Multi-circuit metering

This is an integrated solution for monitoring multi-circuits and mains by using a single meter. The meter is designed for use in both new build and retrofit and is used for critical power operations in data centres and energy management in buildings.

The ideal solution for data centre managers, energy or facility managers, engineers and operational executives who are responsible for delivering power to critical applications.

In corporate and hosted data centre facilities, this technology helps you plan and optimise the critical power infrastructure to meet the demands of continuous availability.

- PowerLogic BCPM
- EM4000 Series
- EM4800
- EM4900

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PowerLogic BCPM

The PowerLogic BCPM is a highly accurate, full-featured metering product designed for the unique, multi-circuit and minimal space requirements of a high performance power distribution unit (PDU) or remote power panel (RPP).

It offers class 1 (1 %) power and energy system accuracy (including 50 A or 100 A CTs) on all branch channels. The BCPM monitors up to 84 branch circuits and the incoming power mains to provide information on a complete PDU. Full alarming capabilities ensure that potential issues are dealt with before they become problems.

Applications

- Maximise uptime and avoid outages
- Optimise existing infrastructure
- Improve power distribution efficiency
- Track usage and allocate energy costs
- Enable accurate sub-metering

PB113665

The solution for

Markets that can benefit from a solution that includes PowerLogic BCPM series meters:

- Data centres
- Buildings

Benefits

The flexible BCPM fits any PDU or RPP design and supports both new and retrofit installations. It has exceptional dynamic range and accuracy, and optional feature sets to meet the energy challenges of mission critical data centres.

Competitive advantages

- Fit any PDU or RPP design for both new and retrofit projects
- Class 1.0 system accuracy
- Ethernet communication

Power management solutions

Schneider Electric provides innovative power management solutions to increase your energy efficiency and cost savings, maximise electrical network reliability and availability, and optimise electrical asset performance.

Conformity of standards

- IEC 61010

BCPM

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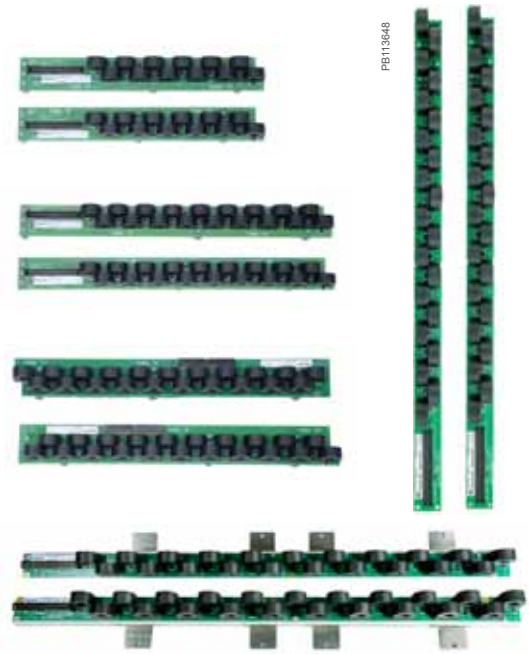
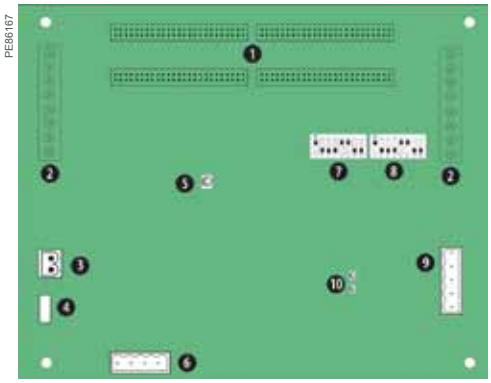


Main characteristics

- Monitor up to 84 branch circuits with a single BCPM.
- Ideal for installation in both new PDUs and retrofit projects
- New installations:
  - BCPM with solid core CTs monitors up to 84 branch circuits using 2 or 4 CT strips. Solid core CTs are rated to 100 A CTs and are mounted on strips to simplify installation. CT strips are available with 12, 8 or 21 CTs per strip on 18 mm spacings. 21 CT strips with 3/4" or 1" spacings are also available.
- Retrofit projects:
  - BCPMSC with split core CTs is ideal for retrofits. Any number of split core CTs, up to 84 maximum, can be installed with a single BCPM. Three sizes of CT are supported (50 A, 100 A, and 200 A) and all three CT sizes can be used on a single BCPM. Adapter boards with terminals for split core CTs can be mounted using DIN-rail, Snaptrack or on a common mounting plate with the main board (42 ch Y63 models only).
- IEC Class 1 metering accuracy
  - Accurately monitor very low current levels, down to a quarter-Amp.
  - Easily differentiate between the flow of low current and a trip where no current flows.
- Class 1.0 system accuracy for Revenue Grade measurements
  - Branch Power and Energy measurements fully meet ANSI and IEC class 1 accuracy requirements with 50 or 100 A CTs included. No need to de-rate meter branch accuracy to allow for CTs. Voltage and current measurement accuracy is 0.5 % and currents are measured down to 50mA. Easily differentiate between the flow of low current and a trip where no current flows.
- Designed to fit any PDU or RPP design
  - Lowers your total installation costs as well as the cost per meter point by supporting both new and retrofit installations.
- New models with integrated Ethernet offer broad protocol support
  - All models integrate easily into existing networks using Modbus RTU communications over an RS-485 serial link. BCPME and BCPMSCE models offer integrated Ethernet and add support for Modbus TCP, BACnet IP, BACnet MS/TP and SNMP. An optional external gateway can be added to all other models to add the same capability.
- Compatible with PowerLogic power monitoring software
  - Easily turn the large amount of data collected by the devices into useful decision-making information.
- Flexible Configuration capability
  - Set the ordering and orientation of CT strips, assign individual CT size and phases, support for 1, 2, and 3-pole breakers in any configuration.

BCPM



PowerLogic BCPM
1 50-pin ribbon cable connectors (data acquisition board).
2 Auxiliary inputs.
3 Control (mains) power connection.
4 Control power fuse.
5 Alive LED.
6 Voltage taps.
7 Communications address DIP switches.
8 Communications settings DIP switch.
9 RS-485 2 connection.
10 RS-485 LEDs.

Feature selection		BCPMA	BCPME
General			
Use on LV systems		■	■
Power and energy measurements			
Mains		■	■
Branch circuits		■	■
Instantaneous rms values			
Voltage, frequency		■	■
Current		■	■
Active power	Total and per phase	■	■
Power factor	Total and per phase	■	■
Energy values			
Active energy		■	■
Demand values			
Total active power	Present and max. values	■	■
Power quality measurements			
Detection of over-voltage/under-voltage		■	■
Sampling rate points per cycle		2560 Hz	2560 Hz
Alarming			
Alarms		■	■
Power supply			
AC version		90-277 V AC	100-277 V AC
Communication			
RS-485 port		■	■
Modbus protocol		■	■
Ethernet Port		1★	■
Modbus RTU protocol		1★	■
BACnet IP protocol		1★	■
BACnet MS/TP protocol		1★	■
SNMP protocol		1★	■

★1 Add E8951 Gateway

BCPM

PE86168

Example BCPM with solid core CTs part number
1. Model
2. Feature set
3. CT spacing (solid core models only)
4. Number of circuits
5. Brand

The PowerLogic BCPM uses .333 V AC output split core CTs for the auxiliary inputs. These CTs are ordered separately from the BCPM.

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PB113665

* Quantity and style of CT strips and cables included varies by model

BCPM part numbers

BCPM with solid core CTs			
Item		Code	Description
1	Model	BCPM	BCPM with solid core CTs. Highly accurate meter that monitors branch circuits and the incoming power mains and includes full alarming capabilities
2	Feature set	A	Advanced - Monitors power & energy per circuit & mains, Modbus RTU only (add E8951 for other protocols), Meter Main Board comes on an aluminum mounting plate
		E	Advanced, with Ethernet - Monitors power & energy per circuit & mains, Meter Main Board is enclosed in a metal housing
3	CT spacing	0	3/4" (19 mm) CT spacing
		1	1" (26 mm) CT spacing
		2	18 mm CT spacing
4	Number of circuits	24	24 circuits, (2) 18-CT strips (18 mm spacing only)
		36	36 circuits, (2) 18-CT strips (18 mm spacing only)
		42	42 circuits, (2) 21-CT strips
		48	48 circuits, (4) 18-CT strips (18 mm spacing only)
		72	72 circuits, (4) 18-CT strips (18 mm spacing only)
		84	84 circuits, (4) 21-CT strips
5	Brand	S	Schneider Electric

BCPM

PB113735

Example BCPMSC with split core CTs part number.

1 Model.
2 Feature set.
3 Number of circuits.
4 Brand.

PB113666

PB113730

BCPM part numbers (contd.)

BCPM with split core CTs BCPM with split core CTs			
1	Model	BCPMSC	BCPM with split core CTs. Highly accurate meter that monitors branch circuits and the incoming power mains and includes full alarming capabilities
2	Feature set	A	Advanced - Monitors power and energy per circuit and mains, Modbus RTU only (add E8951 for other protocols), Meter Main Board comes on an aluminum mounting plate
		B	Intermediate - Monitors current per circuit, power and energy per mains, Modbus RTU only (add E8951 for other protocols), Meter Main Board comes on an aluminum mounting plate
		C	Basic - Monitors current only per circuit and mains, Modbus RTU only (add E8951 for other protocols), Meter Main Board comes on an aluminum mounting plate
		E	Advanced, with Ethernet - Monitors power & energy per circuit & mains, Meter Main Board is enclosed in a metal housing
3	Number of circuits	1	42 circuits (no branch CTs or ribbon cables, order separately)
		2	84 circuits (no branch CTs or ribbon cables, order separately)
		30	30 split core CTs (50 A)
		42	42 split core CTs (50 A)
		60	60 split core CTs (50 A)
		84	84 split core CTs (50 A)
		Y63	42 circuits – main and adapter boards on single mounting plate (no branch CTs or ribbon, order separately) - Feature set A only
4	Brand	S	Schneider Electric

*The BCPMSC models with 1, 2 or Y63 as the number of circuits DO NOT INCLUDE ANY branch CTs or ribbon cables (they include only the Main board and adapater board assemblies). These models are provided to allow users to order a specific combination of CT quantities, CT sizes, CT lead lengths and ribbon cable styles and lengths. The CTs and cables must be ordered separately.

Models with more than 2 as the number of circuits include 50 A branch CTs with 2 meter leads and 1.8 M round ribbon cables.

The PowerLogic BCPMSC uses .333 V AC output split core CTs for the auxiliary inputs. These CTs are ordered separately from the BCPM.

BCPM

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Flat ribbon cable

PB113650

Round ribbon cable

Cabling and connection

Flat ribbon cables are recommended for use when the BCPM printed circuit board will be mounted inside of the PDU that is being monitored. Round ribbon cables are the prefered choice when the ribbon cable will be threaded through conduit.

BCPM part numbers for solid and split core CTs (contd.)

BCPM with split core CTs	
Commercial ref. no.	Description
BCPMA042S	42-circuit solid core power & energy meter, 100 A CTs (2 strips), 19 mm spacing
BCPMA084S	84-circuit solid core power & energy meter, 100 A CTs (4 strips), 19 mm spacing
BCPMA142S	42-circuit solid core power & energy meter, 100 A CTs (2 strips), 25 mm spacing
BCPMA184S	84-circuit solid core power & energy meter, 100 A CTs (4 strips), 25 mm spacing
BCPMA224S	24-circuit solid core power & energy meter, 100 A CTs (2 strips), 18 mm spacing
BCPMA236S	36-circuit solid core power & energy meter, 100 A CTs (2 strips), 18 mm spacing
BCPMA242S	42-circuit solid core power & energy meter, 100 A CTs (2 strips), 18 mm spacing
BCPMA248S	48-circuit solid core power & energy meter, 100 A CTs (4 strips), 18 mm spacing
BCPMA272S	72-circuit solid core power & energy meter, 100 A CTs (4 strips), 18 mm spacing
BCPMA284S	84-circuit solid core power & energy meter, 100 A CTs (4 strips), 18 mm spacing
BCPME042S	42-circuit solid core power & energy meter w/Ethernet, 100 A CTs (2 strips), 19 mm spacing
BCPME084S	84-circuit solid core power & energy meter w/Ethernet, 100 A CTs (4 strips), 19 mm spacing
BCPME142S	42-circuit solid core power & energy meter w/Ethernet, 100 A CTs (2 strips), 25 mm spacing
BCPME184S	84-circuit solid core power & energy meter w/Ethernet, 100 A CTs (4 strips), 25 mm spacing
BCPME224S	24-circuit solid core power & energy meter w/Ethernet, 100 A CTs (2 strips), 18 mm spacing
BCPME236S	36-circuit solid core power & energy meter w/Ethernet, 100 A CTs (2 strips), 18 mm spacing
BCPME242S	42-circuit solid core power & energy meter w/Ethernet, 100 A CTs (2 strips), 18 mm spacing
BCPME248S	48-circuit solid core power & energy meter w/Ethernet, 100 A CTs (4 strips), 18 mm spacing
BCPME272S	72-circuit solid core power & energy meter w/Ethernet, 100 A CTs (4 strips), 18 mm spacing
BCPME284S	84-circuit solid core power & energy meter w/Ethernet, 100 A CTs (4 strips), 18 mm spacing

BCPM

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BCPMSCxY63S 42-circuit split core models come with the main board, (2) adapter boards and ribbon cables all mounted on a backplate, to simplify installation.

PE86183

PowerLogic™ LVCT0xxxxS Split core Low-voltage (1/3V) CTs for Aux inputs (Mains) are ideal for retrofit applications

PB113652
PB113657
PB113658

PowerLogic™ LVCT2xxxxS Low-voltage (1/3V) solid core CTs for Aux inputs (Mains) are ideal for panel builders (small, medium, large)

BCPM part numbers for solid and split core CTs (contd.)

BCPM with split core CTs	
Commercial ref. no.	Description
BCPMSCA1S	42-circuit split core power and energy meter, CTs and cables sold separately
BCPMSCA2S	84-circuit split core power and energy meter, CTs and cables sold separately
BCPMSCA30S	30-circuit split core power and energy meter, (30) 50 A CTs & (2) 1.2 m cables
BCPMSCA42S	42-circuit split core power and energy meter, (42) 50 A CTs & (2) 1.2 m cables
BCPMSCA60S	60-circuit split core power and energy meter, (60) 50 A CTs & (4) 1.2 m cables
BCPMSCAY63S	42-circuit split core power and energy meter, all boards on backplate, CTs and cables sold separately
BCPMSCA84S	84-circuit split core power and energy meter, with (84) 50 A CTs & (4) 1.2 m cables
BCPMSCE1S	42-circuit split core power and energy meter w/Ethernet, CTs and cables sold separately
BCPMSCE2S	84-circuit split core power and energy meter w/Ethernet, CTs and cables sold separately
BCPMSCE30S	30-circuit split core power and energy meter w/Ethernet, (30) 50 A CTs & (2) 1.2 m cables
BCPMSCE42S	42-circuit split core power and energy meter w/Ethernet, (42) 50 A CTs & (2) 1.2 m cables
BCPMSCE60S	60-circuit split core power and energy meter w/Ethernet, (60) 50 A CTs & (4) 1.2 m cables
BCPMSCE84S	84-circuit split core power and energy meter w/Ethernet, (84) 50 A CTs & (4) 1.2 m cables

The PowerLogic™ BCPM uses .333 V AC output split core CTs for the auxiliary inputs.

These CTs are ordered separately from the BCPM.

BCPM

Commercial ref. no.	
BCPM split core branch CTs and adapter boards	
BCPMSCADPBS	BCPM adapter boards, quantity 2, for split core BCPM
BCPMSCCT0	BCPM 50 A split core CTs, Quantity 6, 1.8 m lead lengths
BCPMSCCT0R20	BCPM 50 A split core CTs, quantity 6, 6 m lead lengths
BCPMSCCT1	BCPM 100 A split core CTs, Quantity 6, 1.8 m lead lengths
BCPMSCCT1R20	BCPM 100 A split core CTs, Quantity 6, 6 m lead lengths
BCPMSCCT3	BCPM 200 A split core CTs, Quantity 1, 1.8 m lead lengths
BCPMSCCT3R20	BCPM 200 A split core CTs, Quantity 1, 6 m lead lengths
Commercial ref. no.	
Additional accessories for use with BCPM products	
BCPMCOVERS	BCPM circuit board cover
BCPMREPAIR	CT repair kit for solid core BCPM (includes one CT)
H6803R-0100	Additional 100 A split core CT for use with solid core repair kit
E8951	Modbus to BACnet protocol converter
CBL016	Flat Ribbon cable (quantity 1) for BCPM, length = 1.2 m
CBL017	Flat Ribbon cable (quantity 1) for BCPM, length = 1.5 m
CBL018	Flat Ribbon cable (quantity 1) for BCPM, length = 1.8 m
CBL020	Flat Ribbon cable (quantity 1) for BCPM, length = 3.0 m
CBL021	Flat Ribbon cable (quantity 1) for BCPM, length = 6.1 m
CBL022	Round Ribbon cable (quantity 1) for BCPM, length = 1.2 m
CBL024	Round Ribbon cable (quantity 1) for BCPM, length = 6.1 m

1/3 V low-voltage Split core CTs for Aux inputs (Mains)

Commercial ref. no.	Amperage rating	Inside dimensions
LVCT00050S	50 A	10 mm x 11 mm
LVCT00101S	200 A	16 mm x 20 mm
LVCT00202S	200 A	32 mm x 32 mm
LVCT00102S	100 A	30 mm x 31 mm
LVCT00202S	200 A	30 mm x 31 mm
LVCT00302S	300 A	30 mm x 31 mm
LVCT00403S	400 A	62 mm x 73 mm
LVCT00603S	600 A	62 mm x 73 mm
LVCT00803S	800 A	62 mm x 73 mm
LVCT00804S	800 A	62 mm x 139 mm
LVCT01004S	1000 A	62 mm x 139 mm
LVCT01204S	1200 A	62 mm x 139 mm
LVCT01604S	1600 A	62 mm x 139 mm
LVCT02004S	2000 A	62 mm x 139 mm
LVCT02404S	2400 A	62 mm x 139 mm

1/3 V low-voltage Solid core CTs for Aux inputs (Mains)

Commercial ref. no.	Amperage rating	Inside dimensions
LVCT20050S	50A	10 mm
LVCT20100S	100A	10 mm
LVCT20202S	200A	25 mm
LVCT20403S	400A	31 mm

BCPM

Technical specifications

Electrical characteristics		
Type of measurement		
Accuracy	Power/energy	1 % system accuracy (including 50A or 100A branch CTs)
	Voltage	±0.5 % of reading
	Current	±0.5 % of reading
Minimum “ON” current		50mA
Sampling rate Points per cycle		2560 Hz
Data update rate		1.8 seconds (Modbus), 14 seconds (BACnet) 20 sec (SNMP)
Input-voltage characteristics	Measured voltage	150 – 480 V AC L-L (1) 90 – 277 V AC L-N (1)
	Measurement range	150 – 480 V AC L-L (1) 90 – 277 V AC L-N (1)
Power supply	AC	100 – 277 V AC (50/60 Hz)
Auxiliary CT Current Input Range		0-0.333V; CTs must be rated for use with Class 1 voltage inputs
Mechanical characteristics		
Weight		1.5 kg
Dimensions	A/B/C model Circuit board	288 x 146 mm
E model housing (w/brackets on long sides)		253 mm W x 307 mm H x 71 mm D
E model housing (w/brackets on short ends)		210 mm W x 353 mm H x 71 mm D

Environmental conditions	
Operating temperature	0 to 60 ºC
Storage temperature	-40 ºC to 70 ºC
Installation category	CAT III, pollution degree 2
Safety	
Europe	IEC 61010
U.S. and Canada	UL 508 Open type device
Communication	
RS-485 (A/B/C models)	Baud rate: DIP-switch selectable 9600, 19200, 38400 DIP-switch selectable 2-wire or 4-wire RS-485. Parity selectable: Even, Odd or None.
RS-485 (A models)	Baud rate: configured via Web-server. Baud selectable: 9600, 19200, 38400. Parity selectable: Even, Odd or None. 2-wire RS-485.
Ethernet (E models)	10/100 Mbit Ethernet. RJ-45 connection. Static IP or DHCP.
Protocols	Modbus RTU on all models, BCPME models also support Modbus TCP, SNMP, BACnet IP & BACnet MS/TP
Firmware characteristics	
Detection of over-voltage/under-voltage	User-defined alarm thresholds for over-voltage and under-voltage detection
Alarms	Four alarm levels: high-high, high, low and low-low (users define the setpoints for each). Each alarm has a latching status to alert the operator that an alarm has previously occurred. High and Low alarms have instantaneous status to let the operator know if the alarm state is still occurring.
Firmware update	Update via Modbus

BCPM

1/3 V low-voltage CT (LVCT) for Mains - Technical specifications

Electrical characteristics	
Accuracy	1 % from 10 % to 100 % of rated current(LVCT0xxxx0S/1S/2S/3S/4S [split core]) 0.5 % from 5 % to 100 % of rated current (LVCT2xxxx0S/2S/3S [solid core])
Frequency range	50/60 Hz
Leads	18 AWG, 600 V AC, 1.8m standard length
Max. voltage L-N sensed conductor	300 V AC (LVCT0xxxx0S) 600 V AC (LVCT0xxxx1S/2S/3S/4S, LVCT2xxxxS)
Environmental conditions	
Operating temperature	0 ºC to 70 ºC (LVCT0xxxx0S/1S) -15 ºC to 60 ºC (LVCT0xxxx2S/3S/4S less than 2400A) -15 ºC to 60 ºC (LVCT02404S [2400A]) -40 ºC to 85 ºC (LVCT2xxxx0S/2S/3S [solid core])
Storage temperature	-40 ºC to 105 ºC (LVCT0xxxx0S/1S) -40 ºC to 70 ºC (LVCT0xxxx2S/3S/4S) -50 ºC to 105 ºC (LVCT2xxxx0S/2S/3S [solid core])
Humidity range	0 to 95 % non-condensing

BCPM

PowerLogic BCPM dimensions

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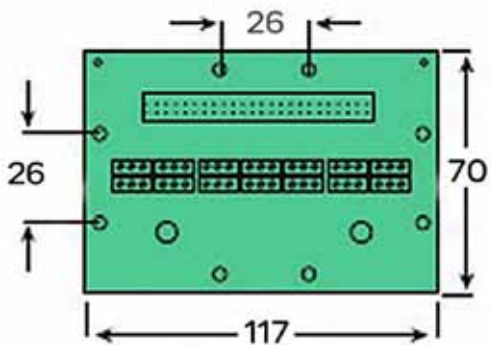

PowerLogic BCPM adapter board (one board per 21 split core branch CTs)

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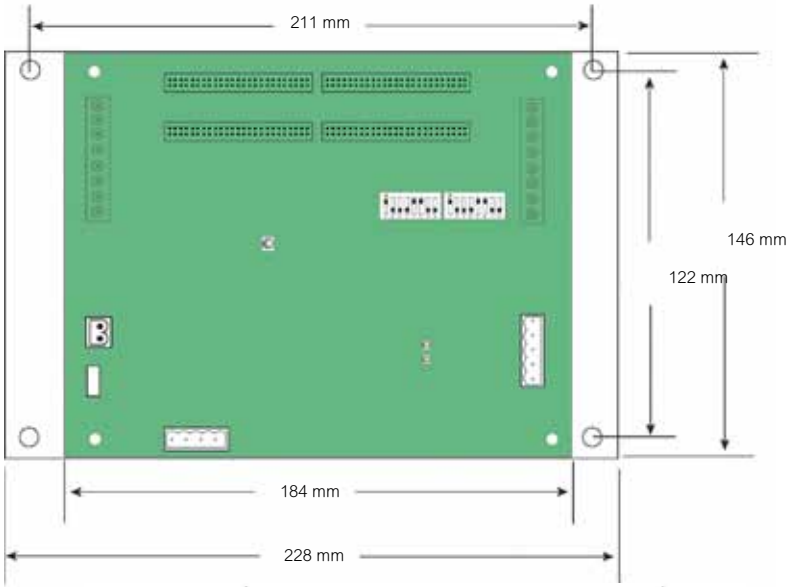

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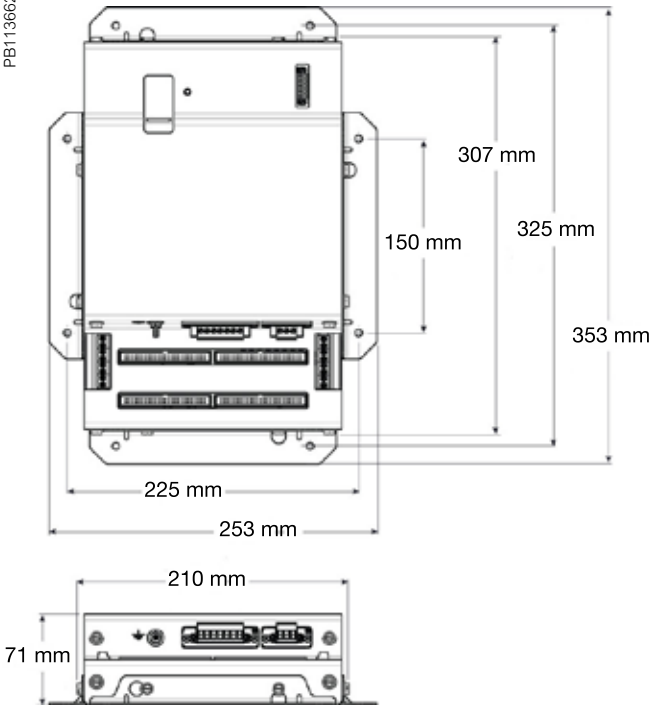

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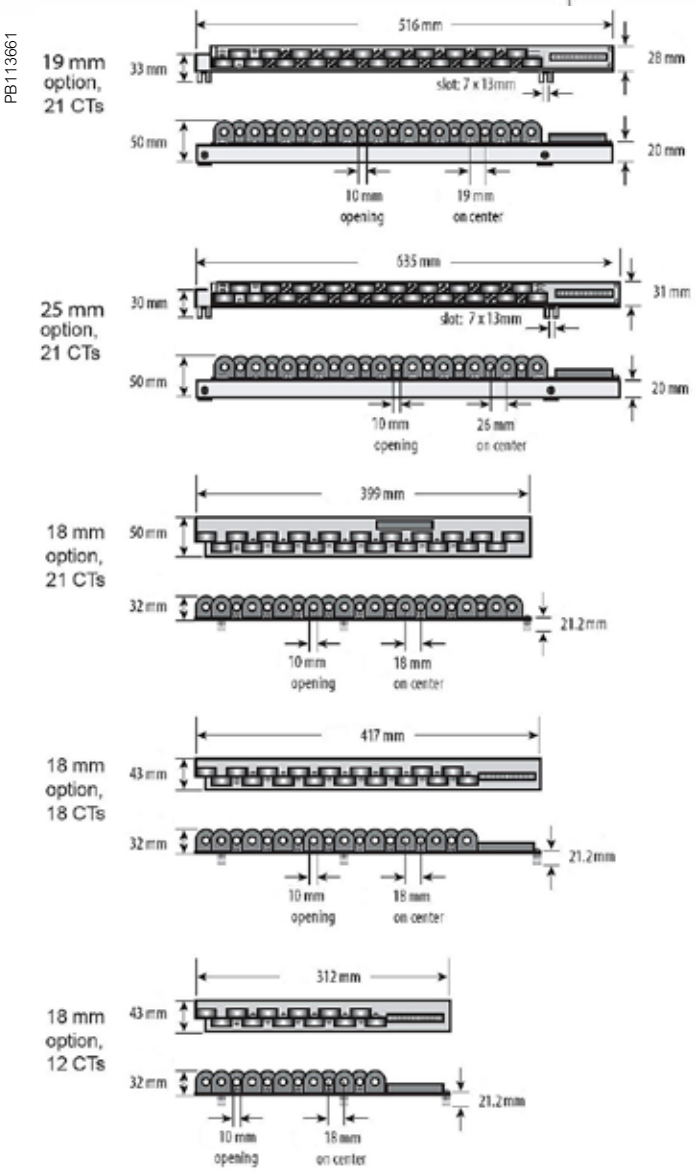

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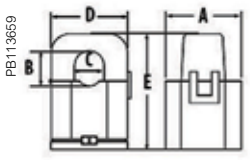
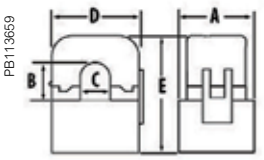
50 A-200 A Split core CT dimensions

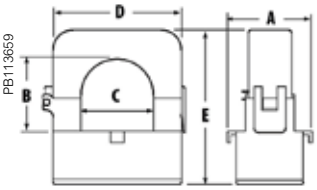


(in mm)

50 Amp
A = 26-35 w/ears
B = 11
C = 10
D = 23-29 w/hinge
E = 40



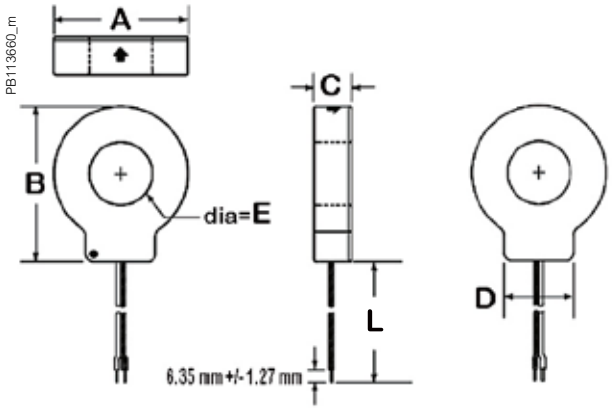
100 Amp
A = 28-37 w/ears
B = 16
C = 16
D = 40
E = 52



200 Amp
A = 37
B = 32
C = 32
D = 62
E = 69

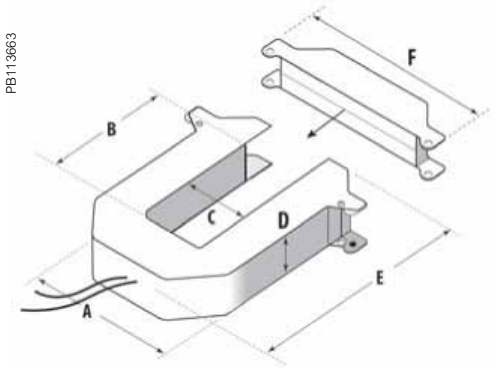
These dimensions apply to both BCPMSCCTxx (branch CTs) and LVCT0xxxx0S/1S (for Mains) 50 A-200 A CT families.

Solid core CT dimensions



Model	L	A	B	C	D	E
LVCT200505	1.8 m	33 mm	38 mm	18 mm	21 mm	10 mm
LVCT201005						
LVCT202025	1.8 m	59 mm	66 mm	18 mm	31 mm	25 mm
LVCT204035	1.8 m	70 mm	82 mm	25 mm	36 mm	31 mm

1/3 V low-voltage CT form factor



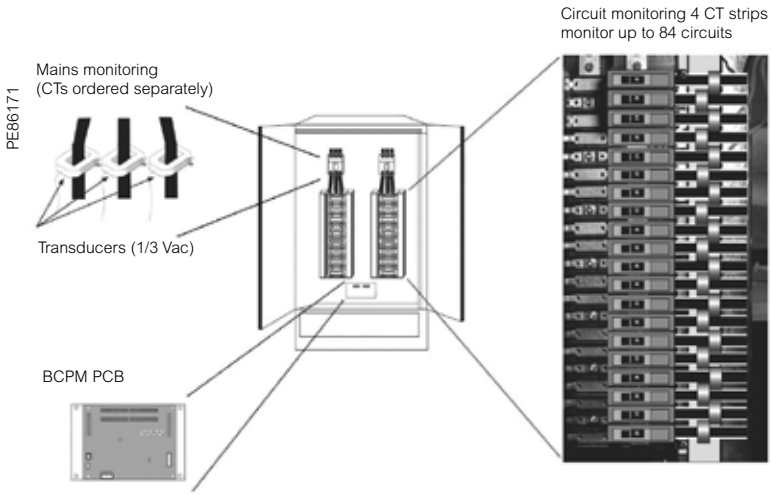
Small form factor
100/200/300 Amp
A = 96 mm
B = 30 mm
C = 31 mm
D = 30 mm
E = 100 mm
F = 121 mm

Medium form factor
400/600/800 Amp
A = 125 mm
B = 73 mm
C = 62 mm
D = 30 mm
E = 132 mm
F = 151 mm

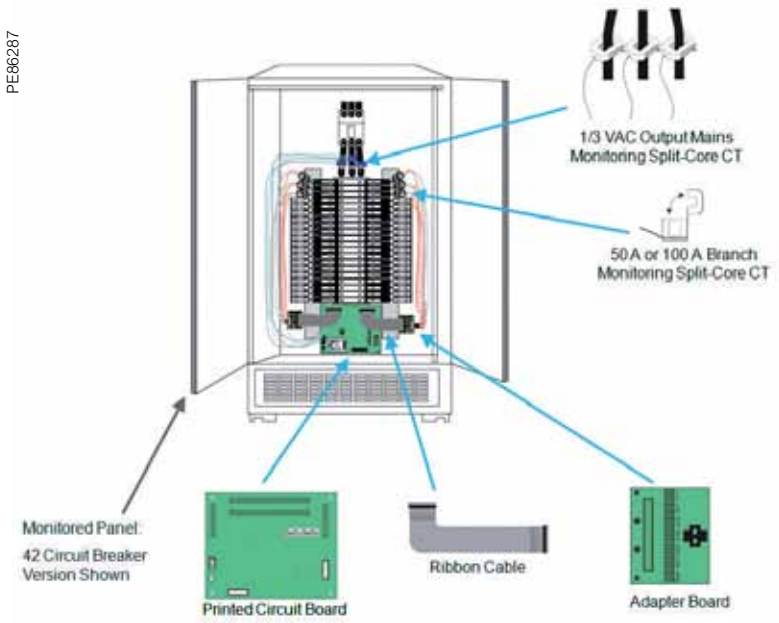
Large form factor
800/1000/1200/
1600/2000/2400 Amp
A = 125 mm
B = 139 mm
C = 62 mm
D = 30 mm
E = 201 mm
F = 151 mm

BCPM

PowerLogic BCPM with solid core CT strips installation details



PowerLogic BCPM with split core CTs installation details



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