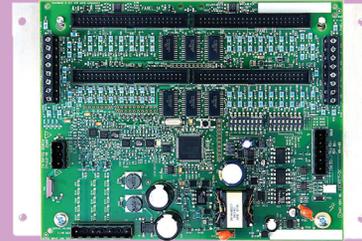


Panelboard Monitoring System

Monitor Current, Voltage, and Energy Consumption with One Device

BACNET
CONNECTIVITY
VIA NEW
E8950
GATEWAY



E3x Main Board

POWER
AT
BRANCH
LEVEL

DESCRIPTION

The E3x Series Panelboard Monitoring System provides a cost effective solution for electrical load management, making it ideally suited for applications where loads are dynamic, such as the data storage industry, lighting panels, etc.

The E3x series monitors the current, voltage, and energy consumption of each circuit in a panelboard including the main breaker. The accumulated information can be transmitted through the communications interface. Data updates occur roughly every two seconds to provide timely preventative maintenance information. As a circuit approaches the user-configured thresholds, alarm indicators are triggered, preventing costly downtime from overloaded circuits or failed loads. (See graph, facing page)

APPLICATIONS

- Load based cost allocation
- Overload protection
- Load management
- Load balancing
- Lighting circuits

FEATURES

- Revenue Grade measurements
- IEC Class 1 metering accuracy
- Up to 126 panelboards can be monitored on one RS-485 drop...simplifies wiring
- Reports volts, amps, power, and energy for each circuit...one product covers the whole panelboard
- 92 circuits with one product (84 branch circuits, 2 3-phase mains, 2 neutrals)... saves space
- 3/4", or 1", or 18 mm spaced solid-core current sensors...flexible installation
- Split-core version has two mounting options (DIN Rail or Snaptrack)... installation flexibility
- 4 user-configurable alarm threshold registers...improved load management
- Built-in ability to set the orientation and numbering of the circuits
- 1/4 amp to 100 amp solid-core monitoring...widest dynamic range in the industry
- 1, 2, 3 pole breaker support
- Applications for new construction (solid-core version) and retrofits (split-core version)
- Modbus RTU standard
- Modbus TCP over Ethernet available with addition of U013-0012...page 166
- BACnet IP or MS/TP available with addition of E8950...see page 164 (E30Ax84 and E31Axxx not supported)

NEW

SPECIFICATIONS



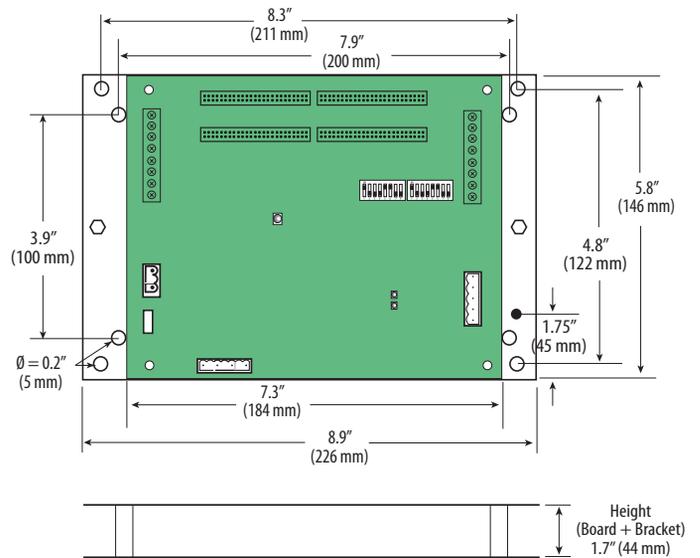
<i>Inputs:</i>	
Input Power	90-277VAC, 50/60 Hz
<i>Accuracy:</i>	
Power/Energy	IEC 62053-21 Class 1, ANSI C12.1-2008
Voltage	±0.5% of reading 90-277V line-to-neutral
<i>Operation:</i>	
Sampling Frequency	2560 Hz
Update Rate	1.8 seconds (both panels)
<i>Outputs:</i>	
Type	Modbus RTU
Connection	DIP switch-selectable 2-wire or 4-wire, RS-485
Address	DIP switch-selectable address 1 to 247 (in pairs of 2)
Baud Rate	DIP switch-selectable 9600, 19200, 38400
Parity	DIP switch-selectable NONE, ODD, EVEN
Communication Format	8-data-bits, 1-start-bit, 1-stop-bit
Termination	5-position depluggable connector (TX+ TX- SHIELD TX+/RX+ TX-/RX-)
Terminal Block Torque	4.4 to 5.3 in-lb (0.5 to 0.6 N-m)
<i>Mechanical:</i>	
Ribbon Cable Support	4 ft. (0.9 m) ribbon cable ships standard; up to 20 ft. (6 m) flat and round cables available
<i>Environmental:</i>	
Operating Temperature Range	0° to 60°C (32° to 140°F) (<95% RH noncondensing)
Storage Temperature Range	-40° to 70°C (-40° to 158°F)
Altitude of Operation	3000 m
Agency Approvals	UL508, EN61010

DATA OUTPUT

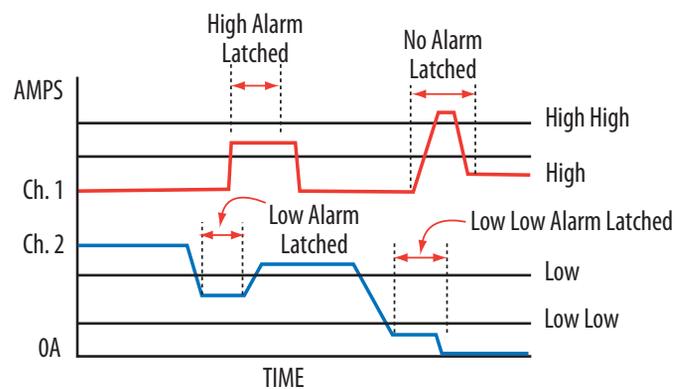
Monitoring at Mains	E3xA	E3xB	E3xC
Current per phase	●	●	●
Max. current per phase	●	●	●
Current demand per phase	●	●	●
Max. current demand per phase	●	●	●
Energy (kWh) per phase	●	●	●
Real Power (kW) per phase	●	●	●
Apparent Power (kVA)	●	●	●
Power factor total *	●	●	●
Power factor per phase	●	●	●
Voltage, L-L and average	●	●	●
Voltage, L-N and average	●	●	●
Voltage, L-N and per phase	●	●	●
Frequency (phase A)	●	●	●
Monitoring at Branch Circuit			
Current	●	●	●
Max. current	●	●	●
Current demand	●	●	●
Max. current demand	●	●	●
Real power (kW)	●	●	●
Real power (kW) demand	●	●	●
Real power (kW) demand max.	●	●	●
Energy (kWh) per circuit	●	●	●
Power factor	●	●	●
Apparent Power (kVA)	●	●	●
Modbus Alarms			
Voltage over/under	●	●	●
Current over/under	●	●	●

* Based on a 3-phase breaker rotation.

DIMENSIONAL DRAWINGS



OPERATION EXAMPLE



POWER/ENERGY MONITORING

ACCESSORIES

- Ribbon Cables, round or flat (CBLxxx)
- E3x cover (AE001)
- Modbus TCP Gateway (U013-0012)
- Modbus-to-BACnet Converter (E8950)
- Network Display (H8932, H8936)
- CTs (E31CT0, E31CT1, E31CT3)
- CTs for auxiliary inputs (H681x)
- Repair kit for E30 (AE006)



CBL022



AE001



U013-0012



E8950



H8932/H8936



E31CT0



E31CT1



E31CT3

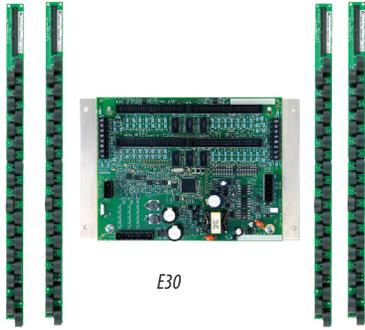


H681x

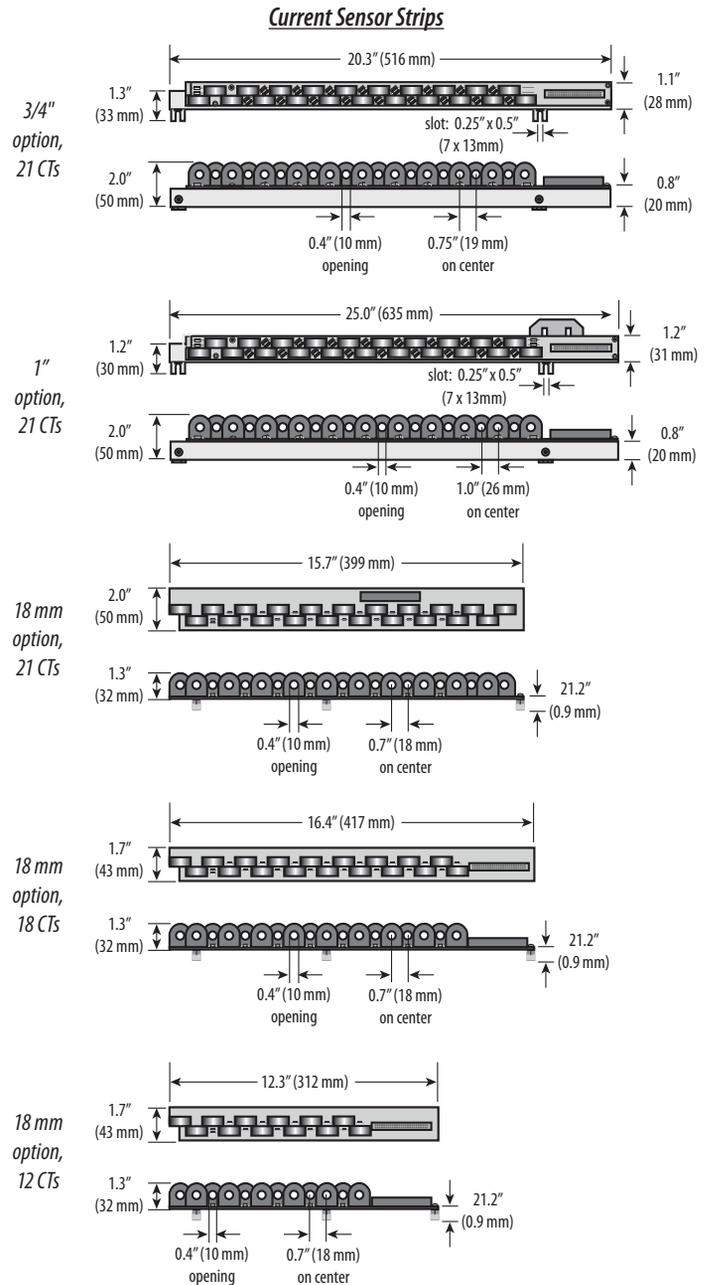


AE006

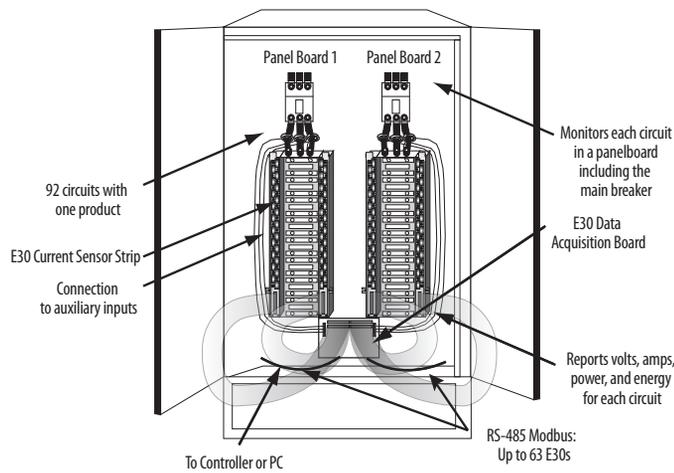
Panelboard Monitoring System – Solid-Core



DIMENSIONAL DRAWINGS



APPLICATION/WIRING EXAMPLE



SOLID-CORE CT SPECIFICATIONS

	100A Solid-Core CT
Voltage Rating	300VAC
Accuracy	±0.5%
Temperature	0° to 60°C
Agency	UL508 recognized, EN61010

ORDERING INFORMATION



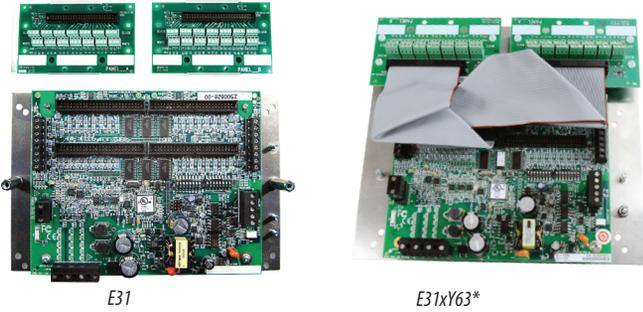
Description	CT Option	# of CTs and Ribbon Cables
E30 <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A = Advanced	0 = 100A, 3/4" spacing	24 = 2 strips of 12 CTs (18 mm only)
B = Intermediate	1 = 100A, 1" spacing	36 = 2 strips of 18 CTs (18 mm only)
C = Basic	2 = 100A, 18 mm spacing	42 = 2 strips of 21 CTs (3/4", 1", or 18 mm) with two 4-ft. flat ribbon cables
		48 = 4 strips of 12 CTs (18 mm only)
		72 = 4 strips of 18 CTs (18 mm only)
		84 = 4 strips of 21 CTs (3/4", 1", or 18 mm) with four 4-ft. flat ribbon cables

Example:

E30 A 0 42

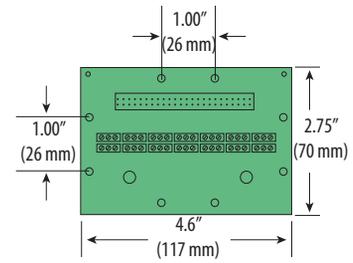
Free Configuration tool available from www.veris.com.
 Consult factory for additional mounting options.

Panelboard Monitoring System – Split-Core

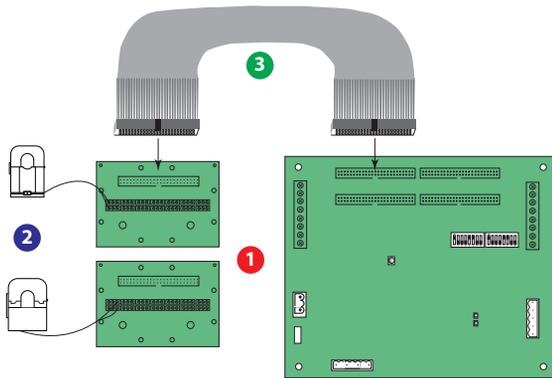


DIMENSIONAL DRAWINGS

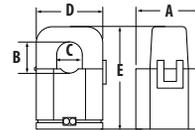
Adapter Board



APPLICATION/WIRING DIAGRAM

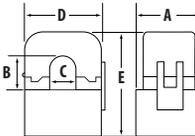


CTs



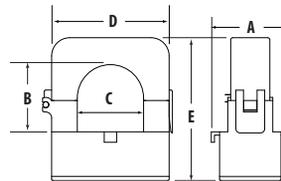
E31CT0 50 Amp

- A = 1.0" (26 mm)
- B = 0.5" (11 mm)
- C = 0.4" (10 mm)
- D = 0.9" (23 mm)
- E = 1.6" (40 mm)



E31CT1 100 Amp

- A = 1.5" (39 mm)
- B = 0.8" (20 mm)
- C = 0.7" (16 mm)
- D = 1.6" (40 mm)
- E = 2.1" (53 mm)



E31CT3 200 Amp

- A = 1.5" (39 mm)
- B = 1.25" (32 mm)
- C = 1.25" (32 mm)
- D = 2.5" (64 mm)
- E = 2.8" (71 mm)

ORDERING INFORMATION



1 Boards

Description	# of CTs
E31	
A = Advanced board	002 = 2 adapter boards, no CTs, no cables
B = Intermediate board	004 = 4 adapter boards, no CTs, no cables
C = Basic board	42 = 2 adapter boards, 42 50A CTs, 2 4 ft. round ribbon cables
	84 = 4 adapter boards, 84 50A CTs, 4 4 ft. round ribbon cables
	Y63* = 2 adapter boards, flat ribbon cables, pre-assembled on one bracket, CTs not included

2 CTs (up to 21 CTs per adapter board)

E31CT0	Six-pack, 50A CT, 6 ft. (1.8 m) lead
E31CT0R20	Six-pack, 50A CT, 20 ft. (6 m) lead
E31CT1	Six-pack, 100A CT, 6 ft. (1.8 m) lead
E31CT1R20	Six-pack, 100 CT, 20 ft. (6 m) lead
E31CT3	Single CT, 200A CT, 6 ft. (1.8 m) lead
E31CT3R20	Single CT, 200A CT, 20 ft. (6 m) lead

3 Ribbon Cable (order 1 cable per adapter board)

CBL022	Round Ribbon Cable, 4 ft. (1.2 m)	CBL016	Flat Ribbon Cable, 4 ft. (1.2 m)
CBL033	Round Ribbon Cable, 8 ft. (2.4 m)	CBL018	Flat Ribbon Cable, 6 ft. (1.8 m)
CBL023	Round Ribbon Cable, 10 ft. (3 m)	CBL020	Flat Ribbon Cable, 10 ft. (3 m)
CBL024	Round Ribbon Cable, 20 ft. (6 m)	CBL021	Flat Ribbon Cable, 20 ft. (6 m)

Ordering Examples:

Option A: For monitoring 42 or 84 circuits, order a pre-made kit from Group 1 only (see Application/Wiring Diagram above).

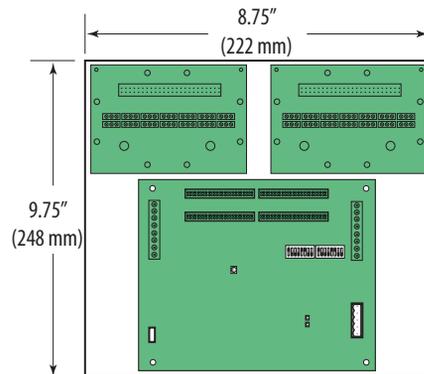
Example: E31x42 or E31x84

Option B: For monitoring other configurations, build your own kit by selecting from Groups 1, 2, and 3.

Example kit for an 18-circuit panel retrofit:

- 1 E31A002 - Advanced board, 2 adapter boards (1 unit)
- 2 E31CT0 - 50A CT six-pack (3 units)
- 3 CBL023 - 10 ft. round ribbon cable (2 units)

E31xY63 Boards with Bracket*



SPLIT-CORE CT SPECIFICATIONS

	50A Split-Core CT	100A Split-Core CT	200A Split-Core CT
Voltage Rating	300VAC	600VAC	600VAC
Accuracy	±1%	±0.5%	±1%
Temperature	0° to 60°C	0° to 60°C	0° to 60°C
Agency	UL508 recognized, EN61010	UL508 recognized, EN61010	UL508 recognized, EN61010

POWER/ENERGY MONITORING