E8950

Modbus-to-BACnet Protocol Converter

NOTICE

- This product is not intended for life or safety applications.
- Do not install this product in hazardous or classified locations.
- The installer is responsible for conformance to all applicable codes.

Control system design must consider the potential failure modes of control paths and, for certain critical control functions, provide a means to acheive a safe state during and after a path failure. Examples of critical control functions are emergency stop and over-travel stop.

⚠ WARNING

LOSS OF CONTROL

- Assure that the system will reach a safe state during and after a control path failure.
- Separate or redundant control paths must be provided for critical control functions.
- Test the effect of transmission delays or failures of communication links.[1]
- Each implementation of equipment using communication links must be individually and thoroughly tested for proper operation before placing it in service.

Failure to follow these instructions may cause injury, death or equipment damage.

[1]For additional information about anticipated transmission delays or failures of the link, refer to NEMA ICS 1.1 (latest edition). *Safety Guidelins for the Application, Installation, and Maintenance of Solid-State Control* or its equivalent in your specific country, language, and/or location.

Veris Industries assumes no responsibility for any consequences arising out of the use of this material.

FCC PART 15 INFORMATION

NOTE: This equipment has been tested by the manufacturer and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Modifications to this product without the express authorization of Veris Industries nullify this statement.

SPECIFICATIONS

Downstream (Device) Interfaces:	
Physical Layer	2-wire RS-485
Line Termination	Internal, 120 Ω
Line Polarization	Internal
Protocol	Modbus RTU
Baud Rate	9600 to 38400 (selections vary with Modbus devices used)
Number of Devices Supported	up to 32 devices (not to exceed 1000 total BACnet data objects)
Upstream (Controller) Ethernet Interface:	
Physical Layer	10/100 Mb Ethernet
Protocol	BACnet IP
Upstream (Controller) Serial Interface:	
Physical Layer	2-wire RS-485
Protocol	BACnet MS/TP
Baud Rate	9600, 19200, 38400, and 76800
Input Power Requirements:	
Supply Voltage	Class 2 9-30VDC or 12-24VAC
Nominal Current Draw @ 12V	240mA
Environmental:	
Operating Temperature Range	-40°C to 122°C (-40°F to 50°F)
Operating Humidity Range	5-90% RH noncondensing
Agency Approvals	CE; TUV approved to UL916

PRODUCT IDENTIFICATION

E8950 Modbus-to-BACnet Protocol Converter
Supported Veris Meters*: H8035, H8036, E50C2, E50C3*, E51C2, E51C3*, H81xx Series (with the H8163-CB Modbus RTU Communication Board), H8238 Series, H8436 Series, H8437 Series, and E30Ax42**, E30Bxxx**, E30Cxxx**, E31Bxxx**, E31Cxxx** Series**

** The E8950 does not support the logging functionality of these meters.*

*** Must include firmware version 1.011 or later.*

**** E31A42 is supported also, but requires some manual configuration. Contact Veris Customer Support for details.*

Refer to Appendix 3 to determine how many meters of each type can be supported.

PRODUCT OVERVIEW

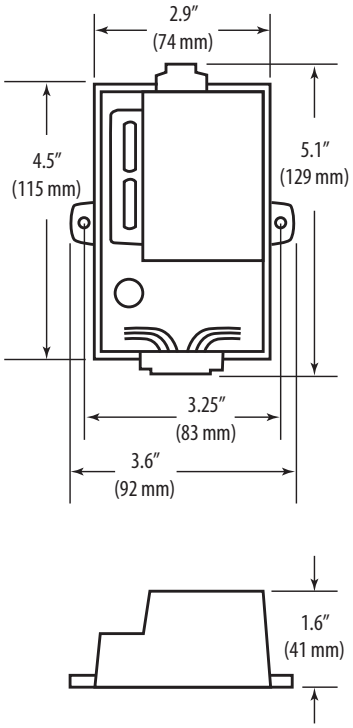
The E8950 is a protocol conversion gateway that adapts supported Veris Modbus RTU energy meters to building automation systems using BACnet protocol over either IP or MS/TP physical layer interfaces. The E8950 supports up to 32 meters or 1000 total measurement points (number of output points varies by meter model). It is pre-programmed to discover any supported meters and automatically configure them for BACnet MS/TP and BACnet/IP. Each Modbus meter is presented as a BACnet device, with a unique BACnet device_ID and a full set of measurement data and configuration objects. Little configuration is required. The user sets up the system using DIP switches and a built-in webserver graphical user interface (GUI).

TABLE OF CONTENTS

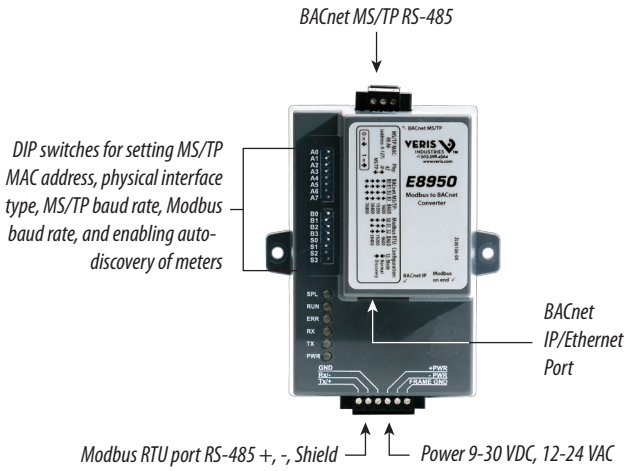
QUICK INSTALL

1. Connect the Modbus outputs of the metering devices to the Modbus terminals on the 6-pin connector of the E8950. Daisy chain up to 32 metering devices to the E8950 (provided that the total number of data points from all devices does not exceed 1000).
2. Connect 9-30 VDC or 12-24 VAC to the power terminals on the 6-pin connector.
3. Use DIP switches S0 to S2 to set the Modbus baud rate on the E8950 to the same rate as on all metering devices in the chain (factory default is 9600 baud).
4. Use DIP switch A7 to select the BACnet physical layer (MS/TP or IP).
5. If using BACnet MS/TP, connect the MS/TP connections to the BACnet interface. Use DIP switches A0 to A6 to set the MAC address, and use DIP switches B0 to B3 to set the MS/TP baud rate (factory default is 76800).
6. If using BACnet/IP, connect the E8950 to a PC using an ethernet cable and use the GUI to set the IP address.
7. If the default network number (50) or the default Device_ID offset will cause conflicts, connect the E8950 to a PC using an ethernet cable and use the GUI to set them appropriately.
8. Apply power to the E8950 and allow time to map all Modbus devices in the chain.
9. If the configuration is final and will not change (no Modbus devices will be added, removed, or changed), set the configuration mode to Normal (slide DIP switch A7 to the right) to speed future power-up cycles and prevent the auto-configuration mechanism from overwriting when power is cycled.

DIMENSIONS



PRODUCT DIAGRAM



LED BLINK CODES

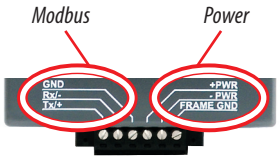
LED	Color	Description
SPL	Blue	Reserved for future use. It may be on or off when the unit is on.
RUN	Dark Green	Slow blink (one second on, one second off) after the product has initialized (approximately 40 seconds after the unit is powered or reset). This indicates normal operation.
ERR	Red	• This illuminates blink briefly when the Run LED first comes on (about 15 seconds after the unit is powered or reset). • A steady red light indicates the unit needs attention.
RX	Yellow	Indicates the device is receiving data on the Modbus link.
TX	Orange	Indicates the device is transmitting data on the Modbus link.
PWR	Light Green	This is always on when the unit is powered.

INSTALLATION

The E8950 can be DIN rail mounted, using the supplied DIN rail mounting clip, or screw-mounted directly to a wall or other flat surface using the mounting holes on either side of the housing.

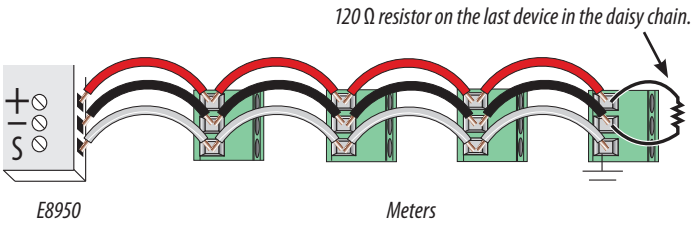
6 Pin Connector

Pin #	Pin Assignment
Pin 1	RS-485 + (Modbus)
Pin 2	RS-485 - (Modbus)
Pin 3	RS-485 GND
Pin 4	V +
Pin 5	V -
Pin 6	FRAME GND



1. Refer to the Installation Guides for the specific meter devices used to locate instructions on connecting the meters and changing the configuration settings.

2. Connect the Modbus outputs of the devices to the Modbus side of the E8950.

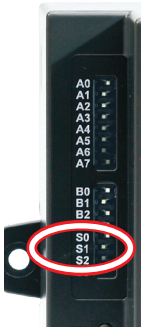


- Wire the RS-485 bus as a daisy chain from device to device (up to 32 supported devices) without any stubs. Use a 120 Ω termination resistor (not included) on the device farthest from the E8950. An additional 120 Ω termination and Modbus line polarization are provided internal to the E8950.
- Connect shield to earth ground somewhere on the RS-485 bus. The shield is not internally connected to earth ground.
- Use wire with an insulation rating sufficient for the location where the meter is installed (e.g. Belden 1120A for installation in panels with up to 600 VAC).

3. Connect 9-30 VDC or 12-24 VAC to the +PWR/-PWR terminals of the 6-pin connector.

Modbus Setup

Use DIP switches S0 to S2 to set the Modbus baud rate to 9600, 19200, or 38400. The default baud rate is 9600, because this rate is available on all the devices supported by the E8950. If all connected devices support a faster rate, use the highest rate in common to improve performance. **Set the E8950 and all Modbus devices in the series to the same rate.** Set all devices to NO parity.



Baud Rate	S0 – S2 DIP Switches		
	S0	S1	S2
9600 Baud	⇨	⇦	⇦
19200 Baud	⇦	⇨	⇦
38400 Baud	⇦	⇦	⇨

BACnet Physical Layer Selection

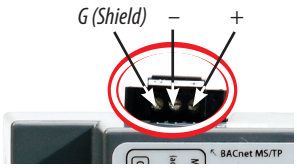
Use DIP switch A7 to select the BACnet physical layer. See Appendix 2: DIP Switch Addresses section at the back of this document for physical layer switch settings.

Layer	Switch Position
BACnet/IP	⇨
BACnet MS/TP	⇦

MS/TP Setup (if using BACnet/IP, skip this section)

1. Connect the MS/TP connections on the E8950 to the field controller or other BACnet MS/TP interface according to its guidelines.

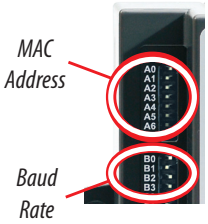
Pin Label	Pin #	Pin assignment
+	Pin 1	RS-485 + (MS/TP)
-	Pin 2	RS-485 - (MS/TP)
G	Pin 3	RS-485 Shield



2. Set the MAC address using DIP switches A0-A6. See Appendix 2: DIP Switch Addresses section at the back of this document for a full table of valid address switch settings.

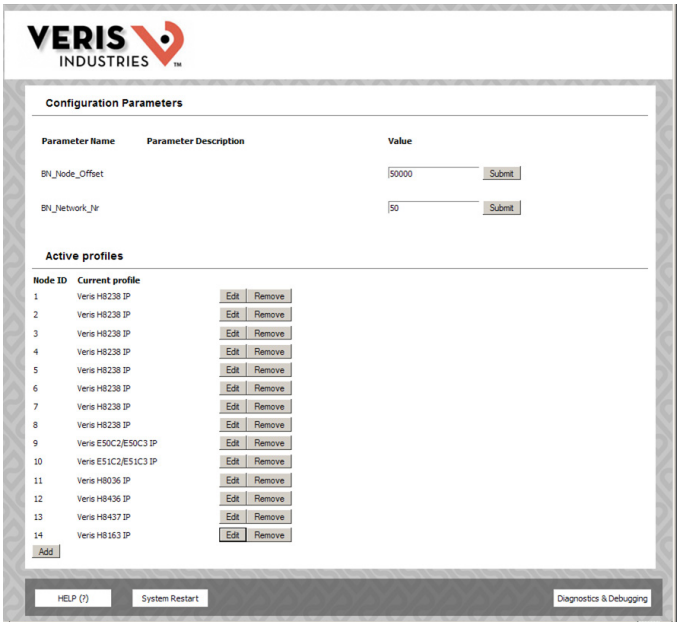
3. Set the MS/TP baud rate using DIP switches B0-B3.

Baud	B0	B1	B2	B3
9600	⇨	⇨	⇨	⇦
19200	⇦	⇦	⇦	⇨
38400	⇨	⇨	⇦	⇨
76800	⇨	⇦	⇨	⇨



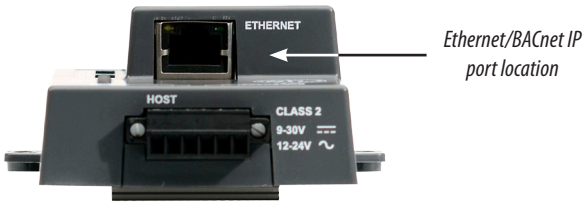
Accessing the Graphical User Interface (GUI)

If the E8950 IP address parameters are already configured to work on the network and the E8950 is being accessed from a PC on that same network, open a web browser and enter the IP address of the E8950 into the address/URL filed on the browser. Press enter. The GUI will launch and appear, as shown, in the browser window.



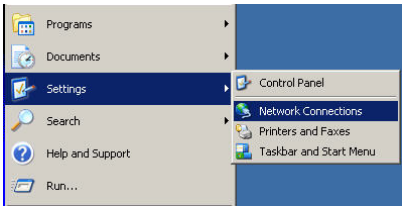
If the E8950 IP address parameters are not configured for the network, connect a PC directly and access the GUI from it as follows:

4. Connect a standard CAT5 ethernet cable between a PC and E8950.

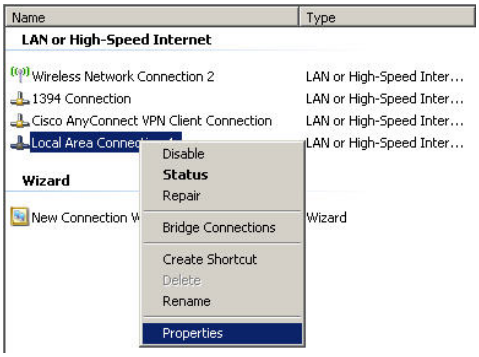


5. Temporarily change the IP address of the PC to a static value on the same subnet as the E8950. For example: If the E8950 is set to its factory default IP address of 192.168.1.24, set the PC to an unused static IP address on the 192.168.1.xxx subnet (where xxx is any value between 1 and 255, except 24). Set the subnet mask to 255.255.255.0 (the screen captures in this example were taken using Windows XP; other operating systems will look different).

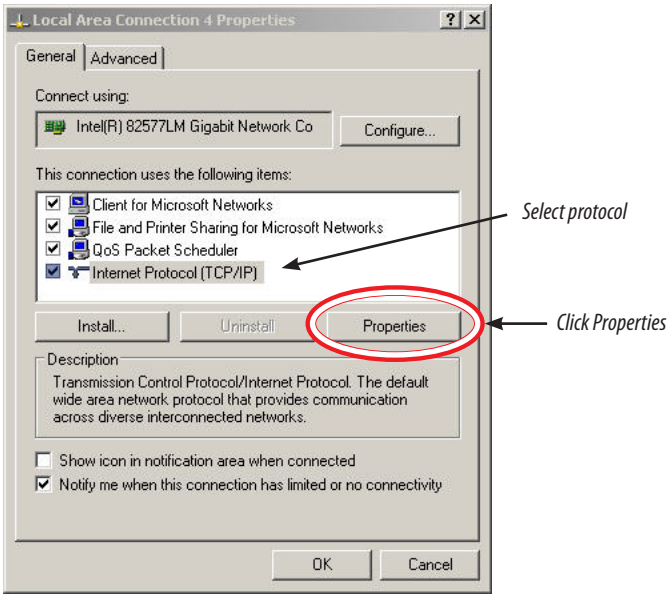
a. Click Start, then



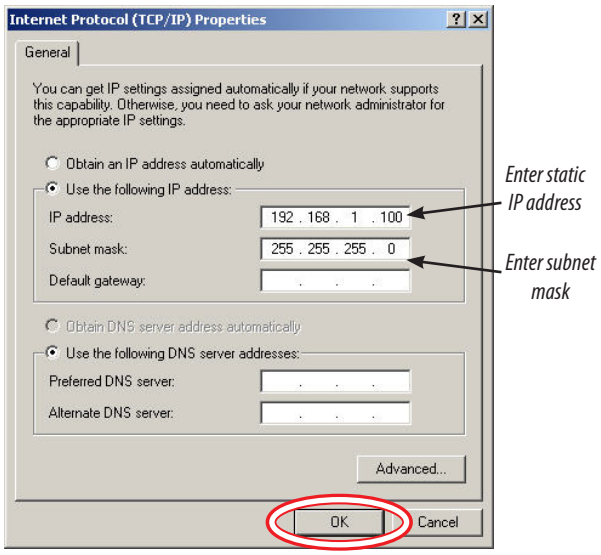
b. Right-click on the local area connection you are using and select Properties



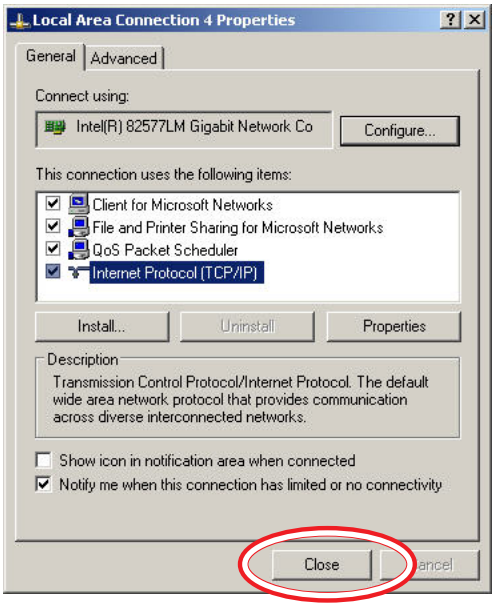
c. Highlight Internet Protocol (TCP/IP) and select Properties



d. Select <Use the following IP Address>. Make note of the IP address that appears, then enter the static IP address (e.g. if the E8950 is still set to its default address of 192.168.1.24, then change it to 192.168.1.100). Enter for the 255.255.255.0 subnet mask. Click OK.



e. Click Close.

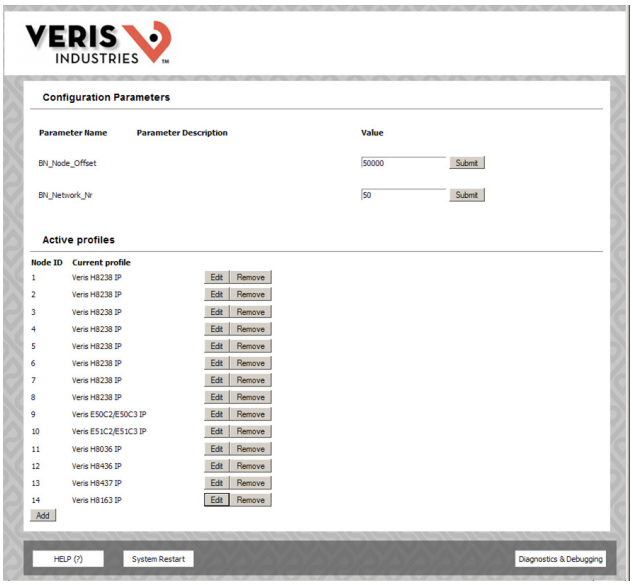


6. Open a PC web browser and enter the IP address of the E8950 (default address is 192.168.1.24) to access the E8950 GUI. The GUI will launch and appear in the browser window.

7. When finished using the GUI, unplug the ethernet cable from the PC and restore the IP settings as needed.

Using the GUI to Set the E8950 Internal Network Number or the Device_ID Offset

Access the GUI according the instructions in the "Accessing the Graphical User Interface (GUI)" section.



The home screen on the GUI shows the current values used for the offset used to assign Device_IDs in discovery mode and the network number assigned to the internal virtual network used by the E8950 to manage the Modbus devices attached.

The offset used to assign Device_IDs in discovery mode is the variable labeled BN_Node_Offset. Enter a different value here and click submit. The new value is first used at the next power-up or system restart. Valid Device_ID numbers range from 1 to 4194303. Since the numbers assigned during discovery are the sum of the Offset and the Modbus address (which can be any value from 1-255), the Offset values entered in the GUI must be less than 4194057.

The internal virtual network used by the E8950 to manage the Modbus devices attached is the variable labeled BN_Network_Nr. Enter a different value here and click submit. Valid network numbers range from 1 to 65534; if other values are entered, the network number defaults to 5. The new value is first used at the next power-up or system restart. If using a BACnet router, it is recommended that the router also be restarted after the E8950 has completed discovery, when the network number is changed.

Using the GUI to set up the E8950 IP address for use on your network

1. Access the GUI according the instructions in the "Accessing the Graphical User Interface (GUI)" section. To set IP address parameters, click the button labeled "Diagnostics and Debugging."

The Diagnostics screen appears.

2. Have the desired IP settings ready in advance (contact the system administrator). IP parameters for use with BACnet IP are static, not dynamic.

3. Set the IP address for use on the BACnet/IP network:

   a. From the navigation tree (left column) on the GUI, click on Setup and then Network Settings to enter the Edit IP Address Settings menu.

   b. Enter the desired IP address in the N1_IP_Address field (in the format xxx.xxx.xxx.xxx)

   c. If necessary, change the Subnet Mask by entering the appropriate new value in the N1_Netmask field

d. If the E8950 is connected to an ethernet gateway, enter its IP address in the Default Gateway field.

e. Click the Update IP settings button. The E8950 will change its settings and restart. The GUI will not connect again until the E8950 is installed on the network that matches those settings and the new IP address is entered into a web browser on a PC properly configured for that network.

Profile Assignment

Profile assignment is automatic. Upon power-up/reset, with the device in Discovery mode (DIP switch S3 is to the right), each Modbus address is queried for a slave ID. Any devices that respond with a slave ID matching a supported device are given a unique device object and a full set of data objects to match the device.

All supported Veris meters are discovered and assigned one of the profiles (see Appendix 1) if they are connected, powered, and configured properly.

The Add/Remove/Edit buttons on the GUI can be used to alter the assignments, but this is not recommended for general use, as the profiles could be assigned to products they do not support. If a meter is not discovered because it is not connected, powered, or configured properly, adding the profile manually will not make it work. Any changes to the profile assignments made manually through the GUI will be discarded when the E8950 is power-cycled or reset in Discovery mode.

Turn on the E8950

1. Set the configuration mode switch (S3) to the Discovery position.

2. Apply power to the E8950. It can take up to 2-3 minutes to discover all the Modbus RTU meters, build a configuration file, and install the device on BACnet MS/TP. Scanning begins at address 1 and continues in numerical sequence, mapping meters as they are discovered. To shorten this time, use lower Modbus addresses for the meters so that they will be discovered and mapped more quickly. After the meters at the lower addresses are discovered, the E8950 continues scanning the remaining addresses in the background, without affecting operation.

3. Optional: Lock the configuration. If no more devices will be added to or removed from the Modbus trunk, lock the device mapping by setting the mode from Discovery to Normal (slide DIP switch S3 to the left). This causes the E8950 to set up the same devices at power-up, without repeating the Discovery process. In Normal mode, the power-up time improves, but BACnet devices are created whether the device responds or not, and new devices are not discovered.

Configuration Mode	S3
Normal	⇦
Discovery	⇨

Determine the best mode for the application. Discovery mode queries and re-discovers devices each time the E8950 is power-cycled or reset, so use this mode when you anticipate adding, removing, or changing Modbus devices. Normal mode creates the same set of BACnet device objects when the E8950 is power-cycled or reset, even if objects change, are removed, or cease to communicate. Power-up time is faster in Normal mode.

BACnet Network Management – Important Steps to Avoid Conflicts

BACnet configuration uses two default settings that might need to be changed, depending on the application.

a. Network ID number. Every logical network segment (IP subnet, MS/TP trunk, etc.) in an entire system must have a (16-bit) network ID number that is unique from all other BACnet networks in the enterprise. The BACnet network administrator assigns this network ID so that no two ID numbers conflict (whether using BACnet/IP or MS/TP). Within each segment, every device is physically identified by the combination of its 8-bit MAC address and the 16-bit network ID number.

To support multiple meters with a single E8950, the E8950 presents multiple BACnet devices using a single (its own) MAC address. Each E8950 has its own (internal) network ID, and it assigns a unique MAC address to each Modbus meter attached, derived from the unique Device_IDs.

The E8950 factory default network address is 50 (decimal). If that number is already in use in the system, assign a unique address using the graphical user interface (GUI) on the built-in web server (this requires an ethernet connection to a web browser; see BACnet/IP Setup section for instructions on changing configuration settings using the GUI). Valid network numbers range from 1 to 65534; if other values are entered, the network number defaults to 5.

b. Device ID. Every BACnet device must have a BACnet Device_ID number that is unique throughout the entire enterprise. Since the E8950 presents every Modbus meter as a BACnet device, each connected meter that has a Modbus address must have a BACnet Device_ID.

By default, each device discovered receives a Device_ID number that is the sum of an offset value (default is 50000) and the Modbus address of the device. If these Device_ID numbers cause a conflict with existing devices in the system, or if the system includes multiple E8950s, change the Device_ID numbers before connecting the E8950 to the system. This can be managed one of two ways:

i. Connect to the E8950 directly (offline from the system) with the devices (meters) connected to the E8950. After the E8950 discovers the devices and assigns their default ID numbers, the user can choose new Device_ID values and write these to each device using BACnet software. Subsequent discoveries will not overwrite these values with defaults even if the E8950 is then set to Discovery mode.

ii. Use the GUI on the built-in web server to modify the offset value used to calculate default Device_IDs in the discovery process (this requires an ethernet connection to a web browser; see BACnet/IP Setup section for instructions on changing configuration settings using the GUI). The E8950 retains this offset value and uses it to assign Device_ID numbers every time power is cycled if the E8950 is in Discovery mode. Valid Device_ID numbers range from 1 to 4194303. Since the numbers assigned during discovery are the sum of the Offset and the Modbus address (which can be any value from 1-255), any Offset values entered in the GUI must be less than 4194057.

BACNET PROGRAMMING INFORMATION

BACnet PICS (Protocol Implementation Conformance Statement)

Vendor Name: Veris Industries
BACnet Vendor ID 133
Product Name: E8950 Modbus-to-BACnet Protocol Converter
Product Model Number: E8950 w/Modbus Energy Meter
Product Description: Modbus-to-BACnet Protocol Converter
Protocol Conversions: Converts Modbus RTU to BACnet IP and BACnet MS/TP for supported products from Veris Industries
BACnet Protocol Version: Version 1 Revision 12

BACnet Standardized Device Profile (Annex L) – [Note: E8950 is a gateway device]
- BACnet Application Specific Controller (B-ASC)

BACnet Interoperability Building Blocks Supported (Annex K):
- K.1.2 BIBB - Data Sharing - ReadProperty-B (DS-RP-B)
- K.1.4 BIBB - Data Sharing - ReadPropertyMultiple-B (DS-RPM-B)
- K.1.8 BIBB - Data Sharing - WriteProperty-B (DS-WP-B)
- K.1.10 BIBB - Data Sharing - WritePropertyMultiple-B (DS-WPM-B)
- K.1.12 BIBB - Data Sharing - COV-B (DS-COV-B)
- K.2.2 BIBB - Alarm and Event-Notification Internal-B (AE-N-I-B)
- K.2.5 BIBB - Alarm and Event-ACK-B (AE-ACK-B)
- K.2.11 BIBB - Alarm and Event-Information-B (AE-INFO-B)
- K.5.2 BIBB - Device Management - Dynamic Device Binding-B (DM-DDB-B)
- K.5.4 BIBB - Device Management - Dynamic Object Binding-B (DM-DOB-B)
- K.5.6 BIBB - Device Management - DeviceCommunicationControl-B (DM-DCC-B)
- K.5.12 BIBB - Device Management - TimeSyncronization-B (DM-TS-B)
- K.5.22 BIBB - Device Management – List Manipulation-B (DM-LM-B)

Standard Object Types Supported
- Device Object
- Analog Input
- Analog Output*
- Analog Value
- Binary Input*
- Binary Output*
- Binary Value*
- Multi State Input*
- Multi State Output*
- Multi State Value*
- Notification Class Object*

** Supported by device driver, but not used by current device profiles*

Unsupported Properties and Restrictions
- Does not support BACnet CreateObject
- Does not support BACnet DeleteObject
- Does not support any proprietary properties
- No proprietary properties exist
- No range restrictions exist
- Max_Master is writable, but it reverts to 127 when the E8950 is reset or powered-up.

Data Link Layer Options:
- BACnet IP, (Annex J)
- MS/TP master (Clause 9), baud rate up to 76.8 kbps

Networking Options:
- BACnet/IP Broadcast Management Device (BBMD)
- Registrations by Foreign Devices

Character Sets Supported:
- ISO 10646 (UTF-8) / ANSI X3.4

General Programming Information

The E8950, in Discovery mode, queries each Modbus address, from 1 to 247 for a slave ID. For each address queried, if a meter responds with a slave_ID that matches those supported by the E8950, a BACnet device object and a full set of data objects are created (see Appendix 1).

The initial Object_Identifier (Device_ID) property value of each device object discovered is the sum of the Device_ID offset programmed into the E8950 and the Modbus address of the meter. The factory default value of the offset is 50000; use the GUI to change this value. The new value will be applied the next time the E8950 is power cycled or reset. Once a device's Object_Identifier is overwritten, changes to the ID Offset will no longer affect that Object_Identifier, even in Discovery mode. Make further changes to the value by writing the Object_Identifier property.

The default Object_Name property value of each device object is an abbreviated name of the meter series discovered with an underscore and the Modbus address of the meter appended to it. The Object_Name is a writable property. Once a device's Object_Name is overwritten, the Object_Name will not revert to the initial default, even in Discovery mode. Make further changes to the value by writing the Object_name property.

The default description property value of each device object is the first 40 characters of the Modbus slave ID returned by the meter discovered. The description is not a writable property.

The E8950 supports Subscribe_COV, with default COV increment values assigned as shown in the data object tables (see Appendix for value tables for each meter). If these values are not appropriate for a specific application, write them as needed when they are subscribed. On subsequent power cycles, no subscriptions are active and the COV increments return to their default values.

With few exceptions, any data values written to AV objects are accepted (without error) by the data object and passed through to the corresponding Modbus register. There is no direct indication via the BACnet protocol if invalid values are rejected. After an invalid value is written to the Present_Value of an AV, subsequent reads of that property return the new (invalid) value until the next time the E8950 scans and updates the AV objects (this may take several seconds, depending on the overall configuration and timing of the scan sequence). The tables in Appendix 1 specify valid values for AV objects of each supported model.

TROUBLESHOOTING

Problem	Solution
Modbus device is not discovered as expected.	Use the main screen of the E8950 GUI to confirm which meters have been discovered.
	Verify that the Modbus device is a model specifically supported by the E8950 (see Appendix 1).
	Verify that the meter is connected to a control power source and is operating normally.
	Verify that the Modbus 2-wire RS-485 connection is correctly wired from the E8950 to all other Modbus devices and that the chain is terminated at both ends with 120 Ω resistors (not included).
	Verify that the Modbus RTU baud is set to the same rate on all Modbus devices and that parity on all devices is set to "none."
	Verify that the E8950 is powered and operating (the light green LED is on).
	Verify that the E8950 is in Discovery mode.

CHINA ROHS COMPLIANCE INFORMATION (EFUP TABLE)

部件名称	产品中有毒有害物质或元素的名称及含量Substances					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯(PBB)	多溴二苯醚(PBDE)
电子线路板	X	O	O	O	O	O

O = 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下.

X = 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006标准规定的限量要求.

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APPENDIX 1: DATA OBJECTS FOR SUPPORTED METERING DEVICES

Enercept H8035 Series Energy Meters (all models)

The H8035 Series has 3 data objects and operates at 9600 baud.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Analog_input objects: (Read-only)						
kWh Energy: Total	Accumulated Real Energy	AI1	kWH	0	40259/40260	
kW: Total	Total Instantaneous Real Power	AI2	kW	1	40261/40262	
Analog_Value objects: (can be written as well as read)						
kWh Energy Reset	Write zero to reset	AV1	n/a	32767	40001	

Enercept H8036 Series Energy Meters (all models)

The H8036 Series has 28 data objects and operates at 9600 baud.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Analog_input objects: (Read-only)						
kWh Energy: Total	Accumulated Real Energy	AI1	kWh	0	40259/260	
kW: Total	Total Instantaneous Real Power	AI2	kW	1	40261/262	
kVAR: Total	Total Instantaneous Reactive Power	AI3	kVAR	1	40263/264	
kVA: Total	Total Instantaneous Apparent Power	AI4	kVA	1	40265/266	
PF: Total	Total Power Factor	AI5	PF	0.01	40267/268	
Volts: L-L Avg	Voltage L-L average of active phases	AI6	Volts	5	40269/270	
Volts: L-N Avg	Voltage L-N average of active phases	AI7	Volts	5	40271/272	
Amps: Avg	Current Avg of active phases	AI8	Amps	5	40273/274	
kW: Ph A	Instantaneous Real Power Phase A	AI9	kW	1	40275/276	
kW: Ph B	Instantaneous Real Power Phase B	AI10	kW	1	40277/278	
kW: Ph C	Instantaneous Real Power Phase C	AI11	kW	1	40279/280	
PF: Ph A	Instantaneous Power Factor Phase A	AI12	PF	0.01	40281/282	
PF: Ph B	Instantaneous Power Factor Phase B	AI13	PF	0.01	40283/284	
PF: Ph C	Instantaneous Power Factor Phase C	AI14	PF	0.01	40285/286	
Volts: Ph A-B	Instantaneous Voltage Phase A to Phase B	AI15	Volts	5	40287/288	
Volts: Ph B-C	Instantaneous Voltage Phase B to Phase C	AI16	Volts	5	40289/290	
Volts: Ph A-C	Instantaneous Voltage Phase A to Phase C	AI17	Volts	5	40291/292	
Volts: Ph A-N	Instantaneous Voltage Phase A to Neutral	AI18	Volts	5	40293/294	
Volts: Ph B-N	Instantaneous Voltage Phase B to Neutral	AI19	Volts	5	40295/296	
Volts: Ph C-N	Instantaneous Voltage Phase C to Neutral	AI20	Volts	5	40297/298	
Amps: Ph A	Instantaneous Current Phase A	AI21	Amps	5	40299/300	
Amps: Ph B	Instantaneous Current Phase B	AI22	Amps	5	40301/302	
Amps: Ph C	Instantaneous Current Phase C	AI23	Amps	5	40303/304	
kW: Average	Average Real Power since last reset	AI24	kW	1	40305/306	
kW: Min	Minimum Real Power since last reset	AI25	kW	1	40307/308	
kW: Max	Maximum Real Power since last reset	AI26	kW	1	40309/310	
Analog_Value objects: (can be written as well as read)						
kWh Energy Reset	Write Zero to reset	AV1	n/a	32767	40001	
kW Average, Min, Max Reset	Write Zero to reset	AV2	n/a	32767	40026	

E50C2 and E50C3 Uni-Directional Energy Meter

The E50C2/C3 has 63 data objects and operates at 9600, 19200 or 38400 baud. The E8950 does not support the logging functionality of the E50C3.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Analog_input objects: (Read-only)						
kWh Energy: Total	Accumulated Real Energy	AI1	kWh	0	259/260	Resolution is limited by data type (when value exceeds 7 digits, reset more often to maximize resolution)
kW: Total	Total Instantaneous Real Power	AI2	kW	1	261/262	
kVAR: Total	Total Instantaneous Reactive Power	AI3	kVAR	1	263/264	
KVA: Total	Total Instantaneous Apparent Power	AI4	kVA	1	265/266	
PF: Total	Total Instantaneous Power Factor	AI5	PF	0.01	267/268	
Volts: L-L Avg	Voltage L-L average of active phases	AI6	Volts	5	269/270	
Volts: L-N Avg	Voltage L-N average of active phases	AI7	Volts	5	271/272	
Amps: Avg	Current Avg of active phases	AI8	Amps	5	273/274	
kW: Ph A	Instantaneous Real Power Phase A	AI9	kW	1	275/276	
kW: Ph B	Instantaneous Real Power Phase B	AI10	kW	1	277/278	
kW: Ph C	Instantaneous Real Power Phase C	AI11	kW	1	279/280	
PF: Ph A	Instantaneous Power Factor Phase A	AI12	PF	0.01	281/282	
PF: Ph B	Instantaneous Power Factor Phase B	AI13	PF	0.01	283/284	
PF: Ph C	Instantaneous Power Factor Phase C	AI14	PF	0.01	285/286	
Volts: Ph A-B	Instantaneous Voltage Phase A to Phase B	AI15	Volts	5	287/288	
Volts: Ph B-C	Instantaneous Voltage Phase B to Phase C	AI16	Volts	5	289/290	
Volts: Ph A-C	Instantaneous Voltage Phase A to Phase C	AI17	Volts	5	291/292	
Volts: Ph A-N	Instantaneous Voltage Phase A to Neutral	AI18	Volts	5	293/294	
Volts: Ph B-N	Instantaneous Voltage Phase B to Neutral	AI19	Volts	5	295/296	
Volts: Ph C-N	Instantaneous Voltage Phase C to Neutral	AI20	Volts	5	297/298	
Amps: Ph A	Instantaneous Current Phase A	AI21	Amps	5	299/300	
Amps: Ph B	Instantaneous Current Phase B	AI22	Amps	5	301/302	
Amps: Ph C	Instantaneous Current Phase C	AI23	Amps	5	303/304	
Reserved	Reserved	AI24	n/a	0	305/306	
Frequency	Instantaneous Frequency	AI25	Hz	0.01	307/308	Returns QNAN if frequency is out of range (or no voltage input present on Phase A)
kVAh: Total	Accumulated Apparent Energy Consumption	AI26	kWh	0	309/310	The UNITS property of this object reports kWh because there is no unit type in this verision of the BACnet standard for kVARh.
kVARh: Total	Accumulated Reactive Energy Consumption	AI27	kWh	0	311/312	The UNITS property of this object reports kWh because there is no unit type in this verision of the BACnet standard for kVARh.
kVA: Ph A	Instantaneous Apparent Power Phase A	AI28	kVA	1	313/314	
kVA: Ph B	Instantaneous Apparent Power Phase B	AI29	kVA	1	315/316	
kVA: Ph C	Instantaneous Apparent Power Phase C	AI30	kVA	1	317/318	
kVAR: Ph A	Instantaneous Reactive Power Phase A	AI31	kVAR	1	319/320	
kVAR: Ph B	Instantaneous Reactive Power Phase B	AI32	kVAR	1	321/322	
kVAR: Ph C	Instantaneous Reactive Power Phase C	AI33	kVAR	1	323/324	
kW: Demand	Total Real Power Present Demand	AI34	kW	1	325/326	
kVAR: Demand	Total Reactive Power Present Demand	AI35	kVAR	1	327/328	
kVA: Demand	Total Apparent Power Present Demand	AI36	kVA	1	329/330	

E50C2 and E50C3 Uni-Directional Energy Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
kW: Max Demand	Total Real Power Max. Demand	AI37	kW	0	331/332	This retains the largest value measured for Total Real Power Demand (AI34) for any single demand interval since the Max Demand was last explicitly reset via AV1 (this also resets when the demand interval changes).
kVAR: Max Demand	Total Reactive Power Max. Demand	AI38	kVAR	0	333/334	This retains the largest value measured for Total Reactive Power Demand (AI35) for any single demand interval since the Max Demand was last explicitly reset via AV1 (this also resets when the demand interval changes).
kVA: Max Demand	Total Apparent Power Max. Demand	AI39	kVA	0	335/336	This retains the largest value measured for Total Apparent Power Demand (AI36) for any single demand interval since the Max Demand was last explicitly reset via AV1 (this also resets when the demand interval changes).
Pulse Counter 1 (Real Energy)	Pulse Counter 1 (Real Energy)	AI40	n/a	0	337/338	Contact closure counter for Real Energy pulse output. Check Pulse setup on the LCD display for the weight of each pulse output count. These values are derived from 32 bit integer counter and roll over to 0 when the integer counters do. Write 16498 (0x4072) to the Present_Value property of Analog_Value object AV1 to reset both Pulse Counters to 0.
Pulse Counter 2	Pulse Counter 2	AI41	n/a	0	339/340	Contact closure counter for Reactive Energy pulse output. Check Pulse setup on the LCD display for the weight of each pulse output count. These values are derived from 32 bit integer counter and roll over to 0 when the integer counters do. Write 16498 (0x4072) to the Present_Value property of Analog_Value object AV1 to reset both Pulse Counters to 0.
kWh: Ph A	Real Energy Consumption - Phase A	AI42	kWh	1	341/342	
kWh: Ph B	Real Energy Consumption - Phase B	AI43	kWh	1	343/344	
kWh: Ph C	Real Energy Consumption - Phase C	AI44	kWh	1	345/346	
Max_Power	Max Power	AI45	kW	0	135	
Reserved_AI77	(Reserved AI77)	AI46	n/a	65535	136	
Energy_Resets	Count of Energy_Resets	AI47	n/a	0	147	
Reserved_AI79	Reserved_AI79	AI48	n/a	65535	148	
Reserved_AI80	Reserved_AI80	AI49	n/a	65535	151	
Power_Up_Count	Count of Power Up Cycles	AI50	n/a	0	152	
Output_Config	Output Configuration	AI51	n/a	0	153	
Alarm Error Bitmap	Bitmap of all alarm bits	AI52	n/a	0	146	
Analog_Value objects: (can be written as well as read)						
Reset: write values to reset configs	30078=Acc 21211=Dmd 21212=Max 16498=Puls	AV1	n/a	0	129	Reset (aka Command Register): - Write 30078 (0x757E) to clear all Energy Accumulators to 0 (All). - Write 21211 (0x52DB) to begin new Demand Sub-Interval calculation cycle. Takes effect at the end of the next 1 second calculation cycle. Write no more frequently than every 10 seconds. - Write 21212 (0x52DC) to reset Max Demand values to Present Demand Values. Takes effect at the end of the next 1 second calculation cycle. Write no more frequently than every 10 seconds. - Write 16498 (0x4072) to clear Pulse Counts to zero. - Read always returns 0.
System Type (being metered)	10=1ph 11=2ph 12=2ph+N 31=3ph-Y 40=3ph+N	AV2	n/a	0	130	10 = Single Phase: A + N 11 = Single Phase: A + B 12 = Single Split Phase: A + B + N 31 = 3 phase Δ, A + B + C, no N 40 = 3 phase Y, A + B + C + N

E50C2 and E50C3 Uni-Directional Energy Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
CT Ratio Primary	CT Ratio Primary (5A to 32000A)	AV3	Amps	0	131	Current Transducer Size - Primary Current Range
CT Ratio Secondary	CT Ratio Secondary (1=1VAC 3=1/3VAC)	AV4	n/a	0	132	Current Transducer Type – Secondary Interface - Enter 1 for CTs with 1V outputs - Enter 3 for CTs with 1/3V outputs
PT Ratio	Potential Transformer Ratio (1 = no PT)	AV5	n/a	0	133	PT Ratio: The meter scales this value by 100 (i.e. entering 200 yields a potential transformer ratio of 2:1). The default is 100 (1.00:1), which is with no PT attached. Set this value before setting the system voltage (below)
System Voltage	Line-Line Voltage of Service Metered	AV6	Volts	0	134	System Voltage: This voltage is line to line, unless in system type 10 (AV2), which is line to neutral. The meter uses this value to calculate the full scale power for the pulse configuration (below), and as full scale for phase loss (AV8). The meter will refuse voltages outside the range of 82-660 volts when divided by the PT Ratio (above).
Display Units	Display Units (0=IEC 1=iEEE)	AV7	n/a	0	137	Display Units: 0 = IEC (U, V, P, Q, S) 1 = IEEE (default: VLL, VLN, W, VAR, VA)
Phase Loss Voltage Threshold	Phase Loss Thresh (% of System Voltage)	AV8	Percent	0	142	Phase Loss Voltage Threshold in percent of System Voltage (in object AV6). Default is 10 (10%). Any phase (as configured in AV2) whose level drops below this threshold triggers a Phase Loss alert. E.g., if the System voltage is set to 480 V L-L, the nominal L-N voltage for each phase should be 277 V. When the threshold is set to 10%, if any phase drops below 27.7 V, or if any L-L voltage drops below 48 V the corresponding phase loss alarm bit is true.
Phase Loss Imbalance Threshold	Phase Loss Imbalance (% L-L variation)	AV9	Percent	0	143	Phase Loss Imbalance Threshold in Percent. Default is 25% phase to phase difference. For a 3-phase Y (3 + N) system type (40 in object AV2), both Line to Neutral and Line to Line voltages are tested. In a 3-phase Δ System type (31 in object AV2), only Line to Line voltages are examined. In a single split-phase (2 + N) system type (12 in object AV2), just the line to neutral voltage are compared. E.g., if the System Type is 40 (3-phase with Neutral) and the Phase Loss Imbalance Threshold is 25%, a Phase Imbalance is indicated when the L-L voltage between any two phases drops to less than 75% of the L-L voltage between any other two phases or when the L-N voltage of any phase drops to less than 75% of the L-N voltage of any other phase.
Num of Sub-Intrvl per Dem Intrvl	1=most recent; n(2-6)=avg of last n	AV10	n/a	0	149	Number of Sub-Intervals per Demand Interval. Sets the number of sub-intervals that make a single demand interval. For block demand, set this to 1. Default is 1. When Sub-Interval Length (in object AV11) is set to 0 (sync-to-comms mode), the value of this object is ignored.
Sub-Interval Length	10 to 32767 seconds (0= Sync-to-Comms)	AV11	Seconds	0	150	Sub-Interval Length in hundredths of a second. For sync-to-comms mode, which allows manual triggering of demand intervals and the logging of another Trend_Log record, set this value to 0 and write 21211 to the reset register (object AV1) each time the sub-interval must be externally reset. Default is 90000 (15 minutes). This variable is tied directly to the Log_Interval property of all three Trend_Log objects (their value is always the same as this one). Changing any of these four properties changes all of them.

E51C2 and E51C3 Bi-Directional Energy Meter

The E51C2/C3 has 94 data objects and operates at 9600, 19200 or 38400 baud. The E8950 does not support the logging functionality of the E51C3.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Analog_input objects: (Read-only)						
kWh: Net	Accumulated Net Real Energy	AI1	kWh	0	257/258	Resolution is limited by data type (when value exceeds 7 digits; reset more often to maximize resolution)
kWh: Import	Real Energy: Import (Quadrants 1 & 4)	AI2	kWh	0	259/260	
kWh: Export	Real Energy: Export (Quadrants 2 & 3)	AI3	kWh	0	261/262	
kVARh: Quad 1	Reactive Energy: Quad 1 (Lags Import)	AI4	n/a	0	263/264	The UNITS property of this object will report n/a because there is no unit type in this verision of the BACnet standard for kVARh.
kVARh: Quad 2	Reactive Energy: Quad 2 (Leads Export)	AI5	n/a	0	265/266	The UNITS property of this object will report n/a because there is no unit type in this verision of the BACnet standard for kVARh.
kVARh: Quad 3	Reactive Energy: Quad 3 (Lags Export)	AI6	n/a	0	267/268	The UNITS property of this object will report n/a because there is no unit type in this verision of the BACnet standard for kVARh.
kVARh: Quad 4	Reactive Energy: Quad 4 (Leads Import)	AI7	n/a	0	269/270	The UNITS property of this object will report n/a because there is no unit type in this verision of the BACnet standard for kVARh.
kVAh: Net	Apparent Energy: Net	AI8	n/a	0	271/272	The UNITS property of this object will report n/a because there is no unit type in this verision of the BACnet standard for kVAh.
kVAh: Import	Apparent Energy: Import (Quads 1 & 4)	AI9	n/a	0	273/274	The UNITS property of this object will report n/a because there is no unit type in this verision of the BACnet standard for kVAh.
kVAh: Export	Apparent Energy: Export (Quads 2 & 3)	AI10	n/a	0	275/276	The UNITS property of this object will report n/a because there is no unit type in this verision of the BACnet standard for kVAh.
kW: Total Net	Total Net Instantaneous Real Power	AI11	kW	1	277/278	
kVAR: Total Net	Total Net Instantaneous Reactive Power	AI12	kVAR	1	279/280	
kVA: Total Net	Total Net Instantaneous Apparent Power	AI13	kVA	1	281/282	
PF: Total	Total Instantaneous Power Factor	AI14	PF	0.01	283/284	
Volts: L-L Avg	Voltage L-L average of active phases	AI15	Volts	5	285/286	
Volts: L-N Avg	Voltage L-N average of active phases	AI16	Volts	5	287/288	
Amps: Avg	Current Avg of active phases	AI17	Amps	5	289/290	
Frequency	Instantaneous Frequency	AI18	Hz	0.01	291/292	Will return QNAN if frequency is out of range (or no voltage input present on Phase A)
kW: Demand	Total Real Power Present Demand	AI19	kW	1	293/294	
kVAR: Demand	Total Reactive Power Present Demand	AI20	kVAR	1	295/296	
kVA: Demand	Total Apparent Power Present Demand	AI21	kVA	1	297/298	
kW: Total Import Max. Demand	Total Import Real Power Max. Demand	AI22	kW	0	299/300	This retains the largest positive (Import) value measured for Total Real Power Demand (AI19) for any single demand interval since the Max Demand were last explicitly reset via AV1 (this is also reset when the demand interval is changed).
kVAR: Total Import Max. Demand	Total Import Reactive Power Max. Demand	AI23	kVAR	0	301/302	This retains the largest positive (Import) value measured for Total Reactive Power Demand (AI20) for any single demand interval since the Max Demand were last explicitly reset via AV1 (this is also reset when the demand interval is changed).
kVA: Total Import Max. Demand	Total Import Apparent Power Max. Demand	AI24	kVA	0	303/304	This retains the largest positive (Import) value measured for Total Apparent Power Demand (AI21) for any single demand interval since the Max Demand were last explicitly reset via AV1 (this is also reset when the demand interval is changed).

E51C2 and E51C3 Bi-Directional Energy Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
kW: Total Export Max. Demand	Total Export Real Power Max. Demand	AI25	kW	0	305/306	This retains the largest negative (Export) value measured for Total Real Power Demand (AI19) for any single demand interval since the Max Demand were last explicitly reset via AV1 (this is also reset when the demand interval is changed).
kVAR: Total Export Max. Demand	Total Export Reactive Power Max. Demand	AI26	kVAR	0	307/308	This retains the largest negative (Export) value measured for Total Reactive Power Demand (AI20) for any single demand interval since the Max Demand were last explicitly reset via AV1 (this is also reset when the demand interval is changed).
kVA: Total Export Max. Demand	Total Export Apparent Power Max. Demand	AI27	kVA	0	309/310	This retains the largest negative (Export) value measured for Total Apparent Power Demand (AI21) for any single demand interval since the Max Demand were last explicitly reset via AV1 (this is also reset when the demand interval is changed).
Reserved_AI28	(Reserved_AI28)	AI28	kVA	1	311/312	This retains the largest negative (Export) value measured for Total Apparent Power Demand (AI21) for any single demand interval since the Max Demand were last explicitly reset via AV1 (this is also reset when the demand interval is changed).
Pulse Counter 1 Import Real Energy	Pulse Counter 1 Import Real Energy	AI29	n/a	0	313/314	Contact closure counter for Real Energy Import pulse output. Check Pulse setup on the LCD display for the weight of each pulse output count. These values are derived from 32 bit integer counter and roll over to 0 when the integer counters do. Write 16498 (0x4072) to the Present_Value property of Analog_Value object AV1 to reset both Pulse Counters to 0.
Pulse Counter 2 Export Real Energy	Pulse Counter 2 Export Real Energy	AI30	n/a	0	315/316	Contact closure counter for Real Energy Export pulse output (there is no physical output for this, but the pulses are counted anyway). Check Pulse setup on the LCD display for the weight of each pulse output count. These values are derived from 32 bit integer counter and roll over to 0 when the integer counters do. Write 16498 (0x4072) to the Present_Value property of Analog_Value object AV1 to reset both Pulse Counters to 0.
kWh Energy: Import Ph A	Accumulated Real Energy Import Ph A	AI31	kWh	0	317/318	
kWh Energy: Import Ph B	Accumulated Real Energy Import Ph B	AI32	kWh	0	319/320	
kWh Energy: Import Ph C	Accumulated Real Energy Import Ph C	AI33	kWh	0	321/322	
kWh Energy: Export Ph A	Accumulated Real Energy Export Ph A	AI34	kWh	0	323/324	
kWh Energy: Export Ph B	Accumulated Real Energy Export Ph B	AI35	kWh	0	325/326	
kWh Energy: Export Ph C	Accumulated Real Energy Export Ph C	AI36	kWh	0	327/328	
kVARh: Q1 Ph A	Accumulated Q1 Reactive Energy Ph A	AI37	kWh	0	329/330	
kVARh: Q1 Ph B	Accumulated Q1 Reactive Energy Ph B	AI38	kWh	0	331/332	
kVARh: Q1 Ph C	Accumulated Q1 Reactive Energy Ph C	AI39	kWh	0	333/334	
kVARh: Q2 Ph A	Accumulated Q2 Reactive Energy Ph A	AI40	kWh	0	335/336	
kVARh: Q2 Ph B	Accumulated Q2 Reactive Energy Ph B	AI41	kWh	0	337/338	
kVARh: Q2 Ph C	Accumulated Q2 Reactive Energy Ph C	AI42	kWh	0	339/340	
kVARh: Q3 Ph A	Accumulated Q3 Reactive Energy Ph A	AI43	kWh	0	341/342	
kVARh: Q3 Ph B	Accumulated Q3 Reactive Energy Ph B	AI44	kWh	0	343/344	
kVARh: Q3 Ph C	Accumulated Q3 Reactive Energy Ph C	AI45	kWh	0	345/346	

E51C2 and E51C3 Bi-Directional Energy Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
kVARh: Q4 Ph A	Accumulated Q4 Reactive Energy Ph A	AI46	kWh	0	347/348	
kVARh: Q4 Ph B	Accumulated Q4 Reactive Energy Ph B	AI47	kWh	0	349/350	
kVARh: Q4 Ph C	Accumulated Q4 Reactive Energy Ph C	AI48	kWh	0	351/352	
kVAh: Import Ph A	Accumulated Appar. Energy Import Ph A	AI49	kWh	0	353/354	
kVAh: Import Ph B	Accumulated Appar. Energy Import Ph B	AI50	kWh	0	355/356	
kVAh: Import Ph C	Accumulated Appar. Energy Import Ph C	AI51	kWh	0	357/358	
kVAh: Export Ph A	Accumulated Appar. Energy Export Ph A	AI52	kWh	0	359/360	
kVAh: Export Ph B	Accumulated Appar. Energy Export Ph B	AI53	kWh	0	361/362	
kVAh: Export Ph C	Accumulated Appar. Energy Export Ph C	AI54	kWh	0	363/364	
kW: Ph A	Instantaneous Real Power Phase A	AI55	kW	1	365/366	
kW: Ph B	Instantaneous Real Power Phase B	AI56	kW	1	367/368	
kW: Ph C	Instantaneous Real Power Phase C	AI57	kW	1	369/370	
kVAR: Ph A	Instantaneous Reactive Power Phase A	AI58	kVAR	1	371/372	
kVAR: Ph B	Instantaneous Reactive Power Phase B	AI59	kVAR	1	373/374	
kVAR: Ph C	Instantaneous Reactive Power Phase C	AI60	kVAR	1	375/376	
kVA: Ph A	Instantaneous Apparent Power Phase A	AI61	kVA	1	377/378	
kVA: Ph B	Instantaneous Apparent Power Phase B	AI62	kVA	1	379/380	
kVA: Ph C	Instantaneous Apparent Power Phase C	AI63	kVA	1	381/382	
PF: Ph A	Instantaneous Power Factor Phase A	AI64	PF	0.01	383/384	
PF: Ph B	Instantaneous Power Factor Phase B	AI65	PF	0.01	385/386	
PF: Ph C	Instantaneous Power Factor Phase C	AI66	PF	0.01	387/388	
Volts: Ph A-B	Instantaneous Voltage Phase A to Phase B	AI67	Volts	5	389/390	
Volts: Ph B-C	Instantaneous Voltage Phase B to Phase C	AI68	Volts	5	391/392	
Volts: Ph A-C	Instantaneous Voltage Phase A to Phase C	AI69	Volts	5	393/394	
Volts: Ph A-N	Instantaneous Voltage Phase A to Neutral	AI70	Volts	5	395/396	
Volts: Ph B-N	Instantaneous Voltage Phase B to Neutral	AI71	Volts	5	397/398	
Volts: Ph C-N	Instantaneous Voltage Phase C to Neutral	AI72	Volts	5	399/400	
Amps: Ph A	Instantaneous Current Phase A	AI73	Amps	5	401/402	
Amps: Ph B	Instantaneous Current Phase B	AI74	Amps	5	403/404	
Amps: Ph C	Instantaneous Current Phase C	AI75	Amps	5	405/406	
Max_Power	Max Power	AI76	kW	0	135	
Reserved_AI77	(Reserved AI77)	AI77	n/a	65535	136	
Energy_Resets	Count of Energy_Resets	AI78	n/a	0	147	
Reserved_AI79	Reserved_AI79	AI79	n/a	65535	148	
Reserved_AI80	Reserved_AI80	AI80	n/a	65535	151	
Power_Up_Count	Count of Power Up Cycles	AI81	n/a	0	152	
Output_Config	Output Configuration	AI82	n/a	0	153	
Alarm Error Bitmap	Bitmap of all alarm bits	AI83	n/a	0	146	

E51C2 and E51C3 Bi-Directional Energy Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Analog_Value objects: (can be written as well as read)						
Reset: write values to reset configs	30078=Acc 21211=Dmd 21212=Max 16498=Puls	AV1	n/a	0	129	Reset (aka Command Register): - Write 30078 (0x757E) to clear all Energy Accumulators to 0 (All). - Write 21211 (0x52DB) to begin new Demand Sub-Interval calculation cycle. Takes effect at the end of the next 1 second calculation cycle. For proper operation, write no more frequently than every 10 seconds. - Write 21212 (0x52DC) to reset Max Demand values to Present Demand Values. Takes effect at the end of the next 1 second calculation cycle. For proper operation, write no more frequently than every 10 seconds. - Write 16498 (0x4072) to clear Pulse Counts to zero. - Read always returns 0.
System Type (being metered)	10=1ph 11=2ph 12=2ph+N 31=3ph-Y 40=3ph+N	AV2	n/a	0	130	10 = Single Phase: A + N 11 = Single Phase: A + B 12 = Single Split Phase: A + B + 31 = 3 phase Δ, A + B + C, no N 40 = 3 phase Y, A + B + C + N
CT Ratio Primary	CT Ratio Primary (5A to 32000A)	AV3	Amps	0	131	Current Transducer Size - Primary Current Range
CT Ratio Secondary	CT Ratio Secondary (1=1VAC 3=1/3VAC)	AV4	n/a	0	132	Current Transducer Type – Secondary Interface - Enter 1 for CTs with 1V outputs - Enter 3 for CTs with 1/3V outputs
PT Ratio	Potential Transformer Ratio (1= no PT)	AV5	n/a	0	133	PT Ratio: The meter scales this value by 100 (i.e. entering 200 yields a potential transformer ratio of 2:1). The default is 100 (1.00:1), which is with no PT attached. Set this value before setting the system voltage (below)
System Voltage	Line-Line Voltage of Service Metered	AV6	Volts	0	134	System Voltage: This voltage is line to line, unless in system type 10 (AV2), which is line to neutral. The meter uses this value to calculate the full scale power for the pulse configuration (below), and as full scale for phase loss (AV8). The meter will refuse voltages that are outside the range of 82-660 volts when divided by the PT Ratio (above).
Display Units	Display Units (0=IEC 1=iEEE)	AV7	n/a	0	137	Display Units: 0 = IEC (U, V, P, Q, S), 1 = IEEE (default: VLL, VLN, W, VAR, VA)
Phase Loss Voltage Threshold	Phase Loss Thresh (% of System Voltage)	AV8	Percent	0	142	Phase Loss Voltage Threshold in percent of System Voltage (in object AV6). Default is 10 (10%). Any phase (as configured in AV2) whose level drops below this threshold triggers a Phase Loss alert. E.g., if the System voltage is set to 480 V L-L, the L-N voltage for each phase should be 277 V. When the threshold is set to 10%, if any phase drops below 27.7, or if any L-L voltage drops below 48 V, the corresponding phase loss alarm bit will be true.
Phase Loss Imbalance Threshold	Phase Loss Imbalance (% L-L variation)	AV9	Percent	0	143	Phase Loss Imbalance Threshold in Percent. Default is 25% phase to phase difference. For a 3-phase Y (3 + N) system type (40 in object AV2), both Line to Neutral and Line to Line voltages are tested. In a 3-phase Δ System type (31 in object AV2), only Line to Line voltages are examined. In a single split-phase (2 + N) system type (12 in object AV2), just the line to neutral voltage are compared. E.g., if the System Type is 40 (3-phase with Neutral) and the Phase Loss Imbalance Threshold is 25%, a Phase Imbalance is indicated when the L-L voltage between any two phases drops to less than 75% of the L-L voltage between any other two phases or when the L-N voltage of any phase drops to less than 75% of the L-N voltage of any other phase.

E51C2 and E51C3 Bi-Directional Energy Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Num of Sub-Intrvl per Dem Intrvl	1=most recent; n(2-6)=avg of last n	AV10	n/a	0	149	Number of Sub-Intervals per Demand Interval. Sets the number of sub-intervals that make a single demand interval. For block demand, set this to 1. Default is 1. When Sub-Interval Length (in object AV11) is set to 0 (sync-to-comms mode), the value of this object is ignored.
Sub-Interval Length	10 to 32767 seconds (0= Sync-to-Comms)	AV11	Seconds	0	150	Sub-Interval Length in hundredths of a second. For sync-to-comms mode, which allows manual triggering of demand intervals and the logging of another Trend_Log record, set this value to 0 and write 21211 to the reset register (object AV1) each time the sub-interval must be externally reset. Default is 90000 (15 minutes). This variable is tied directly to the Log_Interval property of all three Trend_Log objects (their value is always the same as this one). Changing any of these four properties changes all of them.

H8436 Series Energy Meters (H8436V, H8436VB & H8436VBS)

The H8436 has 34 data objects and operates at 9600 or 19200 baud.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Analog_input objects: (Read-only)						
kWh Energy: Total	Accumulated Real Energy	AI1	kWh	0	259/260	
kW: Total	Total Instantaneous Real Power	AI2	kW	1	261/262	
kVA: Total	Total Instantaneous Apparent Power	AI3	kVA	1	263/264	
kVAR: Total	Total Instantaneous Reactive Power	AI4	kVAR	1	265/266	
PF: Total	Total Instantaneous Power Factor	AI5	PF	0.01	267/268	
Volts: L-L Avg	Voltage L-L average of active phases	AI6	Volts	5	269/270	
Volts: L-N Avg	Voltage L-N average of active phases	AI7	Volts	5	271/272	
Amps: Avg	Current Avg of active phases	AI8	Amps	5	273/274	
kW: Ph A	Instantaneous Real Power Phase A	AI9	kW	1	275/276	
kW: Ph B	Instantaneous Real Power Phase B	AI10	kW	1	277/278	
kW: Ph C	Instantaneous Real Power Phase C	AI11	kW	1	279/280	
PF: Ph A	Instantaneous Power Factor Phase A	AI12	PF	0.01	281/282	
PF: Ph B	Instantaneous Power Factor Phase B	AI13	PF	0.01	283/284	
PF: Ph C	Instantaneous Power Factor Phase C	AI14	PF	0.01	285/286	
Volts: Ph A-B	Instantaneous Voltage Phase A to Phase B	AI15	Volts	5	287/288	
Volts: Ph B-C	Instantaneous Voltage Phase B to Phase C	AI16	Volts	5	289/290	
Volts: Ph A-C	Instantaneous Voltage Phase A to Phase C	AI17	Volts	5	291/292	
Volts: Ph A-N	Instantaneous Voltage Phase A to Neutral	AI18	Volts	5	293/294	
Volts: Ph B-N	Instantaneous Voltage Phase B to Neutral	AI19	Volts	5	295/296	
Volts: Ph C-N	Instantaneous Voltage Phase C to Neutral	AI20	Volts	5	297/298	
Amps: Ph A	Instantaneous Current Phase A	AI21	Amps	5	299/300	
Amps: Ph B	Instantaneous Current Phase B	AI22	Amps	5	301/302	
Amps: Ph C	Instantaneous Current Phase C	AI23	Amps	5	303/304	
Alarm Error Bitmap	Alarm Error Bitmap	AI24	n/a	0	146	
Count of Energy Accumulator Resets	Count of Energy Accumulator Resets	AI25	n/a	0	147	
Analog_Value objects: (can be written as well as read)						
Reset: write values to reset configs	30078= Clear All Accumulators	AV1	n/a	0	129	Reset: - Write 30078 to clear all energy accumulators to 0 (All). - Read always returns 0
System Type	10, 11, 12, 30, 31, 32, 40, 42, 44	AV2	n/a	0	130	
CT Ratio Primary	CT Ratio Primary (1A to 32767A)	AV3	n/a	0	131	
CT Ratio Secondary	CT Ratio Secondary (1=1AC 5=5A)	AV4	n/a	0	132	Not used on H84xx-V models (reads 32768)
PT Ratio Primary	Potential Transformer Ratio Primary	AV5	n/a	0	133	
PT Ratio Scale (0 = No PT)	0, 1, 10, 100 (0 = no PT)	AV6	n/a	0	134	
PT Ratio Secondary	100, 110, 115, 120	AV7	n/a	0	135	
Service Frequency	50 or 60 Hz	AV8	Hz	0	136	
Display Units	Display Units (0=IEC 1=IEEE)	AV9	n/a	0	137	

H8437 Series Energy Meters (H8437V, H8437VB & H8437VBS)

The H8437 has 66 data objects and operates at 9600 or 19200 baud.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Analog_input objects: (Read-only)						
kWh Energy: Total	Accumulated Real Energy	AI1	kWh	0	259/260	
kW: Total	Total Instantaneous Real Power	AI2	kW	1	261/262	
KVA: Total	Total Instantaneous Apparent Power	AI3	kVA	1	263/264	
kVAR: Total	Total Instantaneous Reactive Power	AI4	kVAR	1	265/266	
PF: Total	Total Instantaneous Power Factor	AI5	PF	0.01	267/268	
Volts: L-L Avg	Voltage L-L average of active phases	AI6	Volts	5	269/270	
Volts: L-N Avg	Voltage L-N average of active phases	AI7	Volts	5	271/272	
Amps: Avg	Current Avg of active phases	AI8	Amps	5	273/274	
kW: Ph A	Instantaneous Real Power Phase A	AI9	kW	1	275/276	
kW: Ph B	Instantaneous Real Power Phase B	AI10	kW	1	277/278	
kW: Ph C	Instantaneous Real Power Phase C	AI11	kW	1	279/280	
PF: Ph A	Instantaneous Power Factor Phase A	AI12	PF	0.01	281/282	
PF: Ph B	Instantaneous Power Factor Phase B	AI13	PF	0.01	283/284	
PF: Ph C	Instantaneous Power Factor Phase C	AI14	PF	0.01	285/286	
Volts: Ph A-B	Instantaneous Voltage Phase A to Phase B	AI15	Volts	5	287/288	
Volts: Ph B-C	Instantaneous Voltage Phase B to Phase C	AI16	Volts	5	289/290	
Volts: Ph A-C	Instantaneous Voltage Phase A to Phase C	AI17	Volts	5	291/292	
Volts: Ph A-N	Instantaneous Voltage Phase A to Neutral	AI18	Volts	5	293/294	
Volts: Ph B-N	Instantaneous Voltage Phase B to Neutral	AI19	Volts	5	295/296	
Volts: Ph C-N	Instantaneous Voltage Phase C to Neutral	AI20	Volts	5	297/298	
Amps: Ph A	Instantaneous Current Phase A	AI21	Amps	5	299/300	
Amps: Ph B	Instantaneous Current Phase B	AI22	Amps	5	301/302	
Amps: Ph C	Instantaneous Current Phase C	AI23	Amps	5	303/304	
Amps: Neutral	Instantaneous Neutral Current	AI24	Amps	0.1	305/306	
Frequency	Instantaneous Frequency	AI25	Hz	0.01	307/308	
kW: Total Min	Total Real Power Minimum Value	AI26	kW	0	309/310	
kW: Total Max	Total Real Power Maximum Value	AI27	kW	0	311/312	
kVAh: Total	Accumulated Apparent Energy Consumption	AI28	n/a	0	313/314	
kVARh: Total	Accumulated Reactive Energy Consumption	AI29	n/a	0	315/316	
kVA: Ph A	Instantaneous Apparent Power Phase A	AI30	kVA	1	317/318	
kVA: Ph B	Instantaneous Apparent Power Phase B	AI31	kVA	1	319/320	
kVA: Ph C	Instantaneous Apparent Power Phase C	AI32	kVA	1	321/322	
kVAR: Ph A	Instantaneous Reactive Power Phase A	AI33	kVAR	1	323/324	
kVAR: Ph B	Instantaneous Reactive Power Phase B	AI34	kVAR	1	325/326	
kVAR: Ph C	Instantaneous Reactive Power Phase C	AI35	kVAR	1	327/328	
kW: Demand	Total Real Power Present Demand	AI36	kW	0	329/330	
kVA: Demand	Total Apparent Power Present Demand	AI37	kVA	0	331/332	
kVAR: Demand	Total Reactive Power Present Demand	AI38	kVAR	0	333/334	
kW: Max Demand	Total Real Power Max. Demand	AI39	kW	0	335/336	

H8437 Series Energy Meters (H8437V, H8437VB & H8437VBS), cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
kVA: Max Demand	Total Apparent Power Max. Demand	AI40	kVA	0	337/338	
kVAR: Max Demand	Total Reactive Power Max. Demand	AI41	kVAR	0	339/340	
Usage Hours	Hours: >0.1A on at least one phase	AI42	Hours	0	341/342	
Usage Minutes (0.0-59.9)	Minutes: >0.1A on at least one phase	AI43	Minutes	10	343/344	
Total Hours	Total Hours since last timer reset	AI44	Hours	0	345/346	This combination timer counts the total time for which the absolute current on at least one phase is >0.1 Amp.
Total Minutes (0.0-59.9)	Total Minutes since last timer reset	AI45	Minutes	10	347/348	This combination timer counts the total time for which the absolute current on at least one phase is >0.1 Amp.
Percent Usage	Usage Hours / Total Hours	AI46	Percent	5	349/350	This timer counts the total time since the usage timer was reset.
Volts THD: Ph A-N	Instantaneous THD Voltage Ph A - Neutral	AI47	Percent	5	351/352	Percent Usage = Usage Time / Total Time .
Volts THD: Ph B-N	Instantaneous THD Voltage Ph B - Neutral	AI48	Percent	5	353/354	
Volts THD: Ph C-N	Instantaneous THD Voltage Ph C - Neutral	AI49	Percent	5	355/356	
Volts THD: Ph A-B	Instantaneous THD Voltage Ph A - Ph B	AI50	Percent	5	357/358	
Volts THD: Ph B-C	Instantaneous THD Voltage Ph B - Ph C	AI51	Percent	5	359/360	
Volts THD: Ph A-C	Instantaneous THD Voltage Ph A - Ph C	AI52	Percent	5	361/362	
Amps THD: Ph A	Instantaneous THD Current Phase A	AI53	Percent	5	363/364	
Amps THD: Ph B	Instantaneous THD Current Phase B	AI54	Percent	5	365/366	
Amps THD: Ph C	Instantaneous THD Current Phase C	AI55	Percent	5	367/368	
Alarm Error Bitmap	Alarm Error Bitmap	AI56	n/a	0	146	Error Bitmap: bit 0: Phase A Voltage out of range bit 1: Phase B Voltage out of range bit 2: Phase C Voltage out of range bit 3: Phase A Current out of range bit 4: Phase B Current out of range bit 5: Phase C Current out of range bit 6: Frequency out of range or insufficient voltage on Phase A to determine frequency range of 45-65 Hz. bit 7: Reserved for future use bit 8: Phase Loss A bit 9: Phase Loss B bit 10: Phase Loss C bit 11-15: Reserved for future use
Count of Energy Accumulator Resets	Count of Energy Accumulator Resets	AI57	n/a	0	147	
Analog_Value objects: (can be written as well as read)						
Reset: write values to reset configs	30078=Acc 14255=MnMx 21212=Dmd 10001=Tmr	AV1	n/a	0	129	Reset: - Write 30078 to clear all Energy Accumulators to 0 (All). - Write 14255 to reset all Power Min/Max to Present Values (H84xx EDS Only). - Write 21212 to reset Peak Demand values to Present Demand Values (H84xx EDS Only). - Write 10001 to clear the Usage Timers to 0 (H84xx EDS Only). - Read always returns 0
System Type	10; 11; 12; 30; 31; 32; 40; 42; 44	AV2	n/a	0	130	
CT Ratio Primary	CT Ratio Primary (1A to 32767A)	AV3	n/a	0	131	
CT Ratio Secondary	CT Ratio Secondary (1=1AC 5=5A)	AV4	n/a	0	132	Not used on H84xxV (reads 32768)
PT Ratio Primary	Potential Transformer Ratio Primary	AV5	n/a	0	133	

H8437 Series Energy Meters (H8437V, H8437VB & H8437VBS), cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
PT Ratio Scale (0 = No PT)	0; 1; 10; 100 (0 = no PT)	AV6	n/a	0	134	
PT Ratio Secondary	100; 110; 115; 120	AV7	n/a	0	135	
Service Frequency	50 or 60 Hz	AV8	Hz	0	136	
Display Units	Display Units (0=IEC 1=IEEE)	AV9	n/a	0	137	
(Power) Demand Block Interval	1 to 60 Minutes	AV10	n/a	0	149	(Power) Demand Block Interval – Used for PQS (P=Real Power KW, Q=Reactive Power KVAR, and S=Apparent Power KVA) demand calculations.
Num of Power Dem. Block Sub-Intrvl.	Subset of Block interval	AV11	n/a	0	150	Number of Power Demand Block Sub-Intervals - Sets the number of sub-intervals per Demand Block Interval (above). The method of demand calculation is set as follows: 0 = Sliding Block. Like rolling block, but with a subinterval of 15 seconds; used for Demand Intervals ≤ 15 minutes, or 60 seconds for intervals > 15 minutes 1 = Block. Fixed block with no sub-intervals. >1 = Rolling Block. The number of sub-intervals per block. This value must divide evenly into the Block Demand Interval (above). For example, if the Demand Block Interval is 15 minutes, valid Sub-Interval values are: 3, 5, or 15. If the value of 3 is chosen, then there will be 3 subintervals of 5 minutes each.

H8238 Series Multi-Circuit Meters (H8238, H8238E & H8238EL)

Each H8238 contains up to 8 logical meters, each with 73 data objects, for a total of 584 data objects for one H8238 if all 8 meters are enabled. The H8238 operates at 9600 or 19200 baud.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Analog_input objects: (Read-only)						
kWh Energy: Total	Accumulated Real Energy	AI1	kWh	0	259/260	
kW: Total	Total Instantaneous Real Power	AI2	kW	1	261/262	
kVAR: Total	Total Instantaneous Reactive Power	AI3	kVAR	1	263/264	
KVA: Total	Total Instantaneous Apparent Power	AI4	kVA	1	265/266	
PF: Total	Total Instantaneous Power Factor	AI5	PF	0.01	267/268	
Volts: L-L Avg	Voltage L-L average of active phases	AI6	Volts	5	269/270	
Volts: L-N Avg	Voltage L-N average of active phases	AI7	Volts	5	271/272	
Amps: Avg	Current Avg of active phases	AI8	Amps	5	273/274	
Frequency	Instantaneous Frequency	AI9	Hz	0.01	275/276	Frequency: measured from the phase A voltage input. Range is 40 to 70 Hz. If voltage is insufficient for an accurate frequency determination, this register reads as 0xFFFF for integer and 0x7FC00000 for float.
kW: Ph A	Instantaneous Real Power Phase A	AI10	kW	1	277/278	
kW: Ph B	Instantaneous Real Power Phase B	AI11	kW	1	279/280	
kW: Ph C	Instantaneous Real Power Phase C	AI12	kW	1	281/282	
PF: Ph A	Instantaneous Power Factor Phase A	AI13	PF	0.01	283/284	
PF: Ph B	Instantaneous Power Factor Phase B	AI14	PF	0.01	285/286	
PF: Ph C	Instantaneous Power Factor Phase C	AI15	PF	0.01	287/288	
Volts: Ph A-B	Instantaneous Voltage Phase A to Phase B	AI16	Volts	5	289/290	
Volts: Ph B-C	Instantaneous Voltage Phase B to Phase C	AI17	Volts	5	291/292	
Volts: Ph A-C	Instantaneous Voltage Phase A to Phase C	AI18	Volts	5	293/294	
Volts: Ph A-N	Instantaneous Voltage Phase A to Neutral	AI19	Volts	5	295/296	
Volts: Ph B-N	Instantaneous Voltage Phase B to Neutral	AI20	Volts	5	297/298	
Volts: Ph C-N	Instantaneous Voltage Phase C to Neutral	AI21	Volts	5	299/300	
Amps: Ph A	Instantaneous Current Phase A	AI22	Amps	5	301/302	
Amps: Ph B	Instantaneous Current Phase B	AI23	Amps	5	303/304	
Amps: Ph C	Instantaneous Current Phase C	AI24	Amps	5	305/306	
Amps: Neutral	Instantaneous Neutral Current	AI25	Amps	0.1	307/308	Only Active in 6-Meter mode (reads 65535 in 8-meter mode)
kW: Average	Average Real Power since last reset	AI26	kW	1	309/310	

H8238 Series Multi-Circuit Meters (H8238, H8238E & H8238EL), cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
kW: Min	Minimum Real Power since last reset	AI27	kW	1	311/312	
kW: Max	Maximum Real Power since last reset	AI28	kW	1	313/314	
Firmware Revision - Reset System	Firmware Revision - Reset System	AI29	n/a	0	43	
Firmware Revision - Operating System	Firmware Revision - Operating System	AI30	n/a	0	44	
Serial number MSW	MSW of unsigned-long integer	AI31	n/a	0	45	
Serial number LSW	LSW of unsigned-long integer	AI32	n/a	0	46	
Error Register	0=no error; 1=NV Ram error; others rsvd	AI33	n/a	0	47	Reports internal errors detected by the microcontroller. The ALIVE LED is steadily lit (not blinking) if any errors are detected.
Device ID	15027=8-meter config; 15027=6-meter	AI34	n/a	0	48	
Meter Alarm Status (non-latching)	bitmap of 8 alarms - bits 9-15 are all 0	AI35	n/a	0	49	Holds the instantaneous state of the meter alarms. The bits in this register are only set while the alarm condition exists. These alarms cannot be reset by the user. Only set the Over Voltage Alarm when its time-delay condition is satisfied (see AV4). bit 0 = over current bit 1 = under current bit 2 = over kVA bit 3 = under kVA bit 4 = over voltage bit 5 = under voltage bit 6 = phase loss A bit 7 = phase loss B bit 8 = phase loss C bits 9-15 = 0
Over Voltage Set Counter	Over Voltage Set Counter	AI36	n/a	0	50	
Over Voltage Reset Counter	Over Voltage Reset Counter	AI37	n/a	0	51	
Under Voltage Set Counter	Under Voltage Set Counter	AI38	n/a	0	52	
Under Voltage Reset Counter	Under Voltage Reset Counter	AI39	n/a	0	53	
Phase Loss A Set Counter	Phase Loss A Set Counter	AI40	n/a	0	54	
Phase Loss A Reset Counter	Phase Loss A Reset Counter	AI41	n/a	0	55	
Phase Loss B Set Counter	Phase Loss B Set Counter	AI42	n/a	0	56	
Phase Loss B Reset Counter	Phase Loss B Reset Counter	AI43	n/a	0	57	
Phase Loss C Set Counter	Phase Loss C Set Counter	AI44	n/a	0	58	
Phase Loss C Reset Counter	Phase Loss C Reset Counter	AI45	n/a	0	59	
Over Current Set Counter	Over Current Set Counter	AI46	n/a	0	60	
Over Current Reset Counter	Over Current Reset Counter	AI47	n/a	0	61	
Under Current Set Counter	Under Current Set Counter	AI48	n/a	0	62	
Under Current Reset Counter	Under Current Reset Counter	AI49	n/a	0	63	
Over kVA Set Counter	Over kVA Set Counter	AI50	n/a	0	64	
Over kVA Reset Counter	Over kVA Reset Counter	AI51	n/a	0	65	
Under kVA Set Counter	Under kVA Set Counter	AI52	n/a	0	66	
Under kVA Reset Counter	Under kVA Reset Counter	AI53	n/a	0	67	
Modbus addr as conf by DIP switches	integer value (1-247) addr of 1st meter	AI54	n/a	0	68	

H8238 Series Multi-Circuit Meters (H8238, H8238E & H8238EL), cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Baud rate as conf by DIP switches	integer (2400; 4800; 9600; 19200)	AI55	n/a	0	69	
Analog_Value objects: (can be written as well as read)						
Reset Min/Max/Avg Real Power	Write Zero to Reset Min/Max/ Avg kW	AV1	n/a	0	28	Returns random values if read.
Reset Energy Consumption	Write Zero to Reset kWh Accumulator	AV2	n/a	0	1	Returns random values if read.
CT Scale	Amp rating of CT used (integer)	AV3	Amps	0	30	Sets the size of the external 5-Amp CTs used. Range is 1 to 5999. E.g. for 10A:5A CTs, set register to 10; for 4000A:5A CTs, set register to 4000.
Over Voltage (AV6) Alarm Threshold	Alarm if L-L Voltage>threshold > 10 sec	AV4	Volts	0	31	Occurs if the average L-L voltage (AI6) is greater than this threshold for at least 10 seconds. Units are absolute voltage (using integer multiplier). Range = 0 to 65535; Default = 65535
Under Voltage (AV6) Alarm Threshold	Alarm if L-L Voltage<threshold (ever)	AV5	Volts	0	32	Occurs if the average L-L voltage (AI6) is less than this threshold at any time. Units are absolute voltage (using integer multiplier). Range = 0 to 65535; Default = 0
Over Current (AV8) Alarm Threshold	Alarm if Avg Current>threshold (ever)	AV6	Amps	0	33	Occurs if the average current (AI8) is greater than this threshold at any time. Units are absolute current (usinginteger multiplier). Range = 0 to 65535; Default = 65535
Under Current (AV8) Alarm Threshold	Alarm if Avg Current<threshold (ever)	AV7	Amps	0	34	Occurs if the average current (AI8) is less than this threshold at any time. Units are absolute current (usinginteger multiplier). Range = 0 to 65535; Default = 0
Over kVA (AV5) Alarm Threshold	Alarm if kVA>threshold (ever)	AV8	kVA	0	35	Occurs if the total apparent power (AI5) is greater than this threshold at any time. Units are absolute kVA (using integer multiplier). Range = 0 to 65535; Default = 65535
Under kVA (AV5) Alarm Threshold	Alarm if kVA<threshold (ever)	AV9	kVA	0	36	Occurs if the total apparent power (AI5) is less than this threshold at any time. Units are absolute kVA (using integer multiplier). Range = 0 to 65535; Default = 0
Meter Alarm Status (Latching)	bitmap of 8 alarms - bits 9-15 are all 0	AV10	n/a	0	37	Holds the state of the meter alarm latches. These alarms are latching and must be cleared by the user. To reset any alarm, read the register and then write the register with the desired alarm bit cleared. Writing a 1 to any bit has no effect. bit 0 = over current bit 1 = under current bit 2 = over kVA bit 3 = under kVA bit 4 = over voltage bit 5 = under voltage bit 6 = phase loss A bit 7 = phase loss B bit 8 = phase loss C bits 9-15 = 0
Phase Loss Threshold	Integer % of other phases	AV11	Percent	0	38	Phase Loss Threshold (0 to 100%, default = 65535): these exist independently for all 3 phases (A, B, C). This register sets the alarm threshold for all three phases. This setting is the percent deviation of a phase from the average of all 3 phases (register 8). The decision logic is constructed so that normal power-ups do not trigger alarms. A phase loss alarm will occur only if the following conditions are met: 1. The average L-L voltage (register 8) is greater than 25V. 2. The L-N voltage on a phase (register 20, 21, or 22) is less than the percent deviation set by this threshold. 3. This threshold is set between 0 and 100%.

H8238 Series Multi-Circuit Meters (H8238, H8238E & H8238EL), cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Meter Name: First 2 characters	First 2 ASCII characters (Default=MT)	AV12	n/a	0	39	AV12 – AV15 is a decimal representation of two ASCII characters used for the meter name. Allowed characters are 21h through 7Dh, excluding 5Ch. The high order byte is the high-order character. For example: AV12 Present Value = 19796 ⇨ 4D54 (hex) M = 4D (hex) T = 54 (hex)
Meter Name: Second 2 characters	Second 2 ASCII characters (Default=Rx)	AV13	n/a	0	40	
Board Name: First 2 characters	First 2 ASCII characters (Default=BR)	AV14	n/a	0	41	
Board Name: Second 2 characters	Second 2 ASCII characters (Default=C1)	AV15	n/a	0	42	
Meter Enable Register	bitmap of 8 meters: 0=off; 1=on; 9-15=0	AV16	n/a	0	73	Meter Enable Register: allows the user to enable or disable selected meters on the board. A disabled meter will not respond to any Modbus queries. A 1 indicates an enabled meter; a 0 indicates a disabled meter. This register can only be written to meter #1. When read from meters 2 through 8, the high bit (bit 15) is always set as a flag that the register may not be written to that meter. When in 6-meter mode, bit 6 and bit 7 may not be set and will always read as 0. bit 0 = Meter #1 (always reads as 1, cannot be reset) bit 1 = Meter #2 bit 2 = Meter #3 bit 3 = Meter #4 bit 4 = Meter #5 bit 5 = Meter #6 bit 6 = Meter #7 bit 7 = Meter #8 bits 8-14 = 0 bit 15 = 0 if read from Meter #1; 1 if read from Meters #2-#8
Critical Alarm Register	info only: set 0=critical; 1=not; 9-15=0	AV17	n/a	0	74	Critical Alarm Register: allows the user to indicate which of the meter's alarms are critical and non-critical. This product takes no action on the contents of this register. It is provided for monitoring systems' use. A 1 indicates a critical alarm; a 0 indicates a non-critical alarm. bit 0 = over current bit 1 = under current bit 2 = over kVA bit 3 = under kVA bit 4 = over voltage bit 5 = under voltage bit 6 = phase loss A bit 7 = phase loss B bit 8 = phase loss C bits 9-15 = 0

H8163 Series Energy Meter with H8163-CB Modbus Communication Board

The H8163 Series has 54 data objects and operates at 9600 or 19200 baud. All Date/Time values (AI39-47 & AV5-7) for the H8163 are float representations of hexadecimal data with two values packed into each word, one in the lower byte (LSB) and one in the upper byte (MSB). Convert these values externally.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Analog_input objects: (Read-only)						
kWh Energy: Total	Accumulated Real Energy	AI1	kWh	0	259/260	
kW: Total	Total Instantaneous Real Power	AI2	kW	1	261/262	
kVAR: Total	Total Instantaneous Reactive Power	AI3	kVAR	1	263/264	
KVA: Total	Total Instantaneous Apparent Power	AI4	kVA	1	265/266	
PF: Total	Total Instantaneous Power Factor	AI5	PF	0.01	267/268	
Volts: L-L Avg	Voltage L-L average of active phases	AI6	Volts	5	269/270	
Volts: L-N Avg	Voltage L-N average of active phases	AI7	Volts	5	271/272	
Amps: Avg	Current Avg of active phases	AI8	Amps	5	273/274	
kW: Ph A	Instantaneous Real Power Phase A	AI9	kW	1	275/276	
kW: Ph B	Instantaneous Real Power Phase B	AI10	kW	1	277/278	
kW: Ph C	Instantaneous Real Power Phase C	AI11	kW	1	279/280	
PF: Ph A	Instantaneous Power Factor Phase A	AI12	PF	0.01	281/282	
PF: Ph B	Instantaneous Power Factor Phase B	AI13	PF	0.01	283/284	
PF: Ph C	Instantaneous Power Factor Phase C	AI14	PF	0.01	285/286	
Volts: Ph A-B	Instantaneous Voltage Phase A to Phase B	AI15	Volts	5	287/288	
Volts: Ph B-C	Instantaneous Voltage Phase B to Phase C	AI16	Volts	5	289/290	
Volts: Ph A-C	Instantaneous Voltage Phase A to Phase C	AI17	Volts	5	291/292	
Volts: Ph A-N	Instantaneous Voltage Phase A to Neutral	AI18	Volts	5	293/294	
Volts: Ph B-N	Instantaneous Voltage Phase B to Neutral	AI19	Volts	5	295/296	
Volts: Ph C-N	Instantaneous Voltage Phase C to Neutral	AI20	Volts	5	297/298	
Amps: Ph A	Instantaneous Current Phase A	AI21	Amps	5	299/300	
Amps: Ph B	Instantaneous Current Phase B	AI22	Amps	5	301/302	
Amps: Ph C	Instantaneous Current Phase C	AI23	Amps	5	303/304	
Present Real Energy Sub-Interval	SubInterval value currently accumulating	AI24	kW	1	305/306	Present Demand Sub-Interval. This is the currently accumulating Sub-Interval demand, which is constantly changing.
Present Real Energy Demand (kW)	Most recent kW Demand Sub-Interval	AI25	kW	1	307/308	Present Demand (kW). This is the present demand, updated at the end of every Sub-Interval. This value is the average of the previous N subintervals, where N is the number of sub intervals (register 37).

H8163 Series Energy Meter with H8163-CB Modbus Communication Board, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Peak Real Energy Demand	Largest value recorded	AI26	kW	1	309/310	The peak demand is the highest demand value (register 26) that has occurred. This value is also displayed on LCD for MAX kW when the comms board is present.
Present Reactive Energy Sub-Interval	SubInterval value currently accumulating	AI27	KVAR	1	311/312	Present kVAR Sub-Interval. This is the currently accumulating Sub-Interval KVAR, which is constantly changing.
Present Reactive Energy Demand	Most recent Demand Sub-Interval	AI28	KVAR	1	313/314	Present kVAR. This is the present kVar, which is updated at the end of every sub-interval. This value is the average of the previous N sub-intervals, where N is the number of sub-intervals (register 37).
Peak Reactive Energy Demand	Largest value recorded	AI29	KVAR	1	315/316	Peak kVar. The peak kVar is the highest kVar value (register 28) that has occurred.
Count of KWh resets	# of times kWh accumulator was reset	AI30	n/a	1	31	Count of KWh resets. The number of times the peak demand (register 27) has been reset. This value rolls over from 65535 to zero.
Count of Peak Demand Resets	# of times Peak kW Demand was reset	AI31	n/a	1	32	Count of Peak Demand Resets. The number of times the peak demand (register 27) has been reset. This value rolls over from 65535 to zero.
Count of Peak kVAR Resets	# of times Peak kVAR Demand was reset	AI32	n/a	1	33	Count of Peak kVar Resets. The number of times the peak kVar (register 30) has been reset. This value rolls over from 65535 to zero.
Count of Elapsed Sub Intervals	Sub-intervals filled in current Block	AI33	n/a	1	34	Count of Elapsed Sub Intervals. This counts the number of subintervals that have elapsed. Because the demand (register 28) is updated every sub-interval, this register may be read to determine if an identical value in register 28 is actually the same demand
# of Readings in Present sub-interval	updated every 200 mS	AI34	n/a	5000	35	Number readings in present sub-interval. This value indicates the number of readings that are represented by the present subinterval (register 25). This register acts as an unsigned integer. Values larger than 32767 should not be "trusted". See below for explanation of sub-interval reading count overflow. This register will increment every 200 ms (5 times per Second).
System ID	15024=Basic, 15025=Enhanced	AI35	n/a	0	38	System ID. This register reads as 15024 for the Basic Meter and 15025 for the Enhanced Model to help identify the meter.
CT Size	Primary Rating, in Amps	AI36	n/a	0	39	CT Size. This register reads as the CT size: 100, 300, etc.
CT Number	Qty of CTs configured	AI37	n/a	0	40	CT Number. The number of CTs that are connected, 1,2, or 3.
Count of Phase Losses.	# of times phase loss has occurred	AI38	n/a	1	43	Count of Phase Losses. The number of times a phase loss has occurred on any phase. This value rolls over from 65535 to zero.

H8163 Series Energy Meter with H8163-CB Modbus Communication Board, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Phase Loss Timestamp, Month/ Day	Hex Month 1-12 (LSB); Day 1-31 (MSB)	AI39	n/a	65535	47	The Date/Time information in A139-AI47 is encoded as two 8-bit hexadecimal values. To use these values, first convert the float values read to an integer, then convert to a 16-bit hexadecimal number, then convert each of the two bytes of the hexadecimal number to individual integer values. The first value (Months, Years or Minutes) is in the least significant byte of the hexadecimal number, and the second value (Days, Hours or Seconds) is in the most significant byte the hexadecimal number. For example: Last Restart Timestamp: AI42 Present Value = 6920 AI43 Present Value = 4876 AI44 Present Value = 15145 AI42 – 6920 -> 1B08 (hex) Day = 1B (hex) -> 27 Month = 08 (hex) -> 8 AI43 – 4876 -> 130C (hex) Hour = 13 (hex) -> 19 -> 7 PM Year = 0C (hex) -> 12 AI44 – 15145 -> 3B29 (hex) Second = 3B (hex) -> 59 Minute = 29 (hex) -> 41 Last Restart Timestamp – August 27th 2012 7:41:59 PM
Phase Loss Timestamp, Year/ Hour	Hex Year 0-199 (LSB), Hour 0-23 (MSB)	AI40	n/a	65535	48	
Phase Loss Timestamp, Minute/ Second	Hex Minute 0-59 (LSB), Second 0-59 (MSB)	AI41	n/a	65535	49	
Last Restart Time., Month/Day	Hex Month 1-12 (LSB); Day 1-31 (MSB)	AI42	n/a	65535	50	
Last Restart Time., Year/Hour	Hex Year 0-199 (LSB), Hour 0-23 (MSB)	AI43	n/a	65535	51	
Last Restart Time., Minute/ Second	Hex Minute 0-59 (LSB), Second 0-59 (MSB)	AI44	n/a	65535	52	
Last kWh Reset Time., Month/ Day	Hex Month 1-12 (LSB); Day 1-31 (MSB)	AI45	n/a	65535	53	
Last kWh Reset Time., Year/Hour	Hex Year 0-199 (LSB), Hour 0-23 (MSB)	AI46	n/a	65535	54	
Last kWh Reset Time., Minute/ Second	Hex Minute 0-59 (LSB), Second 0-59 (MSB)	AI47	n/a	65535	55	
Analog_Value objects: (can be written as well as read)						
Sub-Interval Length	Number of Seconds * 5 (4500 = 15 min)	AV1	n/a	0	36	Sub-Interval Length. Sets the length of a sub-interval. Value is the number of seconds * 5, for example, 4500 is 15 minutes. For sync-to-comms, or sync-to-demand-reset-input (hardware signal), set this to zero.
# of Sub-Intervals per Demand Interval	1-6 (1= Block Demand)	AV2	n/a	0	37	Number of Sub-Intervals per Demand Interval. Sets the number of sub-intervals that make a single demand interval. Legal values are 1 to 6. For block demand, set this to 1.
Command: write values to reset:	1=Dmd; 2=kW Accum; 4=Pk KW; 8=Pk kVAR	AV3	n/a	0	41	Command (bit mapped): bit 0 (mask 1) = begin new demand sub-interval bit 1 (mask 2) = clear kWh accumulator bit 2 (mask 4) = reset peak demand bit 3 (mask 8) = reset peak kVAR bits 4-15 = write as zeros to avoid activating any additional commands that may be added in future revisions.
Phase Loss; Latching Register (bitmap):	bit0=ph-A; bit1=ph-B; bit2=ph-C; 3-15 nu	AV4	n/a	0	42	Phase Loss, Latching Register (bit mapped): bit 0 = phase A (unpredictable results, phase A) bit 1 = phase B bit 2 = phase C bits 3 to 15 = write as zeros. User clears this latching register.
Present Date/Time Month/Day	Hex Month 1-12 (LSB); Day 1-31 (MSB)	AV5	n/a	65535	44	Date/Time Month 1-12(LSB) Day 1-31 (MSB) Hexadecimal values.
Present Date/Time Year/Hour	Hex Year 0-199 (LSB); Hour 0-23 (MSB)	AV6	n/a	65535	45	Date/Time Year 0-99(LSB) Hour 0-23 (MSB) Hexadecimal values.
Present Date/Time Minute/ Second	Hex Minute 0-59 (LSB); Second 0-59 (MSB)	AV7	n/a	65535	46	Date/Time Minutes 0-59 (LSB) Second 0-59 (MSB) Hexadecimal values.

E30A042 and E30A142 Branch Circuit Power Meter

The E30A042 and E30A142 meters have 783 data objects per Modbus address and operate at 9600, 19200, or 38400 baud. These meters monitor current, power, demand, and energy on 42 branch circuits and 4 main circuits (up to 3 phases, plus neutral) and use only one Modbus address.

Due to the capacity limitation of 1000 BACnet data points, the E30Ax84 models and the E31Axxx models are not fully supported. If these products are discovered by the E8950, they will be automatically mapped to the E30Bxxx profile, which supports a more limited data set.

AV4-AV45 are not writable on E30xxxx solid-core models because the CT size is fixed (at 100 A). Other values written revert to 100 A the next time the meter is scanned.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Analog_Input objects						
Frequency: (derived from Phase A)	Frequency (derived from Phase A)	AI1	Hz	0.01	600/601	
VOLTS L-N: 3ph Ave	Voltage L-L - average of active phases	AI2	Volts	5	602/603	
VOLTS L-L: 3ph Ave	Voltage L-N - average of active phases	AI3	Volts	5	604/605	
VOLTS A-N	Instantaneous Voltage Ph-A to Neutral	AI4	Volts	5	606/607	
VOLTS B-N	Instantaneous Voltage Ph-B to Neutral	AI5	Volts	5	608/609	
VOLTS C-N	Instantaneous Voltage Ph-C to Neutral	AI6	Volts	5	610/611	
VOLTS A-B	Instantaneous Voltage Phase A to B	AI7	Volts	5	612/613	
VOLTS B-C	Instantaneous Voltage Phase B to C	AI8	Volts	5	614/615	
VOLTS A-C	Instantaneous Voltage Phase A to C	AI9	Volts	5	616/617	
kWh Energy: 3ph Total	Real Energy - total of active phases	AI10	kWh	0	618/619	
kW: 3ph Total	Inst Real Power- total of active phases	AI11	kW	1	620/621	
Power Factor: 3ph Total	Inst Power Factor - average of phases	AI12	PF	0.01	622/623	
Amps: 3ph Average (phases 1,2,3)	Inst Current- average of active phases	AI13	Amps	5	624/625	
kW: Phase 1	Instantaneous Real Power - Phase 1	AI14	kW	1	626/627	
kW: Phase 2	Instantaneous Real Power - Phase 2	AI15	kW	1	628/629	
kW: Phase 3	Instantaneous Real Power - Phase 3	AI16	kW	1	630/631	
Power Factor: Phase 1	Instantaneous Power Factor - Phase A	AI17	PF	0.01	632/633	
Power Factor: Phase 2	Instantaneous Power Factor - Phase B	AI18	PF	0.01	634/635	
Power Factor: Phase 3	Instantaneous Power Factor - Phase C	AI19	PF	0.01	636/637	
Amps: Phase 1	Instantaneous Current - Phase 1	AI20	Amps	5	638/639	
Amps: Phase 2	Instantaneous Current - Phase 2	AI21	Amps	5	640/641	
Amps: Phase 3	Instantaneous Current - Phase 3	AI22	Amps	5	642/643	

E30A042 and E30A142 Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Amps: Phase 4 (Neutral)	Instantaneous Neutral Current	AI23	Amps	5	644/645	
Amps Present Demand: Phase 1	Present Current Demand- Phase 1	AI24	Amps	5	646/647	
Amps Present Demand: Phase 2	Present Current Demand - Phase 2	AI25	Amps	5	648/649	
Amps Present Demand: Phase 3	Present Current Demand - Phase 3	AI26	Amps	5	650/651	
Amps Present Demand: (Neutral)	Present Current Demand - Neutral	AI27	Amps	5	652/653	
Amps Max Demand: Phase 1	Max Current Demand - Phase 1	AI28	Amps	5	654/655	
Amps Max Demand: Phase 2	Max Current Demand - Phase 2	AI29	Amps	5	656/657	
Amps Max Demand: Phase 3	Max Current Demand - Phase 3	AI30	Amps	5	658/659	
Amps Max Demand: (Neutral)	Max Current Demand - Neutral	AI31	Amps	5	660/661	
kW Present Demand: 3ph Total	Real Power Present Demand - 3ph Total	AI32	kW	1	662/663	
kW Max Demand: 3ph Total	Real Power Max Demand - 3ph Total	AI33	kW	1	664/665	
Max Amps: Phase 1	Max Instantaneous Current - Phase 1	AI34	Amps	5	666/667	
Max Amps: Phase 2	Max Instantaneous Current - Phase 2	AI35	Amps	5	668/669	
Max Amps: Phase 3	Max Instantaneous Current - Phase 3	AI36	Amps	5	670/671	
Max Amps: (Neutral)	Max Instantaneous Neutral Current	AI37	Amps	5	672/673	
kW: 3ph Max	Max Instantaneous Real Power- 3ph Total	AI38	kW	1	674/675	
Device Health	Bit Map of Device Health Indicators	AI39	n/a	1	532	Bit 0: Reserved Bit 1: Frequency out of range or insufficient voltage on Phase A to determine frequency range. Frequency range is 40-70 Hz. Bit 2: Phase A Voltage Clipping Bit 3: Phase B Voltage Clipping Bit 4: Phase C Voltage Clipping Bit 5: Current Clipping on at least 1 channel (AUX and Circuit) Bit 6-7: Reserved Bit 8: Strip Connection Error Bit 9-12: Reserved Bit 13: Current Model, Model C Bit 14: Power Model, Model B Bit 15: Branch Power, Model A
Reserved for future use	Reserved for future use	AI40	n/a	1	533	
Reserved for future use	Reserved for future use	AI41	n/a	1	534	
Reserved for future use	Reserved for future use	AI42	n/a	1	535	
Reserved for future use	Reserved for future use	AI43	n/a	1	536	
Reserved for future use	Reserved for future use	AI44	n/a	1	537	
Reserved for future use	Reserved for future use	AI45	n/a	1	538	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Product ID	bit Map of Model configuration	AI46	n/a	1	539	Bit 0: Default Solid-Core Bit 1: Default Split-Core Bit 3-9: Reserved Bit 10: Reserved Bit 11: Reserved Bit 12: Custom V-Phase Capable Bit 13: Reserved (Model C) Bit 14: Reserved (Model B) Bit 15: Reserved (Model A)
kVA: 3ph Total	Instantaneous Apparent Power- 3ph Total	AI47	kVA	1	676/677	
kVA: Phase 1	Instantaneous Apparent Power - Phase 1	AI48	kVA	1	678/679	
kVA: Phase 2	Instantaneous Apparent Power - Phase 2	AI49	kVA	1	680/681	
kVA: Phase 3	Instantaneous Apparent Power - Phase 3	AI50	kVA	1	682/683	
Serial Number MSW	Serial Number MSW	AI51	n/a	1	1	Upper 16-bits of a 32-bit hex value
Serial Number LSW	Serial Number LSW	AI52	n/a	1	2	Lower 16-bits of a 32-bit hex value
Firmware Revision RS	Firmware Revision RS	AI53	n/a	1	3	
Firmware Revision OS	Firmware Revision OS	AI54	n/a	1	4	
Device ID:	15170=C, 15171=B, 15172=A	AI55	n/a	1	5	15170 = Model C, current only on all channels, no voltage 15171 = Model B, current only on branch channels, power on AUX channels plus voltage 15172 = Model A, current and power on all channels plus voltage
Global Latching Alarm Status	(HHL,HL,LL,LLL,ON,Rsv,Rsv,Rsv,HVL,LVL)	AI56	n/a	1	224	Bit 0: High High Latching Alarm Bit 1: High Latching Alarm Bit 2: Low Latching Alarm Bit 3: Low Low Latching Alarm Bit 4: Latching Alarm OFF state declared (1=OFF; ON state must have been achieved prior) Bit 5-7: Reserved for future use (reads 0) Bit 8: High Voltage Latching Alarm Bit 9: Low Voltage Latching Alarm Bit 10-15: Reserved for future use (reads 0)
Global Non-Latching Alarm Status	(HL,LL,Rsv,Rsv,Rsv,Rsv,Rsv,Rsv,HVL,LVL)	AI57	n/a	1	225	Bit 0: High Non-Latching Alarm Bit 1: Low Non-Latching Alarm Bit 2-7: Reserved for future use (reads 0) Bit 8: High Voltage Non-Latching Alarm Bit 9: Low Voltage Non-Latching Alarm Bit 10-15: Reserved for future use (reads 0)
Global Most-Recent Latching Alarm Ch	# of Most-Recent Channel (0=none)	AI58	n/a	1	226	0-46, 0=none
Global Most-Recent Non-Latch Alarm Ch	# of Most-Recent Channel (0=none)	AI59	n/a	1	227	0-46, 0=none
Total number of Latch ch in alarm	# alarm chan (non-latching alarms)	AI60	n/a	1	228	
Total number of non-Latch ch in alarm	# alarm chan (based on latching alarms)	AI61	n/a	1	229	
Error Bitmap1 (placeholder - TBD)	Error Bitmap1 (placeholder - bits TBD)	AI62	n/a	1	230	
Error Bitmap2 (placeholder - TBD)	Error Bitmap2 (placeholder - bits TBD)	AI63	n/a	1	231	
Error Bitmap3 (placeholder - TBD)	Error Bitmap3 (placeholder - bits TBD)	AI64	n/a	1	232	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Error Bitmap4 (placeholder - TBD)	Error Bitmap4 (placeholder - bits TBD)	AI65	n/a	1	233	
Error Bitmap5 (placeholder - TBD)	Error Bitmap5 (placeholder - bits TBD)	AI66	n/a	1	234	
Error Bitmap6 (placeholder - TBD)	Error Bitmap6 (placeholder - bits TBD)	AI67	n/a	1	235	
kWh: Channel 1	Real Energy - Channel 1	AI68	kWh	0	2000/2001	
kWh: Channel 2	Real Energy - Channel 2	AI69	kWh	0	2002/2003	
kWh: Channel 3	Real Energy - Channel 3	AI70	kWh	0	2004/2005	
kWh: Channel 4	Real Energy - Channel 4	AI71	kWh	0	2006/2007	
kWh: Channel 5	Real Energy - Channel 5	AI72	kWh	0	2008/2009	
kWh: Channel 6	Real Energy - Channel 6	AI73	kWh	0	2010/2011	
kWh: Channel 7	Real Energy - Channel 7	AI74	kWh	0	2012/2013	
kWh: Channel 8	Real Energy - Channel 8	AI75	kWh	0	2014/2015	
kWh: Channel 9	Real Energy - Channel 9	AI76	kWh	0	2016/2017	
kWh: Channel 10	Real Energy - Channel 10	AI77	kWh	0	2018/2019	
kWh: Channel 11	Real Energy - Channel 11	AI78	kWh	0	2020/2021	
kWh: Channel 12	Real Energy - Channel 12	AI79	kWh	0	2022/2023	
kWh: Channel 13	Real Energy - Channel 13	AI80	kWh	0	2024/2025	
kWh: Channel 14	Real Energy - Channel 14	AI81	kWh	0	2026/2027	
kWh: Channel 15	Real Energy - Channel 15	AI82	kWh	0	2028/2029	
kWh: Channel 16	Real Energy - Channel 16	AI83	kWh	0	2030/2031	
kWh: Channel 17	Real Energy - Channel 17	AI84	kWh	0	2032/2033	
kWh: Channel 18	Real Energy - Channel 18	AI85	kWh	0	2034/2035	
kWh: Channel 19	Real Energy - Channel 19	AI86	kWh	0	2036/2037	
kWh: Channel 20	Real Energy - Channel 20	AI87	kWh	0	2038/2039	
kWh: Channel 21	Real Energy - Channel 21	AI88	kWh	0	2040/2041	
kWh: Channel 22	Real Energy - Channel 22	AI89	kWh	0	2042/2043	
kWh: Channel 23	Real Energy - Channel 23	AI90	kWh	0	2044/2045	
kWh: Channel 24	Real Energy - Channel 24	AI91	kWh	0	2046/2047	
kWh: Channel 25	Real Energy - Channel 25	AI92	kWh	0	2048/2049	
kWh: Channel 26	Real Energy - Channel 26	AI93	kWh	0	2050/2051	
kWh: Channel 27	Real Energy - Channel 27	AI94	kWh	0	2052/2053	
kWh: Channel 28	Real Energy - Channel 28	AI95	kWh	0	2054/2055	
kWh: Channel 29	Real Energy - Channel 29	AI96	kWh	0	2056/2057	
kWh: Channel 30	Real Energy - Channel 30	AI97	kWh	0	2058/2059	
kWh: Channel 31	Real Energy - Channel 31	AI98	kWh	0	2060/2061	
kWh: Channel 32	Real Energy - Channel 32	AI99	kWh	0	2062/2063	
kWh: Channel 33	Real Energy - Channel 33	AI100	kWh	0	2064/2065	
kWh: Channel 34	Real Energy - Channel 34	AI101	kWh	0	2066/2067	
kWh: Channel 35	Real Energy - Channel 35	AI102	kWh	0	2068/2069	
kWh: Channel 36	Real Energy - Channel 36	AI103	kWh	0	2070/2071	
kWh: Channel 37	Real Energy - Channel 37	AI104	kWh	0	2072/2073	
kWh: Channel 38	Real Energy - Channel 38	AI105	kWh	0	2074/2075	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
kWh: Channel 39	Real Energy - Channel 39	AI106	kWh	0	2076/2077	
kWh: Channel 40	Real Energy - Channel 40	AI107	kWh	0	2078/2079	
kWh: Channel 41	Real Energy - Channel 41	AI108	kWh	0	2080/2081	
kWh: Channel 42	Real Energy - Channel 42	AI109	kWh	0	2082/2083	
kW: Channel 1	Instantaneous Real Power - Channel 1	AI110	kW	1	2084/2085	
kW: Channel 2	Instantaneous Real Power - Channel 2	AI111	kW	1	2086/2087	
kW: Channel 3	Instantaneous Real Power - Channel 3	AI112	kW	1	2088/2089	
kW: Channel 4	Instantaneous Real Power - Channel 4	AI113	kW	1	2090/2091	
kW: Channel 5	Instantaneous Real Power - Channel 5	AI114	kW	1	2092/2093	
kW: Channel 6	Instantaneous Real Power - Channel 6	AI115	kW	1	2094/2095	
kW: Channel 7	Instantaneous Real Power - Channel 7	AI116	kW	1	2096/2097	
kW: Channel 8	Instantaneous Real Power - Channel 8	AI117	kW	1	2098/2099	
kW: Channel 9	Instantaneous Real Power - Channel 9	AI118	kW	1	2100/2101	
kW: Channel 10	Instantaneous Real Power - Channel 10	AI119	kW	1	2102/2103	
kW: Channel 11	Instantaneous Real Power - Channel 11	AI120	kW	1	2104/2105	
kW: Channel 12	Instantaneous Real Power - Channel 12	AI121	kW	1	2106/2107	
kW: Channel 13	Instantaneous Real Power - Channel 13	AI122	kW	1	2108/2109	
kW: Channel 14	Instantaneous Real Power - Channel 14	AI123	kW	1	2110/2111	
kW: Channel 15	Instantaneous Real Power - Channel 15	AI124	kW	1	2112/2113	
kW: Channel 16	Instantaneous Real Power - Channel 16	AI125	kW	1	2114/2115	
kW: Channel 17	Instantaneous Real Power - Channel 17	AI126	kW	1	2116/2117	
kW: Channel 18	Instantaneous Real Power - Channel 18	AI127	kW	1	2118/2119	
kW: Channel 19	Instantaneous Real Power - Channel 19	AI128	kW	1	2120/2121	
kW: Channel 20	Instantaneous Real Power - Channel 20	AI129	kW	1	2122/2123	
kW: Channel 21	Instantaneous Real Power - Channel 21	AI130	kW	1	2124/2125	
kW: Channel 22	Instantaneous Real Power - Channel 22	AI131	kW	1	2126/2127	
kW: Channel 23	Instantaneous Real Power - Channel 23	AI132	kW	1	2128/2129	
kW: Channel 24	Instantaneous Real Power - Channel 24	AI133	kW	1	2130/2131	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
kW: Channel 25	Instantaneous Real Power - Channel 25	AI134	kW	1	2132/2133	
kW: Channel 26	Instantaneous Real Power - Channel 26	AI135	kW	1	2134/2135	
kW: Channel 27	Instantaneous Real Power - Channel 27	AI136	kW	1	2136/2137	
kW: Channel 28	Instantaneous Real Power - Channel 28	AI137	kW	1	2138/2139	
kW: Channel 29	Instantaneous Real Power - Channel 29	AI138	kW	1	2140/2141	
kW: Channel 30	Instantaneous Real Power - Channel 30	AI139	kW	1	2142/2143	
kW: Channel 31	Instantaneous Real Power - Channel 31	AI140	kW	1	2144/2145	
kW: Channel 32	Instantaneous Real Power - Channel 32	AI141	kW	1	2146/2147	
kW: Channel 33	Instantaneous Real Power - Channel 33	AI142	kW	1	2148/2149	
kW: Channel 34	Instantaneous Real Power - Channel 34	AI143	kW	1	2150/2151	
kW: Channel 35	Instantaneous Real Power - Channel 35	AI144	kW	1	2152/2153	
kW: Channel 36	Instantaneous Real Power - Channel 36	AI145	kW	1	2154/2155	
kW: Channel 37	Instantaneous Real Power - Channel 37	AI146	kW	1	2156/2157	
kW: Channel 38	Instantaneous Real Power - Channel 38	AI147	kW	1	2158/2159	
kW: Channel 39	Instantaneous Real Power - Channel 39	AI148	kW	1	2160/2161	
kW: Channel 40	Instantaneous Real Power - Channel 40	AI149	kW	1	2162/2163	
kW: Channel 41	Instantaneous Real Power - Channel 41	AI150	kW	1	2164/2165	
kW: Channel 42	Instantaneous Real Power - Channel 42	AI151	kW	1	2166/2167	
Power Factor: Channel 1	Instantaneous Power Factor - Channel 1	AI152	PF	0.01	2168/2169	
Power Factor: Channel 2	Instantaneous Power Factor - Channel 2	AI153	PF	0.01	2170/2171	
Power Factor: Channel 3	Instantaneous Power Factor - Channel 3	AI154	PF	0.01	2172/2173	
Power Factor: Channel 4	Instantaneous Power Factor - Channel 4	AI155	PF	0.01	2174/2175	
Power Factor: Channel 5	Instantaneous Power Factor - Channel 5	AI156	PF	0.01	2176/2177	
Power Factor: Channel 6	Instantaneous Power Factor - Channel 6	AI157	PF	0.01	2178/2179	
Power Factor: Channel 7	Instantaneous Power Factor - Channel 7	AI158	PF	0.01	2180/2181	
Power Factor: Channel 8	Instantaneous Power Factor - Channel 8	AI159	PF	0.01	2182/2183	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Power Factor: Channel 9	Instantaneous Power Factor - Channel 9	AI160	PF	0.01	2184/2185	
Power Factor: Channel 10	Instantaneous Power Factor - Channel 10	AI161	PF	0.01	2186/2187	
Power Factor: Channel 11	Instantaneous Power Factor - Channel 11	AI162	PF	0.01	2188/2189	
Power Factor: Channel 12	Instantaneous Power Factor - Channel 12	AI163	PF	0.01	2190/2191	
Power Factor: Channel 13	Instantaneous Power Factor - Channel 13	AI164	PF	0.01	2192/2193	
Power Factor: Channel 14	Instantaneous Power Factor - Channel 14	AI165	PF	0.01	2194/2195	
Power Factor: Channel 15	Instantaneous Power Factor - Channel 15	AI166	PF	0.01	2196/2197	
Power Factor: Channel 16	Instantaneous Power Factor - Channel 16	AI167	PF	0.01	2198/2199	
Power Factor: Channel 17	Instantaneous Power Factor - Channel 17	AI168	PF	0.01	2200/2201	
Power Factor: Channel 18	Instantaneous Power Factor - Channel 18	AI169	PF	0.01	2202/2203	
Power Factor: Channel 19	Instantaneous Power Factor - Channel 19	AI170	PF	0.01	2204/2205	
Power Factor: Channel 20	Instantaneous Power Factor - Channel 20	AI171	PF	0.01	2206/2207	
Power Factor: Channel 21	Instantaneous Power Factor - Channel 21	AI172	PF	0.01	2208/2209	
Power Factor: Channel 22	Instantaneous Power Factor - Channel 22	AI173	PF	0.01	2210/2211	
Power Factor: Channel 23	Instantaneous Power Factor - Channel 23	AI174	PF	0.01	2212/2213	
Power Factor: Channel 24	Instantaneous Power Factor - Channel 24	AI175	PF	0.01	2214/2215	
Power Factor: Channel 25	Instantaneous Power Factor - Channel 25	AI176	PF	0.01	2216/2217	
Power Factor: Channel 26	Instantaneous Power Factor - Channel 26	AI177	PF	0.01	2218/2219	
Power Factor: Channel 27	Instantaneous Power Factor - Channel 27	AI178	PF	0.01	2220/2221	
Power Factor: Channel 28	Instantaneous Power Factor - Channel 28	AI179	PF	0.01	2222/2223	
Power Factor: Channel 29	Instantaneous Power Factor - Channel 29	AI180	PF	0.01	2224/2225	
Power Factor: Channel 30	Instantaneous Power Factor - Channel 30	AI181	PF	0.01	2226/2227	
Power Factor: Channel 31	Instantaneous Power Factor - Channel 31	AI182	PF	0.01	2228/2229	
Power Factor: Channel 32	Instantaneous Power Factor - Channel 32	AI183	PF	0.01	2230/2231	
Power Factor: Channel 33	Instantaneous Power Factor - Channel 33	AI184	PF	0.01	2232/2233	
Power Factor: Channel 34	Instantaneous Power Factor - Channel 34	AI185	PF	0.01	2234/2235	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Power Factor: Channel 35	Instantaneous Power Factor - Channel 35	AI186	PF	0.01	2236/2237	
Power Factor: Channel 36	Instantaneous Power Factor - Channel 36	AI187	PF	0.01	2238/2239	
Power Factor: Channel 37	Instantaneous Power Factor - Channel 37	AI188	PF	0.01	2240/2241	
Power Factor: Channel 38	Instantaneous Power Factor - Channel 38	AI189	PF	0.01	2242/2243	
Power Factor: Channel 39	Instantaneous Power Factor - Channel 39	AI190	PF	0.01	2244/2245	
Power Factor: Channel 40	Instantaneous Power Factor - Channel 40	AI191	PF	0.01	2246/2247	
Power Factor: Channel 41	Instantaneous Power Factor - Channel 41	AI192	PF	0.01	2248/2249	
Power Factor: Channel 42	Instantaneous Power Factor - Channel 42	AI193	PF	0.01	2250/2251	
Amps: Channel 1	Instantaneous Current - Channel 1	AI194	Amps	5	2252/2253	
Amps: Channel 2	Instantaneous Current - Channel 2	AI195	Amps	5	2254/2255	
Amps: Channel 3	Instantaneous Current - Channel 3	AI196	Amps	5	2256/2257	
Amps: Channel 4	Instantaneous Current - Channel 4	AI197	Amps	5	2258/2259	
Amps: Channel 5	Instantaneous Current - Channel 5	AI198	Amps	5	2260/2261	
Amps: Channel 6	Instantaneous Current - Channel 6	AI199	Amps	5	2262/2263	
Amps: Channel 7	Instantaneous Current - Channel 7	AI200	Amps	5	2264/2265	
Amps: Channel 8	Instantaneous Current - Channel 8	AI201	Amps	5	2266/2267	
Amps: Channel 9	Instantaneous Current - Channel 9	AI202	Amps	5	2268/2269	
Amps: Channel 10	Instantaneous Current - Channel 10	AI203	Amps	5	2270/2271	
Amps: Channel 11	Instantaneous Current - Channel 11	AI204	Amps	5	2272/2273	
Amps: Channel 12	Instantaneous Current - Channel 12	AI205	Amps	5	2274/2275	
Amps: Channel 13	Instantaneous Current - Channel 13	AI206	Amps	5	2276/2277	
Amps: Channel 14	Instantaneous Current - Channel 14	AI207	Amps	5	2278/2279	
Amps: Channel 15	Instantaneous Current - Channel 15	AI208	Amps	5	2280/2281	
Amps: Channel 16	Instantaneous Current - Channel 16	AI209	Amps	5	2282/2283	
Amps: Channel 17	Instantaneous Current - Channel 17	AI210	Amps	5	2284/2285	
Amps: Channel 18	Instantaneous Current - Channel 18	AI211	Amps	5	2286/2287	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Amps: Channel 19	Instantaneous Current - Channel 19	AI212	Amps	5	2288/2289	
Amps: Channel 20	Instantaneous Current - Channel 20	AI213	Amps	5	2290/2291	
Amps: Channel 21	Instantaneous Current - Channel 21	AI214	Amps	5	2292/2293	
Amps: Channel 22	Instantaneous Current - Channel 22	AI215	Amps	5	2294/2295	
Amps: Channel 23	Instantaneous Current - Channel 23	AI216	Amps	5	2296/2297	
Amps: Channel 24	Instantaneous Current - Channel 24	AI217	Amps	5	2298/2299	
Amps: Channel 25	Instantaneous Current - Channel 25	AI218	Amps	5	2300/2301	
Amps: Channel 26	Instantaneous Current - Channel 26	AI219	Amps	5	2302/2303	
Amps: Channel 27	Instantaneous Current - Channel 27	AI220	Amps	5	2304/2305	
Amps: Channel 28	Instantaneous Current - Channel 28	AI221	Amps	5	2306/2307	
Amps: Channel 29	Instantaneous Current - Channel 29	AI222	Amps	5	2308/2309	
Amps: Channel 30	Instantaneous Current - Channel 30	AI223	Amps	5	2310/2311	
Amps: Channel 31	Instantaneous Current - Channel 31	AI224	Amps	5	2312/2313	
Amps: Channel 32	Instantaneous Current - Channel 32	AI225	Amps	5	2314/2315	
Amps: Channel 33	Instantaneous Current - Channel 33	AI226	Amps	5	2316/2317	
Amps: Channel 34	Instantaneous Current - Channel 34	AI227	Amps	5	2318/2319	
Amps: Channel 35	Instantaneous Current - Channel 35	AI228	Amps	5	2320/2321	
Amps: Channel 36	Instantaneous Current - Channel 36	AI229	Amps	5	2322/2323	
Amps: Channel 37	Instantaneous Current - Channel 37	AI230	Amps	5	2324/2325	
Amps: Channel 38	Instantaneous Current - Channel 38	AI231	Amps	5	2326/2327	
Amps: Channel 39	Instantaneous Current - Channel 39	AI232	Amps	5	2328/2329	
Amps: Channel 40	Instantaneous Current - Channel 40	AI233	Amps	5	2330/2331	
Amps: Channel 41	Instantaneous Current - Channel 41	AI234	Amps	5	2332/2333	
Amps: Channel 42	Instantaneous Current - Channel 42	AI235	Amps	5	2334/2335	
kW Present Demand: Channel 1	Present Real Power Demand - Channel 1	AI236	kW	1	2336/2337	
kW Present Demand: Channel 2	Present Real Power Demand - Channel 2	AI237	kW	1	2338/2339	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
kW Present Demand: Channel 3	Present Real Power Demand - Channel 3	AI238	kW	1	2340/2341	
kW Present Demand: Channel 4	Present Real Power Demand - Channel 4	AI239	kW	1	2342/2343	
kW Present Demand: Channel 5	Present Real Power Demand - Channel 5	AI240	kW	1	2344/2345	
kW Present Demand: Channel 6	Present Real Power Demand - Channel 6	AI241	kW	1	2346/2347	
kW Present Demand: Channel 7	Present Real Power Demand - Channel 7	AI242	kW	1	2348/2349	
kW Present Demand: Channel 8	Present Real Power Demand - Channel 8	AI243	kW	1	2350/2351	
kW Present Demand: Channel 9	Present Real Power Demand - Channel 9	AI244	kW	1	2352/2353	
kW Present Demand: Channel 10	Present Real Power Demand - Channel 10	AI245	kW	1	2354/2355	
kW Present Demand: Channel 11	Present Real Power Demand - Channel 11	AI246	kW	1	2356/2357	
kW Present Demand: Channel 12	Present Real Power Demand - Channel 12	AI247	kW	1	2358/2359	
kW Present Demand: Channel 13	Present Real Power Demand - Channel 13	AI248	kW	1	2360/2361	
kW Present Demand: Channel 14	Present Real Power Demand - Channel 14	AI249	kW	1	2362/2363	
kW Present Demand: Channel 15	Present Real Power Demand - Channel 15	AI250	kW	1	2364/2365	
kW Present Demand: Channel 16	Present Real Power Demand - Channel 16	AI251	kW	1	2366/2367	
kW Present Demand: Channel 17	Present Real Power Demand - Channel 17	AI252	kW	1	2368/2369	
kW Present Demand: Channel 18	Present Real Power Demand - Channel 18	AI253	kW	1	2370/2371	
kW Present Demand: Channel 19	Present Real Power Demand - Channel 19	AI254	kW	1	2372/2373	
kW Present Demand: Channel 20	Present Real Power Demand - Channel 20	AI255	kW	1	2374/2375	
kW Present Demand: Channel 21	Present Real Power Demand - Channel 21	AI256	kW	1	2376/2377	
kW Present Demand: Channel 22	Present Real Power Demand - Channel 22	AI257	kW	1	2378/2379	
kW Present Demand: Channel 23	Present Real Power Demand - Channel 23	AI258	kW	1	2380/2381	
kW Present Demand: Channel 24	Present Real Power Demand - Channel 24	AI259	kW	1	2382/2383	
kW Present Demand: Channel 25	Present Real Power Demand - Channel 25	AI260	kW	1	2384/2385	
kW Present Demand: Channel 26	Present Real Power Demand - Channel 26	AI261	kW	1	2386/2387	
kW Present Demand: Channel 27	Present Real Power Demand - Channel 27	AI262	kW	1	2388/2389	
kW Present Demand: Channel 28	Present Real Power Demand - Channel 28	AI263	kW	1	2390/2391	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
kW Present Demand: Channel 29	Present Real Power Demand - Channel 29	AI264	kW	1	2392/2393	
kW Present Demand: Channel 30	Present Real Power Demand - Channel 30	AI265	kW	1	2394/2395	
kW Present Demand: Channel 31	Present Real Power Demand - Channel 31	AI266	kW	1	2396/2397	
kW Present Demand: Channel 32	Present Real Power Demand - Channel 32	AI267	kW	1	2398/2399	
kW Present Demand: Channel 33	Present Real Power Demand - Channel 33	AI268	kW	1	2400/2401	
kW Present Demand: Channel 34	Present Real Power Demand - Channel 34	AI269	kW	1	2402/2403	
kW Present Demand: Channel 35	Present Real Power Demand - Channel 35	AI270	kW	1	2404/2405	
kW Present Demand: Channel 36	Present Real Power Demand - Channel 36	AI271	kW	1	2406/2407	
kW Present Demand: Channel 37	Present Real Power Demand - Channel 37	AI272	kW	1	2408/2409	
kW Present Demand: Channel 38	Present Real Power Demand - Channel 38	AI273	kW	1	2410/2411	
kW Present Demand: Channel 39	Present Real Power Demand - Channel 39	AI274	kW	1	2412/2413	
kW Present Demand: Channel 40	Present Real Power Demand - Channel 40	AI275	kW	1	2414/2415	
kW Present Demand: Channel 41	Present Real Power Demand - Channel 41	AI276	kW	1	2416/2417	
kW Present Demand: Channel 42	Present Real Power Demand - Channel 42	AI277	kW	1	2418/2419	
kW Max Demand: Channel 1	Max Real Power Demand - Channel 1	AI278	kW	1	2420/2421	
kW Max Demand: Channel 2	Max Real Power Demand - Channel 2	AI279	kW	1	2422/2423	
kW Max Demand: Channel 3	Max Real Power Demand - Channel 3	AI280	kW	1	2424/2425	
kW Max Demand: Channel 4	Max Real Power Demand - Channel 4	AI281	kW	1	2426/2427	
kW Max Demand: Channel 5	Max Real Power Demand - Channel 5	AI282	kW	1	2428/2429	
kW Max Demand: Channel 6	Max Real Power Demand - Channel 6	AI283	kW	1	2430/2431	
kW Max Demand: Channel 7	Max Real Power Demand - Channel 7	AI284	kW	1	2432/2433	
kW Max Demand: Channel 8	Max Real Power Demand - Channel 8	AI285	kW	1	2434/2435	
kW Max Demand: Channel 9	Max Real Power Demand - Channel 9	AI286	kW	1	2436/2437	
kW Max Demand: Channel 10	Max Real Power Demand - Channel 10	AI287	kW	1	2438/2439	
kW Max Demand: Channel 11	Max Real Power Demand - Channel 11	AI288	kW	1	2440/2441	
kW Max Demand: Channel 12	Max Real Power Demand - Channel 12	AI289	kW	1	2442/2443	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
kW Max Demand: Channel 13	Max Real Power Demand - Channel 13	AI290	kW	1	2444/2445	
kW Max Demand: Channel 14	Max Real Power Demand - Channel 14	AI291	kW	1	2446/2447	
kW Max Demand: Channel 15	Max Real Power Demand - Channel 15	AI292	kW	1	2448/2449	
kW Max Demand: Channel 16	Max Real Power Demand - Channel 16	AI293	kW	1	2450/2451	
kW Max Demand: Channel 17	Max Real Power Demand - Channel 17	AI294	kW	1	2452/2453	
kW Max Demand: Channel 18	Max Real Power Demand - Channel 18	AI295	kW	1	2454/2455	
kW Max Demand: Channel 19	Max Real Power Demand - Channel 19	AI296	kW	1	2456/2457	
kW Max Demand: Channel 20	Max Real Power Demand - Channel 20	AI297	kW	1	2458/2459	
kW Max Demand: Channel 21	Max Real Power Demand - Channel 21	AI298	kW	1	2460/2461	
kW Max Demand: Channel 22	Max Real Power Demand - Channel 22	AI299	kW	1	2462/2463	
kW Max Demand: Channel 23	Max Real Power Demand - Channel 23	AI300	kW	1	2464/2465	
kW Max Demand: Channel 24	Max Real Power Demand - Channel 24	AI301	kW	1	2466/2467	
kW Max Demand: Channel 25	Max Real Power Demand - Channel 25	AI302	kW	1	2468/2469	
kW Max Demand: Channel 26	Max Real Power Demand - Channel 26	AI303	kW	1	2470/2471	
kW Max Demand: Channel 27	Max Real Power Demand - Channel 27	AI304	kW	1	2472/2473	
kW Max Demand: Channel 28	Max Real Power Demand - Channel 28	AI305	kW	1	2474/2475	
kW Max Demand: Channel 29	Max Real Power Demand - Channel 29	AI306	kW	1	2476/2477	
kW Max Demand: Channel 30	Max Real Power Demand - Channel 30	AI307	kW	1	2478/2479	
kW Max Demand: Channel 31	Max Real Power Demand - Channel 31	AI308	kW	1	2480/2481	
kW Max Demand: Channel 32	Max Real Power Demand - Channel 32	AI309	kW	1	2482/2483	
kW Max Demand: Channel 33	Max Real Power Demand - Channel 33	AI310	kW	1	2484/2485	
kW Max Demand: Channel 34	Max Real Power Demand - Channel 34	AI311	kW	1	2486/2487	
kW Max Demand: Channel 35	Max Real Power Demand - Channel 35	AI312	kW	1	2488/2489	
kW Max Demand: Channel 36	Max Real Power Demand - Channel 36	AI313	kW	1	2490/2491	
kW Max Demand: Channel 37	Max Real Power Demand - Channel 37	AI314	kW	1	2492/2493	
kW Max Demand: Channel 38	Max Real Power Demand - Channel 38	AI315	kW	1	2494/2495	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
kW Max Demand: Channel 39	Max Real Power Demand - Channel 39	AI316	kW	1	2496/2497	
kW Max Demand: Channel 40	Max Real Power Demand - Channel 40	AI317	kW	1	2498/2499	
kW Max Demand: Channel 41	Max Real Power Demand - Channel 41	AI318	kW	1	2500/2501	
kW Max Demand: Channel 42	Max Real Power Demand - Channel 42	AI319	kW	1	2502/2503	
Amps Present Demand: Channel 1	Present Current Demand - Channel 1	AI320	Amps	5	2504/2505	
Amps Present Demand: Channel 2	Present Current Demand - Channel 2	AI321	Amps	5	2506/2507	
Amps Present Demand: Channel 3	Present Current Demand - Channel 3	AI322	Amps	5	2508/2509	
Amps Present Demand: Channel 4	Present Current Demand - Channel 4	AI323	Amps	5	2510/2511	
Amps Present Demand: Channel 5	Present Current Demand - Channel 5	AI324	Amps	5	2512/2513	
Amps Present Demand: Channel 6	Present Current Demand - Channel 6	AI325	Amps	5	2514/2515	
Amps Present Demand: Channel 7	Present Current Demand - Channel 7	AI326	Amps	5	2516/2517	
Amps Present Demand: Channel 8	Present Current Demand - Channel 8	AI327	Amps	5	2518/2519	
Amps Present Demand: Channel 9	Present Current Demand - Channel 9	AI328	Amps	5	2520/2521	
Amps Present Demand: Channel 10	Present Current Demand - Channel 10	AI329	Amps	5	2522/2523	
Amps Present Demand: Channel 11	Present Current Demand - Channel 11	AI330	Amps	5	2524/2525	
Amps Present Demand: Channel 12	Present Current Demand - Channel 12	AI331	Amps	5	2526/2527	
Amps Present Demand: Channel 13	Present Current Demand - Channel 13	AI332	Amps	5	2528/2529	
Amps Present Demand: Channel 14	Present Current Demand - Channel 14	AI333	Amps	5	2530/2531	
Amps Present Demand: Channel 15	Present Current Demand - Channel 15	AI334	Amps	5	2532/2533	
Amps Present Demand: Channel 16	Present Current Demand - Channel 16	AI335	Amps	5	2534/2535	
Amps Present Demand: Channel 17	Present Current Demand - Channel 17	AI336	Amps	5	2536/2537	
Amps Present Demand: Channel 18	Present Current Demand - Channel 18	AI337	Amps	5	2538/2539	
Amps Present Demand: Channel 19	Present Current Demand - Channel 19	AI338	Amps	5	2540/2541	
Amps Present Demand: Channel 20	Present Current Demand - Channel 20	AI339	Amps	5	2542/2543	
Amps Present Demand: Channel 21	Present Current Demand - Channel 21	AI340	Amps	5	2544/2545	
Amps Present Demand: Channel 22	Present Current Demand - Channel 22	AI341	Amps	5	2546/2547	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Amps Present Demand: Channel 23	Present Current Demand - Channel 23	AI342	Amps	5	2548/2549	
Amps Present Demand: Channel 24	Present Current Demand - Channel 24	AI343	Amps	5	2550/2551	
Amps Present Demand: Channel 25	Present Current Demand - Channel 25	AI344	Amps	5	2552/2553	
Amps Present Demand: Channel 26	Present Current Demand - Channel 26	AI345	Amps	5	2554/2555	
Amps Present Demand: Channel 27	Present Current Demand - Channel 27	AI346	Amps	5	2556/2557	
Amps Present Demand: Channel 28	Present Current Demand - Channel 28	AI347	Amps	5	2558/2559	
Amps Present Demand: Channel 29	Present Current Demand - Channel 29	AI348	Amps	5	2560/2561	
Amps Present Demand: Channel 30	Present Current Demand - Channel 30	AI349	Amps	5	2562/2563	
Amps Present Demand: Channel 31	Present Current Demand - Channel 31	AI350	Amps	5	2564/2565	
Amps Present Demand: Channel 32	Present Current Demand - Channel 32	AI351	Amps	5	2566/2567	
Amps Present Demand: Channel 33	Present Current Demand - Channel 33	AI352	Amps	5	2568/2569	
Amps Present Demand: Channel 34	Present Current Demand - Channel 34	AI353	Amps	5	2570/2571	
Amps Present Demand: Channel 35	Present Current Demand - Channel 35	AI354	Amps	5	2572/2573	
Amps Present Demand: Channel 36	Present Current Demand - Channel 36	AI355	Amps	5	2574/2575	
Amps Present Demand: Channel 37	Present Current Demand - Channel 37	AI356	Amps	5	2576/2577	
Amps Present Demand: Channel 38	Present Current Demand - Channel 38	AI357	Amps	5	2578/2579	
Amps Present Demand: Channel 39	Present Current Demand - Channel 39	AI358	Amps	5	2580/2581	
Amps Present Demand: Channel 40	Present Current Demand - Channel 40	AI359	Amps	5	2582/2583	
Amps Present Demand: Channel 41	Present Current Demand - Channel 41	AI360	Amps	5	2584/2585	
Amps Present Demand: Channel 42	Present Current Demand - Channel 42	AI361	Amps	5	2586/2587	
Amps Max Demand: Channel 1	Max Current Demand - Channel 1	AI362	Amps	5	2588/2589	
Amps Max Demand: Channel 2	Max Current Demand - Channel 2	AI363	Amps	5	2590/2591	
Amps Max Demand: Channel 3	Max Current Demand - Channel 3	AI364	Amps	5	2592/2593	
Amps Max Demand: Channel 4	Max Current Demand - Channel 4	AI365	Amps	5	2594/2595	
Amps Max Demand: Channel 5	Max Current Demand - Channel 5	AI366	Amps	5	2596/2597	
Amps Max Demand: Channel 6	Max Current Demand - Channel 6	AI367	Amps	5	2598/2599	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Amps Max Demand: Channel 7	Max Current Demand - Channel 7	AI368	Amps	5	2600/2601	
Amps Max Demand: Channel 8	Max Current Demand - Channel 8	AI369	Amps	5	2602/2603	
Amps Max Demand: Channel 9	Max Current Demand - Channel 9	AI370	Amps	5	2604/2605	
Amps Max Demand: Channel 10	Max Current Demand - Channel 10	AI371	Amps	5	2606/2607	
Amps Max Demand: Channel 11	Max Current Demand - Channel 11	AI372	Amps	5	2608/2609	
Amps Max Demand: Channel 12	Max Current Demand - Channel 12	AI373	Amps	5	2610/2611	
Amps Max Demand: Channel 13	Max Current Demand - Channel 13	AI374	Amps	5	2612/2613	
Amps Max Demand: Channel 14	Max Current Demand - Channel 14	AI375	Amps	5	2614/2615	
Amps Max Demand: Channel 15	Max Current Demand - Channel 15	AI376	Amps	5	2616/2617	
Amps Max Demand: Channel 16	Max Current Demand - Channel 16	AI377	Amps	5	2618/2619	
Amps Max Demand: Channel 17	Max Current Demand - Channel 17	AI378	Amps	5	2620/2621	
Amps Max Demand: Channel 18	Max Current Demand - Channel 18	AI379	Amps	5	2622/2623	
Amps Max Demand: Channel 19	Max Current Demand - Channel 19	AI380	Amps	5	2624/2625	
Amps Max Demand: Channel 20	Max Current Demand - Channel 20	AI381	Amps	5	2626/2627	
Amps Max Demand: Channel 21	Max Current Demand - Channel 21	AI382	Amps	5	2628/2629	
Amps Max Demand: Channel 22	Max Current Demand - Channel 22	AI383	Amps	5	2630/2631	
Amps Max Demand: Channel 23	Max Current Demand - Channel 23	AI384	Amps	5	2632/2633	
Amps Max Demand: Channel 24	Max Current Demand - Channel 24	AI385	Amps	5	2634/2635	
Amps Max Demand: Channel 25	Max Current Demand - Channel 25	AI386	Amps	5	2636/2637	
Amps Max Demand: Channel 26	Max Current Demand - Channel 26	AI387	Amps	5	2638/2639	
Amps Max Demand: Channel 27	Max Current Demand - Channel 27	AI388	Amps	5	2640/2641	
Amps Max Demand: Channel 28	Max Current Demand - Channel 28	AI389	Amps	5	2642/2643	
Amps Max Demand: Channel 29	Max Current Demand - Channel 29	AI390	Amps	5	2644/2645	
Amps Max Demand: Channel 30	Max Current Demand - Channel 30	AI391	Amps	5	2646/2647	
Amps Max Demand: Channel 31	Max Current Demand - Channel 31	AI392	Amps	5	2648/2649	
Amps Max Demand: Channel 32	Max Current Demand - Channel 32	AI393	Amps	5	2650/2651	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Amps Max Demand: Channel 33	Max Current Demand - Channel 33	AI394	Amps	5	2652/2653	
Amps Max Demand: Channel 34	Max Current Demand - Channel 34	AI395	Amps	5	2654/2655	
Amps Max Demand: Channel 35	Max Current Demand - Channel 35	AI396	Amps	5	2656/2657	
Amps Max Demand: Channel 36	Max Current Demand - Channel 36	AI397	Amps	5	2658/2659	
Amps Max Demand: Channel 37	Max Current Demand - Channel 37	AI398	Amps	5	2660/2661	
Amps Max Demand: Channel 38	Max Current Demand - Channel 38	AI399	Amps	5	2662/2663	
Amps Max Demand: Channel 39	Max Current Demand - Channel 39	AI400	Amps	5	2664/2665	
Amps Max Demand: Channel 40	Max Current Demand - Channel 40	AI401	Amps	5	2666/2667	
Amps Max Demand: Channel 41	Max Current Demand - Channel 41	AI402	Amps	5	2668/2669	
Amps Max Demand: Channel 42	Max Current Demand - Channel 42	AI403	Amps	5	2670/2671	
kW Max Total: Channel 1	Max Instantaneous Real Power - Chan 1	AI404	kW	1	2672/2673	
kW Max Total: Channel 2	Max Instantaneous Real Power - Chan 2	AI405	kW	1	2674/2675	
kW Max Total: Channel 3	Max Instantaneous Real Power - Chan 3	AI406	kW	1	2676/2677	
kW Max Total: Channel 4	Max Instantaneous Real Power - Chan 4	AI407	kW	1	2678/2679	
kW Max Total: Channel 5	Max Instantaneous Real Power - Chan 5	AI408	kW	1	2680/2681	
kW Max Total: Channel 6	Max Instantaneous Real Power - Chan 6	AI409	kW	1	2682/2683	
kW Max Total: Channel 7	Max Instantaneous Real Power - Chan 7	AI410	kW	1	2684/2685	
kW Max Total: Channel 8	Max Instantaneous Real Power - Chan 8	AI411	kW	1	2686/2687	
kW Max Total: Channel 9	Max Instantaneous Real Power - Chan 9	AI412	kW	1	2688/2689	
kW Max Total: Channel 10	Max Instantaneous Real Power - Chan 10	AI413	kW	1	2690/2691	
kW Max Total: Channel 11	Max Instantaneous Real Power - Chan 11	AI414	kW	1	2692/2693	
kW Max Total: Channel 12	Max Instantaneous Real Power - Chan 12	AI415	kW	1	2694/2695	
kW Max Total: Channel 13	Max Instantaneous Real Power - Chan 13	AI416	kW	1	2696/2697	
kW Max Total: Channel 14	Max Instantaneous Real Power - Chan 14	AI417	kW	1	2698/2699	
kW Max Total: Channel 15	Max Instantaneous Real Power - Chan 15	AI418	kW	1	2700/2701	
kW Max Total: Channel 16	Max Instantaneous Real Power - Chan 16	AI419	kW	1	2702/2703	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
kW Max Total: Channel 17	Max Instantaneous Real Power - Chan 17	AI420	kW	1	2704/2705	
kW Max Total: Channel 18	Max Instantaneous Real Power - Chan 18	AI421	kW	1	2706/2707	
kW Max Total: Channel 19	Max Instantaneous Real Power - Chan 19	AI422	kW	1	2708/2709	
kW Max Total: Channel 20	Max Instantaneous Real Power - Chan 20	AI423	kW	1	2710/2711	
kW Max Total: Channel 21	Max Instantaneous Real Power - Chan 21	AI424	kW	1	2712/2713	
kW Max Total: Channel 22	Max Instantaneous Real Power - Chan 22	AI425	kW	1	2714/2715	
kW Max Total: Channel 23	Max Instantaneous Real Power - Chan 23	AI426	kW	1	2716/2717	
kW Max Total: Channel 24	Max Instantaneous Real Power - Chan 24	AI427	kW	1	2718/2719	
kW Max Total: Channel 25	Max Instantaneous Real Power - Chan 25	AI428	kW	1	2720/2721	
kW Max Total: Channel 26	Max Instantaneous Real Power - Chan 26	AI429	kW	1	2722/2723	
kW Max Total: Channel 27	Max Instantaneous Real Power - Chan 27	AI430	kW	1	2724/2725	
kW Max Total: Channel 28	Max Instantaneous Real Power - Chan 28	AI431	kW	1	2726/2727	
kW Max Total: Channel 29	Max Instantaneous Real Power - Chan 29	AI432	kW	1	2728/2729	
kW Max Total: Channel 30	Max Instantaneous Real Power - Chan 30	AI433	kW	1	2730/2731	
kW Max Total: Channel 31	Max Instantaneous Real Power - Chan 31	AI434	kW	1	2732/2733	
kW Max Total: Channel 32	Max Instantaneous Real Power - Chan 32	AI435	kW	1	2734/2735	
kW Max Total: Channel 33	Max Instantaneous Real Power - Chan 33	AI436	kW	1	2736/2737	
kW Max Total: Channel 34	Max Instantaneous Real Power - Chan 34	AI437	kW	1	2738/2739	
kW Max Total: Channel 35	Max Instantaneous Real Power - Chan 35	AI438	kW	1	2740/2741	
kW Max Total: Channel 36	Max Instantaneous Real Power - Chan 36	AI439	kW	1	2742/2743	
kW Max Total: Channel 37	Max Instantaneous Real Power - Chan 37	AI440	kW	1	2744/2745	
kW Max Total: Channel 38	Max Instantaneous Real Power - Chan 38	AI441	kW	1	2746/2747	
kW Max Total: Channel 39	Max Instantaneous Real Power - Chan 39	AI442	kW	1	2748/2749	
kW Max Total: Channel 40	Max Instantaneous Real Power - Chan 40	AI443	kW	1	2750/2751	
kW Max Total: Channel 41	Max Instantaneous Real Power - Chan 41	AI444	kW	1	2752/2753	
kW Max Total: Channel 42	Max Instantaneous Real Power - Chan 42	AI445	kW	1	2754/2755	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Max Amps: Channel 1	Max Instantaneous Current - Channel 1	AI446	Amps	5	2756/2757	
Max Amps: Channel 2	Max Instantaneous Current - Channel 2	AI447	Amps	5	2758/2759	
Max Amps: Channel 3	Max Instantaneous Current - Channel 3	AI448	Amps	5	2760/2761	
Max Amps: Channel 4	Max Instantaneous Current - Channel 4	AI449	Amps	5	2762/2763	
Max Amps: Channel 5	Max Instantaneous Current - Channel 5	AI450	Amps	5	2764/2765	
Max Amps: Channel 6	Max Instantaneous Current - Channel 6	AI451	Amps	5	2766/2767	
Max Amps: Channel 7	Max Instantaneous Current - Channel 7	AI452	Amps	5	2768/2769	
Max Amps: Channel 8	Max Instantaneous Current - Channel 8	AI453	Amps	5	2770/2771	
Max Amps: Channel 9	Max Instantaneous Current - Channel 9	AI454	Amps	5	2772/2773	
Max Amps: Channel 10	Max Instantaneous Current - Channel 10	AI455	Amps	5	2774/2775	
Max Amps: Channel 11	Max Instantaneous Current - Channel 11	AI456	Amps	5	2776/2777	
Max Amps: Channel 12	Max Instantaneous Current - Channel 12	AI457	Amps	5	2778/2779	
Max Amps: Channel 13	Max Instantaneous Current - Channel 13	AI458	Amps	5	2780/2781	
Max Amps: Channel 14	Max Instantaneous Current - Channel 14	AI459	Amps	5	2782/2783	
Max Amps: Channel 15	Max Instantaneous Current - Channel 15	AI460	Amps	5	2784/2785	
Max Amps: Channel 16	Max Instantaneous Current - Channel 16	AI461	Amps	5	2786/2787	
Max Amps: Channel 17	Max Instantaneous Current - Channel 17	AI462	Amps	5	2788/2789	
Max Amps: Channel 18	Max Instantaneous Current - Channel 18	AI463	Amps	5	2790/2791	
Max Amps: Channel 19	Max Instantaneous Current - Channel 19	AI464	Amps	5	2792/2793	
Max Amps: Channel 20	Max Instantaneous Current - Channel 20	AI465	Amps	5	2794/2795	
Max Amps: Channel 21	Max Instantaneous Current - Channel 21	AI466	Amps	5	2796/2797	
Max Amps: Channel 22	Max Instantaneous Current - Channel 22	AI467	Amps	5	2798/2799	
Max Amps: Channel 23	Max Instantaneous Current - Channel 23	AI468	Amps	5	2800/2801	
Max Amps: Channel 24	Max Instantaneous Current - Channel 24	AI469	Amps	5	2802/2803	
Max Amps: Channel 25	Max Instantaneous Current - Channel 25	AI470	Amps	5	2804/2805	
Max Amps: Channel 26	Max Instantaneous Current - Channel 26	AI471	Amps	5	2806/2807	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Max Amps: Channel 27	Max Instantaneous Current - Channel 27	AI472	Amps	5	2808/2809	
Max Amps: Channel 28	Max Instantaneous Current - Channel 28	AI473	Amps	5	2810/2811	
Max Amps: Channel 29	Max Instantaneous Current - Channel 29	AI474	Amps	5	2812/2813	
Max Amps: Channel 30	Max Instantaneous Current - Channel 30	AI475	Amps	5	2814/2815	
Max Amps: Channel 31	Max Instantaneous Current - Channel 31	AI476	Amps	5	2816/2817	
Max Amps: Channel 32	Max Instantaneous Current - Channel 32	AI477	Amps	5	2818/2819	
Max Amps: Channel 33	Max Instantaneous Current - Channel 33	AI478	Amps	5	2820/2821	
Max Amps: Channel 34	Max Instantaneous Current - Channel 34	AI479	Amps	5	2822/2823	
Max Amps: Channel 35	Max Instantaneous Current - Channel 35	AI480	Amps	5	2824/2825	
Max Amps: Channel 36	Max Instantaneous Current - Channel 36	AI481	Amps	5	2826/2827	
Max Amps: Channel 37	Max Instantaneous Current - Channel 37	AI482	Amps	5	2828/2829	
Max Amps: Channel 38	Max Instantaneous Current - Channel 38	AI483	Amps	5	2830/2831	
Max Amps: Channel 39	Max Instantaneous Current - Channel 39	AI484	Amps	5	2832/2833	
Max Amps: Channel 40	Max Instantaneous Current - Channel 40	AI485	Amps	5	2834/2835	
Max Amps: Channel 41	Max Instantaneous Current - Channel 41	AI486	Amps	5	2836/2837	
Max Amps: Channel 42	Max Instantaneous Current - Channel 42	AI487	Amps	5	2838/2839	
kVA: Channel 1	Instantaneous Apparent Power - Chan 1	AI488	kVA	1	2840/2841	
kVA: Channel 2	Instantaneous Apparent Power - Chan 2	AI489	kVA	1	2842/2843	
kVA: Channel 3	Instantaneous Apparent Power - Chan 3	AI490	kVA	1	2844/2845	
kVA: Channel 4	Instantaneous Apparent Power - Chan 4	AI491	kVA	1	2846/2847	
kVA: Channel 5	Instantaneous Apparent Power - Chan 5	AI492	kVA	1	2848/2849	
kVA: Channel 6	Instantaneous Apparent Power - Chan 6	AI493	kVA	1	2850/2851	
kVA: Channel 7	Instantaneous Apparent Power - Chan 7	AI494	kVA	1	2852/2853	
kVA: Channel 8	Instantaneous Apparent Power - Chan 8	AI495	kVA	1	2854/2855	
kVA: Channel 9	Instantaneous Apparent Power - Chan 9	AI496	kVA	1	2856/2857	
kVA: Channel 10	Instantaneous Apparent Power - Chan 10	AI497	kVA	1	2858/2859	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
kVA: Channel 11	Instantaneous Apparent Power - Chan 11	AI498	kVA	1	2860/2861	
kVA: Channel 12	Instantaneous Apparent Power - Chan 12	AI499	kVA	1	2862/2863	
kVA: Channel 13	Instantaneous Apparent Power - Chan 13	AI500	kVA	1	2864/2865	
kVA: Channel 14	Instantaneous Apparent Power - Chan 14	AI501	kVA	1	2866/2867	
kVA: Channel 15	Instantaneous Apparent Power - Chan 15	AI502	kVA	1	2868/2869	
kVA: Channel 16	Instantaneous Apparent Power - Chan 16	AI503	kVA	1	2870/2871	
kVA: Channel 17	Instantaneous Apparent Power - Chan 17	AI504	kVA	1	2872/2873	
kVA: Channel 18	Instantaneous Apparent Power - Chan 18	AI505	kVA	1	2874/2875	
kVA: Channel 19	Instantaneous Apparent Power - Chan 19	AI506	kVA	1	2876/2877	
kVA: Channel 20	Instantaneous Apparent Power - Chan 20	AI507	kVA	1	2878/2879	
kVA: Channel 21	Instantaneous Apparent Power - Chan 21	AI508	kVA	1	2880/2881	
kVA: Channel 22	Instantaneous Apparent Power - Chan 22	AI509	kVA	1	2882/2883	
kVA: Channel 23	Instantaneous Apparent Power - Chan 23	AI510	kVA	1	2884/2885	
kVA: Channel 24	Instantaneous Apparent Power - Chan 24	AI511	kVA	1	2886/2887	
kVA: Channel 25	Instantaneous Apparent Power - Chan 25	AI512	kVA	1	2888/2889	
kVA: Channel 26	Instantaneous Apparent Power - Chan 26	AI513	kVA	1	2890/2891	
kVA: Channel 27	Instantaneous Apparent Power - Chan 27	AI514	kVA	1	2892/2893	
kVA: Channel 28	Instantaneous Apparent Power - Chan 28	AI515	kVA	1	2894/2895	
kVA: Channel 29	Instantaneous Apparent Power - Chan 29	AI516	kVA	1	2896/2897	
kVA: Channel 30	Instantaneous Apparent Power - Chan 30	AI517	kVA	1	2898/2899	
kVA: Channel 31	Instantaneous Apparent Power - Chan 31	AI518	kVA	1	2900/2901	
kVA: Channel 32	Instantaneous Apparent Power - Chan 32	AI519	kVA	1	2902/2903	
kVA: Channel 33	Instantaneous Apparent Power - Chan 33	AI520	kVA	1	2904/2905	
kVA: Channel 34	Instantaneous Apparent Power - Chan 34	AI521	kVA	1	2906/2907	
kVA: Channel 35	Instantaneous Apparent Power - Chan 35	AI522	kVA	1	2908/2909	
kVA: Channel 36	Instantaneous Apparent Power - Chan 36	AI523	kVA	1	2910/2911	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
kVA: Channel 37	Instantaneous Apparent Power - Chan 37	AI524	kVA	1	2912/2913	
kVA: Channel 38	Instantaneous Apparent Power - Chan 38	AI525	kVA	1	2914/2915	
kVA: Channel 39	Instantaneous Apparent Power - Chan 39	AI526	kVA	1	2916/2917	
kVA: Channel 40	Instantaneous Apparent Power - Chan 40	AI527	kVA	1	2918/2919	
kVA: Channel 41	Instantaneous Apparent Power - Chan 41	AI528	kVA	1	2920/2921	
kVA: Channel 42	Instantaneous Apparent Power - Chan 42	AI529	kVA	1	2922/2923	
Analog_Value objects:						
Configuration (bit 0 is LSB):	Configuration (bit 0 is LSB):	AV1	n/a	1	6	Bit 0: 0 = odd-even, 1 = sequential Bit 1: 0 = odd-even, 1 = sequential Bits 2-15: future use Examples: Value 0 = Odd/Even Value 1 = Reserved for Solid-Core Value 2 = Sequential Value 3 = Reserved for Solid-Core
# of Sub-Intervals per Demand Int.	Number of Sub-Intervals per Interval	AV2	n/a	1	71	Sets the number of sub-intervals that make a single demand interval. For block demand, set this to 1.
Sub-Interval Length in seconds.	Sub-Interval Length in seconds.	AV3	n/a	1	72	Sub-Interval Length in seconds. For sync-to-comms, set this to 0.

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Branch 1 CT Size	Branch 1 CT Size	AV4	Amps	5	73	These are writable ONLY on E31Axxx split-core models. These are NOT WRITABLE on E30Axxx solid-core models because the CT size is fixed (at 100 A). Other values written revert to 100 A the next time the meter is scanned.
Branch 2 CT Size	Branch 2 CT Size	AV5	Amps	5	74	
Branch 3 CT Size	Branch 3 CT Size	AV6	Amps	5	75	
Branch 4 CT Size	Branch 4 CT Size	AV7	Amps	5	76	
Branch 5 CT Size	Branch 5 CT Size	AV8	Amps	5	77	
Branch 6 CT Size	Branch 6 CT Size	AV9	Amps	5	78	
Branch 7 CT Size	Branch 7 CT Size	AV10	Amps	5	79	
Branch 8 CT Size	Branch 8 CT Size	AV11	Amps	5	80	
Branch 9 CT Size	Branch 9 CT Size	AV12	Amps	5	81	
Branch 10 CT Size	Branch 10 CT Size	AV13	Amps	5	82	
Branch 11 CT Size	Branch 11 CT Size	AV14	Amps	5	83	
Branch 12 CT Size	Branch 12 CT Size	AV15	Amps	5	84	
Branch 13 CT Size	Branch 13 CT Size	AV16	Amps	5	85	
Branch 14 CT Size	Branch 14 CT Size	AV17	Amps	5	86	
Branch 15 CT Size	Branch 15 CT Size	AV18	Amps	5	87	
Branch 16 CT Size	Branch 16 CT Size	AV19	Amps	5	88	
Branch 17 CT Size	Branch 17 CT Size	AV20	Amps	5	89	
Branch 18 CT Size	Branch 18 CT Size	AV21	Amps	5	90	
Branch 19 CT Size	Branch 19 CT Size	AV22	Amps	5	91	
Branch 20 CT Size	Branch 20 CT Size	AV23	Amps	5	92	
Branch 21 CT Size	Branch 21 CT Size	AV24	Amps	5	93	
Branch 22 CT Size	Branch 22 CT Size	AV25	Amps	5	94	
Branch 23 CT Size	Branch 23 CT Size	AV26	Amps	5	95	
Branch 24 CT Size	Branch 24 CT Size	AV27	Amps	5	96	
Branch 25 CT Size	Branch 25 CT Size	AV28	Amps	5	97	
Branch 26 CT Size	Branch 26 CT Size	AV29	Amps	5	98	
Branch 27 CT Size	Branch 27 CT Size	AV30	Amps	5	99	
Branch 28 CT Size	Branch 28 CT Size	AV31	Amps	5	100	
Branch 29 CT Size	Branch 29 CT Size	AV32	Amps	5	101	
Branch 30 CT Size	Branch 30 CT Size	AV33	Amps	5	102	
Branch 31 CT Size	Branch 31 CT Size	AV34	Amps	5	103	
Branch 32 CT Size	Branch 32 CT Size	AV35	Amps	5	104	
Branch 33 CT Size	Branch 33 CT Size	AV36	Amps	5	105	
Branch 34 CT Size	Branch 34 CT Size	AV37	Amps	5	106	
Branch 35 CT Size	Branch 35 CT Size	AV38	Amps	5	107	
Branch 36 CT Size	Branch 36 CT Size	AV39	Amps	5	108	
Branch 37 CT Size	Branch 37 CT Size	AV40	Amps	5	109	
Branch 38 CT Size	Branch 38 CT Size	AV41	Amps	5	110	
Branch 39 CT Size	Branch 39 CT Size	AV42	Amps	5	111	
Branch 40 CT Size	Branch 40 CT Size	AV43	Amps	5	112	
Branch 41 CT Size	Branch 41 CT Size	AV44	Amps	5	113	
Branch 42 CT Size	Branch 42 CT Size	AV45	Amps	5	114	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
AUX Channel (phase 1) CT Size	AUX Channel (phase 1) CT Size	AV46	Amps	5	115	
AUX Channel (phase 2) CT Size	AUX Channel (phase 2) CT Size	AV47	Amps	5	116	
AUX Channel (phase 3) CT Size	AUX Channel (phase 3) CT Size	AV48	Amps	5	117	
AUX Channel (Neutral) CT Size	AUX Channel (Neutral) CT Size	AV49	Amps	5	118	
Branch 1 Breaker Size	Branch 1 Breaker Size	AV50	Amps	5	119	
Branch 2 Breaker Size	Branch 2 Breaker Size	AV51	Amps	5	120	
Branch 3 Breaker Size	Branch 3 Breaker Size	AV52	Amps	5	121	
Branch 4 Breaker Size	Branch 4 Breaker Size	AV53	Amps	5	122	
Branch 5 Breaker Size	Branch 5 Breaker Size	AV54	Amps	5	123	
Branch 6 Breaker Size	Branch 6 Breaker Size	AV55	Amps	5	124	
Branch 7 Breaker Size	Branch 7 Breaker Size	AV56	Amps	5	125	
Branch 8 Breaker Size	Branch 8 Breaker Size	AV57	Amps	5	126	
Branch 9 Breaker Size	Branch 9 Breaker Size	AV58	Amps	5	127	
Branch 10 Breaker Size	Branch 10 Breaker Size	AV59	Amps	5	128	
Branch 11 Breaker Size	Branch 11 Breaker Size	AV60	Amps	5	129	
Branch 12 Breaker Size	Branch 12 Breaker Size	AV61	Amps	5	130	
Branch 13 Breaker Size	Branch 13 Breaker Size	AV62	Amps	5	131	
Branch 14 Breaker Size	Branch 14 Breaker Size	AV63	Amps	5	132	
Branch 15 Breaker Size	Branch 15 Breaker Size	AV64	Amps	5	133	
Branch 16 Breaker Size	Branch 16 Breaker Size	AV65	Amps	5	134	
Branch 17 Breaker Size	Branch 17 Breaker Size	AV66	Amps	5	135	
Branch 18 Breaker Size	Branch 18 Breaker Size	AV67	Amps	5	136	
Branch 19 Breaker Size	Branch 19 Breaker Size	AV68	Amps	5	137	
Branch 20 Breaker Size	Branch 20 Breaker Size	AV69	Amps	5	138	
Branch 21 Breaker Size	Branch 21 Breaker Size	AV70	Amps	5	139	
Branch 22 Breaker Size	Branch 22 Breaker Size	AV71	Amps	5	140	
Branch 23 Breaker Size	Branch 23 Breaker Size	AV72	Amps	5	141	
Branch 24 Breaker Size	Branch 24 Breaker Size	AV73	Amps	5	142	
Branch 25 Breaker Size	Branch 25 Breaker Size	AV74	Amps	5	143	
Branch 26 Breaker Size	Branch 26 Breaker Size	AV75	Amps	5	144	
Branch 27 Breaker Size	Branch 27 Breaker Size	AV76	Amps	5	145	
Branch 28 Breaker Size	Branch 28 Breaker Size	AV77	Amps	5	146	
Branch 29 Breaker Size	Branch 29 Breaker Size	AV78	Amps	5	147	
Branch 30 Breaker Size	Branch 30 Breaker Size	AV79	Amps	5	148	
Branch 31 Breaker Size	Branch 31 Breaker Size	AV80	Amps	5	149	
Branch 32 Breaker Size	Branch 32 Breaker Size	AV81	Amps	5	150	
Branch 33 Breaker Size	Branch 33 Breaker Size	AV82	Amps	5	151	
Branch 34 Breaker Size	Branch 34 Breaker Size	AV83	Amps	5	152	
Branch 35 Breaker Size	Branch 35 Breaker Size	AV84	Amps	5	153	
Branch 36 Breaker Size	Branch 36 Breaker Size	AV85	Amps	5	154	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Branch 37 Breaker Size	Branch 37 Breaker Size	AV86	Amps	5	155	
Branch 38 Breaker Size	Branch 38 Breaker Size	AV87	Amps	5	156	
Branch 39 Breaker Size	Branch 39 Breaker Size	AV88	Amps	5	157	
Branch 40 Breaker Size	Branch 40 Breaker Size	AV89	Amps	5	158	
Branch 41 Breaker Size	Branch 41 Breaker Size	AV90	Amps	5	159	
Branch 42 Breaker Size	Branch 42 Breaker Size	AV91	Amps	5	160	
AUX Channel (phase 1) Breaker Size	AUX Channel (phase 1) Breaker Size	AV92	Amps	5	161	
AUX Channel (phase 2) Breaker Size	AUX Channel (phase 2) Breaker Size	AV93	Amps	5	162	
AUX Channel (phase 3) Breaker Size	AUX Channel (phase 3) Breaker Size	AV94	Amps	5	163	
AUX Channel (Neutral) Breaker Size	AUX Channel (Neutral) Breaker Size	AV95	Amps	5	164	
High-High Latching Alarm Time Delay	Alarm event duration threshold	AV96	Seconds	1	165	These timers control entry into a latching alarm state. A return to a non-alarm state is instantaneous. All channels use the same global timers. Latching Alarm On Time applies to all Latching Alarms. The parameter measurement rate is expected to be approximately 2.5 sec, which limits the effective resolution of the timers.
High Latching Alarm Time Delay	Alarm event duration threshold	AV97	Seconds	1	166	
Low Latching Alarm Time Delay	Alarm event duration threshold	AV98	Seconds	1	167	
Low-Low Latching Alarm Time Delay	Alarm event duration threshold	AV99	Seconds	1	168	
Latching Alarm ON Time	From initial current to alarms enabled	AV100	Seconds	1	169	Latching Alarm ON Time (when the current is above Low-Low alarm and the ON Time elapses, the ON state is declared for all latching alarms. ON State enables Alarm Time Delays)
Latching Alarms time until OFF state	time until OFF state declared	AV101	Seconds	1	170	Latching Alarms time until OFF state is declared for all latching alarms (when current is below Low-Low alarm and an ON state was declared)
High-High Latching Alarm Threshold	% of breaker size	AV102	Percent	1	171	
High Alarm Latching Alarm Threshold	% of breaker size	AV103	Percent	1	172	
Low Alarm Latching Alarm Threshold	% of breaker size	AV104	Percent	1	173	
Low Low Latching Alarm Threshold	% of breaker size	AV105	Percent	1	174	
Non-Latching High Threshold	% of breaker size	AV106	Percent	1	175	
Non-Latching Low Threshold	% of breaker size	AV107	Percent	1	176	
Non-Latching Hysteresis (0-100%)	Non-Latching Hysteresis (% of setpoint)	AV108	Percent	1	177	
Branch 1 Alarm Status	Write 0 to alarm bits to clear alarms	AV109	n/a	1	178	Latching Alarms are cleared by writing a 0 to its alarm bit. Writing to a Non-Latching alarm is ignored Bit 0: High High Latching Alarm Bit 1: High Latching Alarm Bit 2: Low Latching Alarm Bit 3: Low Low Latching Alarm Bit 4: Latching Alarm OFF state declared (1=OFF; ON state must have been achieved prior) Bit 5-7: Reserved for future use (reads 0) Bit 8: High Non-Latching Alarm Bit 9: Low Non-Latching Alarm Bit 10-15: Reserved for future use (reads 0)

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Branch 2 Alarm Status	Write 0 to alarm bits to clear alarms	AV110	n/a	1	179	
Branch 3 Alarm Status	Write 0 to alarm bits to clear alarms	AV111	n/a	1	180	
Branch 4 Alarm Status	Write 0 to alarm bits to clear alarms	AV112	n/a	1	181	
Branch 5 Alarm Status	Write 0 to alarm bits to clear alarms	AV113	n/a	1	182	
Branch 6 Alarm Status	Write 0 to alarm bits to clear alarms	AV114	n/a	1	183	
Branch 7 Alarm Status	Write 0 to alarm bits to clear alarms	AV115	n/a	1	184	
Branch 8 Alarm Status	Write 0 to alarm bits to clear alarms	AV116	n/a	1	185	
Branch 9 Alarm Status	Write 0 to alarm bits to clear alarms	AV117	n/a	1	186	
Branch 10 Alarm Status	Write 0 to alarm bits to clear alarms	AV118	n/a	1	187	
Branch 11 Alarm Status	Write 0 to alarm bits to clear alarms	AV119	n/a	1	188	
Branch 12 Alarm Status	Write 0 to alarm bits to clear alarms	AV120	n/a	1	189	
Branch 13 Alarm Status	Write 0 to alarm bits to clear alarms	AV121	n/a	1	190	
Branch 14 Alarm Status	Write 0 to alarm bits to clear alarms	AV122	n/a	1	191	
Branch 15 Alarm Status	Write 0 to alarm bits to clear alarms	AV123	n/a	1	192	
Branch 16 Alarm Status	Write 0 to alarm bits to clear alarms	AV124	n/a	1	193	
Branch 17 Alarm Status	Write 0 to alarm bits to clear alarms	AV125	n/a	1	194	
Branch 18 Alarm Status	Write 0 to alarm bits to clear alarms	AV126	n/a	1	195	
Branch 19 Alarm Status	Write 0 to alarm bits to clear alarms	AV127	n/a	1	196	
Branch 20 Alarm Status	Write 0 to alarm bits to clear alarms	AV128	n/a	1	197	
Branch 21 Alarm Status	Write 0 to alarm bits to clear alarms	AV129	n/a	1	198	
Branch 22 Alarm Status	Write 0 to alarm bits to clear alarms	AV130	n/a	1	199	
Branch 23 Alarm Status	Write 0 to alarm bits to clear alarms	AV131	n/a	1	200	
Branch 24 Alarm Status	Write 0 to alarm bits to clear alarms	AV132	n/a	1	201	
Branch 25 Alarm Status	Write 0 to alarm bits to clear alarms	AV133	n/a	1	202	
Branch 26 Alarm Status	Write 0 to alarm bits to clear alarms	AV134	n/a	1	203	
Branch 27 Alarm Status	Write 0 to alarm bits to clear alarms	AV135	n/a	1	204	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Branch 28 Alarm Status	Write 0 to alarm bits to clear alarms	AV136	n/a	1	205	
Branch 29 Alarm Status	Write 0 to alarm bits to clear alarms	AV137	n/a	1	206	
Branch 30 Alarm Status	Write 0 to alarm bits to clear alarms	AV138	n/a	1	207	
Branch 31 Alarm Status	Write 0 to alarm bits to clear alarms	AV139	n/a	1	208	
Branch 32 Alarm Status	Write 0 to alarm bits to clear alarms	AV140	n/a	1	209	
Branch 33 Alarm Status	Write 0 to alarm bits to clear alarms	AV141	n/a	1	210	
Branch 34 Alarm Status	Write 0 to alarm bits to clear alarms	AV142	n/a	1	211	
Branch 35 Alarm Status	Write 0 to alarm bits to clear alarms	AV143	n/a	1	212	
Branch 36 Alarm Status	Write 0 to alarm bits to clear alarms	AV144	n/a	1	213	
Branch 37 Alarm Status	Write 0 to alarm bits to clear alarms	AV145	n/a	1	214	
Branch 38 Alarm Status	Write 0 to alarm bits to clear alarms	AV146	n/a	1	215	
Branch 39 Alarm Status	Write 0 to alarm bits to clear alarms	AV147	n/a	1	216	
Branch 40 Alarm Status	Write 0 to alarm bits to clear alarms	AV148	n/a	1	217	
Branch 41 Alarm Status	Write 0 to alarm bits to clear alarms	AV149	n/a	1	218	
Branch 42 Alarm Status	Write 0 to alarm bits to clear alarms	AV150	n/a	1	219	
AUX Channel (phase 1) Alarm Status	Write 0 to alarm bits to clear alarms	AV151	n/a	1	220	
AUX Channel (phase 2) Alarm Status	Write 0 to alarm bits to clear alarms	AV152	n/a	1	221	
AUX Channel (phase 3) Alarm Status	Write 0 to alarm bits to clear alarms	AV153	n/a	1	222	
AUX Channel (Neutral) Alarm Status	Write 0 to alarm bits to clear alarms	AV154	n/a	1	223	
Overvoltage Alarm Timer	Alarm event duration threshold	AV155	Seconds	1	236	Controls entry into Overvoltage alarm state. A return to a non-alarm state is instantaneous. All channels use these same global timers. Note that the parameter measurement update rate is 1.6 sec, which limits the effective resolution of these timers.
Undervoltage Alarm Timer	Alarm event duration threshold	AV156	Seconds	1	237	Controls entry into Undervoltage alarm state. A return to a non-alarm state is instantaneous. All channels use these same global timers. Note that the parameter measurement update rate is 1.6 sec, which limits the effective resolution of these timers.
Overvoltage Alarm Threshold	Overvoltage level threshold (0=OFF)	AV157	Volts	5	238	
Undervoltage Alarm Threshold	Undervoltage level threshold (0=OFF)	AV158	Volts	5	239	
Voltage Alarm Hysteresis	Voltage Alarm Hysteresis (% of setpoint)	AV159	Percent	1	240	Percentage of setpoint

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Voltage 1 Alarm Status	Write 0 to alarm bits to clear alarms	AV160	n/a	1	241	Latching Alarms are cleared by writing a 0 to its alarm bit. Writing to a Non-Latching alarm is ignored Bit 0: High Latching Alarm Bit 1: Low Latching Alarm Bit 2-7: Reserved for future use (reads 0) Bit 8: High Non-Latching Alarm Bit 9: Low Non-Latching Alarm Bit 10-15: Reserved for future use (reads 0)
Voltage 2 Alarm Status	Write 0 to alarm bits to clear alarms	AV161	n/a	1	242	Latching Alarms are cleared by writing a 0 to its alarm bit. Writing to a Non-Latching alarm is ignored Bit 0: High Latching Alarm Bit 1: Low Latching Alarm Bit 2-7: Reserved for future use (reads 0) Bit 8: High Non-Latching Alarm Bit 9: Low Non-Latching Alarm Bit 10-15: Reserved for future use (reads 0)
Voltage 3 Alarm Status	Write 0 to alarm bits to clear alarms	AV162	n/a	1	243	Latching Alarms are cleared by writing a 0 to its alarm bit. Writing to a Non-Latching alarm is ignored Bit 0: High Latching Alarm Bit 1: Low Latching Alarm Bit 2-7: Reserved for future use (reads 0) Bit 8: High Non-Latching Alarm Bit 9: Low Non-Latching Alarm Bit 10-15: Reserved for future use (reads 0)
Power Up Counter	Power Up Counter	AV163	n/a	1	531	Number of power-up cycles (write 0 to reset)
User Defined Status Register	1 in bit 0 enables CT phase assignment	AV164	n/a	1	62017	User Defined Status Register: Bit 0: Enable User CT Phase Assignment Bit 1-15: Reserved
Voltage Phase for Branch Channel 1	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV165	n/a	1	62116	
Voltage Phase for Branch Channel 2	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV166	n/a	1	62117	
Voltage Phase for Branch Channel 3	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV167	n/a	1	62118	
Voltage Phase for Branch Channel 4	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV168	n/a	1	62119	
Voltage Phase for Branch Channel 5	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV169	n/a	1	62120	
Voltage Phase for Branch Channel 6	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV170	n/a	1	62121	
Voltage Phase for Branch Channel 7	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV171	n/a	1	62122	
Voltage Phase for Branch Channel 8	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV172	n/a	1	62123	
Voltage Phase for Branch Channel 9	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV173	n/a	1	62124	
Voltage Phase for Branch Channel 10	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV174	n/a	1	62125	
Voltage Phase for Branch Channel 11	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV175	n/a	1	62126	
Voltage Phase for Branch Channel 12	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV176	n/a	1	62127	
Voltage Phase for Branch Channel 13	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV177	n/a	1	62128	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Voltage Phase for Branch Channel 14	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV178	n/a	1	62129	
Voltage Phase for Branch Channel 15	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV179	n/a	1	62130	
Voltage Phase for Branch Channel 16	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV180	n/a	1	62131	
Voltage Phase for Branch Channel 17	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV181	n/a	1	62132	
Voltage Phase for Branch Channel 18	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV182	n/a	1	62133	
Voltage Phase for Branch Channel 19	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV183	n/a	1	62134	
Voltage Phase for Branch Channel 20	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV184	n/a	1	62135	
Voltage Phase for Branch Channel 21	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV185	n/a	1	62136	
Voltage Phase for Branch Channel 22	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV186	n/a	1	62137	
Voltage Phase for Branch Channel 23	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV187	n/a	1	62138	
Voltage Phase for Branch Channel 24	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV188	n/a	1	62139	
Voltage Phase for Branch Channel 25	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV189	n/a	1	62140	
Voltage Phase for Branch Channel 26	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV190	n/a	1	62141	
Voltage Phase for Branch Channel 27	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV191	n/a	1	62142	
Voltage Phase for Branch Channel 28	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV192	n/a	1	62143	
Voltage Phase for Branch Channel 29	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV193	n/a	1	62144	
Voltage Phase for Branch Channel 30	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV194	n/a	1	62145	
Voltage Phase for Branch Channel 31	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV195	n/a	1	62146	
Voltage Phase for Branch Channel 32	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV196	n/a	1	62147	
Voltage Phase for Branch Channel 33	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV197	n/a	1	62148	
Voltage Phase for Branch Channel 34	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV198	n/a	1	62149	
Voltage Phase for Branch Channel 35	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV199	n/a	1	62150	
Voltage Phase for Branch Channel 36	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV200	n/a	1	62151	
Voltage Phase for Branch Channel 37	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV201	n/a	1	62152	
Voltage Phase for Branch Channel 38	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV202	n/a	1	62153	
Voltage Phase for Branch Channel 39	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV203	n/a	1	62154	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Voltage Phase for Branch Channel 40	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV204	n/a	1	62155	
Voltage Phase for Branch Channel 41	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV205	n/a	1	62156	
Voltage Phase for Branch Channel 42	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV206	n/a	1	62157	
Voltage Phase for Aux Channel 1	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV207	n/a	1	62158	
Voltage Phase for Aux Channel 2	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV208	n/a	1	62159	
Voltage Phase for Aux Channel 3	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV209	n/a	1	62160	
Analog_Output objects:						
AUX Resets: Write value to reset	10203=kWh, 29877=Max Current & Max kW	AO1	n/a	1	294	Write the listed value to perform the corresponding reset: 10203 = Clear kWh value to zero 29877 = Clear Max Current and Max kW values to zero
Global Resets: Write value to reset	10203=kWh, others…	AO2	n/a	1	295	Write the listed value to perform the corresponding reset: 26012 = Begin new Demand Sub-interval 26013 = Reset Demand 31010 = Reset all Latching Alarms 10203 = Clear all kWh values to zero 29877 = Clear all Max Current and Max kW values to zero 20097 = Clear all Max Demand values to zero
Channel 1 Reset	10203=kWh, 29877=Max Current & Max kW	AO3	n/a	1	1126	Write the listed value to perform the corresponding reset: 10203 = Clear kWh value to zero 29877 = Clear Max Current and Max kW values to zero
Channel 2 Reset	10203=kWh, 29877=Max Current & Max kW	AO4	n/a	1	1127	
Channel 3 Reset	10203=kWh, 29877=Max Current & Max kW	AO5	n/a	1	1128	
Channel 4 Reset	10203=kWh, 29877=Max Current & Max kW	AO6	n/a	1	1129	
Channel 5 Reset	10203=kWh, 29877=Max Current & Max kW	AO7	n/a	1	1130	
Channel 6 Reset	10203=kWh, 29877=Max Current & Max kW	AO8	n/a	1	1131	
Channel 7 Reset	10203=kWh, 29877=Max Current & Max kW	AO9	n/a	1	1132	
Channel 8 Reset	10203=kWh, 29877=Max Current & Max kW	AO10	n/a	1	1133	
Channel 9 Reset	10203=kWh, 29877=Max Current & Max kW	AO11	n/a	1	1134	
Channel 10 Reset	10203=kWh, 29877=Max Current & Max kW	AO12	n/a	1	1135	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Channel 11 Reset	10203=kWh, 29877=Max Current & Max kW	AO13	n/a	1	1136	
Channel 12 Reset	10203=kWh, 29877=Max Current & Max kW	AO14	n/a	1	1137	
Channel 13 Reset	10203=kWh, 29877=Max Current & Max kW	AO15	n/a	1	1138	
Channel 14 Reset	10203=kWh, 29877=Max Current & Max kW	AO16	n/a	1	1139	
Channel 15 Reset	10203=kWh, 29877=Max Current & Max kW	AO17	n/a	1	1140	
Channel 16 Reset	10203=kWh, 29877=Max Current & Max kW	AO18	n/a	1	1141	
Channel 17 Reset	10203=kWh, 29877=Max Current & Max kW	AO19	n/a	1	1142	
Channel 18 Reset	10203=kWh, 29877=Max Current & Max kW	AO20	n/a	1	1143	
Channel 19 Reset	10203=kWh, 29877=Max Current & Max kW	AO21	n/a	1	1144	
Channel 20 Reset	10203=kWh, 29877=Max Current & Max kW	AO22	n/a	1	1145	
Channel 21 Reset	10203=kWh, 29877=Max Current & Max kW	AO23	n/a	1	1146	
Channel 22 Reset	10203=kWh, 29877=Max Current & Max kW	AO24	n/a	1	1147	
Channel 23 Reset	10203=kWh, 29877=Max Current & Max kW	AO25	n/a	1	1148	
Channel 24 Reset	10203=kWh, 29877=Max Current & Max kW	AO26	n/a	1	1149	
Channel 25 Reset	10203=kWh, 29877=Max Current & Max kW	AO27	n/a	1	1150	
Channel 26 Reset	10203=kWh, 29877=Max Current & Max kW	AO28	n/a	1	1151	
Channel 27 Reset	10203=kWh, 29877=Max Current & Max kW	AO29	n/a	1	1152	
Channel 28 Reset	10203=kWh, 29877=Max Current & Max kW	AO30	n/a	1	1153	
Channel 29 Reset	10203=kWh, 29877=Max Current & Max kW	AO31	n/a	1	1154	

E30A042 and E30A142x Branch Circuit Power Meter, cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Channel 30 Reset	10203=kWh, 29877=Max Current & Max kW	AO32	n/a	1	1155	
Channel 31 Reset	10203=kWh, 29877=Max Current & Max kW	AO33	n/a	1	1156	
Channel 32 Reset	10203=kWh, 29877=Max Current & Max kW	AO34	n/a	1	1157	
Channel 33 Reset	10203=kWh, 29877=Max Current & Max kW	AO35	n/a	1	1158	
Channel 34 Reset	10203=kWh, 29877=Max Current & Max kW	AO36	n/a	1	1159	
Channel 35 Reset	10203=kWh, 29877=Max Current & Max kW	AO37	n/a	1	1160	
Channel 36 Reset	10203=kWh, 29877=Max Current & Max kW	AO38	n/a	1	1161	
Channel 37 Reset	10203=kWh, 29877=Max Current & Max kW	AO39	n/a	1	1162	
Channel 38 Reset	10203=kWh, 29877=Max Current & Max kW	AO40	n/a	1	1163	
Channel 39 Reset	10203=kWh, 29877=Max Current & Max kW	AO41	n/a	1	1164	
Channel 40 Reset	10203=kWh, 29877=Max Current & Max kW	AO42	n/a	1	1165	
Channel 41 Reset	10203=kWh, 29877=Max Current & Max kW	AO43	n/a	1	1166	
Channel 42 Reset	10203=kWh, 29877=Max Current & Max kW	AO44	n/a	1	1167	

E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters

The E3xBxxx/Cxxx meters have 446 data objects per Modbus address and operate at 9600, 19200 or 38400 baud. These meters monitor current on 42 branch circuits and 4 main circuits (up to 3 phases, plus neutral) for each Modbus address. The E3xBxxx models also monitor power, demand, and energy on the main channels (not the branches). The E30Bx42/Cx42 models have one Modbus address and support only 42 branch channels (plus main channels). The E30Bx84/Cx84 models and all E31Bxxx/Cxxx models have two Modbus addresses and support up to 84 branch channels and two sets of main channels. On E3xCxxx models, some of the data objects are not used and will return QNAN when their Present_Value is read.

AV4-AV45 are not writable on E30Bxxx/E30Cxxx solid-core models because the CT size is fixed (at 100 A). Other values written revert to 100 A the next time the meter is scanned. AV4-AV45 are writable on E31Bxxx/E31Cxxx split-core models.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Analog_Input objects						
Frequency: (derived from Phase A)	Frequency (derived from Phase A)	AI1	Hz	0.01	600/601	Not used on E3xCxxx models; reports QNAN
VOLTS L-N: 3ph Ave	Voltage L-L - average of active phases	AI2	Volts	5	602/603	Not used on E3xCxxx models; reports QNAN
VOLTS L-L: 3ph Ave	Voltage L-N - average of active phases	AI3	Volts	5	604/605	Not used on E3xCxxx models; reports QNAN
VOLTS A-N	Instantaneous Voltage Ph-A to Neutral	AI4	Volts	5	606/607	Not used on E3xCxxx models; reports QNAN
VOLTS B-N	Instantaneous Voltage Ph-B to Neutral	AI5	Volts	5	608/609	Not used on E3xCxxx models; reports QNAN
VOLTS C-N	Instantaneous Voltage Ph-C to Neutral	AI6	Volts	5	610/611	Not used on E3xCxxx models; reports QNAN
VOLTS A-B	Instantaneous Voltage Phase A to B	AI7	Volts	5	612/613	Not used on E3xCxxx models; reports QNAN
VOLTS B-C	Instantaneous Voltage Phase B to C	AI8	Volts	5	614/615	Not used on E3xCxxx models; reports QNAN
VOLTS A-C	Instantaneous Voltage Phase A to C	AI9	Volts	5	616/617	Not used on E3xCxxx models; reports QNAN
kWh Energy: 3ph Total	Real Energy - total of active phases	AI10	kWh	0	618/619	Not used on E3xCxxx models; reports QNAN
kW: 3ph Total	Inst Real Power- total of active phases	AI11	kW	1	620/621	Not used on E3xCxxx models; reports QNAN
Power Factor: 3ph Total	Inst Power Factor - average of phases	AI12	PF	0.01	622/623	Not used on E3xCxxx models; reports QNAN
Amps: 3ph Average (phases 1,2,3)	Inst Current- average of active phases	AI13	Amps	5	624/625	
kW: Phase 1	Instantaneous Real Power - Phase 1	AI14	kW	1	626/627	Not used on E3xCxxx models; reports QNAN
kW: Phase 2	Instantaneous Real Power - Phase 2	AI15	kW	1	628/629	Not used on E3xCxxx models; reports QNAN
kW: Phase 3	Instantaneous Real Power - Phase 3	AI16	kW	1	630/631	Not used on E3xCxxx models; reports QNAN
Power Factor: Phase 1	Instantaneous Power Factor - Phase A	AI17	PF	0.01	632/633	Not used on E3xCxxx models; reports QNAN
Power Factor: Phase 2	Instantaneous Power Factor - Phase B	AI18	PF	0.01	634/635	Not used on E3xCxxx models; reports QNAN
Power Factor: Phase 3	Instantaneous Power Factor - Phase C	AI19	PF	0.01	636/637	Not used on E3xCxxx models; reports QNAN
Amps: Phase 1	Instantaneous Current - Phase 1	AI20	Amps	5	638/639	
Amps: Phase 2	Instantaneous Current - Phase 2	AI21	Amps	5	640/641	

E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Amps: Phase 3	Instantaneous Current - Phase 3	AI22	Amps	5	642/643	
Amps: Phase 4 (Neutral)	Instantaneous Neutral Current	AI23	Amps	5	644/645	
Amps Present Demand: Phase 1	Present Current Demand- Phase 1	AI24	Amps	5	646/647	
Amps Present Demand: Phase 2	Present Current Demand - Phase 2	AI25	Amps	5	648/649	
Amps Present Demand: Phase 3	Present Current Demand - Phase 3	AI26	Amps	5	650/651	
Amps Present Demand: Phase 4 (Neutral)	Present Current Demand - Neutral	AI27	Amps	5	652/653	
Amps Max Demand: Phase 1	Max Current Demand - Phase 1	AI28	Amps	5	654/655	
Amps Max Demand: Phase 2	Max Current Demand - Phase 2	AI29	Amps	5	656/657	
Amps Max Demand: Phase 3	Max Current Demand - Phase 3	AI30	Amps	5	658/659	
Amps Max Demand: Phase 4 (Neutral)	Max Current Demand - Neutral	AI31	Amps	5	660/661	
kW Present Demand: 3ph Total	Real Power Present Demand - 3ph Total	AI32	kW	1	662/663	Not used on E3xCxxx models; reports QNAN
kW Max Demand: 3ph Total	Real Power Max Demand - 3ph Total	AI33	kW	1	664/665	Not used on E3xCxxx models; reports QNAN
Max Amps: Phase 1	Max Instantaneous Current - Phase 1	AI34	Amps	5	666/667	
Max Amps: Phase 2	Max Instantaneous Current - Phase 2	AI35	Amps	5	668/669	
Max Amps: Phase 3	Max Instantaneous Current - Phase 3	AI36	Amps	5	670/671	
Max Amps: Phase 4 (Neutal)	Max Instantaneous Neutral Current	AI37	Amps	5	672/673	
kW: 3ph Max	Max Instantaneous Real Power- 3ph Total	AI38	kW	1	674/675	Not used on E3xCxxx models; reports QNAN
Device Health	Bit Map of Device Health Indicators	AI39	n/a	1	532	Bit 0: Reserved Bit 1: Frequency Out of Range or insufficient voltage on Phase A to determine frequency range. Frequency range is 40-70 Hz. Bit 2: Phase A Voltage Clipping Bit 3: Phase B Voltage Clipping Bit 4: Phase C Voltage Clipping Bit 5: Current Clipping on at least 1 channel (AUX & Circuit) Bit 6-7: Reserved Bit 8: Strip Connection Error Bit 9-12: Reserved Bit 13: Current Model, Model C Bit 14: Power Model, Model B Bit 15: Branch Power, Model A
Reserved for future use	Reserved for future use	AI40	n/a	1	533	
Reserved for future use	Reserved for future use	AI41	n/a	1	534	
Reserved for future use	Reserved for future use	AI42	n/a	1	535	
Reserved for future use	Reserved for future use	AI43	n/a	1	536	
Reserved for future use	Reserved for future use	AI44	n/a	1	537	

E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Reserved for future use	Reserved for future use	AI45	n/a	1	538	
Product ID	bit Map of Model configuration	AI46	n/a	1	539	Bit 0: Default Solid-Core Bit 1: Default Split-Core Bit 3-9: Reserved Bit 10: Reserved Bit 11: Reserved Bit 12: Custom V-Phase Capable Bit 13: Reserved (Model C) Bit 14: Reserved (Model B) Bit 15: Reserved (Model A)
kVA: 3ph Total	Instantaneous Apparent Power- 3ph Total	AI47	kVA	1	676/677	Not used on E3xCxxx models; reports QNAN
kVA: Phase 1	Instantaneous Apparent Power - Phase 1	AI48	kVA	1	678/679	Not used on E3xCxxx models; reports QNAN
kVA: Phase 2	Instantaneous Apparent Power - Phase 2	AI49	kVA	1	680/681	Not used on E3xCxxx models; reports QNAN
kVA: Phase 3	Instantaneous Apparent Power - Phase 3	AI50	kVA	1	682/683	Not used on E3xCxxx models; reports QNAN
Serial Number MSW	Serial Number MSW	AI51	n/a	1	1	Upper 16-bits of a 32-bit Hex Value
Serial Number LSW	Serial Number LSW	AI52	n/a	1	2	Lower 16-bits of a 32-bit Hex Value
Firmware Revision RS	Firmware Revision RS	AI53	n/a	1	3	
Firmware Revision OS	Firmware Revision OS	AI54	n/a	1	4	
Device ID:	15170=C, 15171=B, 15172=A	AI55	n/a	1	5	15170 = Model C, current only on all channels, no voltage 15171 = Model B, current only on branch channels, power on AUX channels plus voltage 15172 = Model A, current and power on all channels plus voltage
Global Latching Alarm Status	(HHL,HL,LL,LLL,ON,Rsv,Rsv,Rsv,HVL,LVL)	AI56	n/a	1	224	Bit 0: High High Latching Alarm Bit 1: High Latching Alarm Bit 2: Low Latching Alarm Bit 3: Low Low Latching Alarm Bit 4: Latching Alarm OFF state declared (1=OFF; ON state must have been achieved prior) Bit 5-7: Reserved for future use (reads 0) Bit 8: High Voltage Latching Alarm Bit 9: Low Voltage Latching Alarm Bit 10-15: Reserved for future use (reads 0)
Global Non-Latching Alarm Status	(HL,LL,Rsv,Rsv,Rsv,Rsv,Rsv,Rsv,HVL,LVL)	AI57	n/a	1	225	Bit 0: High Non-Latching Alarm Bit 1: Low Non-Latching Alarm Bit 2-7: Reserved for future use (reads 0) Bit 8: High Voltage Non-Latching Alarm Bit 9: Low Voltage Non-Latching Alarm Bit 10-15: Reserved for future use (reads 0)
Global Most-Recent Latching Alarm Chan	# of Most-Recent Channel (0=none)	AI58	n/a	1	226	0-46, 0=none
Global Most-Recent Non-Latching Alrm Ch	# of Most-Recent Channel (0=none)	AI59	n/a	1	227	0-46, 0=none
Total number of Latch channels in alarm	# alarm chan (non-latching alarms)	AI60	n/a	1	228	
Total number of non-Latch chan in alarm	# alarm chan (based on latching alarms)	AI61	n/a	1	229	
Error Bitmap1 (placeholder - bits TBD)	Error Bitmap1 (placeholder - bits TBD)	AI62	n/a	1	230	
Error Bitmap2 (placeholder - bits TBD)	Error Bitmap2 (placeholder - bits TBD)	AI63	n/a	1	231	

E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Error Bitmap3 (placeholder - bits TBD)	Error Bitmap3 (placeholder - bits TBD)	AI64	n/a	1	232	
Error Bitmap4 (placeholder - bits TBD)	Error Bitmap4 (placeholder - bits TBD)	AI65	n/a	1	233	
Error Bitmap5 (placeholder - bits TBD)	Error Bitmap5 (placeholder - bits TBD)	AI66	n/a	1	234	
Error Bitmap6 (placeholder - bits TBD)	Error Bitmap6 (placeholder - bits TBD)	AI67	n/a	1	235	
Amps: Channel 1	Instantaneous Current - Channel 1	AI68	Amps	5	2252/2253	
Amps: Channel 2	Instantaneous Current - Channel 2	AI69	Amps	5	2254/2255	
Amps: Channel 3	Instantaneous Current - Channel 3	AI70	Amps	5	2256/2257	
Amps: Channel 4	Instantaneous Current - Channel 4	AI71	Amps	5	2258/2259	
Amps: Channel 5	Instantaneous Current - Channel 5	AI72	Amps	5	2260/2261	
Amps: Channel 6	Instantaneous Current - Channel 6	AI73	Amps	5	2262/2263	
Amps: Channel 7	Instantaneous Current - Channel 7	AI74	Amps	5	2264/2265	
Amps: Channel 8	Instantaneous Current - Channel 8	AI75	Amps	5	2266/2267	
Amps: Channel 9	Instantaneous Current - Channel 9	AI76	Amps	5	2268/2269	
Amps: Channel 10	Instantaneous Current - Channel 10	AI77	Amps	5	2270/2271	
Amps: Channel 11	Instantaneous Current - Channel 11	AI78	Amps	5	2272/2273	
Amps: Channel 12	Instantaneous Current - Channel 12	AI79	Amps	5	2274/2275	
Amps: Channel 13	Instantaneous Current - Channel 13	AI80	Amps	5	2276/2277	
Amps: Channel 14	Instantaneous Current - Channel 14	AI81	Amps	5	2278/2279	
Amps: Channel 15	Instantaneous Current - Channel 15	AI82	Amps	5	2280/2281	
Amps: Channel 16	Instantaneous Current - Channel 16	AI83	Amps	5	2282/2283	
Amps: Channel 17	Instantaneous Current - Channel 17	AI84	Amps	5	2284/2285	
Amps: Channel 18	Instantaneous Current - Channel 18	AI85	Amps	5	2286/2287	
Amps: Channel 19	Instantaneous Current - Channel 19	AI86	Amps	5	2288/2289	
Amps: Channel 20	Instantaneous Current - Channel 20	AI87	Amps	5	2290/2291	
Amps: Channel 21	Instantaneous Current - Channel 21	AI88	Amps	5	2292/2293	
Amps: Channel 22	Instantaneous Current - Channel 22	AI89	Amps	5	2294/2295	

E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Amps: Channel 23	Instantaneous Current - Channel 23	AI90	Amps	5	2296/2297	
Amps: Channel 24	Instantaneous Current - Channel 24	AI91	Amps	5	2298/2299	
Amps: Channel 25	Instantaneous Current - Channel 25	AI92	Amps	5	2300/2301	
Amps: Channel 26	Instantaneous Current - Channel 26	AI93	Amps	5	2302/2303	
Amps: Channel 27	Instantaneous Current - Channel 27	AI94	Amps	5	2304/2305	
Amps: Channel 28	Instantaneous Current - Channel 28	AI95	Amps	5	2306/2307	
Amps: Channel 29	Instantaneous Current - Channel 29	AI96	Amps	5	2308/2309	
Amps: Channel 30	Instantaneous Current - Channel 30	AI97	Amps	5	2310/2311	
Amps: Channel 31	Instantaneous Current - Channel 31	AI98	Amps	5	2312/2313	
Amps: Channel 32	Instantaneous Current - Channel 32	AI99	Amps	5	2314/2315	
Amps: Channel 33	Instantaneous Current - Channel 33	AI100	Amps	5	2316/2317	
Amps: Channel 34	Instantaneous Current - Channel 34	AI101	Amps	5	2318/2319	
Amps: Channel 35	Instantaneous Current - Channel 35	AI102	Amps	5	2320/2321	
Amps: Channel 36	Instantaneous Current - Channel 36	AI103	Amps	5	2322/2323	
Amps: Channel 37	Instantaneous Current - Channel 37	AI104	Amps	5	2324/2325	
Amps: Channel 38	Instantaneous Current - Channel 38	AI105	Amps	5	2326/2327	
Amps: Channel 39	Instantaneous Current - Channel 39	AI106	Amps	5	2328/2329	
Amps: Channel 40	Instantaneous Current - Channel 40	AI107	Amps	5	2330/2331	
Amps: Channel 41	Instantaneous Current - Channel 41	AI108	Amps	5	2332/2333	
Amps: Channel 42	Instantaneous Current - Channel 42	AI109	Amps	5	2334/2335	
Amps Present Demand: Channel 1	Present Current Demand - Channel 1	AI110	Amps	5	2504/2505	
Amps Present Demand: Channel 2	Present Current Demand - Channel 2	AI111	Amps	5	2506/2507	
Amps Present Demand: Channel 3	Present Current Demand - Channel 3	AI112	Amps	5	2508/2509	
Amps Present Demand: Channel 4	Present Current Demand - Channel 4	AI113	Amps	5	2510/2511	
Amps Present Demand: Channel 5	Present Current Demand - Channel 5	AI114	Amps	5	2512/2513	
Amps Present Demand: Channel 6	Present Current Demand - Channel 6	AI115	Amps	5	2514/2515	

E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Amps Present Demand: Channel 7	Present Current Demand - Channel 7	AI116	Amps	5	2516/2517	
Amps Present Demand: Channel 8	Present Current Demand - Channel 8	AI117	Amps	5	2518/2519	
Amps Present Demand: Channel 9	Present Current Demand - Channel 9	AI118	Amps	5	2520/2521	
Amps Present Demand: Channel 10	Present Current Demand - Channel 10	AI119	Amps	5	2522/2523	
Amps Present Demand: Channel 11	Present Current Demand - Channel 11	AI120	Amps	5	2524/2525	
Amps Present Demand: Channel 12	Present Current Demand - Channel 12	AI121	Amps	5	2526/2527	
Amps Present Demand: Channel 13	Present Current Demand - Channel 13	AI122	Amps	5	2528/2529	
Amps Present Demand: Channel 14	Present Current Demand - Channel 14	AI123	Amps	5	2530/2531	
Amps Present Demand: Channel 15	Present Current Demand - Channel 15	AI124	Amps	5	2532/2533	
Amps Present Demand: Channel 16	Present Current Demand - Channel 16	AI125	Amps	5	2534/2535	
Amps Present Demand: Channel 17	Present Current Demand - Channel 17	AI126	Amps	5	2536/2537	
Amps Present Demand: Channel 18	Present Current Demand - Channel 18	AI127	Amps	5	2538/2539	
Amps Present Demand: Channel 19	Present Current Demand - Channel 19	AI128	Amps	5	2540/2541	
Amps Present Demand: Channel 20	Present Current Demand - Channel 20	AI129	Amps	5	2542/2543	
Amps Present Demand: Channel 21	Present Current Demand - Channel 21	AI130	Amps	5	2544/2545	
Amps Present Demand: Channel 22	Present Current Demand - Channel 22	AI131	Amps	5	2546/2547	
Amps Present Demand: Channel 23	Present Current Demand - Channel 23	AI132	Amps	5	2548/2549	
Amps Present Demand: Channel 24	Present Current Demand - Channel 24	AI133	Amps	5	2550/2551	
Amps Present Demand: Channel 25	Present Current Demand - Channel 25	AI134	Amps	5	2552/2553	
Amps Present Demand: Channel 26	Present Current Demand - Channel 26	AI135	Amps	5	2554/2555	
Amps Present Demand: Channel 27	Present Current Demand - Channel 27	AI136	Amps	5	2556/2557	
Amps Present Demand: Channel 28	Present Current Demand - Channel 28	AI137	Amps	5	2558/2559	
Amps Present Demand: Channel 29	Present Current Demand - Channel 29	AI138	Amps	5	2560/2561	
Amps Present Demand: Channel 30	Present Current Demand - Channel 30	AI139	Amps	5	2562/2563	
Amps Present Demand: Channel 31	Present Current Demand - Channel 31	AI140	Amps	5	2564/2565	
Amps Present Demand: Channel 32	Present Current Demand - Channel 32	AI141	Amps	5	2566/2567	

E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Amps Present Demand: Channel 33	Present Current Demand - Channel 33	AI142	Amps	5	2568/2569	
Amps Present Demand: Channel 34	Present Current Demand - Channel 34	AI143	Amps	5	2570/2571	
Amps Present Demand: Channel 35	Present Current Demand - Channel 35	AI144	Amps	5	2572/2573	
Amps Present Demand: Channel 36	Present Current Demand - Channel 36	AI145	Amps	5	2574/2575	
Amps Present Demand: Channel 37	Present Current Demand - Channel 37	AI146	Amps	5	2576/2577	
Amps Present Demand: Channel 38	Present Current Demand - Channel 38	AI147	Amps	5	2578/2579	
Amps Present Demand: Channel 39	Present Current Demand - Channel 39	AI148	Amps	5	2580/2581	
Amps Present Demand: Channel 40	Present Current Demand - Channel 40	AI149	Amps	5	2582/2583	
Amps Present Demand: Channel 41	Present Current Demand - Channel 41	AI150	Amps	5	2584/2585	
Amps Present Demand: Channel 42	Present Current Demand - Channel 42	AI151	Amps	5	2586/2587	
Amps Max Demand: Channel 1	Max Current Demand - Channel 1	AI152	Amps	5	2588/2589	
Amps Max Demand: Channel 2	Max Current Demand - Channel 2	AI153	Amps	5	2590/2591	
Amps Max Demand: Channel 3	Max Current Demand - Channel 3	AI154	Amps	5	2592/2593	
Amps Max Demand: Channel 4	Max Current Demand - Channel 4	AI155	Amps	5	2594/2595	
Amps Max Demand: Channel 5	Max Current Demand - Channel 5	AI156	Amps	5	2596/2597	
Amps Max Demand: Channel 6	Max Current Demand - Channel 6	AI157	Amps	5	2598/2599	
Amps Max Demand: Channel 7	Max Current Demand - Channel 7	AI158	Amps	5	2600/2601	
Amps Max Demand: Channel 8	Max Current Demand - Channel 8	AI159	Amps	5	2602/2603	
Amps Max Demand: Channel 9	Max Current Demand - Channel 9	AI160	Amps	5	2604/2605	
Amps Max Demand: Channel 10	Max Current Demand - Channel 10	AI161	Amps	5	2606/2607	
Amps Max Demand: Channel 11	Max Current Demand - Channel 11	AI162	Amps	5	2608/2609	
Amps Max Demand: Channel 12	Max Current Demand - Channel 12	AI163	Amps	5	2610/2611	
Amps Max Demand: Channel 13	Max Current Demand - Channel 13	AI164	Amps	5	2612/2613	
Amps Max Demand: Channel 14	Max Current Demand - Channel 14	AI165	Amps	5	2614/2615	
Amps Max Demand: Channel 15	Max Current Demand - Channel 15	AI166	Amps	5	2616/2617	
Amps Max Demand: Channel 16	Max Current Demand - Channel 16	AI167	Amps	5	2618/2619	

E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Amps Max Demand: Channel 17	Max Current Demand - Channel 17	AI168	Amps	5	2620/2621	
Amps Max Demand: Channel 18	Max Current Demand - Channel 18	AI169	Amps	5	2622/2623	
Amps Max Demand: Channel 19	Max Current Demand - Channel 19	AI170	Amps	5	2624/2625	
Amps Max Demand: Channel 20	Max Current Demand - Channel 20	AI171	Amps	5	2626/2627	
Amps Max Demand: Channel 21	Max Current Demand - Channel 21	AI172	Amps	5	2628/2629	
Amps Max Demand: Channel 22	Max Current Demand - Channel 22	AI173	Amps	5	2630/2631	
Amps Max Demand: Channel 23	Max Current Demand - Channel 23	AI174	Amps	5	2632/2633	
Amps Max Demand: Channel 24	Max Current Demand - Channel 24	AI175	Amps	5	2634/2635	
Amps Max Demand: Channel 25	Max Current Demand - Channel 25	AI176	Amps	5	2636/2637	
Amps Max Demand: Channel 26	Max Current Demand - Channel 26	AI177	Amps	5	2638/2639	
Amps Max Demand: Channel 27	Max Current Demand - Channel 27	AI178	Amps	5	2640/2641	
Amps Max Demand: Channel 28	Max Current Demand - Channel 28	AI179	Amps	5	2642/2643	
Amps Max Demand: Channel 29	Max Current Demand - Channel 29	AI180	Amps	5	2644/2645	
Amps Max Demand: Channel 30	Max Current Demand - Channel 30	AI181	Amps	5	2646/2647	
Amps Max Demand: Channel 31	Max Current Demand - Channel 31	AI182	Amps	5	2648/2649	
Amps Max Demand: Channel 32	Max Current Demand - Channel 32	AI183	Amps	5	2650/2651	
Amps Max Demand: Channel 33	Max Current Demand - Channel 33	AI184	Amps	5	2652/2653	
Amps Max Demand: Channel 34	Max Current Demand - Channel 34	AI185	Amps	5	2654/2655	
Amps Max Demand: Channel 35	Max Current Demand - Channel 35	AI186	Amps	5	2656/2657	
Amps Max Demand: Channel 36	Max Current Demand - Channel 36	AI187	Amps	5	2658/2659	
Amps Max Demand: Channel 37	Max Current Demand - Channel 37	AI188	Amps	5	2660/2661	
Amps Max Demand: Channel 38	Max Current Demand - Channel 38	AI189	Amps	5	2662/2663	
Amps Max Demand: Channel 39	Max Current Demand - Channel 39	AI190	Amps	5	2664/2665	
Amps Max Demand: Channel 40	Max Current Demand - Channel 40	AI191	Amps	5	2666/2667	
Amps Max Demand: Channel 41	Max Current Demand - Channel 41	AI192	Amps	5	2668/2669	
Amps Max Demand: Channel 42	Max Current Demand - Channel 42	AI193	Amps	5	2670/2671	

E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Max Amps: Channel 1	Max Instantaneous Current - Channel 1	AI194	Amps	5	2756/2757	
Max Amps: Channel 2	Max Instantaneous Current - Channel 2	AI195	Amps	5	2758/2759	
Max Amps: Channel 3	Max Instantaneous Current - Channel 3	AI196	Amps	5	2760/2761	
Max Amps: Channel 4	Max Instantaneous Current - Channel 4	AI197	Amps	5	2762/2763	
Max Amps: Channel 5	Max Instantaneous Current - Channel 5	AI198	Amps	5	2764/2765	
Max Amps: Channel 6	Max Instantaneous Current - Channel 6	AI199	Amps	5	2766/2767	
Max Amps: Channel 7	Max Instantaneous Current - Channel 7	AI200	Amps	5	2768/2769	
Max Amps: Channel 8	Max Instantaneous Current - Channel 8	AI201	Amps	5	2770/2771	
Max Amps: Channel 9	Max Instantaneous Current - Channel 9	AI202	Amps	5	2772/2773	
Max Amps: Channel 10	Max Instantaneous Current - Channel 10	AI203	Amps	5	2774/2775	
Max Amps: Channel 11	Max Instantaneous Current - Channel 11	AI204	Amps	5	2776/2777	
Max Amps: Channel 12	Max Instantaneous Current - Channel 12	AI205	Amps	5	2778/2779	
Max Amps: Channel 13	Max Instantaneous Current - Channel 13	AI206	Amps	5	2780/2781	
Max Amps: Channel 14	Max Instantaneous Current - Channel 14	AI207	Amps	5	2782/2783	
Max Amps: Channel 15	Max Instantaneous Current - Channel 15	AI208	Amps	5	2784/2785	
Max Amps: Channel 16	Max Instantaneous Current - Channel 16	AI209	Amps	5	2786/2787	
Max Amps: Channel 17	Max Instantaneous Current - Channel 17	AI210	Amps	5	2788/2789	
Max Amps: Channel 18	Max Instantaneous Current - Channel 18	AI211	Amps	5	2790/2791	
Max Amps: Channel 19	Max Instantaneous Current - Channel 19	AI212	Amps	5	2792/2793	
Max Amps: Channel 20	Max Instantaneous Current - Channel 20	AI213	Amps	5	2794/2795	
Max Amps: Channel 21	Max Instantaneous Current - Channel 21	AI214	Amps	5	2796/2797	
Max Amps: Channel 22	Max Instantaneous Current - Channel 22	AI215	Amps	5	2798/2799	
Max Amps: Channel 23	Max Instantaneous Current - Channel 23	AI216	Amps	5	2800/2801	
Max Amps: Channel 24	Max Instantaneous Current - Channel 24	AI217	Amps	5	2802/2803	
Max Amps: Channel 25	Max Instantaneous Current - Channel 25	AI218	Amps	5	2804/2805	
Max Amps: Channel 26	Max Instantaneous Current - Channel 26	AI219	Amps	5	2806/2807	

E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Max Amps: Channel 27	Max Instantaneous Current - Channel 27	AI220	Amps	5	2808/2809	
Max Amps: Channel 28	Max Instantaneous Current - Channel 28	AI221	Amps	5	2810/2811	
Max Amps: Channel 29	Max Instantaneous Current - Channel 29	AI222	Amps	5	2812/2813	
Max Amps: Channel 30	Max Instantaneous Current - Channel 30	AI223	Amps	5	2814/2815	
Max Amps: Channel 31	Max Instantaneous Current - Channel 31	AI224	Amps	5	2816/2817	
Max Amps: Channel 32	Max Instantaneous Current - Channel 32	AI225	Amps	5	2818/2819	
Max Amps: Channel 33	Max Instantaneous Current - Channel 33	AI226	Amps	5	2820/2821	
Max Amps: Channel 34	Max Instantaneous Current - Channel 34	AI227	Amps	5	2822/2823	
Max Amps: Channel 35	Max Instantaneous Current - Channel 35	AI228	Amps	5	2824/2825	
Max Amps: Channel 36	Max Instantaneous Current - Channel 36	AI229	Amps	5	2826/2827	
Max Amps: Channel 37	Max Instantaneous Current - Channel 37	AI230	Amps	5	2828/2829	
Max Amps: Channel 38	Max Instantaneous Current - Channel 38	AI231	Amps	5	2830/2831	
Max Amps: Channel 39	Max Instantaneous Current - Channel 39	AI232	Amps	5	2832/2833	
Max Amps: Channel 40	Max Instantaneous Current - Channel 40	AI233	Amps	5	2834/2835	
Max Amps: Channel 41	Max Instantaneous Current - Channel 41	AI234	Amps	5	2836/2837	
Max Amps: Channel 42	Max Instantaneous Current - Channel 42	AI235	Amps	5	2838/2839	
Analog_Value objects						
Configuration (bit 0 is LSB):	Configuration (bit 0 is LSB):	AV1	n/a	1	6	Bit 0: 0 = odd-even, 1 = sequential Bit 1: 0 = odd-even, 1 = sequential Bits 2-15: future use Examples: Value 0 = Odd/Even Value 1 = Reserved for Solid-Core Value 2 = Sequential Value 3 = Reserved for Solid-Core
# of Sub-Intervals per Demand Int.	Number of Sub-Interval per Dem Interval	AV2	n/a	1	71	Sets the number of sub-intervals that make a single demand interval. For block demand, set this to 1.
Sub-Interval Length in seconds.	Sub-Interval Length in seconds.	AV3	n/a	1	72	Sub-Interval Length in seconds. For sync-to-comms, set this to 0.
Branch 1 CT Size	Branch 1 CT Size	AV4	Amps	5	73	These are writable ONLY on E31Bxxx/E31Cxxx split-core models. These are NOT WRITABLE on E30Bxxx/E30Cxxx solid-core models because the CT size is fixed (at 100 A). Other values written revert to 100 A the next time the meter is scanned.
Branch 2 CT Size	Branch 2 CT Size	AV5	Amps	5	74	
Branch 3 CT Size	Branch 3 CT Size	AV6	Amps	5	75	
Branch 4 CT Size	Branch 4 CT Size	AV7	Amps	5	76	
Branch 5 CT Size	Branch 5 CT Size	AV8	Amps	5	77	

E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Branch 6 CT Size	Branch 6 CT Size	AV9	Amps	5	78	
Branch 7 CT Size	Branch 7 CT Size	AV10	Amps	5	79	
Branch 8 CT Size	Branch 8 CT Size	AV11	Amps	5	80	
Branch 9 CT Size	Branch 9 CT Size	AV12	Amps	5	81	
Branch 10 CT Size	Branch 10 CT Size	AV13	Amps	5	82	
Branch 11 CT Size	Branch 11 CT Size	AV14	Amps	5	83	
Branch 12 CT Size	Branch 12 CT Size	AV15	Amps	5	84	
Branch 13 CT Size	Branch 13 CT Size	AV16	Amps	5	85	
Branch 14 CT Size	Branch 14 CT Size	AV17	Amps	5	86	
Branch 15 CT Size	Branch 15 CT Size	AV18	Amps	5	87	
Branch 16 CT Size	Branch 16 CT Size	AV19	Amps	5	88	
Branch 17 CT Size	Branch 17 CT Size	AV20	Amps	5	89	
Branch 18 CT Size	Branch 18 CT Size	AV21	Amps	5	90	
Branch 19 CT Size	Branch 19 CT Size	AV22	Amps	5	91	
Branch 20 CT Size	Branch 20 CT Size	AV23	Amps	5	92	
Branch 21 CT Size	Branch 21 CT Size	AV24	Amps	5	93	
Branch 22 CT Size	Branch 22 CT Size	AV25	Amps	5	94	
Branch 23 CT Size	Branch 23 CT Size	AV26	Amps	5	95	
Branch 24 CT Size	Branch 24 CT Size	AV27	Amps	5	96	
Branch 25 CT Size	Branch 25 CT Size	AV28	Amps	5	97	
Branch 26 CT Size	Branch 26 CT Size	AV29	Amps	5	98	
Branch 27 CT Size	Branch 27 CT Size	AV30	Amps	5	99	
Branch 28 CT Size	Branch 28 CT Size	AV31	Amps	5	100	
Branch 29 CT Size	Branch 29 CT Size	AV32	Amps	5	101	
Branch 30 CT Size	Branch 30 CT Size	AV33	Amps	5	102	
Branch 31 CT Size	Branch 31 CT Size	AV34	Amps	5	103	
Branch 32 CT Size	Branch 32 CT Size	AV35	Amps	5	104	
Branch 33 CT Size	Branch 33 CT Size	AV36	Amps	5	105	
Branch 34 CT Size	Branch 34 CT Size	AV37	Amps	5	106	
Branch 35 CT Size	Branch 35 CT Size	AV38	Amps	5	107	
Branch 36 CT Size	Branch 36 CT Size	AV39	Amps	5	108	
Branch 37 CT Size	Branch 37 CT Size	AV40	Amps	5	109	
Branch 38 CT Size	Branch 38 CT Size	AV41	Amps	5	110	
Branch 39 CT Size	Branch 39 CT Size	AV42	Amps	5	111	
Branch 40 CT Size	Branch 40 CT Size	AV43	Amps	5	112	
Branch 41 CT Size	Branch 41 CT Size	AV44	Amps	5	113	
Branch 42 CT Size	Branch 42 CT Size	AV45	Amps	5	114	
AUX Channel (phase 1) CT Size	AUX Channel (phase 1) CT Size	AV46	Amps	5	115	
AUX Channel (phase 2) CT Size	AUX Channel (phase 2) CT Size	AV47	Amps	5	116	
AUX Channel (phase 3) CT Size	AUX Channel (phase 3) CT Size	AV48	Amps	5	117	
AUX Channel (Neutral) CT Size	AUX Channel (Neutral) CT Size	AV49	Amps	5	118	

E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Branch 1 Breaker Size	Branch 1 Breaker Size	AV50	Amps	5	119	
Branch 2 Breaker Size	Branch 2 Breaker Size	AV51	Amps	5	120	
Branch 3 Breaker Size	Branch 3 Breaker Size	AV52	Amps	5	121	
Branch 4 Breaker Size	Branch 4 Breaker Size	AV53	Amps	5	122	
Branch 5 Breaker Size	Branch 5 Breaker Size	AV54	Amps	5	123	
Branch 6 Breaker Size	Branch 6 Breaker Size	AV55	Amps	5	124	
Branch 7 Breaker Size	Branch 7 Breaker Size	AV56	Amps	5	125	
Branch 8 Breaker Size	Branch 8 Breaker Size	AV57	Amps	5	126	
Branch 9 Breaker Size	Branch 9 Breaker Size	AV58	Amps	5	127	
Branch 10 Breaker Size	Branch 10 Breaker Size	AV59	Amps	5	128	
Branch 11 Breaker Size	Branch 11 Breaker Size	AV60	Amps	5	129	
Branch 12 Breaker Size	Branch 12 Breaker Size	AV61	Amps	5	130	
Branch 13 Breaker Size	Branch 13 Breaker Size	AV62	Amps	5	131	
Branch 14 Breaker Size	Branch 14 Breaker Size	AV63	Amps	5	132	
Branch 15 Breaker Size	Branch 15 Breaker Size	AV64	Amps	5	133	
Branch 16 Breaker Size	Branch 16 Breaker Size	AV65	Amps	5	134	
Branch 17 Breaker Size	Branch 17 Breaker Size	AV66	Amps	5	135	
Branch 18 Breaker Size	Branch 18 Breaker Size	AV67	Amps	5	136	
Branch 19 Breaker Size	Branch 19 Breaker Size	AV68	Amps	5	137	
Branch 20 Breaker Size	Branch 20 Breaker Size	AV69	Amps	5	138	
Branch 21 Breaker Size	Branch 21 Breaker Size	AV70	Amps	5	139	
Branch 22 Breaker Size	Branch 22 Breaker Size	AV71	Amps	5	140	
Branch 23 Breaker Size	Branch 23 Breaker Size	AV72	Amps	5	141	
Branch 24 Breaker Size	Branch 24 Breaker Size	AV73	Amps	5	142	
Branch 25 Breaker Size	Branch 25 Breaker Size	AV74	Amps	5	143	
Branch 26 Breaker Size	Branch 26 Breaker Size	AV75	Amps	5	144	
Branch 27 Breaker Size	Branch 27 Breaker Size	AV76	Amps	5	145	
Branch 28 Breaker Size	Branch 28 Breaker Size	AV77	Amps	5	146	
Branch 29 Breaker Size	Branch 29 Breaker Size	AV78	Amps	5	147	
Branch 30 Breaker Size	Branch 30 Breaker Size	AV79	Amps	5	148	
Branch 31 Breaker Size	Branch 31 Breaker Size	AV80	Amps	5	149	
Branch 32 Breaker Size	Branch 32 Breaker Size	AV81	Amps	5	150	
Branch 33 Breaker Size	Branch 33 Breaker Size	AV82	Amps	5	151	
Branch 34 Breaker Size	Branch 34 Breaker Size	AV83	Amps	5	152	
Branch 35 Breaker Size	Branch 35 Breaker Size	AV84	Amps	5	153	
Branch 36 Breaker Size	Branch 36 Breaker Size	AV85	Amps	5	154	
Branch 37 Breaker Size	Branch 37 Breaker Size	AV86	Amps	5	155	
Branch 38 Breaker Size	Branch 38 Breaker Size	AV87	Amps	5	156	
Branch 39 Breaker Size	Branch 39 Breaker Size	AV88	Amps	5	157	
Branch 40 Breaker Size	Branch 40 Breaker Size	AV89	Amps	5	158	
Branch 41 Breaker Size	Branch 41 Breaker Size	AV90	Amps	5	159	
Branch 42 Breaker Size	Branch 42 Breaker Size	AV91	Amps	5	160	

E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
AUX Channel (phase 1) Breaker Size	AUX Channel (phase 1) Breaker Size	AV92	Amps	5	161	
AUX Channel (phase 2) Breaker Size	AUX Channel (phase 2) Breaker Size	AV93	Amps	5	162	
AUX Channel (phase 3) Breaker Size	AUX Channel (phase 3) Breaker Size	AV94	Amps	5	163	
AUX Channel (Neutral) Breaker Size	AUX Channel (Neutral) Breaker Size	AV95	Amps	5	164	
High-High Latching Alarm Time Delay	Alarm event duration threshold	AV96	Seconds	1	165	These timers control entry into a latching alarm state. A return to a non-alarm state is instantaneous. All channels use the same global timers. Latching Alarm On Time applies to all Latching Alarms. The parameter measurement rate is expected to be approximately 2.5 sec, which limits the effective resolution of these timers.
High Latching Alarm Time Delay	Alarm event duration threshold	AV97	Seconds	1	166	
Low Latching Alarm Time Delay	Alarm event duration threshold	AV98	Seconds	1	167	
Low-Low Latching Alarm Time Delay	Alarm event duration threshold	AV99	Seconds	1	168	
Latching Alarm ON Time	From initial current to alarms enabled	AV100	Seconds	1	169	Latching Alarm ON Time (when current is above Low-Low alarm and ON Time elapses then ON state is declared for all latching alarms, ON State enables Alarm Time Delays)
Latching Alarms time until OFF state	time until OFF state declared	AV101	Seconds	1	170	Latching Alarms time until OFF state is declared for all latching alarms (when current is below Low-Low alarm and ON state was declared)
High-High Latching Alarm Threshold	% of breaker size	AV102	Percent	1	171	
High Alarm Latching Alarm Threshold	% of breaker size	AV103	Percent	1	172	
Low Alarm Latching Alarm Threshold	% of breaker size	AV104	Percent	1	173	
Low Low Latching Alarm Threshold	% of breaker size	AV105	Percent	1	174	
Non-Latching High Threshold	% of breaker size	AV106	Percent	1	175	
Non-Latching Low Threshold	% of breaker size	AV107	Percent	1	176	
Non-Latching Hysteresis (0-100%)	Non-Latching Hysteresis (% of setpoint)	AV108	Percent	1	177	
Branch 1 Alarm Status	Write 0 to alarm bits to clear alarms	AV109	n/a	1	178	Latching Alarms are cleared by writing a 0 to its alarm bit. Writing to a Non-Latching alarm is ignored. Bit 0: High High Latching Alarm Bit 1: High Latching Alarm Bit 2: Low Latching Alarm Bit 3: Low Low Latching Alarm Bit 4: Latching Alarm OFF state declared (1=OFF; ON state must have been achieved prior) Bit 5-7: Reserved for future use (reads 0) Bit 8: High Non-Latching Alarm Bit 9: Low Non-Latching Alarm Bit 10-15: Reserved for future use (reads 0)
Branch 2 Alarm Status	Write 0 to alarm bits to clear alarms	AV110	n/a	1	179	
Branch 3 Alarm Status	Write 0 to alarm bits to clear alarms	AV111	n/a	1	180	
Branch 4 Alarm Status	Write 0 to alarm bits to clear alarms	AV112	n/a	1	181	

E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Branch 5 Alarm Status	Write 0 to alarm bits to clear alarms	AV113	n/a	1	182	
Branch 6 Alarm Status	Write 0 to alarm bits to clear alarms	AV114	n/a	1	183	
Branch 7 Alarm Status	Write 0 to alarm bits to clear alarms	AV115	n/a	1	184	
Branch 8 Alarm Status	Write 0 to alarm bits to clear alarms	AV116	n/a	1	185	
Branch 9 Alarm Status	Write 0 to alarm bits to clear alarms	AV117	n/a	1	186	
Branch 10 Alarm Status	Write 0 to alarm bits to clear alarms	AV118	n/a	1	187	
Branch 11 Alarm Status	Write 0 to alarm bits to clear alarms	AV119	n/a	1	188	
Branch 12 Alarm Status	Write 0 to alarm bits to clear alarms	AV120	n/a	1	189	
Branch 13 Alarm Status	Write 0 to alarm bits to clear alarms	AV121	n/a	1	190	
Branch 14 Alarm Status	Write 0 to alarm bits to clear alarms	AV122	n/a	1	191	
Branch 15 Alarm Status	Write 0 to alarm bits to clear alarms	AV123	n/a	1	192	
Branch 16 Alarm Status	Write 0 to alarm bits to clear alarms	AV124	n/a	1	193	
Branch 17 Alarm Status	Write 0 to alarm bits to clear alarms	AV125	n/a	1	194	
Branch 18 Alarm Status	Write 0 to alarm bits to clear alarms	AV126	n/a	1	195	
Branch 19 Alarm Status	Write 0 to alarm bits to clear alarms	AV127	n/a	1	196	
Branch 20 Alarm Status	Write 0 to alarm bits to clear alarms	AV128	n/a	1	197	
Branch 21 Alarm Status	Write 0 to alarm bits to clear alarms	AV129	n/a	1	198	
Branch 22 Alarm Status	Write 0 to alarm bits to clear alarms	AV130	n/a	1	199	
Branch 23 Alarm Status	Write 0 to alarm bits to clear alarms	AV131	n/a	1	200	
Branch 24 Alarm Status	Write 0 to alarm bits to clear alarms	AV132	n/a	1	201	
Branch 25 Alarm Status	Write 0 to alarm bits to clear alarms	AV133	n/a	1	202	
Branch 26 Alarm Status	Write 0 to alarm bits to clear alarms	AV134	n/a	1	203	
Branch 27 Alarm Status	Write 0 to alarm bits to clear alarms	AV135	n/a	1	204	
Branch 28 Alarm Status	Write 0 to alarm bits to clear alarms	AV136	n/a	1	205	
Branch 29 Alarm Status	Write 0 to alarm bits to clear alarms	AV137	n/a	1	206	
Branch 30 Alarm Status	Write 0 to alarm bits to clear alarms	AV138	n/a	1	207	

E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Branch 31 Alarm Status	Write 0 to alarm bits to clear alarms	AV139	n/a	1	208	
Branch 32 Alarm Status	Write 0 to alarm bits to clear alarms	AV140	n/a	1	209	
Branch 33 Alarm Status	Write 0 to alarm bits to clear alarms	AV141	n/a	1	210	
Branch 34 Alarm Status	Write 0 to alarm bits to clear alarms	AV142	n/a	1	211	
Branch 35 Alarm Status	Write 0 to alarm bits to clear alarms	AV143	n/a	1	212	
Branch 36 Alarm Status	Write 0 to alarm bits to clear alarms	AV144	n/a	1	213	
Branch 37 Alarm Status	Write 0 to alarm bits to clear alarms	AV145	n/a	1	214	
Branch 38 Alarm Status	Write 0 to alarm bits to clear alarms	AV146	n/a	1	215	
Branch 39 Alarm Status	Write 0 to alarm bits to clear alarms	AV147	n/a	1	216	
Branch 40 Alarm Status	Write 0 to alarm bits to clear alarms	AV148	n/a	1	217	
Branch 41 Alarm Status	Write 0 to alarm bits to clear alarms	AV149	n/a	1	218	
Branch 42 Alarm Status	Write 0 to alarm bits to clear alarms	AV150	n/a	1	219	
AUX Channel (phase 1) Alarm Status	Write 0 to alarm bits to clear alarms	AV151	n/a	1	220	
AUX Channel (phase 2) Alarm Status	Write 0 to alarm bits to clear alarms	AV152	n/a	1	221	
AUX Channel (phase 3) Alarm Status	Write 0 to alarm bits to clear alarms	AV153	n/a	1	222	
AUX Channel (Neutral) Alarm Status	Write 0 to alarm bits to clear alarms	AV154	n/a	1	223	
Overvoltage Alarm Timer	Alarm event duration threshold	AV155	Seconds	1	236	Not used on E3xCxxx models; reports QNAN Controls entry into Overvoltage alarm state. A return to a non-alarm state is instantaneous. All channels use these same global timers. Note that the parameter measurement update rate is 1.6 sec, which limits the effective resolution of these timers.
Undervoltage Alarm Timer	Alarm event duration threshold	AV156	Seconds	1	237	Not used on E3xCxxx models; reports QNAN Controls entry into Undervoltage alarm state. A return to a non-alarm state is instantaneous. All channels use these same global timers. Note that the parameter measurement update rate is 1.6 sec, which limits the effective resolution of these timers.
Overvoltage Alarm Threshold	Overvoltage level threshold (0=OFF)	AV157	Volts	5	238	Not used on E3xCxxx models; reports QNAN
Undervoltage Alarm Threshold	Undervoltage level threshold (0=OFF)	AV158	Volts	5	239	Not used on E3xCxxx models; reports QNAN
Voltage Alarm Hysteresis	Voltage Alarm Hysteresis (% of setpoint)	AV159	Percent	1	240	Not used on E3xCxxx models; reports QNAN Percentage of setpoint

E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Voltage 1 Alarm Status	Write 0 to alarm bits to clear alarms	AV160	n/a	1	241	Not used on E3xCxxx models; reports QNAN Latching Alarms are cleared by writing a 0 to its alarm bit. Writing to Non-Latching alarm is ignored. Bit 0: High Latching Alarm Bit 1: Low Latching Alarm Bit 2-7: Reserved for future use (reads 0) Bit 8: High Non-Latching Alarm Bit 9: Low Non-Latching Alarm Bit 10-15: Reserved for future use (reads 0)
Voltage 2 Alarm Status	Write 0 to alarm bits to clear alarms	AV161	n/a	1	242	Not used on E3xCxxx models; reports QNAN Latching Alarms are cleared by writing a 0 to its alarm bit. Writing to Non-Latching alarm is ignored. Bit 0: High Latching Alarm Bit 1: Low Latching Alarm Bit 2-7: Reserved for future use (reads 0) Bit 8: High Non-Latching Alarm Bit 9: Low Non-Latching Alarm Bit 10-15: Reserved for future use (reads 0)
Voltage 3 Alarm Status	Write 0 to alarm bits to clear alarms	AV162	n/a	1	243	Not used on E3xCxxx models; reports QNAN Latching Alarms are cleared by writing a 0 to its alarm bit. Writing to Non-Latching alarm is ignored. Bit 0: High Latching Alarm Bit 1: Low Latching Alarm Bit 2-7: Reserved for future use (reads 0) Bit 8: High Non-Latching Alarm Bit 9: Low Non-Latching Alarm Bit 10-15: Reserved for future use (reads 0)
Power Up Counter	Power Up Counter	AV163	n/a	1	531	Number of power-up cycles (write 0 to reset)
User Defined Status Register	1 in bit 0 enables CT phase assignment	AV164	n/a	1	62017	User Defined Status Register: Bit 0: Enable User CT Phase Assignment Bit 1-15: Reserved
Voltage Phase for Aux Channel 1	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV165	n/a	1	62158	Not used on E3xCxxx models; reports QNAN
Voltage Phase for Aux Channel 2	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV166	n/a	1	62159	Not used on E3xCxxx models; reports QNAN
Voltage Phase for Aux Channel 3	0=phase-1/A, 1=phase-2/B, 2=phase-3/C	AV167	n/a	1	62160	Not used on E3xCxxx models; reports QNAN
Analog_Output objects						
AUX Resets: Write value to reset	10203=kWh, 29877=Max Current & Max kW	AO1	n/a	1	294	Write the listed value to perform the corresponding reset: 10203 = Clear kWh value to zero 29877 = Clear Max Current and Max kW values to zero
Global Resets: Write value to reset	10203=kWh, others…	AO2	n/a	1	295	Write the listed value to perform the corresponding reset: 26012 = Begin new Demand Sub-interval 26013 = Reset Demand 31010 = Reset all Latching Alarms 10203 = Clear all kWh values to zero 29877 = Clear all Max Current and Max kW values to zero 20097 = Clear all Max Demand values to zero
Channel 1 Reset	10203=kWh, 29877=Max Current & Max kW	AO3	n/a	1	1126	Write the listed value to perform the corresponding reset: 10203 = Clear kWh value to zero 29877 = Clear Max Current and Max kW values to zero
Channel 2 Reset	10203=kWh, 29877=Max Current & Max kW	AO4	n/a	1	1127	

E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters cont.

Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Channel 3 Reset	10203=kWh, 29877=Max Current & Max kW	AO5	n/a	1	1128	
Channel 4 Reset	10203=kWh, 29877=Max Current & Max kW	AO6	n/a	1	1129	
Channel 5 Reset	10203=kWh, 29877=Max Current & Max kW	AO7	n/a	1	1130	
Channel 6 Reset	10203=kWh, 29877=Max Current & Max kW	AO8	n/a	1	1131	
Channel 7 Reset	10203=kWh, 29877=Max Current & Max kW	AO9	n/a	1	1132	
Channel 8 Reset	10203=kWh, 29877=Max Current & Max kW	AO10	n/a	1	1133	
Channel 9 Reset	10203=kWh, 29877=Max Current & Max kW	AO11	n/a	1	1134	
Channel 10 Reset	10203=kWh, 29877=Max Current & Max kW	AO12	n/a	1	1135	
Channel 11 Reset	10203=kWh, 29877=Max Current & Max kW	AO13	n/a	1	1136	
Channel 12 Reset	10203=kWh, 29877=Max Current & Max kW	AO14	n/a	1	1137	
Channel 13 Reset	10203=kWh, 29877=Max Current & Max kW	AO15	n/a	1	1138	
Channel 14 Reset	10203=kWh, 29877=Max Current & Max kW	AO16	n/a	1	1139	
Channel 15 Reset	10203=kWh, 29877=Max Current & Max kW	AO17	n/a	1	1140	
Channel 16 Reset	10203=kWh, 29877=Max Current & Max kW	AO18	n/a	1	1141	
Channel 17 Reset	10203=kWh, 29877=Max Current & Max kW	AO19	n/a	1	1142	
Channel 18 Reset	10203=kWh, 29877=Max Current & Max kW	AO20	n/a	1	1143	
Channel 19 Reset	10203=kWh, 29877=Max Current & Max kW	AO21	n/a	1	1144	
Channel 20 Reset	10203=kWh, 29877=Max Current & Max kW	AO22	n/a	1	1145	
Channel 21 Reset	10203=kWh, 29877=Max Current & Max kW	AO23	n/a	1	1146	

E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters cont.

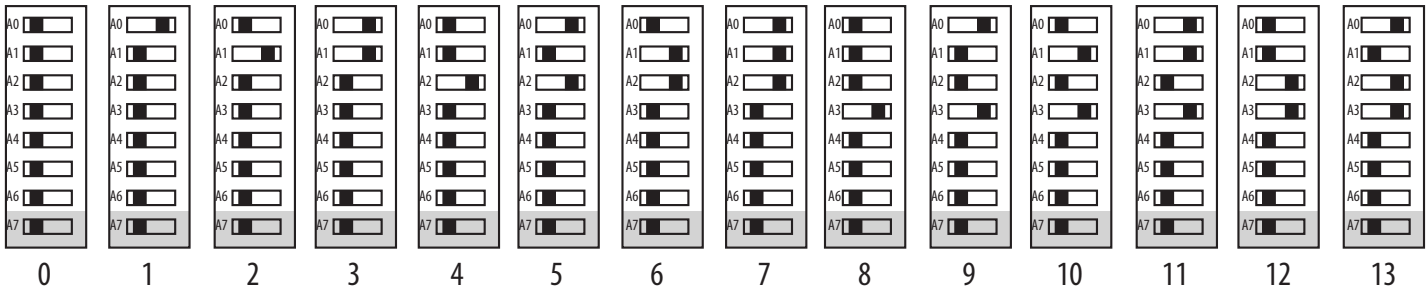
Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Channel 22 Reset	10203=kWh, 29877=Max Current & Max kW	AO24	n/a	1	1147	
Channel 23 Reset	10203=kWh, 29877=Max Current & Max kW	AO25	n/a	1	1148	
Channel 24 Reset	10203=kWh, 29877=Max Current & Max kW	AO26	n/a	1	1149	
Channel 25 Reset	10203=kWh, 29877=Max Current & Max kW	AO27	n/a	1	1150	
Channel 26 Reset	10203=kWh, 29877=Max Current & Max kW	AO28	n/a	1	1151	
Channel 27 Reset	10203=kWh, 29877=Max Current & Max kW	AO29	n/a	1	1152	
Channel 28 Reset	10203=kWh, 29877=Max Current & Max kW	AO30	n/a	1	1153	
Channel 29 Reset	10203=kWh, 29877=Max Current & Max kW	AO31	n/a	1	1154	
Channel 30 Reset	10203=kWh, 29877=Max Current & Max kW	AO32	n/a	1	1155	
Channel 31 Reset	10203=kWh, 29877=Max Current & Max kW	AO33	n/a	1	1156	
Channel 32 Reset	10203=kWh, 29877=Max Current & Max kW	AO34	n/a	1	1157	
Channel 33 Reset	10203=kWh, 29877=Max Current & Max kW	AO35	n/a	1	1158	
Channel 34 Reset	10203=kWh, 29877=Max Current & Max kW	AO36	n/a	1	1159	
Channel 35 Reset	10203=kWh, 29877=Max Current & Max kW	AO37	n/a	1	1160	
Channel 36 Reset	10203=kWh, 29877=Max Current & Max kW	AO38	n/a	1	1161	
Channel 37 Reset	10203=kWh, 29877=Max Current & Max kW	AO39	n/a	1	1162	
Channel 38 Reset	10203=kWh, 29877=Max Current & Max kW	AO40	n/a	1	1163	
Channel 39 Reset	10203=kWh, 29877=Max Current & Max kW	AO41	n/a	1	1164	
Channel 40 Reset	10203=kWh, 29877=Max Current & Max kW	AO42	n/a	1	1165	

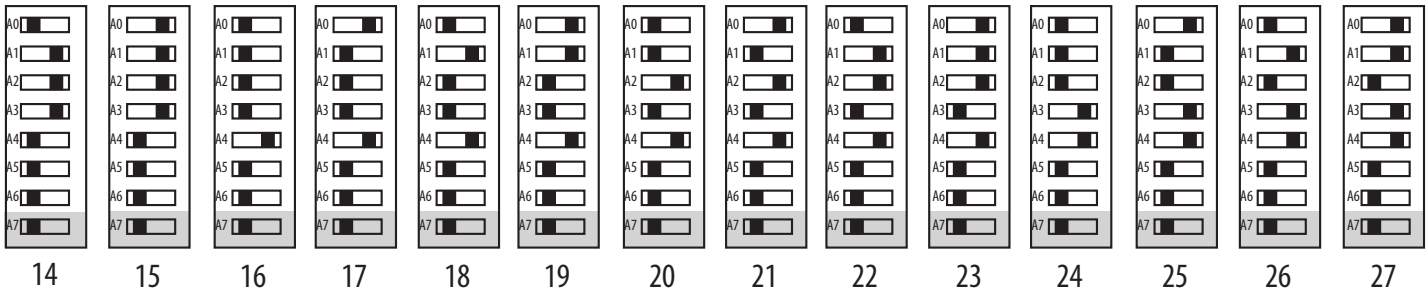
E30Bxxx/Cxxx and E31Bxxx/Cxxx Branch Circuit Meters cont.

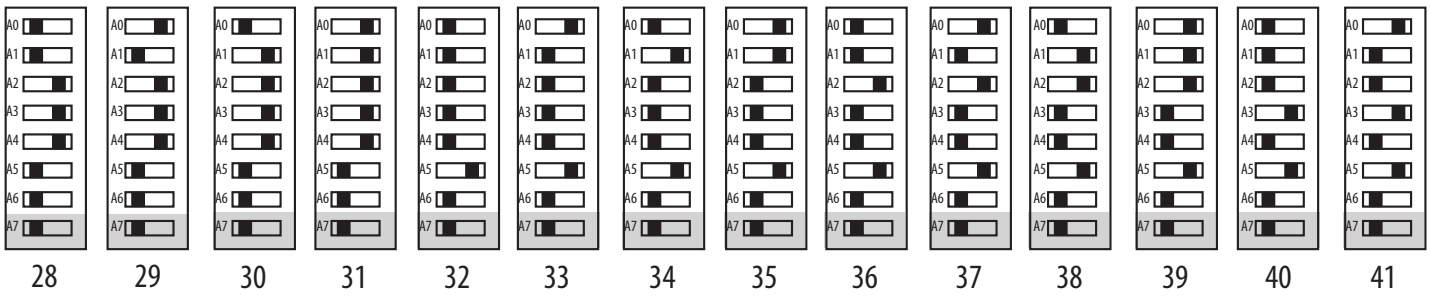
Data Variable	Description	BACnet Object	Units	COV_ Increment	Modbus Address	Comments
Channel 41 Reset	10203=kWh, 29877=Max Current & Max kW	AO43	n/a	1	1166	
Channel 42 Reset	10203=kWh, 29877=Max Current & Max kW	AO44	n/a	1	1167	

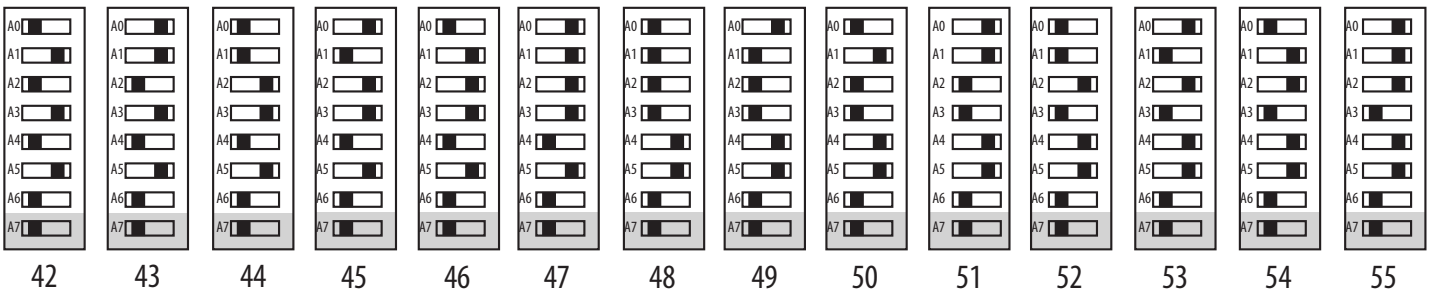
APPENDIX 2: DIP SWITCH ADDRESS SETTINGS

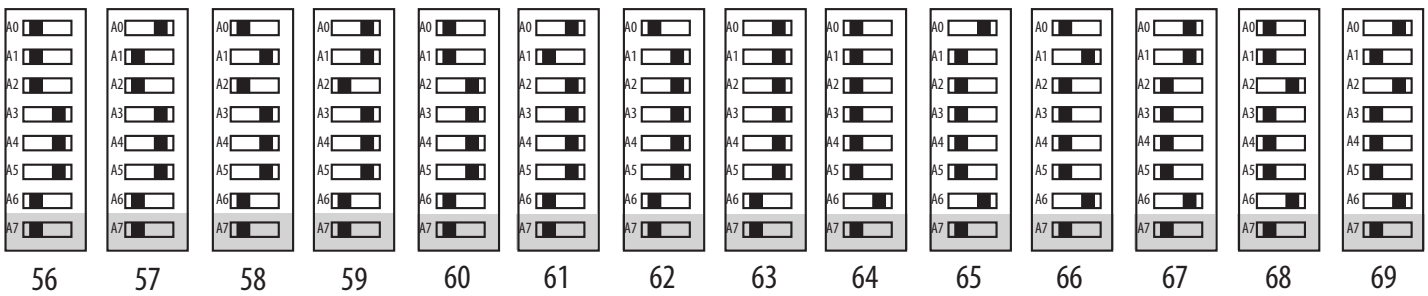
Switch A7 is used to select the BACnet physical interface. It appears shaded here to indicate it is not part of the MAC address.

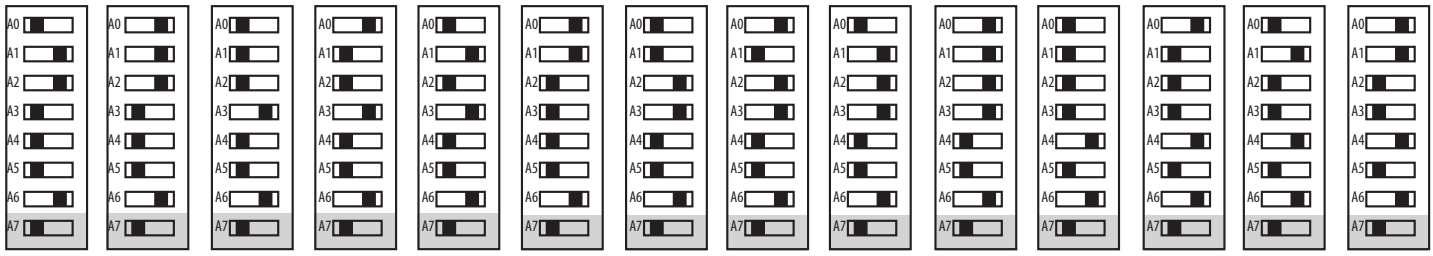




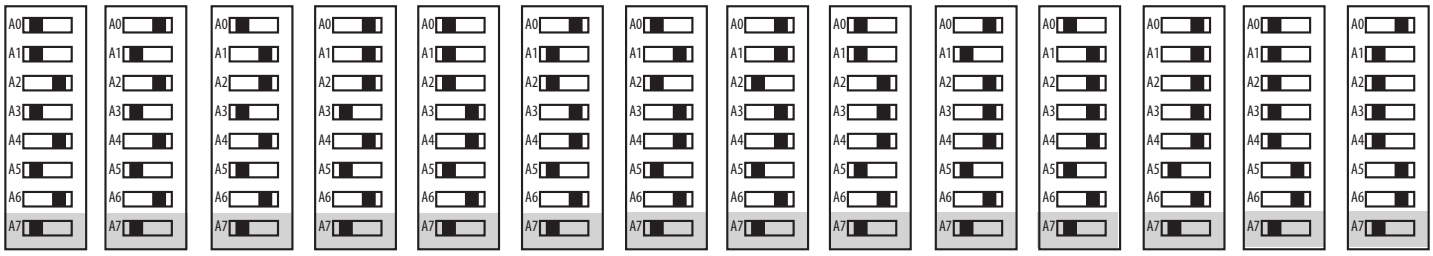




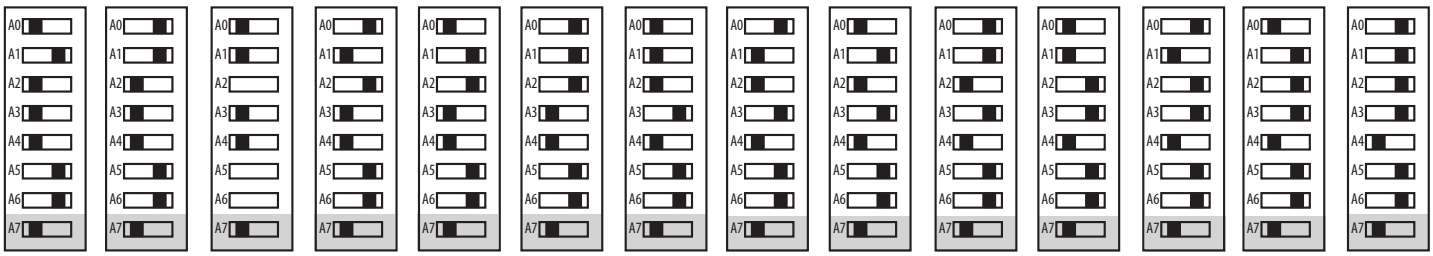




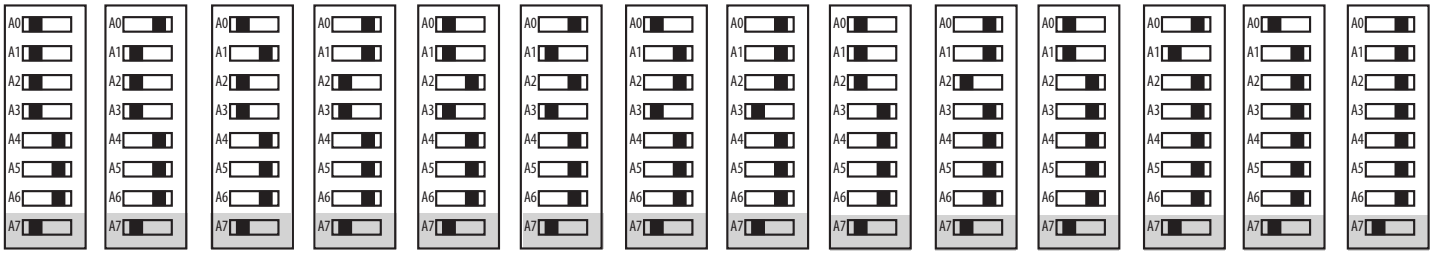
70 71 72 73 74 75 76 77 78 79 80 81 82 83



84 85 86 87 88 89 90 91 92 93 94 95 96 97



98 99 100 101 102 103 104 105 106 107 108 109 110 111



112 113 114 115 116 117 118 119 120 123 124 125 126 127

APPENDIX 3: QUICK GUIDE TO CALCULATE THE NUMBER OF METERS SUPPORTED

The E8950 can support up to 32 meters (maximum) and up to 1000 total BACnet points.

The installer can mix meter types, but only from the list of supported meters.

Set all meters to a common baud rate. The combined number of points (see table below) must not exceed 1000.

Meter Type	Modbus Addresses per Meter	BACnet Points per Address	Total Number of Points per Meter	Maximum number of Meters Supported
E30Ax42	1	783	783	1
E30Bx42	1	446	446	2
E30Cx42	1	446	446	2
E30Ax84	2	783	1566	0
E30Bx84	2	446	892	1
E30Cx84	2	446	892	1
E31A42	2	783	1566	0*
E31B42	2	446	892	1
E31C42	2	446	892	1
E31A84	2	783	1566	0
E31B84	2	446	892	1
E31C84	2	446	892	1
E50C2	1	63	63	15
E50C3	1	63	63	15
E51C2	1	94	94	10
E51C3	1	94	94	10
H8035	1	3	3	32**
H8036	1	28	28	32**
H8163-CB	1	54	54	18
H8238	8	73	584	1
H8436	1	34	34	29
H8437	1	66	66	15

** The E31A42 can be configured with help from Veris Customer Support.*

*** 32 meters maximum.*

