

# EM4900 series

## Technical Datasheet

The PowerLogic EM4900 Series Multi-Circuit Meters make it easy to add many metering points without having to purchase, mount, wire and commission individual energy meters. Simply add a single device with common voltage inputs and communication interface that can measure the current, voltage, power, energy consumption, and Total harmonic Distortion (THD) of up to (14) 3-phase circuits with a single board or up to (28) 3-phase circuits with a two board configuration. Save on both equipment cost and installation.

### Applications

- Commercial and residential subtenant billing
- Load-based cost allocation
- Measuring for load balancing and demand response
- Overload protection

PB117150  
PB117149



METSEEM4904E



METSEEM4904A

### The solution for

Markets that can benefit from a solution that includes PowerLogic EM4900 series meters:

- Buildings
- Industry
- Healthcare
- Hotels, Multi-Dweller Units (condos)

### Benefits

#### System integrators' benefit

- Ease of integration
- Ease of setup
- Cost effectiveness

#### Panel builders' benefit

- Ease of installation
- Cost effectiveness
- Aesthetically pleasing
- Simplified ordering

#### End users' benefit

- Ease of use
- Precision metering & sub-billing
- Billing flexibility
- Comprehensive, consistent and superior performance

### Competitive advantages

- Lower cost and space per metering point
- Adapts to any mix of metering needs (1ph, 2ph, 3ph with or without Neutral wire)
- Class 0.5 accuracy for Revenue Grade measurement
- THD monitoring to help identify problem loads and early wear and tear
- Capable of concurrent communication to software packages, including PowerLogic software packages and third party systems

### 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

- EN 61000-6-3 Class B - Part 6-3
- EN 61000-6-3 Class B - Part 6-3
- EN 61000-6-4 Class A - Part 6
- EN 61010-1 - Part 1
- EN 61326-1 Class A - Part 1
- EN 61326-1 Class B - Part 1
- IEC 62053-22 Class 0.5 - Part 21
- FCC 47 CFR Part 15 Class A & Class B
- UL 508 Open Device Type
- IEC 61010-1 - Part 1

## EM4900 series



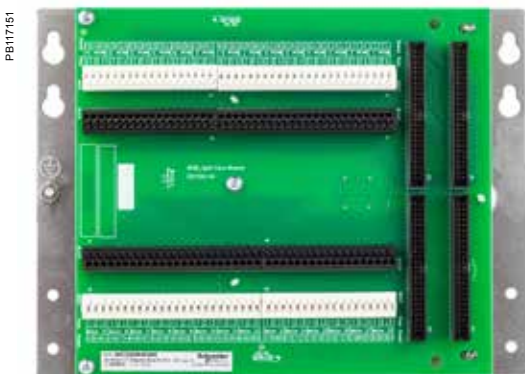
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PowerLogic™ EM4914A



PB117153

PowerLogic™ EM4914E



PB117151

28 Meter adapter board (EM4928A and EM4928E)

To aid in commissioning, a configuration software tool, an Ethernet discovery tool (for the EM49xxE) and a User Guide are available online at [www.schneider-electric.com](http://www.schneider-electric.com).

- Main characteristics

- Add lots of metering points without lots of cost
  - Add up to 28 3-phase meters by installing a single product small enough to fit inside many distribution panels. Save on both equipment cost and installation cost. Common voltage and communication connections and colour-coded push-in CT connections save installation time and effort.
- Class 0.5 accuracy for Revenue Grade measurements
  - Power and Energy measurements with ANSI and IEC class 0.5 accuracy provide the accuracy needed for tenant billing applications. Voltage and current measurement accuracy is 0.5 % and currents are measured down to 0.1% of the CT range. Easily differentiate between the flow of low current and a trip or load disconnect where no current flows.
- Total Harmonics Distortion measurements
  - Helps assess basic power quality to reduce risks to the load and provide indication of potential early wear and tear of the electrical network and its load.
- Common CTs, 1/3V outputs
  - CTs with low-voltage outputs eliminate the need for shorting blocks that add cost and labor to the installation. They also allow long CT lead extensions without compromising accuracy. Choose from a range of our CT styles and sizes or use any CTs with industry-standard 0.333V outputs.
- 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. EM49xxE models offer integrated Ethernet and add support for Modbus TCP, BACnet IP, BACnet MS/TP and SNMP. Those Ethernet protocols can be run in parallel allowing multiple software to access the device (Building Management System, Energy Management System, etc.) An optional external gateway can be added to EM49xxA models to offer 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.
- Configure the meters you want
  - Choose 4, 8, 14 or 28 3-phase meters. User-configurable to any combination of 1-, 2-, 3-phase meters. Reconfigure channels as needed to monitor neutral current.

## EM4900 series specifications

<b>Measurements</b>	
Measurement voltage	90 to 300 V AC L-N, 50/60 Hz
Total Harmonic Distortion (THD)	THD % voltage L-L, L-N and THD % on current
<b>Control power</b>	
EM49xxA	90 to 277 V AC L-N, 50/60 Hz
EM49xxE	100 to 277 V AC L-N, 50/60 Hz
<b>Accuracy</b>	
Power/Energy	IEC 62053-21 Class 0.5, ANSI C12.20 class 0.5
Voltage	±0.5% of reading 90 to 277 V L-N
Current	±0.5% of reading from 2% to 100% of full-scale
<b>Operation</b>	
Sampling frequency	2560 Hz
Update rate	1.8 seconds (both panels)
Overload capability	22 kAIC
<b>EM49xxA serial communication</b>	
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) (See Installation Guide)
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 plug-in connector (TX+ TX- SHIELD TX+/RX+ TX-/RX-)
<b>EM49xxE serial communication</b>	
Physical Interface	2-wire RS-485
Serial protocols supported	Modbus RTU or BACnet MS/TP
Address range	1 to 247 for Modbus RTU; 0 to 127 for BACnet MS/TP
Baud rate	9600, 19200, 38400
Parity	Modbus RTU: NONE, ODD, EVEN BACnet MS/TP: NONE (fixed)
Communication format	8 data bits, 1 start bit, 1 stop bit
Termination	2x3 position connector
<b>EM49xxE Ethernet communication</b>	
Physical interface	Protocols Supported
Protocols supported	Modbus TCP, BACnet IP, SNMP V2c
<b>Wire size range</b>	
Removable connectors on main board	24 to 12 AWG
CT Terminals and EM49xxE serial connector terminals	26 to 16 AWG
<b>Terminal block torque</b>	
Removable connectors	0.5 to 0.6 N-m
<b>Mechanical</b>	
Ribbon cable support (28-meter models only)	0.9 m round ribbon cable ships standard; up to 6 m flat or round available
<b>Operating conditions</b>	
Operating temperature range	0 to 60 °C (<95% RH non-condensing)
Storage temperature range	-40 to 70 °C
Altitude of operation	3000 m
Mounting location	Not suitable for wet locations. For indoor use only.
<b>Compliance information</b>	
Agency approvals	UL 508 open type device <sup>*1</sup> , IEC/EN 61010-1
Installation category	Cat III, pollution degree 2 <sup>*2</sup>
Conducted emissions	EM49xxA Models: FCC part 15 Class B, EN 61000-6-3, EN 61326-1 Class B (residential & light industrial)
Radiated emissions	EM49xxE Models: FCC part 15 Class A, EN 6100-6-4, EN 61326-1 Class A
Conducted and radiated immunity	EN 61000-6-2 and EN 61326-1

<sup>\*1</sup>Install EM49xx in appropriate fire enclosure; if used with circuits higher than product ratings, circuits must be segregated per UL 508A Sec 17.5 (EM49xx internal circuitry are not circuits as defined by UL 508A).

<sup>\*2</sup>A Pollution Degree 2 environment must control conductive pollution and the possibility of condensation or high humidity. Consideration must be given to the enclosure, the correct use of ventilation, thermal properties of the equipment and the relationship with the environment.

## EM4900 series

### 1/3 V low-voltage CT (LVCT)

#### 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, 1.8 m standard length
Max. voltage L-N sensed conductor	300 V AC (LVCT0xxxx0S) 600 V AC (LVCT0xxxx1S/2S/3S/4S, LVCT2xxxx0S)

#### Measurements

Real time measurements	Current: multi-phase average and per phase Current phase angle per branch Real power (kW): multi-phase total and per phase Apparent power (kVA): multi-phase total and per phase Power factor: multi-phase average and per phase
Demand measurements	Current present demand: multi-phase average and per phase Real power (kW) present demand: multi-phase average and per phase
Historic maximums	Maximum instantaneous current: multi-phase average and per phase Maximum current demand: multi-phase average and per phase Maximum real power demand: multi-phase total and per phase
Accumulate energy	Energy (kWh): multi-phase total and per phase
Energy snapshots	Energy (kWh): multi-phase total and per phase

# EM4900 series



- 1 Model.
- 2 Number of 3-phase meters (without neutral current)
- 3 Communication interfaces & protocols.

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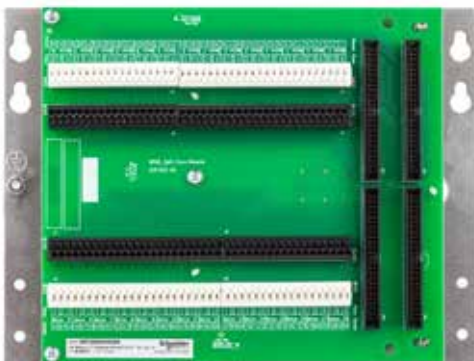
EM49xxA Main Board

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EM49xxE Main Unit

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CT Adapter Assembly (28-Meter models only)

## EM4900 series part numbers - BCPM with solid core CTs

Item	Code	Description
1	Model	METSEEM49 Multi-Circuit Meter
2	Number of 3-phase Meters	04 Up to (4) 3-phase Meters (see table for variations)
		08 Up to (8) 3-phase Meters (see table for variations)
		14 Up to (14) 3-phase Meters (see table for variations)
		28 Up to (28) 3-phase Meters (see table for variations)
3	Communication Interfaces & Protocols	A RS-485 Serial with Modbus RTU (add E8951 for other protocols)
		E Ethernet with Modbus TCP, BACnet IP and SNMP protocols and RS-485 Serial with Modbus RTU or BACnet IP

Commercial ref. no.	"E" - Integrated Ethernet	Number of meters		
		3-phase	2-phase	1-phase
<b>METSEEM4904A</b>	<b>METSEEM4904E</b>	4	6	12
<b>METSEEM4908A</b>	<b>METSEEM4908E</b>	8	12	24
<b>METSEEM4914A</b>	<b>METSEEM4914E</b>	14	21	42
<b>METSEEM4928A</b>	<b>METSEEM4928E</b>	28	42	84

### Number of meters supported:

EM4900 models are all factory-configured as all 3-phase meters (w/o neutral). They can be easily re-configured to any combination of 1-ph, 2-ph or 3-ph meters (with ION Setup). Any unused channels can be used to measure neutral current. Label overlays (to re-number CT connections) are provided for 1-ph/2-ph applications.

Commercial ref. no.	EM4900 multi-circuit meters
<b>METSEEM4904A</b>	Multi-Circuit Meter – (4) 3-phase meters - Modbus RTU only
<b>METSEEM4908A</b>	Multi-Circuit Meter – (8) 3-phase meters - Modbus RTU only
<b>METSEEM4914A</b>	Multi-Circuit Meter – (14) 3-phase meters - Modbus RTU only
<b>METSEEM4928A</b>	Multi-Circuit Meter – (28) 3-phase meters - Modbus RTU only
<b>METSEEM4904E</b>	Multi-Circuit Meter – (4) 3-phase meters - Ethernet and Serial (Modbus, BACnet & SNMP)
<b>METSEEM4908E</b>	Multi-Circuit Meter – (8) 3-phase meters - Ethernet and Serial (Modbus, BACnet & SNMP)
<b>METSEEM4914E</b>	Multi-Circuit Meter – (14) 3-phase meters - Ethernet and Serial (Modbus, BACnet & SNMP)
<b>METSEEM4928E</b>	Multi-Circuit Meter – (28) 3-phase meters - Ethernet and Serial (Modbus, BACnet & SNMP)

# EM4900 series

PEB6284



CBL008

Flat ribbon cable

PB117152



CBL022

Round ribbon cable

PE66183



LVCT00050S

PowerLogic™ LVCT0xxxxS split-core Low-voltage (1/3V) CTs are ideal for retrofit applications

PB113652

PB113657

PB113656



LVCT20050S

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

## EM4900 series accessories

Commercial reference number	Description
<b>BCPMCOVERS</b>	EM4900 circuit board cover
<b>E8951</b>	Modbus to BACnet protocol converter

### Ribbon cables for 28-meter models

1.22 m cables are standard – others must be ordered separately

<b>CBL008</b>	Flat Ribbon cable (quantity 1) for BCPM, length = 0.45 m
<b>CBL016</b>	Flat Ribbon cable (quantity 1) for BCPM, length = 1.2 m
<b>CBL017</b>	Flat Ribbon cable (quantity 1) for BCPM, length = 1.5 m
<b>CBL018</b>	Flat Ribbon cable (quantity 1) for BCPM, length = 1.8 m
<b>CBL019</b>	Flat Ribbon cable (quantity 1) for BCPM, length = 2.4 m
<b>CBL020</b>	Flat Ribbon cable (quantity 1) for BCPM, length = 3.0 m
<b>CBL021</b>	Flat Ribbon cable (quantity 1) for BCPM, length = 6.1 m
<b>CBL022</b>	Round Ribbon cable (quantity 1) for BCPM, length = 1.2 m
<b>CBL023</b>	Round Ribbon cable (quantity 1) for BCPM, length = 3 m
<b>CBL024</b>	Round Ribbon cable (quantity 1) for BCPM, length = 6.1 m
<b>CBL031</b>	Round Ribbon cable (quantity 1) for BCPM, length = 0.5 m
<b>CBL033</b>	Round Ribbon cable (quantity 1) for BCPM, length = 0.8 m

### 1/3 V low-voltage Split-core CTs

Commercial reference number	Amperage rating	Inside dimensions
<b>LVCT00050S</b>	50 A	10 x 11 mm
<b>LVCT00101S</b>	100 A	16 x 20 mm
<b>LVCT00201S</b>	200 A	32 x 32 mm
<b>LVCT00102S</b>	100 A	30 x 31 mm
<b>LVCT00202S</b>	200 A	30 x 31 mm
<b>LVCT00302S</b>	300 A	30 x 31 mm
<b>LVCT00403S</b>	400 A	62 x 73 mm
<b>LVCT00603S</b>	600 A	62 x 73 mm
<b>LVCT00803S</b>	800 A	62 x 73 mm
<b>LVCT00804S</b>	800 A	62 x 139 mm
<b>LVCT01004S</b>	1000 A	62 x 139 mm
<b>LVCT01204S</b>	1200 A	62 x 139 mm
<b>LVCT01604S</b>	1600 A	62 x 139 mm
<b>LVCT02004S</b>	2000 A	62 x 139 mm
<b>LVCT02404S</b>	2400 A	62 x 139 mm

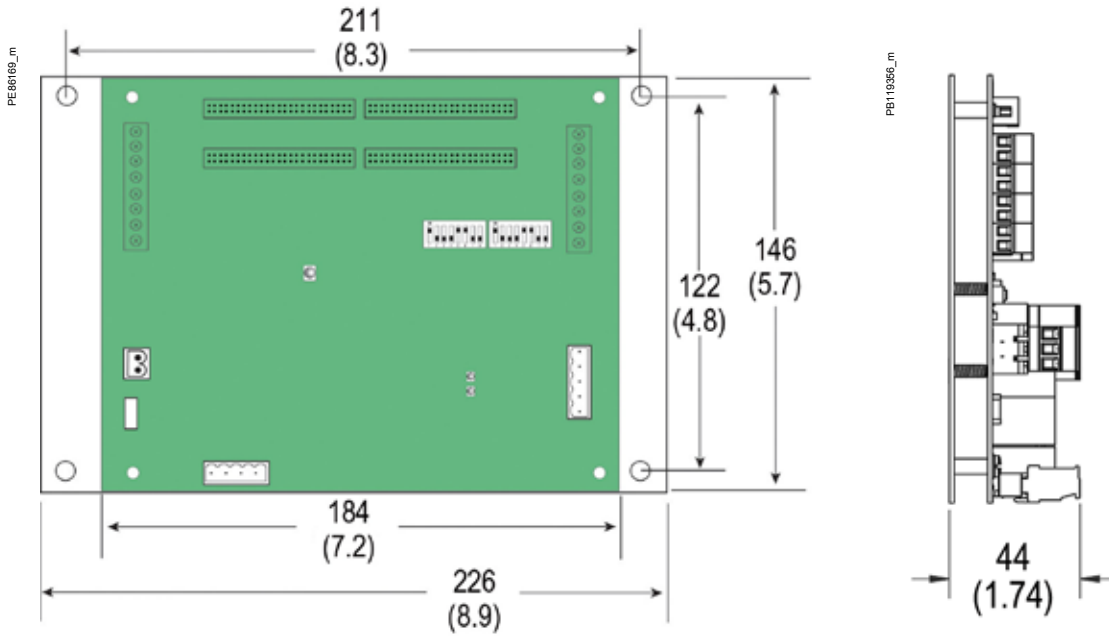
### 1/3 V low-voltage Solid core CTs

Commercial reference number	Amperage rating	Inside dimensions
<b>LVCT20050S</b>	50 A	10 mm
<b>LVCT20100S</b>	100 A	10 mm
<b>LVCT20202S</b>	200 A	25 mm
<b>LVCT20403S</b>	400 A	31 mm

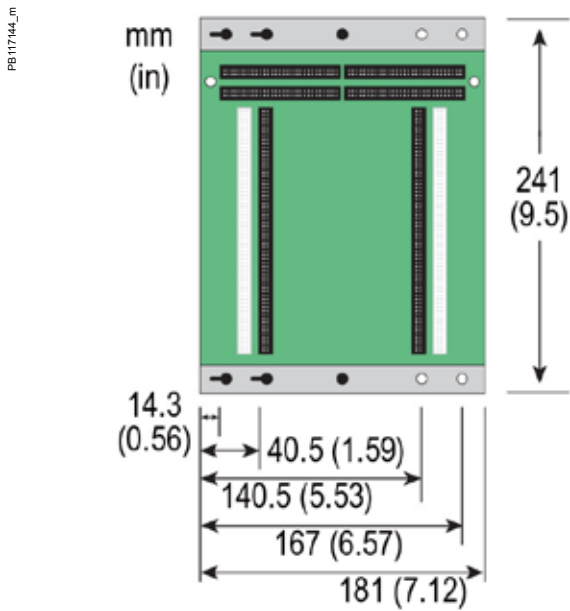
# EM4900 series

## EM49xxA main board dimensions

mm



## 28-Meter CT adapter assembly dimensions

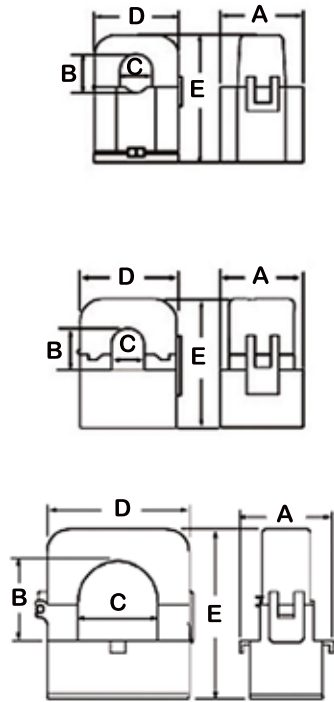




# EM4900 series

## 50 A-200 A Split-core CT dimensions

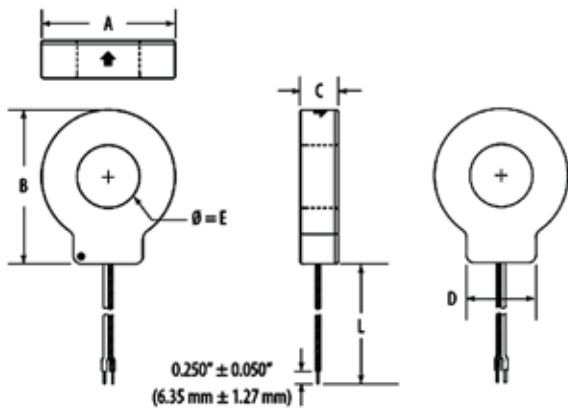
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CT rating	A	B	C	D	E
50 A	26 mm	11 mm	10 mm	23 mm	40 mm
100 A	28 mm	16 mm	16 mm	40 mm	52 mm
200 A	37 mm	32 mm	32 mm	62 mm	69 mm

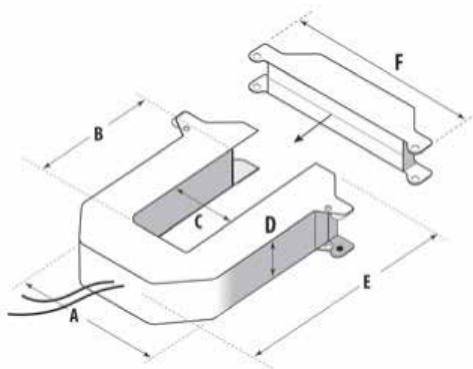
## Solid core CT dimensions

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Model	L	A	B	C	D	E
LVCT20050S	1.8 m	33 mm	38 mm	18 mm	21 mm	10 mm
LVCT20100S						
LVCT20202S	1.8 m	59 mm	66 mm	18 mm	31 mm	25 mm
LVCT20403S	1.8 m	70 mm	82 mm	25 mm	36 mm	31 mm

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Split-core CT dimensions - see table.

## 1/3 V low-voltage CT form factor

Small form factor 100/200/300 A	Medium form factor 400/600/800 A	Large form factor 800/1000/1200/ 1600/2000/2400 A
A = 96 mm	A = 125 mm	A = 125 mm
B = 30 mm	B = 73 mm	B = 139 mm
C = 31 mm	C = 62 mm	C = 62 mm
D = 30 mm	D = 30 mm	D = 30 mm
E = 100 mm	E = 132 mm	E = 201 mm
F = 121 mm	F = 151 mm	F = 151 mm

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**EM4900 Series**  
**PLSED310134EN**

As standards, specifications and designs develop from time to time, please ask for confirmation of the information given in this document.

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Photos: Schneider Electric

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