ALTA by MONNIT

The Leading Enterprise Internet of Things Solution



Industrial Wireless Three Phase Current Meters

General Description

The ALTA Industrial Wireless Three Phase Current Meter measures the RMS current of an alternating current (AC) system using 3 current transformers (CTs) that wrap around the wires of a three phase power system. The sensor reports Minimum RMS current, maximum RMS current, average RMS current, and duty cycle for each phase and the combined amp hours of all three phases to the iMonnit system. The iMonnit system is capable of generating watt hour or kilowatt hour readings as well based on a user specified RMS voltage.

- Measures amp hours, max RMS current, min RMS current, average RMS current, and duty cycle for each phase and combined amp hours from all three phases
- 3 x 0-150 amp current transducers
- Capable of generating watt hour or kilowatt hour readings using iMonnit
- Data logging for accumulated amp hour readings
- Can notify based on current levels
- Simple and safe installation of current/power measurement hardware, no rewiring required

Principle of Operation

To measure current, clip the CT around only a single wire of a powered system (clipping around a hot and neutral wire at the same time will result in 0 current readings). After the sensor powers on and connects to the gateway it will begin taking measurements based on the averaging interval (5 seconds default). It will report data to iMonnit every heartbeat or if the current goes outside of the aware thresholds set in iMonnit. The sensor reports average current, max RMS current, min RMS current, and duty cycle for each phase and amp hours for all three phases combined. iMonnit can also generate watt hour or kilowatt hour readings if a default RMS voltage is set in iMonnit.

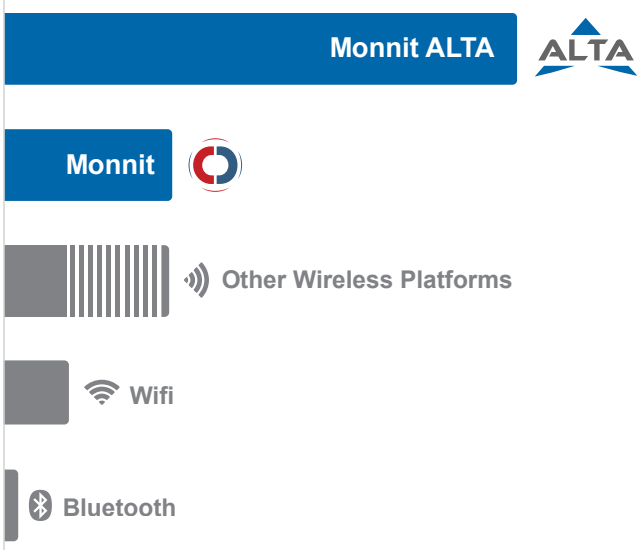
Features of Monnit ALTA Sensors

- 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 Industrial Wireless Three Phase Current Meter | 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°C to +85°C (-40°F to +185°F)
	Capacity	1500 mAh
Optional solar feature	Solar panel	5VDC/30mA (53mm x 30mm)
	Charging temperature range	0°C to 45°C (32°F to 113°F)
	Max temperature range	-20°C to 60°C (-4°F to 140°F)
	Included rechargeable battery	600 mAh/>2000 charge cycles (80% of initial capacity)
	Solar efficiency	Optimized for high and low-light operation ***
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		28.7 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
Current Transformer Specifications		
Number of current transducers		3 per sensor (3 ft wires)
Absolute max CT current		200 Amps RMS (Arms)
Maximum accurate CT current		150 Arms
Frequency range		50–100 Hz
Accuracy		+/- 2% @ 2 to 150 Arms, +/- 0.4 Arms @ < 15 Arms ****
Calibrated accuracy with appropriate offset		+/- 1% @ 2 to 150 Arms, +/- 0.2 Arms @ < 2 Arms ****
Offset limits		-1.27 to + 1.27 Arms (default set to +0.3 Arms) *****
Measurement resolution		Average: 0.01 Arms Max: 1 Arms Min: 1 Arms Duty: 1% Amp Hours: 0.1 Amp Hours
Current transducer dimensions		67 mm x 49 mm x 42 mm (24 mm inner diameter)

* Hardware cannot withstand negative voltage. Please take care when connecting a power device.

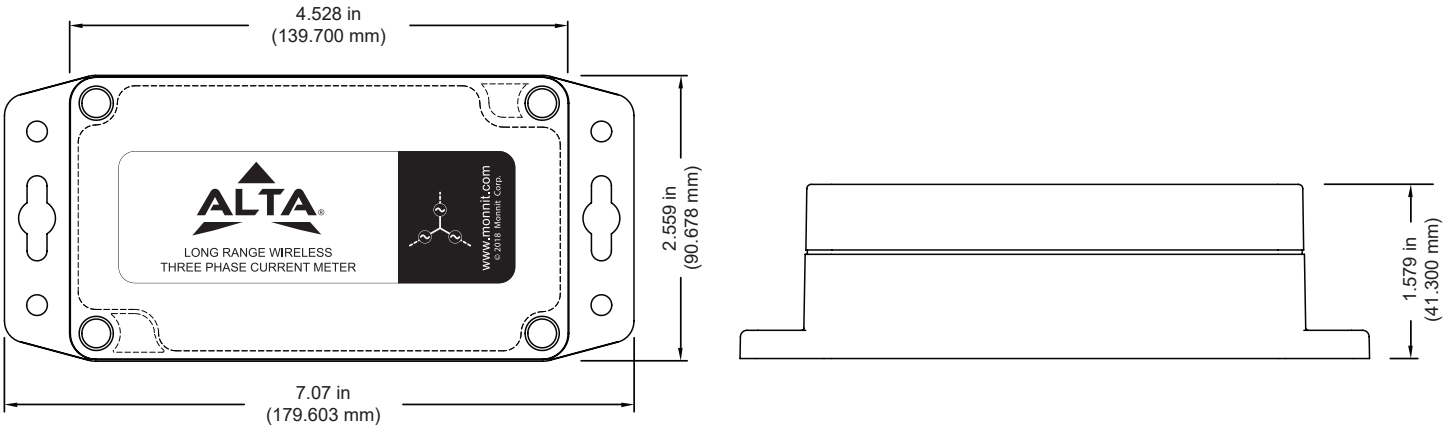
** At temperatures above 100°C, it is possible for the board circuitry to lose programmed memory.

*** Light present 25% of day yields 125% of operating power to support 10-minute heartbeats.

**** CTs are inherently less accurate at or below 10% of max range. For best calibration results, calibrate at a current between 30% and 90% of max accurate range.

***** Offset is used to overcome a diode voltage drop inherent to the hardware. To accurately account for this drop a default offset is used. To best identify the optimal value of this offset make a series of measurements at 0.2 to 2 Arms and find the current (Arms) difference between your measurement standard and the Monnit sensor.

Three Phase Current Meter Enclosure Dimensions



Example Interfacing

- Current monitoring
- Current usage
- Amperage monitoring
- Amp hour meter

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

For more information about our products or to place an order, please contact our sales department at 801-561-5555.

Visit us on the web at www.monnit.com.

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