



H. J. Arnett Industries, LLC

20460 SW Avery Court
Tualatin, OR 97062

Phone: 503-692-4600 Fax: 503-692-4661

Toll free: 800-684-9844 Web address: www.arnettindustries.com

HJ Arnett Industries, LLC presents:

The RAM (Revenue Assurance Meter)

The new generation in check meters



H.J Arnett introduces the most advanced check meters available. These high performance products measure revenue grade electrical energy usage and communicate back information using RS485, RJ45 Ethernet or IEEE 802.11Wi-Fi Ethernet connections. Once the RAM is installed it can communicate directly with your Wi-Fi computer or via the optional cell phone modem. The units use standard 1 amp CTs. (See our list of CT options below).

The RAM can be counted on

Traceable Watt-Hour Test Pulse for Accuracy Certification

To be certified for revenue, utility companies need to know that the billing energy meter will perform to its stated accuracy. To verify the meter's performance and calibration, the utility can use field test standards to insure that the unit's energy measurements are correct. Since the RAM meter is a traceable revenue meter, it contains a utility grade test pulse allowing meter shops to verify and confirm that the meters are performing to their rated accuracy.

This is an essential feature required of all billing grade meters.

Utility Peak Demand Metering

The RAM meter provides user-configured Block Window or Rolling Window Demand. This allows you to set up a particular utility demand profile. Block Window Demand is demand used over a fixed user-configured demand period (usually 5, 15 or 30 minutes). Rolling Window Demand is a fixed window demand that moves for a user specified sub-interval period. An example is a 15-minute

demand using three subintervals, providing a new demand reading every 5 minutes based on the last 15 minutes. Readings for kW, kVAR, kVA and PF are calculated using utility demand structures. Other parameters offer max

and min capability over the user-selectable averaging period. Voltage provides a non-rolling instantaneous max and min reading, displaying the highest surge and lowest sag seen by the meter.

The RAM can communicate

WiFi or Land Based Ethernet

The unit offers two Ethernet options — either an RJ45 or a WiFi connection. The WiFi option allows the RAM meter to be used on standard WiFi base stations. The unit is assigned an IP address; it communicates Modbus protocol over Ethernet TCP/IP.

The RAM harnesses the latest Ethernet technology by providing a simple, over-the-counter wireless architecture. The RAM communicates over any existing wireless or optional wired Ethernet infrastructure. Just

install the unit, plug in its IP address, and the device automatically connects to a LAN wirelessly. You can extend the network simply by adding WiFi access points.

KYZ Pulse

For applications in which a pulse is needed, such as calibration verification, the RAM also provides a KYZ output. It pulses proportional to the amount of energy consumed.

The RAM can record

Extensive Datalogging Capability

The RAM meter has 2 Megabytes of Flash memory that gives it extensive Datalogging capability. The RAM meter offers three Historical logs, a Limits (Alarm) log, and a System Events log. The RAM has a real-time clock that allows for time stamping of all the data in the instrument when log events are created.

Historical logs:

Each of the three historical logs can be programmed with unique parameters consisting of any measured reading. Up to 64 parameters can be recorded per log.

Limits (Alarm) log:

The Limits log provides magnitude and duration of an event. 2048 events are available; the log provides time-stamp and alarm value.

System Events (anti-tampering) log:

To protect critical billing information, the meter records and logs the following with a time stamp:

- Demand/Energy/Log resets
- Password requests
- System startup
- Log reads
- Changes to meter's programmable settings

The RAM specifications:

Feature Summary

(Factory meter calibration, field use with split core CT's is accurate to .5%)

- Meets ANSI C12.20 (0.2%) and IEC 687 (0.2%) Classes
- Multifunction Measurement Capability
- Ethernet or Wireless Ethernet (Modbus TCP)
- 0.2% Class Revenue Certifiable Energy and Demand Submitter
- Serial RS485 Communication (Modbus RTU/ASCII)
- Very Easy To Install
- Extensive Data logging and Alarm recording (RAM meter)

Voltage Inputs

- 20-576 Volts Line to Neutral (snoop meter)
- 0-721 Volts Line to Line
- Universal Voltage Input
- Input Withstand Capability –Meets IEEE C37.90.1 (Surge Withstand Capability)
- Programmable Voltage Range to Any PT ratio
- Supports: 3 Elements WYE, 2.5 Element WYE, 2 Element Delta, 4 Wire Delta Systems
- Burden: 0.36VA per phase Marat 600V, 0.014VA at 120 Volts Current Inputs
- Class 10: 5 Amp Nominal, 10Amp Maximum
- Class 2: 1 Amp Nominal, 2 Amp Secondary
- Programmable Current to Any CT Ratio
- Burden 0.005VA per phase Max at 11Amps
- 5mA Pickup Current for Class 10
- 1mA Pickup Current for Class 2
- Current Surge Withstand:100A/10 Seconds at 23° C

Isolation

All Inputs and Outputs are galvanically isolated to 2500Volts AC.

Environmental Rating

- Storage: (-20 to +70) ° C
- Operating: (-20 to +70) ° C

Applications

- Utility Metering
- Commercial Metering
- Substations
- Industrial Metering
- Power Generation
- Submetering
- Power Quality Studies
- Disturbance Recording
- Load Studies
- Voltage Recording

- Humidity: to 95% RH (Non-condensing) Sensing Method
- RMS
- Sampling at 400+ Samples per Cycle on all channels measured readings simultaneously

Update Rate

- Watts, VAR and VA - Every 6 cycles (e.g., 100ms @ 60Hz)
- All other parameters – Every 60 cycles (e.g., 1s @ 60Hz) (1 second for Current Only measurement, if reference voltage is not available)

Power Supply

- (90 to 400) Volts AC and (100 to 370) Volts DC. Universal AC/DC Supply
- Burden: 16VA max.

Dimensions and Shipping

10.8 pounds
Shipping weight 12.5 pounds

Enclosures are paintable on customer's request

Black
White
Gray
Etc

Modbus ASCII

- Com Port Baud Rate: (9600 to 57,600)
- Com Port Address: 0-247
- 8 Bit, No parity
- Modbus RTU or ASCII Protocols

Compliance:

- IEC 687 (0.2% Accuracy)
- ANSI C12.20 (0.2% Accuracy)
- ANSI (IEEE) C37.90.1 Surge

Withstand

- ANSI C62.41 – Burst
- IEC1000-4-2 – ESD
- IEC1000-4-3 – Radiated

Immunity

- IEC 1000-4-4 – Fast Transient
- IEC 1000-4-5 – Surge Immunity
- UL Listed

Ethernet

- 802.11b Wireless
- 10BaseT Ethernet (RJ45)
- Modbus TCP Protocol

Communication Converters

CAB 6490 – USB to IrDA Adapter for Programming
 Unicom 2500 – RS485 to RS232 Converter
 Unicom 2500-F – RS485 to RS232 to Fiber Optic Converter
 Modem Manager, Model #, MM1– RS485 to RS232 Converter
 For Modem Communication

Compliance Documents

Certificate of Calibration, Part #: CCal
 Certificate of Calibration with NIST traceable Test Data.

RAM configuration order form

Arnett Model Number	Model	Frequency	Current Transformers	Number of CT's
HJA-632-200	RAM Single Phase 200 Amp	50 or 60	CT200	2
HJA-632-1000	RAM Single Phase 1000 Amp	50 or 60	CT1000	2
HJA-643-200	RAM Three Phase 200 Amp	50 or 60	CT200	3
HJA-643-1000	RAM Three Phase 1000 Amp	50 or 60	CT1000	3
HJA-632-200M	RAM Single Phase 200 Amp w/cell modem	50 or 60	CT200	2
HJA-632-1000M	RAM Single Phase 1000 Amp w/cell modem	50 or 60	CT1000	2
HJA-643-200M	RAM Three Phase 200 Amp w/cell modem	50 or 60	CT200	3
HJA-643-1000M	RAM Three Phase 1000 Amp w/cell modem	50 or 60	CT1000	3

Cell phone service is required for the modem model. This service is the responsibility of the end user.

Other types of CT and PT are available call for quote.