E30E

Panelboard Monitoring System

Note to spec writer: information contained in “[ ]” must be selected based on the application needs.

PART 1: PRODUCTS

* 1. MANUFACTURERS
1. Veris Industries, LLC
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Products manufactured by other companies, yet in compliance with the stated specification, must be pre-approved by an authorized project or design engineer at least ten (10) days prior to bid date. The manufacturers listed above, while preferred, must also comply with the specifications listed. Any exceptions to the job specifications must be detailed in writing and submitted with the bid packet.

* 1. MICROPROCESSOR-BASED PANELBOARD MONITORING SYSTEM
1. E30E SERIES (Solid-Core)
	1. Where indicated on the drawing, provide a microprocessor-based panelboard monitoring system device equal to Veris Industries, LLC type E30 Series having the features and functions specified below.
	2. Regulatory: The device shall be UL, cUL listed, and CE marked.
	3. Accuracy: At the panelboard level, the device will meet ANSI standard C12.1-2008 energy revenue metering accuracy and IEC 62053-21 Class 1 accuracy, including branch CTs and measure current with accuracy of 0.5% of reading, including the branch CTs.
	4. The device shall provide direct reading metered or calculated values for up to eighty-four (84) branch circuits with auxiliary inputs available for two (2) three-phase main devices and two (2) neutrals.
	5. The product shall have a five (5) year warranty
	6. The device shall be type E30E that utilizes solid-core, tombstone type current transformers mounted to circuit board based strips that are factory calibrated to ensure system accuracy for the following metered or calculated values:
		1. Monitored values at the main device include:
			1. Current per phase and average of all phases
			2. Max current per phase and max average of all phases
			3. Current demand per phase and average of all phases
			4. Max current demand per phase and max average of all phases
			5. Current phase angle
			6. Energy (kWh) per phase and sum of all phases
			7. Snapshot of total energy as of the completion of the most recent demand interval per phase and sum of all phases
			8. Real power (kW) per phase and sum of all phases
			9. Apparent Power (kVA) per phase and sum of all phases
			10. Power Factor Total based on three-phase breaker rotation (signed, to show leading or lagging current)
			11. Power factor per phase (signed, to show leading or lagging current)
			12. Voltage Line-to-Line and average
			13. Voltage Line-to-Neutral and average
			14. Voltage phase angle
			15. Phase A frequency
		2. Monitored values at the branch circuit level include:
			1. Current, per branch and average of all phases for multi-phase logical circuits
			2. Max current, per branch and max average of all phases for multi-phase logical circuits
			3. Current demand, per branch and average of all phases for multi-phase logical circuits
			4. Max current demand, per branch and max average of all phases for multi-phase logical circuits
			5. Current phase angle
			6. Real power (kW) , per branch and sum of all phases for multi-phase logical circuits
			7. Real power (kW) demand, per branch and sum of all phases for multi-phase logical circuits
			8. Real power (kW) demand max, per branch and sum of all phases for multi-phase logical circuits
			9. Energy (kWh), per branch and sum of all phases for multi-phase logical circuits
			10. Snapshot of total energy as of the completion of the most recent demand interval, per branch and sum of all phases for multi-phase logical circuits
			11. Apparent Power (kVA), per branch and sum of all phases for multi-phase logical circuits
			12. Power factor, per branch and average of all phases for multi-phase logical circuits (signed, to show leading or lagging current)
	7. Two (2) or four (4) solid-core, tombstone type current transformers mounted to circuit board based strips shall be connected to the main circuit board of the meter via a standard ribbon cable connection.
		1. Ribbon cable must utilize a standard fifty (50) pin connector
		2. Must be able to run the ribbon cable a maximum of twenty (20) feet or six (6) meters
	8. The current transformers mounted on the circuit board based strips must be spaced at [3/4”, 1” or 18 mm] center intervals to align appropriately with the panelboard branch circuit breakers.
	9. The device shall be configurable via a free software package available at [www.veris.com](http://www.veris.com) to accommodate stacked (in-line) or parallel panelboards circuits numbered in series or in even / odd configurations.
	10. The device shall be designed to utilize manufacturer supplied mounting brackets to accommodate a variety of manufacturers’ panelboards, power distribution units (PDUs), or remote power panels (RPPs).
	11. Device event alarming must include user configurable low, low-low, high, and high-high alarm thresholds.
	12. Standard alarms must include Over/Under Voltage and Over/Under Current.
2. DEVICE OPERATION SPECIFICATIONS
	1. The device shall operate at 50 / 60 Hz with a measurement input voltage range of 90 to 277 VAC and 22 kAIC overload capability.
	2. The device shall operate on Control Power ranging from 100 VAC to 277 VAC.
	3. The operating temperature shall be 0o to 60oC (32o to 140oF) with <95% RH, non-condensing.
	4. The storage temperature shall be -40o to 70oC (-40o to 158oF)
	5. The sampling frequency shall be 2560 Hz with an update rate of 1.8 seconds for Modbus data variables.
3. SERIAL NETWORKCOMMUNICATIONS
	1. The Modbus RTU and BACnet MS/TP protocols must be native to the product firmware and accessible via a standard RS-485 cable connection. A two-wire connection and all communication settings for utilizing those protocols must be configurable via a web-server graphical user-interface on the unit.
	2. The Modbus RTU or BACnet MS/TP baud rate must be DIP switch selectable for either 9600, 19200, 38400, or 76800 baud.
	3. The parity must be configurable via a web-server graphical user-interface on the unit for either NONE, ODD, or EVEN.
	4. The communication format shall be eight-data-bits with one-start-bit and one-stop-bit.
	5. The communication termination shall be a 2 row,3 position unpluggable connector with two sets of the following terminals: SHIELD, TX+/RX+, and TX-/RX-. The two sets of terminals must be electrically bridged in the connector so that a daisy-chained communication link still functions for other devices on the link if the connector is disconnected from the E30E.
	6. The BACnet MS/TP protocol implementation must support Subscribe\_COV and BBMD functionality.
	7. The BACnet protocol implementation must allow user configuration of the Device\_IDs used, the Max\_Master property of the Main device and the Network number used internally by the Virutal Router.
4. ETHERNET NETWORK COMMUNICATIONS
	1. The Modbus TCP, BACnet IP and SNMP protocols must be native to the product firmware and accessible via a standard 10/100 Mbit Ethernet cable connection. All communication settings for utilizing those protocols must be configurable via a web-server graphical user-interface on the unit.
	2. The BACnet IP protocol implementation must support Subscribe\_COV and BBMD functionality.
	3. The BACnet protocol implementation must allow user configuration of the Device\_IDs used, the UDP port used and the Network number used internally by the Virutal Router.
	4. The SNMP protocol implementation must support SNMP V2c functionality, including table views of data and event notifications.
	5. A MIB (Management Information Base) file must be available for download for using the product via SNMP with standard MIB browsers.