

Remote Monitoring for Business

ALTA® Wireless 0–20 VDC Interface Volt Meter

General Description

The ALTA Wireless 0–20 VDC Interface Volt Meter measures the voltage between two electrical points. Connect it to the power and ground of any voltage source and measure within stated accuracy up to 20 VDC. You can connect to any variable voltage device, such as a transducer or sensor that outputs voltage. If the device to be measured is passive, you must supply your own excitation voltage to the device.

Key Features

- ▶ Accurate to $\pm (0.01 \text{ VDC} + 0.2\% \text{ of Reading})$.
- ▶ Accurate to $\pm (0.005 \text{ VDC} + 0.1\% \text{ of Reading})$ with user calibration
- ▶ Interfaces with any variable-voltage device
- ▶ 1 mV resolution

Principles of Operation

ALTA Wireless 0–20 VDC Interface Volt Meters read the voltage difference between two electrical points and report the measured voltage to iMonnit. It is programmed to sleep for a user-given time interval (Heartbeat) and then wake up, convert the analog data, mathematically compute the voltage, and transmit the data to the gateway, where it is then logged into cloud or local software, like iMonnit. You can configure defined thresholds and have the system alert on threshold breaches.

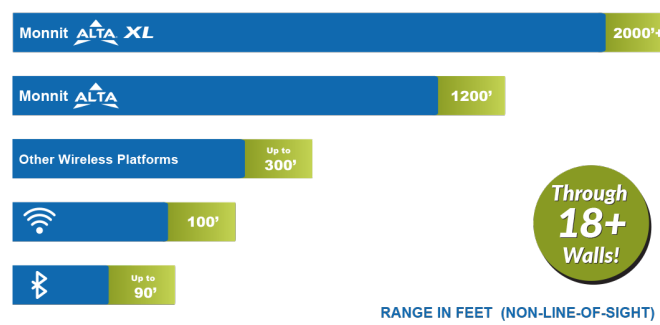
Example Applications

- ▶ 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 firmware over-the-air updates (future-proof)
- Free iMonnit Basic Online Wireless Sensor Monitoring and Notification System to configure sensors, view data, and send alerts via push notification, SMS text, email, and voice call

Wireless Range Comparison



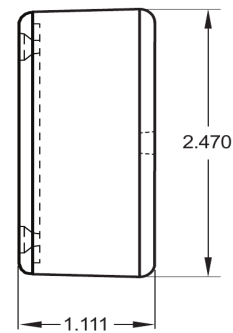
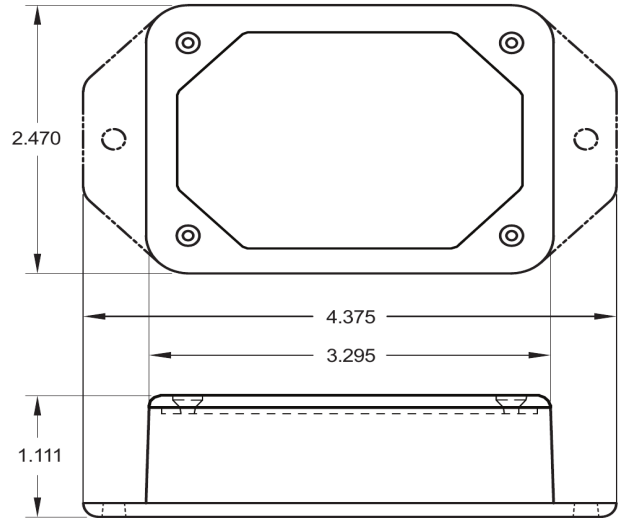
Technical Specification | ALTA® Wireless 20 VDC Meter

Voltage Measurement	Range	0.000 to 20.000 VDC ¹
	Accuracy	+/- (0.01 VDC + 0.2% of Reading)
	User-calibrated accuracy	+/- (0.005 VDC + 0.1% of Reading) ²
	Resolution	0.001 volts
	Open circuit voltage	~0.000 volts
	Max rated input	40.000 volts
	Input Impedance	210 kOhms
	Response time	1 seconds to reach 99.7% of input voltage
Cable	Voltage Rating	300 V
	Temperature Rating	-25~85°C
	Flammability Rating	VW-1
	Gauge	18 AWG (0.82 mm ²)
	Insulation Material	PVC
	Insulation Resistance @ 20°C	10 MΩ/km min
	Insulation Thickness	~0.5mm
	Type	Splittable Radio Wire
	Cross-section dimensions	4.4mm x 2.2mm
	Wire length	2 Wires, 1 ft (12 in), Red (+), Black (-) (Custom lengths available upon request)
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 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) 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 63000:2016/AMD1:2022 .



1. The sensor is capable of measuring above 20 volts 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).

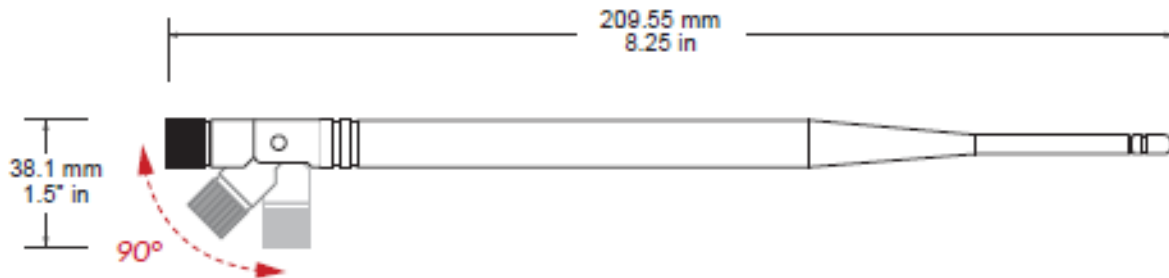
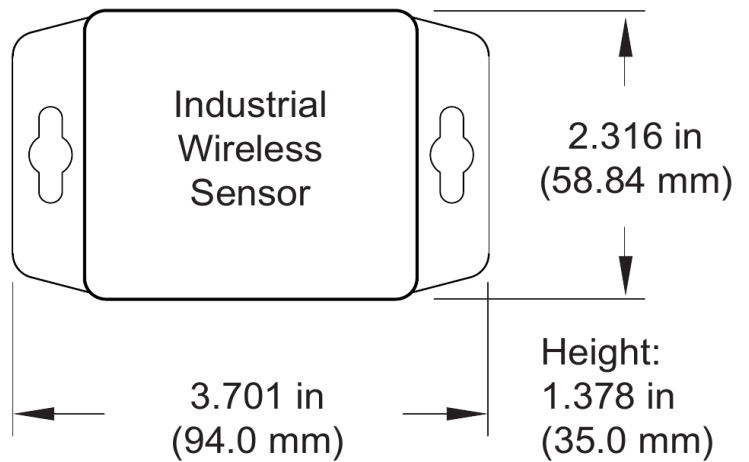
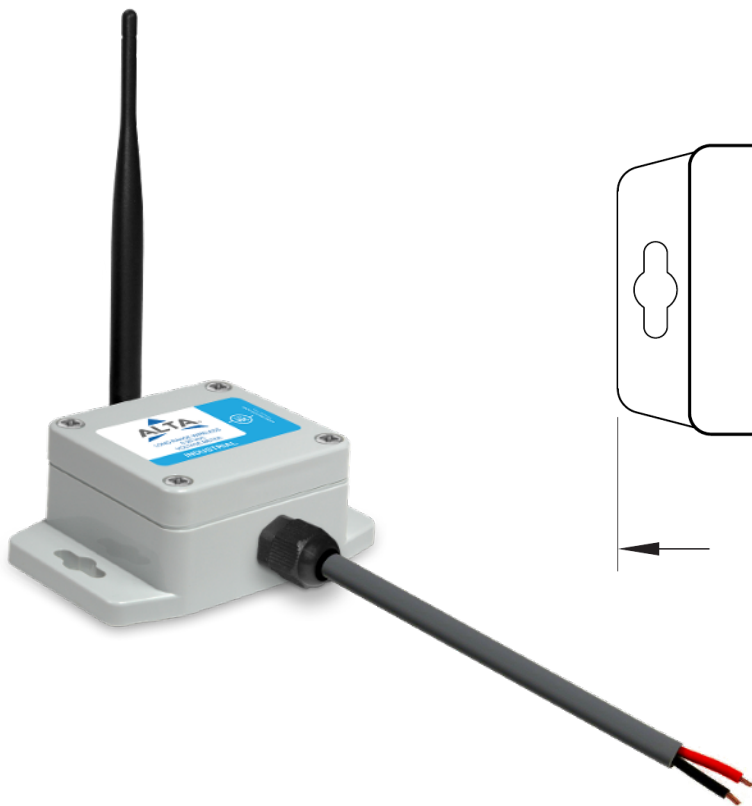
The sensor reports voltage across the red and black leads.



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	3.5 oz. (105 g) with 0.30 m (12.0") 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.



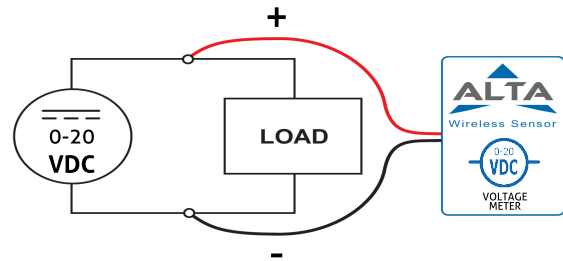
Technical Specifications | ALTA® Industrial

Battery	1x 3.6V AA Lithium Thionyl Chloride, 1500mAh, pre-installed
Battery Life	4+ 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 0.30 m (12.0") 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.

Proper Installation

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



Enterprise-Grade Sensors

Monnit Enterprise-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.



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