

Remote Monitoring for Business

ALTA® Wireless 0-5 and 0-10 VDC Voltage Meters

General Description

The [ALTA Wireless Voltage Meter](#) measures DC voltage up to 5V or 10V on user specified intervals.

Key Features

- ▶ Measurement Range: 0 to 5 VDC or 0 to 10 VDC
- ▶ Resolution: 1 mV
- ▶ Accuracy:
 - ▶ Uncalibrated: $\pm 2.0\%$ of reading ± 0.002 VDC
 - ▶ Calibrated: $\pm 0.5\%$ of reading ± 0.002 VDC
- ▶ Configurable thresholds for critical condition monitoring

Principles of Operation

The ALTA Wireless 5 and 10 VDC Voltage Meter measures the single-ended DC 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 5 and 10 VDC 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

- ▶ Battery health
- ▶ Voltage measurement
- ▶ Transducer measurement
- ▶ Machinery
- ▶ Electrical motors
- ▶ [Additional applications](#)

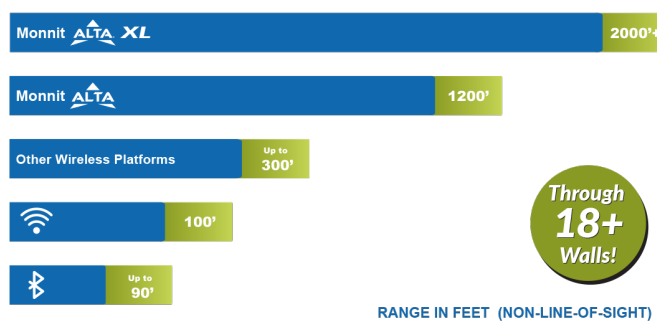
Features of Monnit ALTA Sensors


- 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

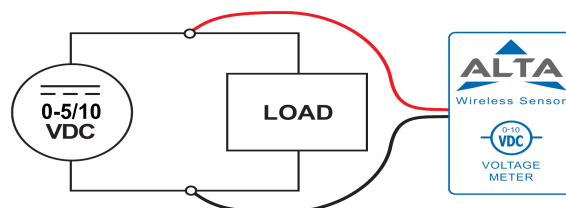


Technical Specification ALTA® Wireless 5 & 10 Voltage Meters			
Voltage Measurement	5 VDC Meter	Range	0 to 5 VDC ¹
		Input impedance	13 kOhm
		Max rated input	10 volts
	10 VDC Meter	Range	0 to 10 VDC ¹
		Input impedance	247 kOhm
		Max rated input	20 volts
	Uncalibrated accuracy		± 2.0% of reading ± 0.002 VDC
	Calibrated accuracy		± 0.5% of reading ± 0.002 VDC ²
Wire Lead	Resolution		1 mV
	Input impedance		247 kOhm
	Cable length		0.3 m (1')
	Wire count		2-conductor (red/black)
	Wire gauge		22 AWG
	Conductor material		Stranded Copper 7/30
	Insulation		PVC, 0.010"
	Shield		No
	Jacket		PVC (black)
	Overall diameter		3.56 mm (0.14")
	Ratings / Approvals		NEC (UL) Type CM, UL AWM Style 2464, CSA AWM FT4, RoHS Compliant
	Temperature Rating		-20° to 60°C (-4° to 140°F)
	Voltage Rating		300 V Max
	Dielectric Strength		1500 V RMS
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
	Wireless protocol		ALTA Proprietary Frequency-Hopping Spread Spectrum
	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)		-15.2 to 1,982 m (-50 to 6,500 ft) ³
	Storage altitude (non-pressurized environments)		-15.2 to 3,048 m (-50 to 10,000 ft) ³
	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
			

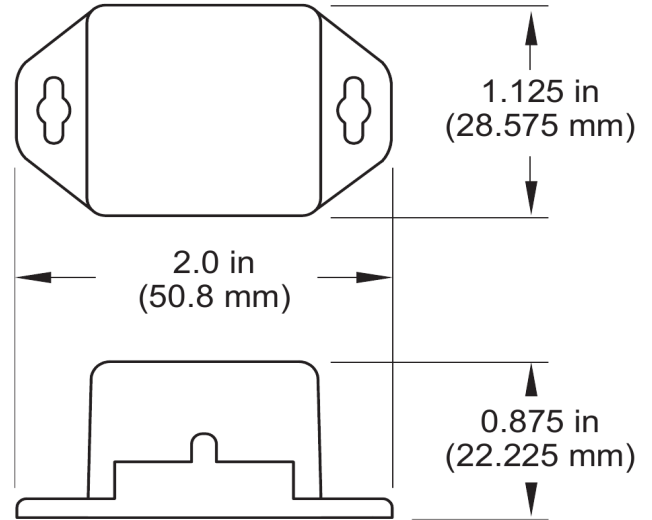
1. The sensor is capable of measuring above listed voltage but may not meet the specified accuracy above this value.
2. For best results calibrate at a voltage between 50% and 90% of the voltage range.
3. Operating and storage altitude without DC power supply is -30.48 to 9144 m (-100 to 30000 ft).

Proper Installation

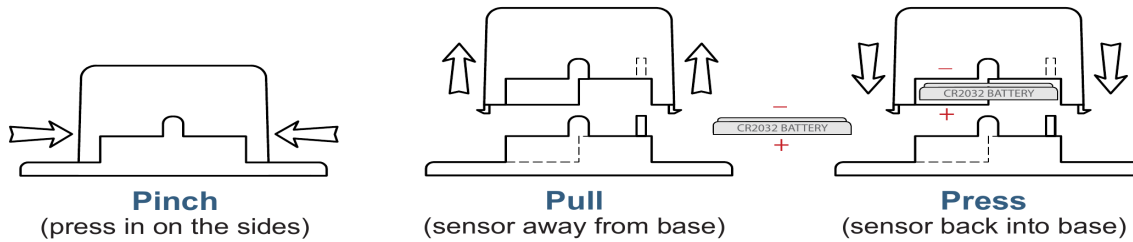
If the sensor is not connected to the power source properly, it will appear that the sensor is broken. Please follow this wiring diagram to ensure proper performance and detection.



The sensor reports the DC Voltage (VDC).



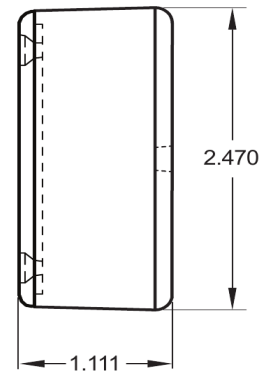
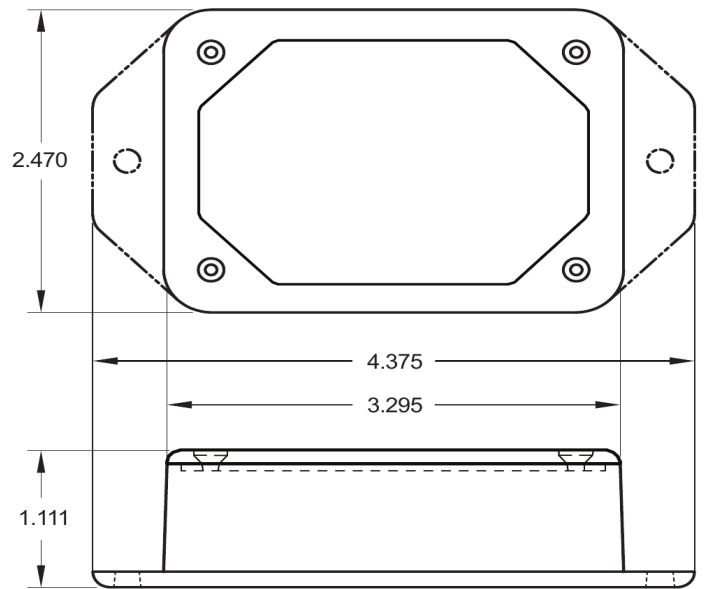
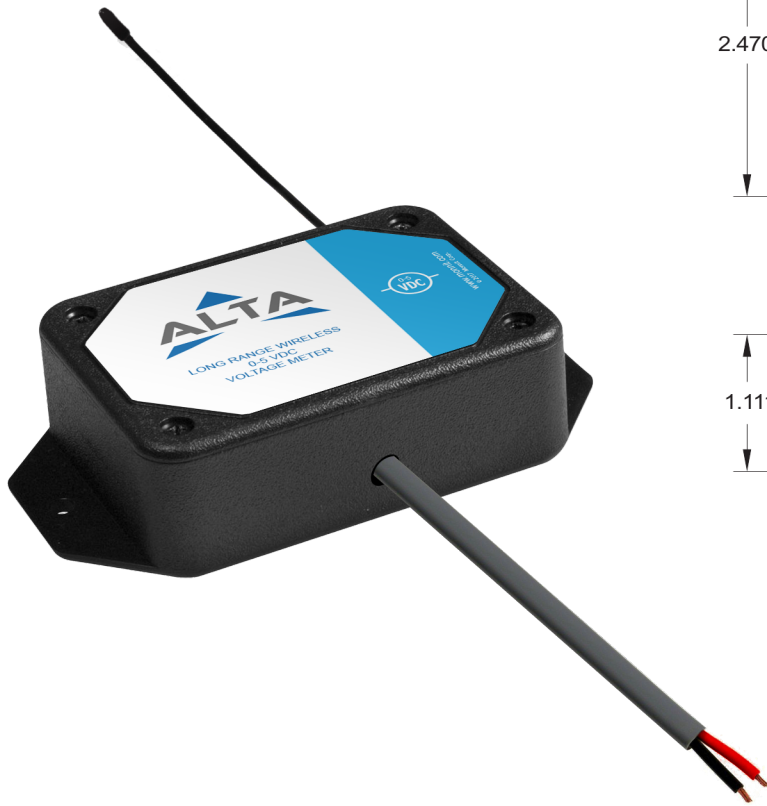
PinchPower™ Enclosures



Technical Specifications | ALTA® Commercial

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	0.7 oz. (19.84 g) with 0.3 m (1') lead

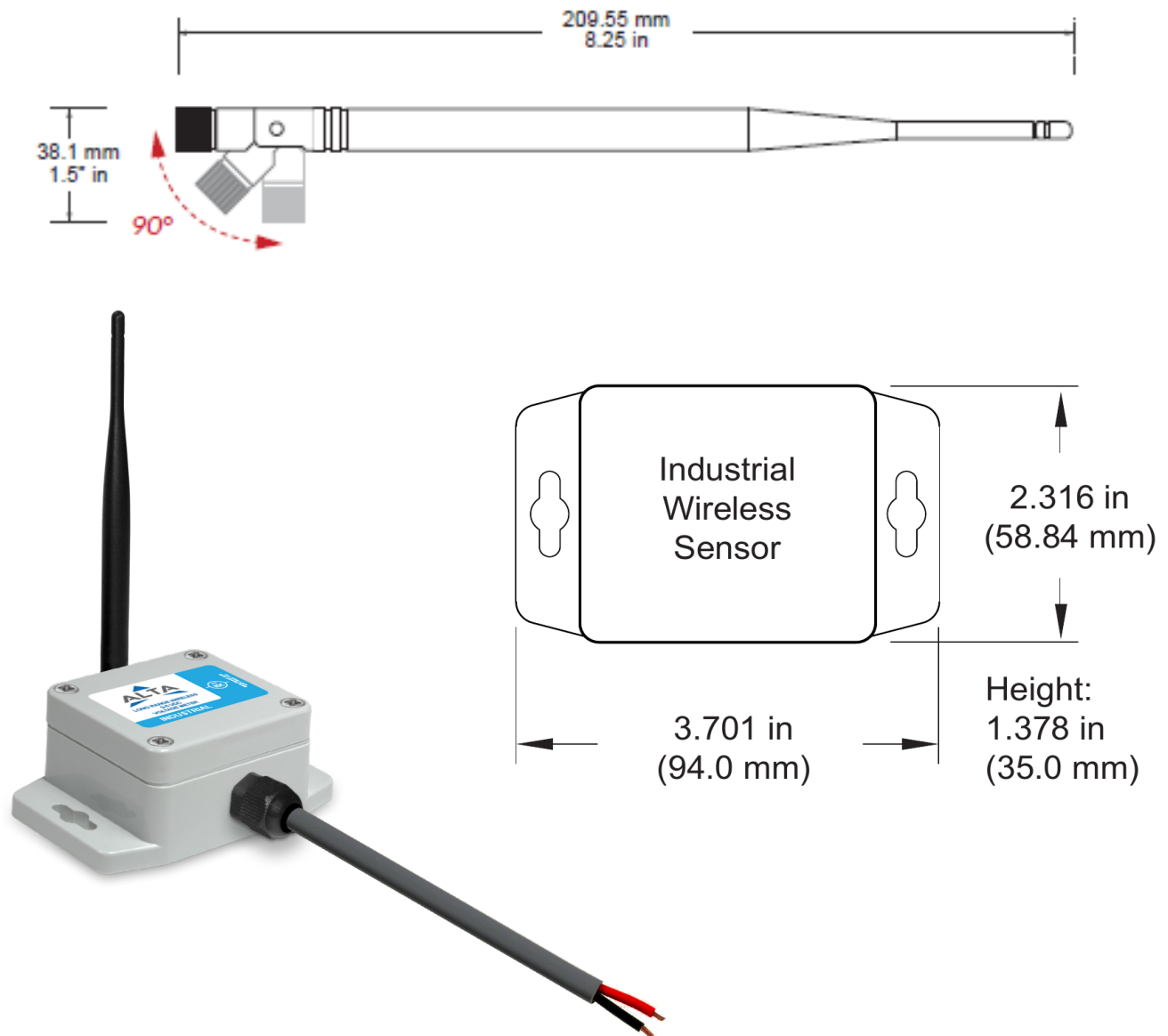
1. Hardware cannot withstand negative voltage. Please take care when inserting and removing battery.



Technical Specifications | ALTA® Enterprise

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	3.2 oz. (91 g) with 0.3m (1.0') lead

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

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) with 0.3 m (1') lead
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 indoor and 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



Monnit Corporation

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