Verdigris EV2 Energy Monitoring for Connected Commercial and Industrial Buildings

1. Virtualize asset energy data at the lowest cost
2. Flexibly integrate with native BACnet IP and Modbus TCP support
3. Access both measured and AI-enhanced data

KEY FEATURES

EV2 improvements over previous generation equipment include:

Native Ethernet support

Wider operating temperature range

Native 480V Delta support commonly seen in older, rural and industrial installations

Datapoints Available

Energy (Wh)	Apparent Power (VA)	Raw Voltage Waveform*
Voltage (V)	Reactive Power (VAr)	Raw Current Waveform*
Current (A)	Power Factor	Total Harmonic Distortion
Active Power (W)	Steady State Voltage Waveform	Local Temperature
	Steady State Current Waveform	

Equipment Specifications

Breaker Panel Types Served

EV2 advanced energy meters work with a range of electricity switchgears, switchboards, distribution panels, MCCs, and breaker boxes. The Energy Data Gateway mounts external to the monitored breaker panel, or on a nearby wall or junction box.

- Panel and voltage types (up to 42 circuits/panel):
    - Single-phase 100–277 V
    - Split-phase 100–277 V
    - Three-phase 120/208 V wye or delta
    - Three-phase 240/416 V wye
    - Three-phase 277/480 V wye
    - Three-phase 120/240 V delta
    - Three-phase 480 V delta (Unearthed)
    - Three-phase 600 V wye (Unearthed)
    - Three-phase 600 V delta (Unearthed)
- Frequency: 50–60 Hz
- Current measurement range (Amperage): 0.25 A –15,000 A

Harmonic Parameters:

Synchronization frequency range: 50 Hz – 60 Hz

Data Transmission

Data is transmitted securely via LTE, WiFi, or Ethernet, stored on the cloud, and available 24/7 on any desktop web browser. Data can also be available through CSV export, API, and integration via BACnet IP or Modbus TCP.

- Frequency Characteristics: AC up to 8 kHz
- Precision: 10 mW
- Data Access via API: unlimited
- Historical data available:

    - 1-minutely
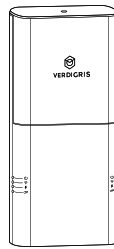   - 15-minutely
    - Hourly
    - Daily

Data Storage:

- 1-minutely - up to 1 year
- 15-minutely, hourly, daily - up to 15 years
- Steady State Waveform - up to 100,000 waveforms (max) for trailing 24 months
- Raw Waveform* - up to 500 events (max) over 15 years (32 cycles per event)

* Requires EV2 Pro hardware

Technical Specifications

Energy Data Gateway

- Physical Size and Weight: 11 x 5 x 2.5 in [280 x 127 x 64 mm] , 4.4 lbs [2 kg]
- Frequency Range: 50 – 60 Hz
- Voltage Range: 100 – 480 VAC CAT III*

  * CAT III-rated instruments are primarily used on fixed installations, distribution boards, and circuit breakers and can withstand the specified voltage range.

- Current Rating: 300 mA
- Cable Max Voltage: 600 V
- Temperature Range: -40 °F – 145 °F [-40 °C – 63 °C]
- ADC Accuracy: 16-bit
- Power Supply: 100 – 480 Vac 50/60 Hz, 20 W
- Degree of Protection: IP30

Analog Inputs:

- 14 three-phase or 42 single-phase electrical circuits
- 4 voltage measurement channels (100–480 Vac)

Current Transformers (CTs)

There are three types of CTs: The Verdigris Smart CT is by far the most commonly used for branch circuits. The Smart CT is for individual circuit breakers (< 90 A) in tight spaces. High Current CT (Hinged or Coil) for larger amperage circuits. High Current CTs connect to the data chain using the High Current Interface Module. Each High Current Interface Module can support up to 3 High Current CTs.

	Smart CT	Hinged CT	Coil CT	High Current Interface Module
Max Circuit Ampacity	90 A per circuit	250 A	Up to 15,000A per circuit (custom sizes available)	
Minimum Load (Amperage or %)	0.25 A	0.5% of CT load	5 A	
Sensor Accuracy	±2%	0.5%	0.5%	
Physical Dimensions	2.2 x 1 x 1 in [56 x 25 x 25 mm]	Varies by amperage	Coil diameter is 0.61 in [15.5 mm]	2.4 x 2.4 x 1 in [60 x 60 x 25 mm]
CT Accuracy Range (% of rated current)	1%-100%	10%-120%	0%-100%	
Temperature	-40 °F–145 °F [-40 °C–63 °C]	5 °F–140 °F [-15 °C–60 °C]	-4 °F–158 °F [-20 °C–70 °C]	
Max Conductor Size	4 AWG [5.16 mm / 20.91 mm²]	600 kcmil [19.68 mm / 304.19 mm²]	4 in [102 mm] or 7 in [178 mm] window	2.4 x 2.4 x 1 in [60 x 60 x 25 mm]

Data Transmission

- Ethernet: 100/1000 Mbps (RJ-45)
- LTE Cat-M1/NB-IoT
- WiFi: 802.11 b/g/n
- Local Networks: BACnet/IP, Modbus/TCP

Safety Certificates

- UL 61010
- IEC 61010-1:2010
- CAN/CSA-C22.2 NO. 61010-1-12
- CAN/CSA-C22.2 NO. 61010-2-030-12

CE FC RoHS BACL UKCA

Wireless

- FCC PART 15 SUBPART B
- ICES-003 ISSUE 6 (Jan. 2016)
- VCCI-CISPR 32:2016
- EN 61000-3-2:2014
- EN 61000-3-3:2013
- EN 61000-6-2:2005/AC:2005
- EN 61000-6-4:2007/A1:2011
- EN 61326-1:2013
- SRRC CMIIT ID:2017DJ1734

Warranty

- 2 year standard*
  * extended options available

Environmental

- WEEE
- ROHS
  1. 94/62/EC Packing materials
  2. 2006/66/EC, cell & batteries

Accessories

- Instruction manual
- Data cables
- Mounting assembly
- Cellular antenna
- 5V USB cable for temporary power
- Hoffman Enclosure*
  * Optional for rugged environments