MONNIT®

The Leader in Low-Cost, Remote Monitoring Solutions

VDC

Wireless DC Voltage Detector

General Description

Monnit's industrial wireless DC voltage detection sensor detects the presence or absence of electricity. This device is intended for use on battery or other DC sources, up to 50 Volts. Not intended for use with AC Voltages. It is perfect for batteries, adapters, solar equipment, vehicles or machinery, and any other electrical appliance monitoring. The sensor triggers on voltage presence to voltage Absence and vice versa. The data is displayed as "Voltage Detected" or "No Voltage".

- Detects presence or absence of voltage.
- Voltage presence detected above ~.47 volts.
- Voltage absence detected below ~.47 volts.
- Detects voltages up to 50 volts.
- Reverse voltage protection, up to 50 Volts.

Free iMonnit basic online wireless sensor monitoring and notification system to configure sensors, view data and set alerts via SMS text and email.

Principle of Operation

The Monnit industrial wireless DC voltage detection sensor detects the presence or absence of voltage. The sensor triggers on voltage presence to voltage absence and vice versa. The data is displayed as "Voltage Detected" or "No Voltage". If no change is observed within the heartbeat interval, the state is continuously reported on the heartbeat interval. Transitions and heartbeat data is logged into a cloud service. The user can set the system to send an alert on either state, or on the transition of states.

Example Interfacing

- Battery Power
- Relays/Switches
- Appliances
- Adapters
- Solar
- Power Supplies
- Sump Pumps
- And many more...

Monnit Sensor Core Specifications

- Wireless Range: 250 - 300 ft. (non line-of-sight / indoors / through walls, ceilings & floors) *
- Communication: RF 900, 920, 868 and 433 MHz
- Power: Replaceable batteries (optimized for long battery life) - Line-power (AA version) and solar (Industrial version) options available
- Battery Life (at 1 hour heartbeat setting) **

AA battery >	4-8 years
Coin Cell >	2-3 years.
Industrial >	4-8 years

* Actual range may vary depending on environment.
** Battery life is determined by sensor reporting frequency and other variables.

Sensor Types & Options

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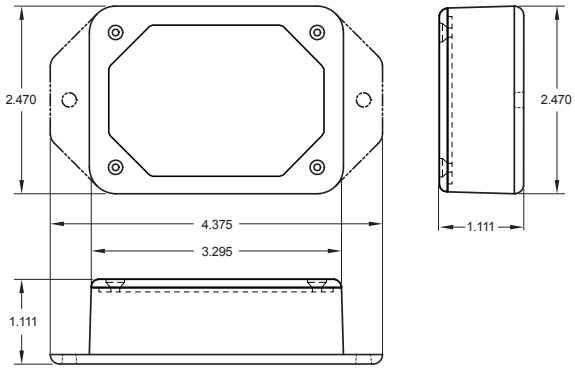
Wireless DC Voltage Detector (AA)

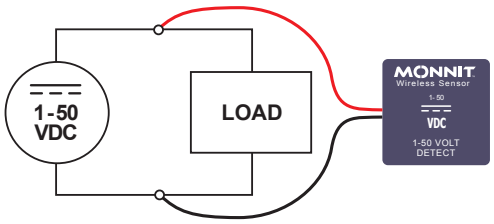


Technical Specifications	
Supply Voltage	2.0 - 3.6 VDC (3.0 - 3.6 VDC Using Power Supply)
Current Consumption	0.7 µA (sleep mode) 2 mA (radio idle/off mode) 2 mA (measurement mode) 25 mA (radio RX mode) 35 mA (radio TX mode)
Operating Temperature Range (Board Circuitry and Batteries)	-18°C to 55°C (0°F to 130°F) using alkaline -40°C to 85°C (-40°F to 185°F) using lithium *
Optimal Battery Temperature Range (AA)	+10°C to +50°C (+50°F to +122°F)
Maximum Rated Input Voltage	50.0 Volts
Minimum Rated Input Voltage	-50.0 Volts
Voltage Detection Threshold	Present above ~.47 Volt, Absent below ~.47 Volt
Trigger	Transmits data upon state change
Open Circuit Reading	Voltage Absent
Leaded Wire Specification	2 Wires, 1 ft. (12 in.), Red (+), Black (-), 18 AWG (Custom lengths available upon request)
Weight	4.0 oz.
Wireless Range	250 - 300 ft. (Indoors / Through walls, ceilings & floors) Range may vary according to environmental variables
Certifications	900 MHz product; FCC ID: ZTL- RFSC1 and IC: 9794A-RFSC1. 920 MHz product; ARIB STD-T108 R210-103733. 868 and 433 MHz product tested and found to comply with: CISPR 22:2008-09 / EN 55022:2010 - Class B and ETSI EN 300 220-2 V2.4.1 (2012-05).

* At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.

Proper Installation

IIf 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.

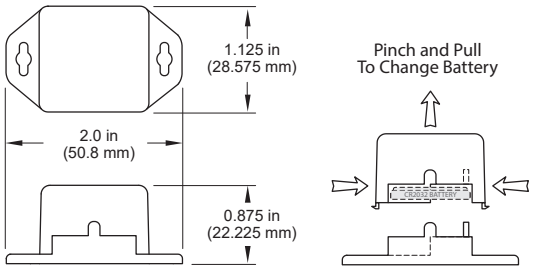


Power Options

Two replaceable 1.5V AA sized batteries are included with the standard model. A line-power version with battery backup is also available - allowing it to be powered by a standard 3.0 - 3.6V power supply and utilize the internal batteries if there is a power interruption.

Power options must be selected at time of purchase as the internal hardware of the sensor must be changed to support the selected power requirements.

Wireless DC Voltage Detector (Coin Cell)

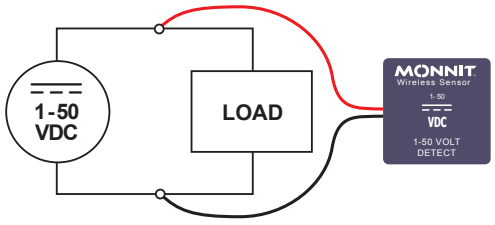


Technical Specifications	
Supply Voltage	2.0 - 3.6 VDC
Current Consumption	0.7 µA (sleep mode) 2 mA (radio idle/off mode) 2 mA (measurement mode) 25 mA (radio RX mode) 35 mA (radio TX mode)
Operating Temperature Range (Board Circuitry and Batteries)	-7°C to +60°C (20°F to +140°F)*
Optimal Battery Temperature Range (AA)	+10°C to +50°C (+50°F to +122°F)
Maximum Rated Input Voltage	50.0 Volts
Minimum Rated Input Voltage	-50.0 Volts
Voltage Detection Threshold	Present above ~.47 Volt, Absent below ~.47 Volt
Trigger	Transmits data upon state change
Open Circuit Reading	Voltage Absent
Leaded Wire Specification	2 Wires, 1 ft. (12 in.), Red (+), Black (-), 18 AWG (Custom lengths available upon request)
Weight	1.0 oz.
Wireless Range	250 - 300 ft. (Indoors / Through walls, ceilings & floors) Range may vary according to environmental variables
Certifications	900 MHz product; FCC ID: ZTL- RFSC1 and IC: 9794A-RFSC1. 920 MHz product; ARIB STD-T108 R210-103733. 868 and 433 MHz product tested and found to comply with: CISPR 22:2008-09 / EN 55022:2010 - Class B and ETSI EN 300 220-2 V2.4.1 (2012-05).

* At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.

Proper Installation

IIf 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.

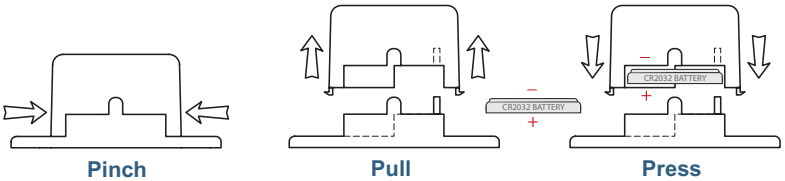


Power Options

Sensors are powered by a replaceable 3.0 V coin cell battery. Optional AA battery powered sensors are available. The AA version of these sensors are larger in size (3” [L] x 2.1” [W] x 1.2” [H]) and include two long-life AA batteries.

It is recommended that unless you are using the AA battery solution, you set heartbeat to no faster than one hour to preserve battery life.

PinchPower™ Enclosure

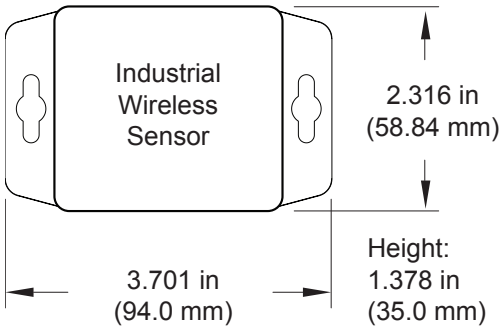


Pinch
(press in on the sides)

Pull
(sensor away from base)

Press
(sensor back into base)

Wireless DC Voltage Detector (Industrial)



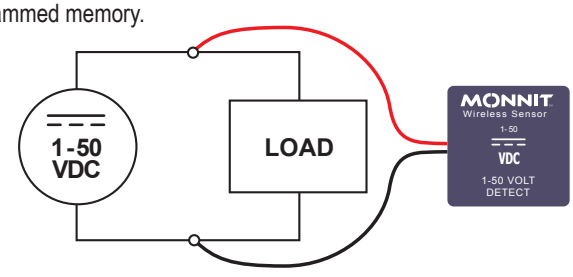
Technical Specifications		
Supply Voltage		2.0 - 3.6 VDC
Current Consumption		0.7 µA (sleep mode) 2 mA (radio idle/off mode) 2 mA (measurement mode) 25 mA (radio RX mode) 35 mA (radio TX mode)
Operating Temperature Range (Board Circuitry and Batteries)		
Included Battery	Max Temperature Range:	-40°C to +85°C (-40°F to +185°F) *
	Capacity:	-40° to +85°C (-40° to +185°F)
Optional Solar Feature	Solar Panel:	1500 mAh
	Charging Temperature Range:	5VDC / 30mA (53mm x 30mm)
	Max Temperature Range:	0° to 45°C (32° to 113°F)
	Included Rechargeable Battery:	-20° to 60°C (-4° to 140°F)
	Charging efficiency	5% **
	Luminous sustainability	Minimum of 10,000 LUX **
Maximum Rated Input Voltage		50.0 Volts
Minimum Rated Input Voltage		-50.0 Volts
Voltage Detection Threshold		Present above ~.47 Volt, Absent below ~.47 Volt
Trigger		Transmits data upon state change
Open Circuit Reading		Voltage Absent
Leaded Wire Specification		2 Wires, 1 ft. (12 in.), Red (+), Black (-), 18 AWG (Custom lengths available upon request)
Weight		5.0 oz.
Enclosure Rating		NEMA 1, 2, 4, 4x, 12 and 13 rated, sealed & weather proof
UL Rating		UL Listed to UL508-4x specifications (File E194432)
Wireless Range		250 - 300 ft. (Indoors / Through walls, ceilings & floors) Range may vary according to environmental variables
Certifications FC CE Industry Canada		900 MHz product; FCC ID: ZTL- RFSC1 and IC: 9794A-RFSC1. 920 MHz product; ARIB STD-T108 R210-103733. 868 and 433 MHz product tested and found to comply with: CISPR 22:2008-09 / EN 55022:2010 - Class B and ETSI EN 300 220-2 V2.4.1 (2012-05).

* At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.

** Solar Feature is only chargeable outside on full sunlight.

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.



Notes

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 burn-out.

- 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.
- Under low or high pressure.
- 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

ALTA® by MONNIT

The Leading Enterprise Internet of Things Solution

2-200 VDC

2-200 VOLT DETECT

Wireless DC Voltage Detection Sensors (2-200 VDC)

General Description

The ALTA DC Voltage Detector detects the presence or absence of electricity. It is intended for use on battery or other DC sources, up to 200 Volts. Not intended for use with AC Voltages. It is perfect for batteries, adapters, solar equipment, vehicles or machinery, and any other electrical appliance monitoring. The sensor triggers on voltage presence to voltage Absence and vice versa. The data is displayed as “Voltage Detected” or “No Voltage”.

- Detects presence or absence of Voltage
- Voltage presence detected above ~2 Volts
- Voltage absence detected below ~1.8 Volts
- Detects voltages up to 200 Volts
- Reverse voltage protection, up to 200 Volts

Principle of Operation

The ALTA DC Voltage Detector detects the presence or absence of voltage. The sensor triggers on voltage presence to voltage absence and vice versa. The data is displayed as “Voltage Detected” or “No Voltage”. If no change is observed within the heartbeat interval, the state is continuously reported on the heartbeat interval. Transitions and heartbeat data is logged into a cloud service. The user can set the system to send an alert on either state, or on the transition of states.

Example Applications

- Battery Power
- Relays/Switches
- Appliances
- Adapters
- Solar
- Power Supplies
- Sump Pumps
- Many additional applications

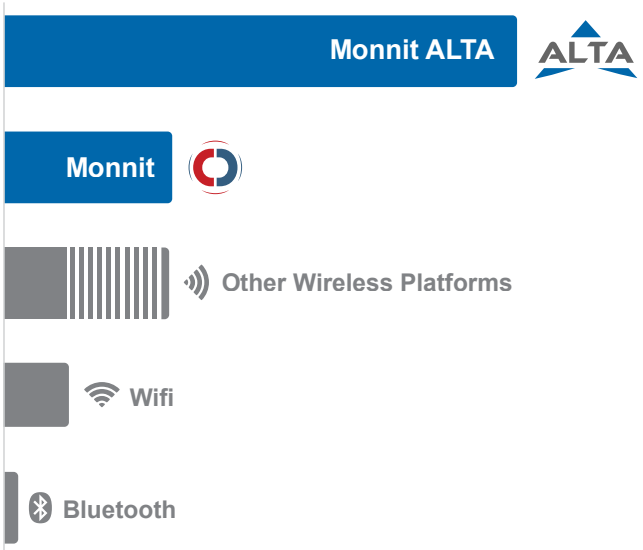
Features of Monnit ALTA Sensors

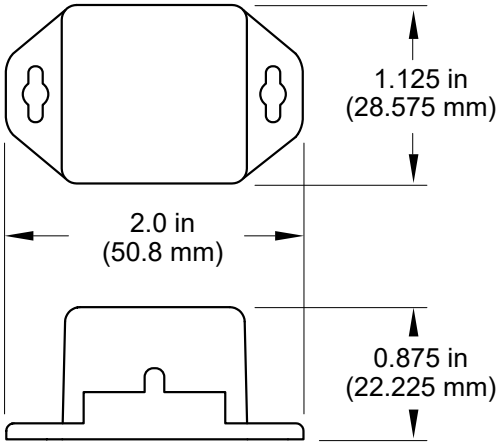
- Wireless range of 1,200+ feet through 12+ walls *
- Frequency-Hopping Spread Spectrum (FHSS)
- Improved interference immunity
- Improved power management for longer battery life ** (12+ years on AA batteries)
- Encrypt-RF® Security (Diffie-Hellman Key Exchange + AES-128 CBC for sensor data messages)
- All ALTA sensors now have up to 3200 readings:
  - 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

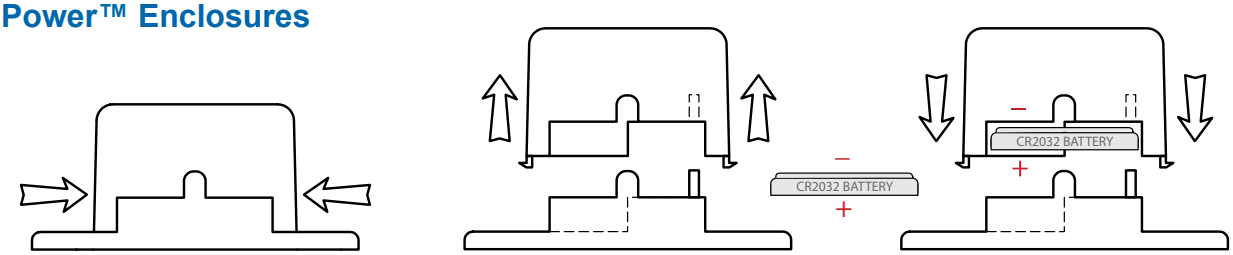




ALTA Commercial Coin Cell Wireless DC Voltage Detection Sensor | Technical Specifications	
Supply voltage	2.0–3.8 VDC *
Current consumption	0.2 µA (sleep mode), 0.7 µA (RTC sleep), 570 µA (MCU idle), 2.5 mA (MCU active), 5.5 mA (radio RX mode), 22.6 mA (radio TX mode)
Operating temperature range (board circuitry and coin cell)	-7°C to +60°C (20°F to +140°F) **
Optimal battery temperature range (coin cell)	+10°C to +200°C (+50°F to +392°F)
Maximum rated input voltage	200.0 Volts***
Minimum rated input voltage	-200.0 Volts ***
Voltage detection threshold	Present above ~2.3 VDC, Absent below ~1.8 VDC (Indeterminant from 1.8 to 2.3 VDC) ****
Trigger	Transmits data upon state change
Open circuit reading	Voltage absent
Input Impedance	2 MOhm
Response Time	~2 Seconds
Leaded wire specification	2 Wires, 1 ft (12 in), Red (+), Black (-), 22 AWG (Custom lengths available upon request)
Integrated memory	Up to 3200 sensor messages
Wireless range	1,200+ ft non-line-of-sight
Security	Encrypt-RF® (256-bit key exchange and AES-128 CTR)
Weight	0.7 ounces
Certifications FC Industry Canada	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 609200

* Circuit cannot withstand negative voltage. Please take care when installing batteries.
** At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.
*** Connecting to voltages over the rated voltage can damage the hardware.
**** The sensor may indicate present or absent in the indeterminant range.

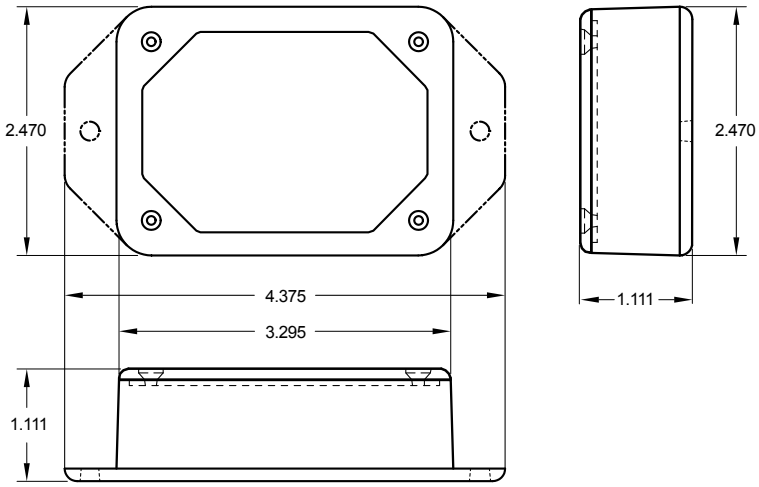
PinchPower™ Enclosures



Pinch
(press in on the sides)

Pull
(sensor away from base)

Press
(sensor back into base)

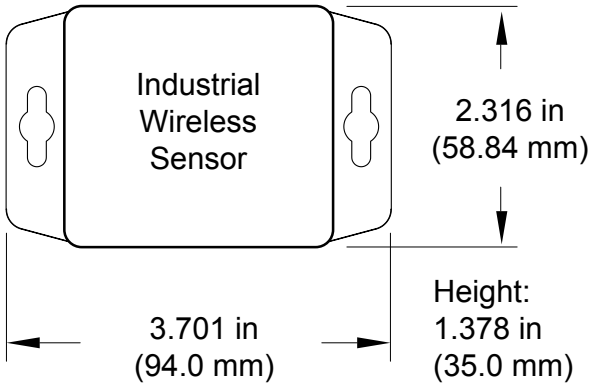


ALTA Commercial AA Wireless DC Voltage Detection Sensor | Technical Specifications	
Supply voltage	2.0–3.8 VDC (3.0–3.8 VDC using power supply) *
Current consumption	0.2 µA (sleep mode), 0.7 µA (RTC sleep), 570 µA (MCU idle), 2.5 mA (MCU active), 5.5 mA (radio RX mode), 22.6 mA (radio TX mode)
Operating temperature range (board circuitry and batteries)	-18°C to 55°C (0°F to 130°F) using alkaline -40°C to 85°C (-40°F to 185°F) using lithium **
Optimal battery temperature range (AA)	+10°C to +200°C (+50°F to +392°F)
Maximum rated input voltage	200.0 Volts***
Minimum rated input voltage	-200.0 Volts ***
Voltage Detection Threshold	Present above ~2.3 VDC, Absent below ~1.8 VDC (Indeterminant from 1.8 to 2.3 VDC) ****
Trigger	Transmits data upon state change
Open circuit reading	Voltage absent
Input Impedance	2 MOhm
Response Time	~2 Seconds
Leaded wire specification	2 Wires, 1 ft (12 in), Red (+), Black (-), 22 AWG (Custom lengths available upon request)
Integrated memory	Up to 3200 sensor messages
Wireless range	1,200+ ft non-line-of-sight
Security	Encrypt-RF® (256-bit key exchange and AES-128 CTR)
Weight	3.7 ounces
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 609200

* Circuit cannot withstand negative voltage. Please take care when installing batteries.
** At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.
*** Connecting to voltages over 200 volts can damage the hardware.
**** The sensor may indicate present or absent in the indeterminant range.

Power Options

The standard version of this sensor is powered by two replaceable 1.5 V AA sized batteries (included with purchase). This sensor is also available with a line power option. The line powered version of this sensor has a barrel power connector allowing it to be powered by a standard 3.0–3.6 V power supply. The line powered version also uses two standard 1.5 V AA batteries as backup for uninterrupted operation in the event of line power outage. Power options must be selected at time of purchase, as the internal hardware of the sensor must be changed to support the selected power requirements.

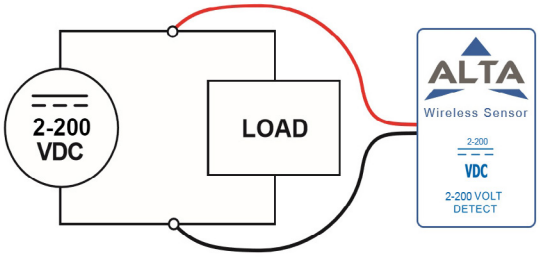


ALTA Industrial Wireless DC Voltage Detection Sensor | Technical Specifications		
Supply voltage		2.0–3.8 VDC (3.0–3.8 VDC using power supply) *
Current consumption		0.2 µA (sleep mode), 0.7 µA (RTC sleep), 570 µA (MCU idle), 2.5 mA (MCU active), 5.5 mA (radio RX mode), 22.6 mA (radio TX mode)
Operating 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	12000 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 ***
Maximum rated input voltage		200.0 Volts****
Minimum rated input voltage		-200.0 Volts ****
Voltage detection threshold		Present above ~2.3 VDC, Absent below ~1.8 VDC (Indeterminant from 1.8 to 2.3 VDC) ****
Trigger		Transmits data upon state change
Open circuit reading		Voltage absent
Input Impedance		2 MOhm
Response Time		~2 Seconds
Leaded wire specification		2 Wires, 1 ft (12 in), Red (+), Black (-), 22 AWG (Custom lengths available upon request)
Integrated memory		Up to 3200 sensor messages
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 UL2008-4x specifications (File E194432)
Certifications FC Industry Canada		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 609200

* Circuit cannot withstand negative voltage. Please take care when installing batteries.
** At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.
*** Light present 25% of day yields 125% of operating power to support 10-minute heartbeats.
**** Connecting to voltages over 200 volts can damage the hardware.
***** The sensor may indicate present or absent in the indeterminant range.

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.



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

ALTA by MONNIT

The Leading Enterprise Internet of Things Solution

4 - 500 VAC

VOLTAGE DETECT

Wireless AC Voltage Detection Sensors (4–500 VAC)

General Description

The ALTA wireless AC voltage detection sensor can interface with other devices to detect voltage from 4 VAC to 500 VAC. The sensor reports presence or absence of voltage when the 4 volt threshold is breached. It is intended for use on power sources or power supplies up to 500 VAC. Not intended for voltages higher than 600 VAC. Perfect for monitoring electrical appliances.

- Wireless interface for detecting voltage
- Detects voltage from 4 to 500 VAC.

Principle of Operation

The ALTA wireless AC voltage detection sensor can be connected to the hot(black) and neutral(white) terminals of an electrical device or power supply line, triggering on the state change from voltage presence to absence and vice versa. The information is sent to the iMonnit Online
Sensor Monitoring and Notification System where the data is displayed as either “No Voltage” or “Voltage Detected”. The data is stored in the online system and can be reviewed and exported as a spread sheet or graph. Notifications can also be set up through the online system to alert the user when certain criteria have been met.

Example Applications

- Sprinkler Systems
- HVAC Systems
- Appliances
- Electrical Sources
- Power Couplings
- Line Power
- Power Supplies
- Sump Pumps
- Many additional applications

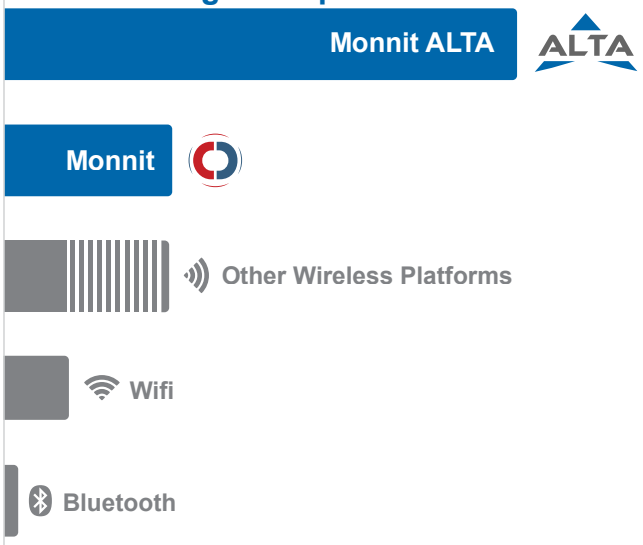
Features of Monnit ALTA Sensors

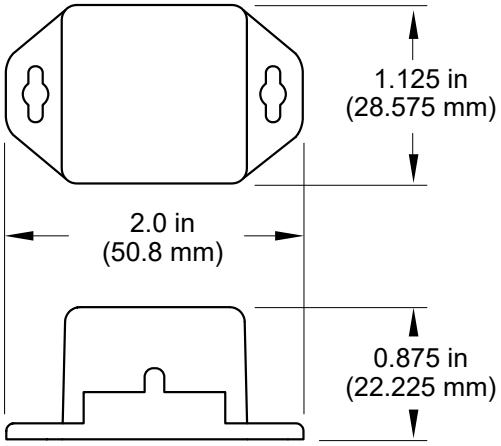
- Wireless range of 1,200+ feet through 12+ walls *
- Frequency-Hopping Spread Spectrum (FHSS)
- Improved interference immunity
- Improved power management for longer battery life ** (12+ years on AA batteries)
- Encrypt-RF® Security (Diffie-Hellman Key Exchange + AES-128 CBC for sensor data messages)
- 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

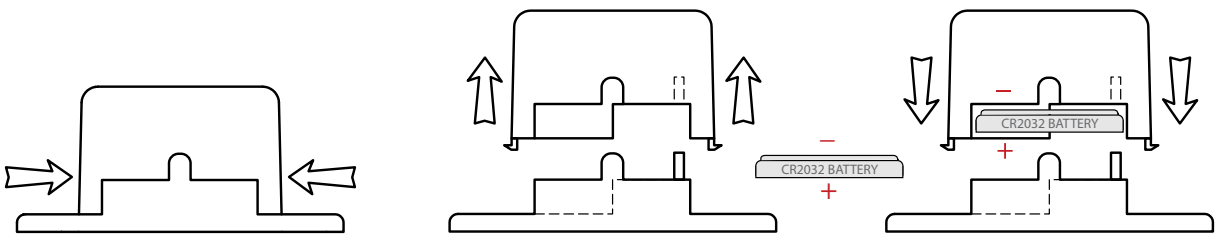




ALTA Commercial Coin Cell Wireless AC Voltage Detection Sensor | Technical Specifications	
Supply voltage	2.0–3.8 VDC *
Current consumption	0.2 µA (sleep mode), 0.7 µA (RTC sleep), 570 µA (MCU idle), 2.5 mA (MCU active), 5.5 mA (radio RX mode), 22.6 mA (radio TX mode)
Operating temperature range (board circuitry and coin cell)	-7°C to +60°C (20°F to +140°F)
Optimal battery temperature range (coin cell)	+10°C to +50°C (+50°F to +122°F)
Absolute Maximum Input Voltage	600 VAC rms **
Response Time	~1 Second
Minimum Detection Voltage	>4 VAC rms
Indeterminant Detection Region	3 - 4 VAC rms ***
Input Impedance	2 MOhm
Leaded Wire Specification	2 Wires, 1 ft (12 in), Black (Line), White (Common), 18 AWG (Custom lengths available upon request)
Datalogging	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
Wireless range	1,200+ ft non-line-of-sight
Security	Encrypt-RF® (256-bit key exchange and AES-128 CTR)
Weight	0.7 ounces
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

* Circuit cannot withstand negative voltage. Please take care when installing batteries.
** Connecting to power sources over 600 VAC rms can damage the hardware.
*** The sensor may indicate present or absent in this voltage range.

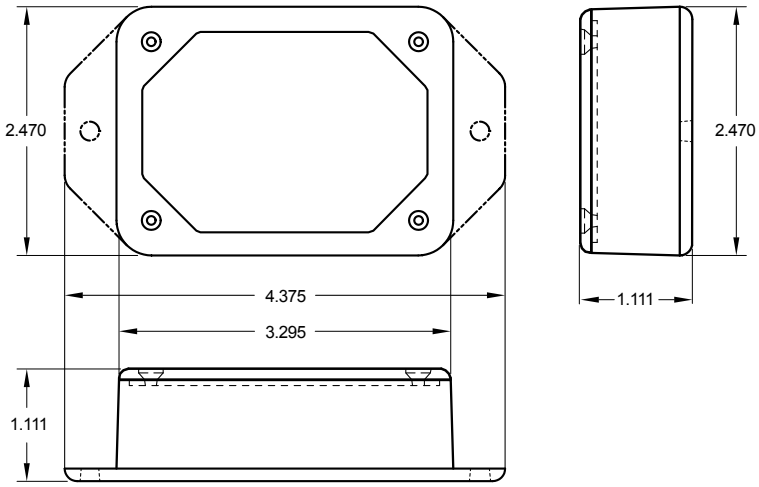
PinchPower™ Enclosures



Pinch
(press in on the sides)

Pull
(sensor away from base)

Press
(sensor back into base)



ALTA Commercial Coin Cell Wireless AC Voltage Detection Sensor | 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 coin cell)	-18°C to 55°C (0°F to +130°F) using alkaline -40°C to 85°C (-40°F to +185°F) using lithium
Optimal battery temperature range (AA)	+10°C to +50°C (+50°F to +122°F)
Absolute Maximum Input Voltage	600 VAC rms **
Response Time	~1 Second
Minimum Detection Voltage	> 4 VACrms
Indeterminant Detection Region	3 - 4 VAC rms ***
Input Impedance	2 MOhm
Leaded Wire Specification	2 Wires, 1 ft (12 in), Black (Line), White (Common), 18 AWG (Custom lengths available upon request)
Datalogging	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
Wireless range	1,200+ ft non-line-of-sight
Security	Encrypt-RF® (256-bit key exchange and AES-128 CTR)
Weight	0.7 ounces
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

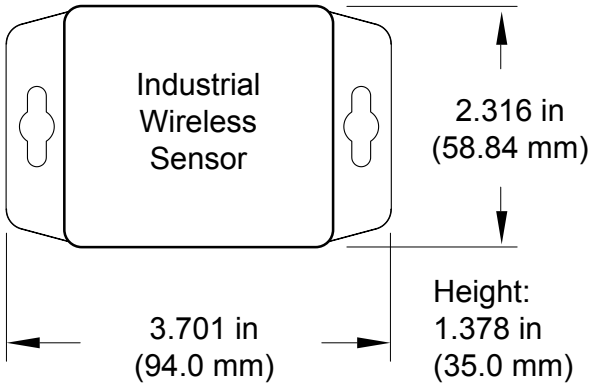
* Circuit cannot withstand negative voltage. Please take care when installing batteries.
** Connecting to power sources over 600 VAC rms can damage the hardware.
*** The sensor may indicate present or absent in this voltage range.

Power Options

The standard version of this sensor is powered by two replaceable 1.5 V AA sized batteries (included with purchase).

This sensor is also available with a line power option. The line powered version of this sensor has a barrel power connector allowing it to be powered by a standard 3.0–3.6 V power supply. The line powered version also uses two standard 1.5 V AA batteries as backup for uninterrupted operation in the event of line power outage.

Power options must be selected at time of purchase, as the internal hardware of the sensor must be changed to support the selected power requirements.

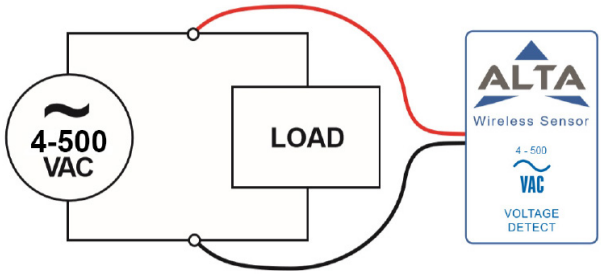


ALTA Industrial Wireless AC Voltage Detection Sensor | Technical Specifications		
Supply voltage		2.0–3.8 VDC (3.0–3.8 VDC using power supply) *
Current consumption		0.2 µA (sleep mode), 0.7 µA (RTC sleep), 570 µA (MCU idle), 2.5 mA (MCU active), 5.5 mA (radio RX mode), 22.6 mA (radio TX mode)
Operating 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	1500 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 ****
Absolute Maximum Input Voltage		600 VAC rms **
Response Time		~1 Second
Minimum Detection Voltage		> 4 VAC rms
Indeterminate Detection Region		3 – 4 VAC rms
Input Impedance		2 MOhm
Leaded wire specification		2 Wires, 1 ft (12 in), Black (Line), White (Common), 18 AWG (Custom lengths available upon request)
Datalogging		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
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

* Circuit cannot withstand negative voltage. Please take care when installing batteries.
** Light present 25% of day yields 125% of operating power to support 10-minute heartbeats
*** Connecting to power sources over 600 VACrms can damage the hardware.
**** Solar feature's energy harvesting circuitry works indoors with low light.
***** The sensor may indicate present or absent in this voltage range.

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.



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