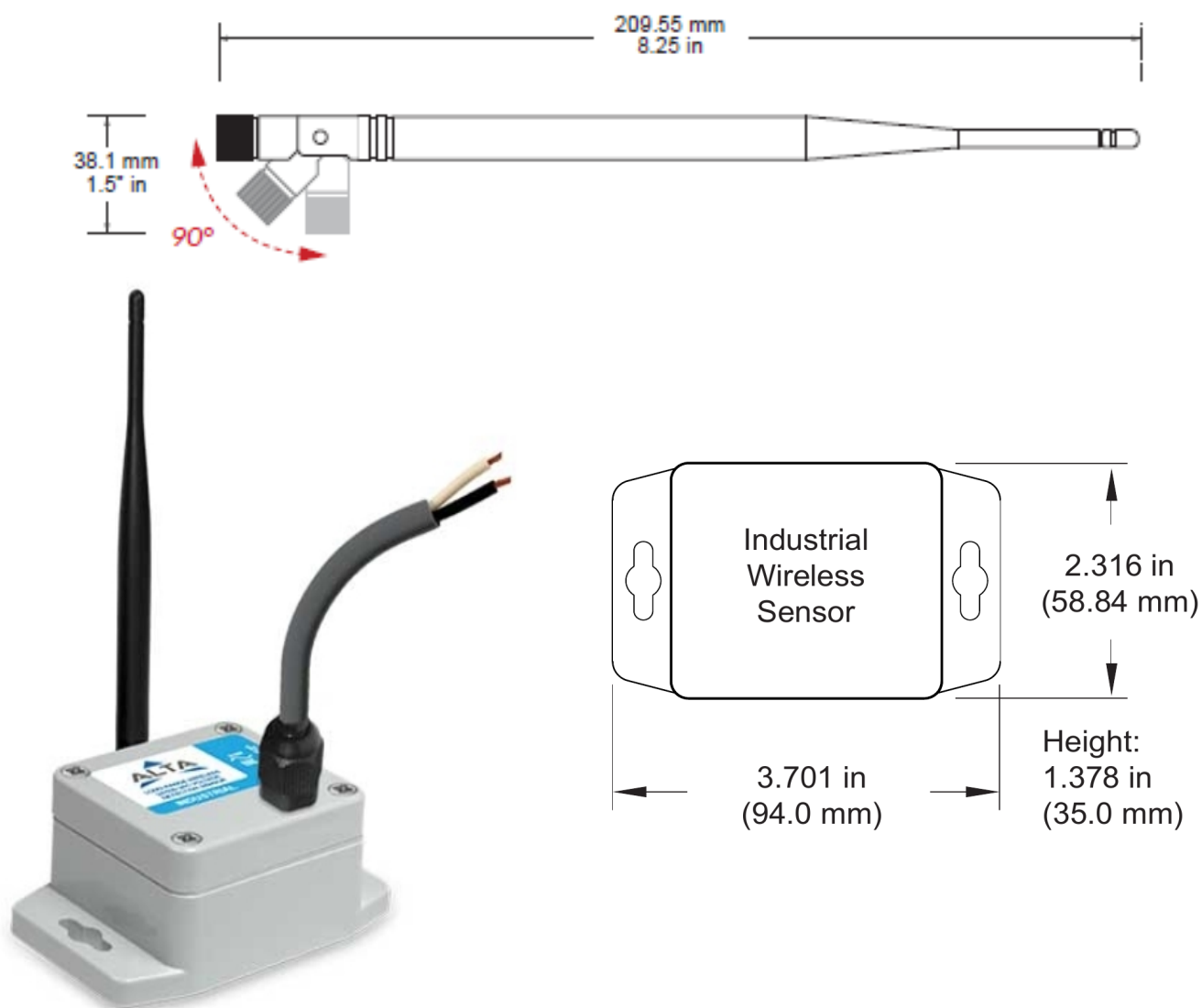
1. Hardware cannot withstand negative voltage. Please take care when inserting and removing battery.



Technical Specifications | ALTA® Enterprise 500 VAC Voltage Meter

Battery ¹	2x 1.5V AA Alkaline, 1500 mAh, (standard) 2x 1.5V AA Lithium, 3000 mAh, (optional)
Battery Life	10+ years expected
External line-power option ²	Input voltage: 5.0-12.0 V Power jack: 2.1 x 5.5 mm barrel, center positive
Operating temperature range (non-leaded measurement range) ³	-18°C to 55°C (0°F to 130°F) - AA Alkaline Batteries -25°C to 60°C (-13°F to 140°F) - AA Lithium L91 Batteries 0°C to 40°C (32°F to 104°F) - US 5V Power Supply 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. Batteries will provide backup power in the case the external power is removed.
3. 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) ¹	-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) NEMA 1, 2, 4, 4x, 12, and 13 rated, sealed, and weatherproof 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

