



Panelboard Monitoring System

E3x Series

1% SYSTEM ACCURACY INCLUDING BRANCH CTs



E3xA/B/C



**INTEGRATED
ETHERNET w/SNMP,
BACNET, & MODBUS**

E3xE

Monitor Current, Voltage, & Energy Consumption with One Device

FEATURES

- Revenue grade measurements
- ANSI & IEC Class 1 metering system accuracy including branch CTs
- Solid-core branch CT strip models for new construction
- Split-core branch CT models for retrofit applications
- Reports volts, amps, power, demand, & energy for each circuit... one product covers up to two complete 42 breaker panelboards*
- Up to 92 circuits with one product (84 branch circuits, 2 3-phase mains, 2 neutrals*)...saves space
- User configurable meters provide multi-phase totals for loads with any combination of 1, 2, 3 pole breaker positions
- 3/4", 1", or 18 mm spaced solid-core branch CT strips... flexible installation
- 4 user-configurable alarm threshold registers...improved load management
- Selectable orientation and numbering of the circuits
- 50mA to 100A monitoring...widest dynamic range in the industry
- Modbus RTU standard on all models
- Modbus TCP over ethernet is standard on E3xExxx models and available on others with addition of U013-0012
- BACnet IP (with BBMD support) or MS/TP is standard on E3xExxx models and available on others with addition of E8951
- SNMP support is standard on E3xExxx models and available on others with addition of E8951

* Depending on options ordered.

SPECIFICATIONS



INPUTS	
Input Power	100-277VAC, 50/60 Hz, 15VA max.
ACCURACY	
Power/Energy	IEC 62053-21 Class 1, ANSI C12.1-2008. 1% system accuracy (includes main board and branch CTs)
Voltage	±0.5% of reading 90-277VAC line-to-neutral
Current	±0.5% of reading
Minimum ON Current	50mA
OPERATION	
Sampling Frequency	2560 Hz
OUTPUTS	
Serial Protocols	All: Modbus RTU E3xE models: BACnet MSTP
Serial Connection	All: 2-wire, RS-485 E3xA/B/C models: 4-wire RS-485
Address	E3xA/B/C models: Selectable address 1 to 247 (uses 2 addresses for Modbus RTU) E3xE models: Selectable at address 1 to 247 for Modbus RTU; 0-127 for BACnet MS/TP
Baud Rate	All: 9600, 19200, 38400 (selectable on A/B/C models)
Parity	All: Modbus RTU: NONE, ODD, EVEN (selectable on A/B/C models) E3xE models: BACnet MS/TP: NONE (fixed)
Terminal Block Torque	4.4 to 5.3 in-lb (0.5 to 0.6 N-m)
Ethernet Protocols	All: Modbus TCP E3xE models: BACnet IP, SNMP V2c
Ethernet Connection	E3xE models only: RJ-45 10/100 Mbit
ENVIRONMENTAL	
Operating Range	0° to 60°C (32° to 140°F) (<95% RH non-condensing)*
Storage Temp Range	-40° to 70°C (-40° to 158°F)
Altitude of Operation	3000 m
Agency Approvals	UL508, EN61010-1, Cat. III, pollution degree 2

* Indoor use only.

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, instantaneous power, demand, and energy consumption of each circuit in a panelboard including the main feed.** 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)

* E3xE models monitor only current values.

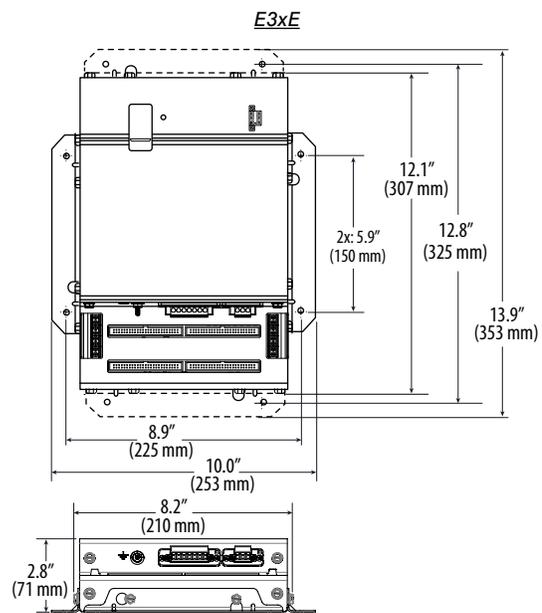
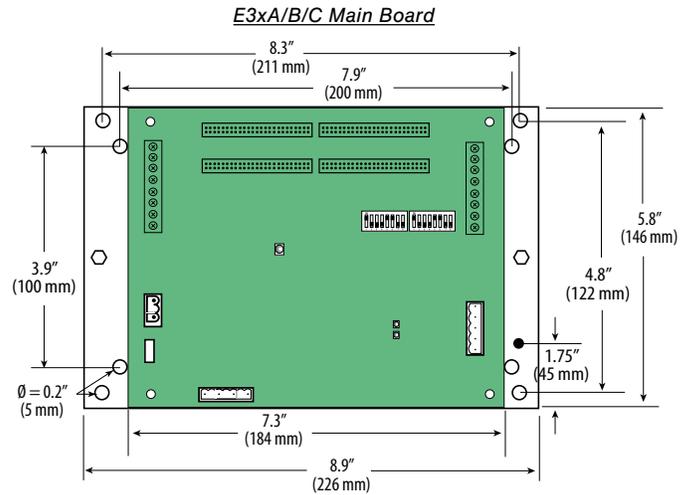
APPLICATIONS

- Load-based cost allocation
- Overload protection
- Data center PDUs
- Subtenant billing
- Lighting control panels
- Load management
- Load balancing
- Energy management

PRODUCT CAPABILITIES

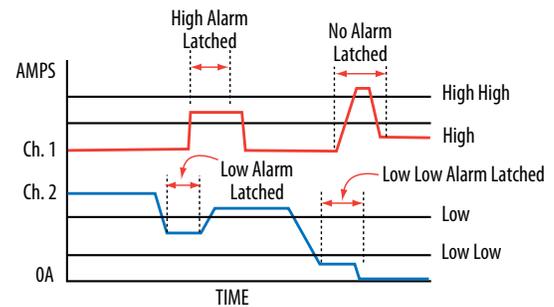
DIMENSIONAL DRAWINGS

	E3xA	E3xB	E3xC	E3xE
Monitoring at Mains				
Current per phase	●	●	●	●
Max. current per phase	●	●	●	●
Current demand per phase	●	●	●	●
Max. current demand per phase	●	●	●	●
Current phase angle	●	●	●	●
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	●	●	●	●
Current phase angle	●	●	●	●
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	●	●	●	●
Protocols Supported				
Modbus RTU	●	●	●	●
Modbus TCP	**	**	**	●
BACnet MS/TP	†	†	†	●
BACnet IP with BBMD support	†	†	†	●
SNMP V2	‡	‡	‡	●



* Based on a 3-phase breaker rotation. ** with U013-0012 or E8951 added
 † with E8951 added ‡ with E8951 added; requires one E8951 for each meter

OPERATION EXAMPLE



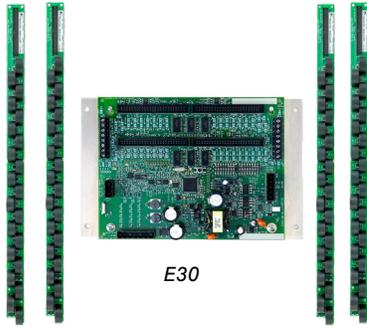
ACCESSORIES

- Ribbon Cables, round or flat (CBLxxx)
- E3x cover (AE001)
- Modbus TCP Gateway (U013-0012)
- Modbus-to-BACnet Converter (E8951)
- Network Display (H8932, H8936)
- Branch CTs (E31CT0, E31CT1, E31CT3)
- Split-core CTs for auxiliary inputs (H681x, E681x)
- Solid-core CTs for auxiliary inputs (E682x)
- Repair kit for E30 (AE006)





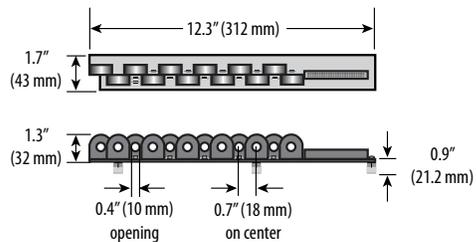
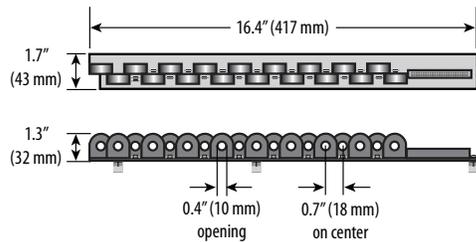
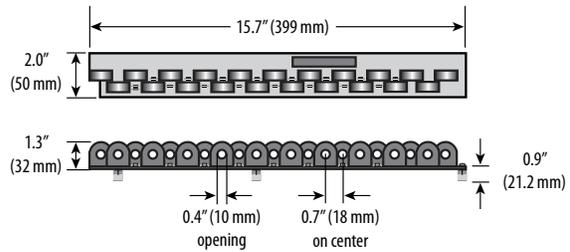
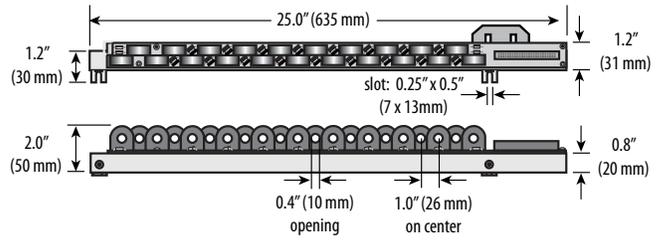
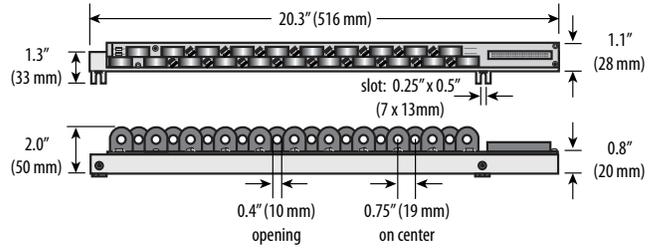
Panelboard Monitoring System – Solid-core



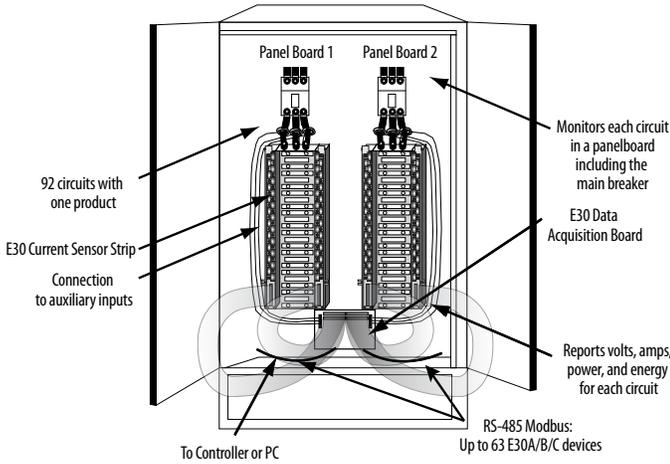
E30

DIMENSIONAL DRAWINGS

Branch CT Strips



WIRING DIAGRAM



SOLID CORE BRANCH CTs

100A Solid-Core Branch CT	
Voltage Rating	300 VAC
Temperature	0° to 60°C
Agency	EN61010-1



Observe precautions for handling static sensitive devices to avoid damage to the circuitry that is not covered under the factory warranty.

ORDERING INFORMATION



Description	Branch CT Spacing	# of Branch CTs & Ribbon Cables
E30		
A = Advanced	0 = 100A, 3/4" spacing	24 = 2 strips of 12 branch CTs (18 mm only) and two 4-ft. round ribbon cables
B = Intermediate	1 = 100A, 1" spacing	36 = 2 strips of 18 branch CTs (18 mm only) and two 4-ft. round ribbon cables
C = Basic	2 = 100A, 18 mm spacing	42 = 2 strips of 21 branch CTs (3/4", 1", or 18 mm) and two 4-ft. round ribbon cables
E = Advanced w/ethernet		48 = 4 strips of 12 branch CTs (18 mm only) and four 4-ft. round ribbon cables
		72 = 4 strips of 18 branch CTs (18 mm only) and four 4-ft. round ribbon cables
		84 = 4 strips of 21 branch CTs (3/4", 1", or 18 mm) and four 4-ft. round ribbon cables

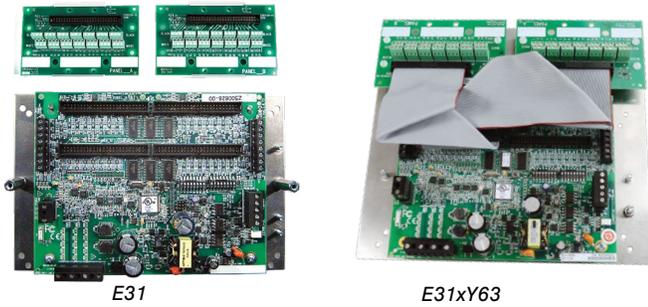
Example:

E30 A 0 42

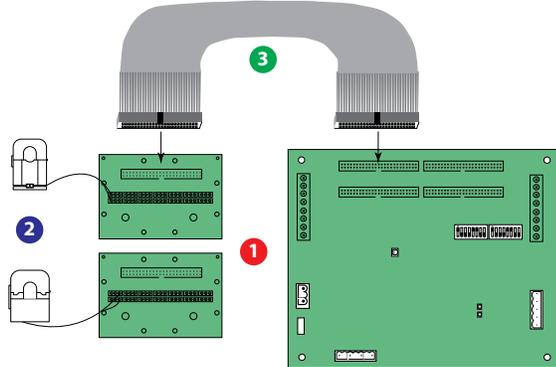
NOTE: CTs for mains (not used on E3xC models) must be ordered separately. Use 0-0.333V CTs rated for use with Class 1 voltage inputs.

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

Panelboard Monitoring System – Split-core

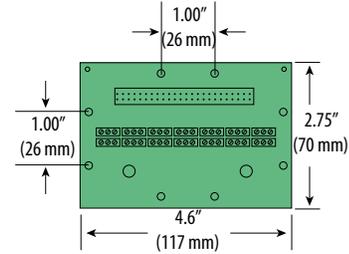


WIRING DIAGRAM

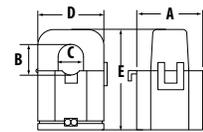


DIMENSIONAL DRAWINGS

E31 Adapter Board

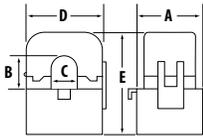


Branch CTs



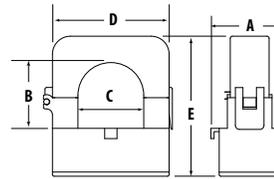
E31CT0 50 Amp

- 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" (37.5 mm)
- B = 0.6" (16 mm)
- C = 0.6" (16 mm)
- D = 1.85" (47 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)



Observe precautions for handling static sensitive devices to avoid damage to the circuitry that is not covered under the factory warranty.

ORDERING INFORMATION



(E31E only)

1 Boards

Description

of CTs

E31	Description	# of CTs
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
E	Advanced w/ ethernet	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 (not available with E31E models)

2 Branch CTs (up to 21 CTs per adapter board)

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

3 Ribbon Cable (order 1 cable per adapter board)

CBL031	Round Ribbon Cable, 18 in. (0.5 m)	CBL008	Flat Ribbon Cable, 18 in. (0.5 m)
CBL032	Round Ribbon Cable, 30 in. (0.8 m)	CBL016	Flat Ribbon Cable, 4 ft. (1.2 m)
CBL022	Round Ribbon Cable, 4 ft. (1.2 m)	CBL017	Flat Ribbon Cable, 5 ft. (1.5 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)	CBL019	Flat Ribbon Cable, 8 ft. (2.4 m)
CBL024	Round Ribbon Cable, 20 ft. (6 m)	CBL020	Flat Ribbon Cable, 10 ft. (3 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

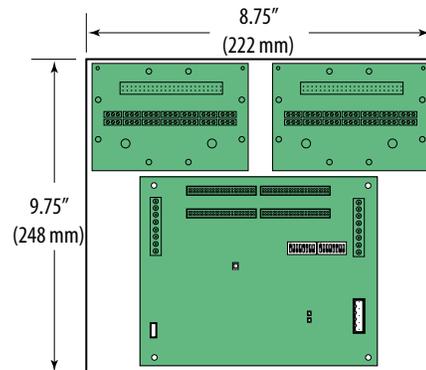
Option B: For monitoring other configurations, build your own kit by selecting from Groups 1, 2, and 3.

Example kit for an 18-circuit panel retrofit:

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

NOTE: CTs for mains (not used on E3xC models) must be ordered separately. Use 0-0.333V CTs rated for use with Class 1 voltage inputs.

E31xY63 Boards with Bracket



SPLIT-CORE BRANCH CTs

	50A Split-Core Branch CT	100A Split-Core Branch CT	200A Split-Core Branch CT
Voltage Rating	300VAC	300VAC (CE), 600VAC (UL)	300VAC (CE), 600VAC (UL)
Measurement Range	0 to 60A	0 to 120A	0 to 240A
Temperature	0° to 60°C	0° to 60°C	0° to 60°C
Agency	UL 61010-1 Recognized, EN61010-1	UL 61010-1 Recognized, EN61010-1	UL 61010-1 Recognized, EN61010-1