

Electrical sub-distribution  
Lighting and power metering solutions

L2 building regulations compliant  
Single phase MCB boards  
Three phase MCB boards  
MCCB panelboards

Get smart.  
Reduce energy  
consumption



**EATON**

*Powering Business Worldwide*



# If it's measured then it can be managed – and energy consumption will be reduced

According to the Confederation of British Industry, 30% of the energy that companies buy is wasted. The Royal Institution of Chartered Surveyors estimates that buildings in the UK account for around 44% of our carbon emissions.

As energy costs escalate and regulations to save energy and reduce carbon emissions proliferate, there is an ever increasing need to understand the requirements and take measures to implement them.

Eaton has a thorough knowledge of European and global energy regulations and, as part of its PowerChain Management® solutions is able to provide an industry-leading range of metering solutions, with distribution and panelboard systems and components to satisfy every commercial need.

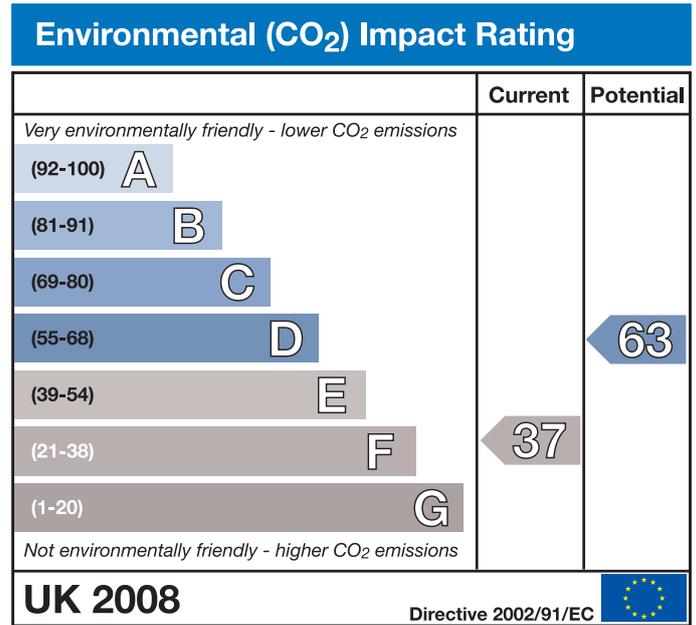
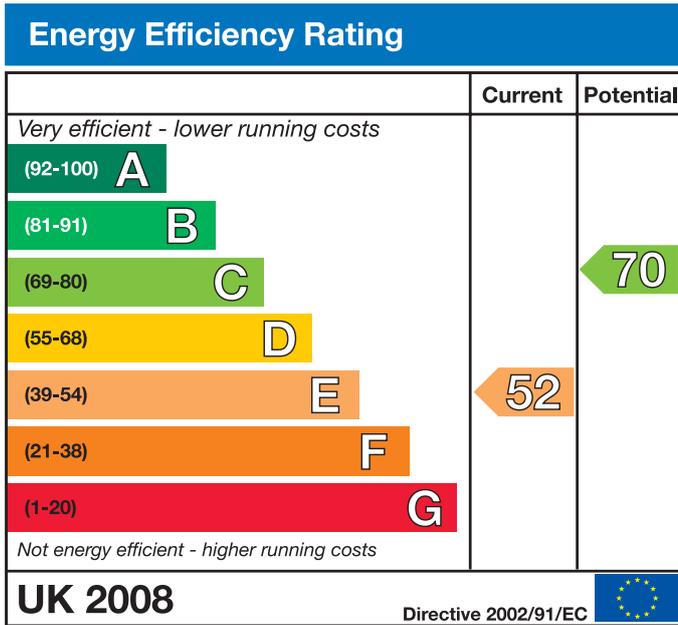
A combination of increasing energy costs and EU directives on the reduction of consumption – and therefore carbon emissions – is causing a dramatic change in the metering requirements of all buildings.

Metering helps the occupiers of buildings to understand energy usage and identify patterns and trends, giving them the ability to control consumption and costs. By providing valuable feedback, it can directly reduce consumption by up to 10% – a key reason behind the recognition given by part L2 of the current Building Regulations and its subsequent requirement for sub-metering in commercial buildings.

In addition, sellers and landlords are now required by law to provide an Energy Performance Certificate (EPC) for all non-domestic buildings when they are sold or rented.

## DID YOU KNOW?

Metering can enable you to reduce energy by up to 10%



# L2 Building Regulations' requirements

Installing sub-meters in non-domestic buildings that enable at least 90% of the estimated annual energy consumption of each fuel to be accounted for is considered reasonable provision. As well as new build, this is applied to existing buildings when consequential improvements are made – that is, if building regulations control approval is required.\*

If improvements are made, then 10% of these improvements must be for energy savings and carbon reduction. Reasonable provision of sub metering would be to provide sub metering as such that the consumption of final distribution boards of 50kW and above can be directly metered or reliably estimated.

Where MCB sub-distribution boards represent a significant part of the overall demand within a building, breaking down this demand into more useable elements provides a greater visibility and understanding of the energy usage. Grouping lighting circuits together, and having separate information for the grouped small power circuits, provides substantial improvements in energy monitoring.

### Key reasons to adopt a metering strategy

- To meet the legal demands of the Building Regulations, part L2 of which addresses the energy efficiency requirements in non-domestic buildings
- Escalating energy costs
- To provide critical energy usage data for owners and tenants to help reduce energy consumption, expected to be 5–10% per annum
- Split load power and lighting boards provide more meaningful information on where energy is being consumed

\*CIBSE General Information Leaflet 65



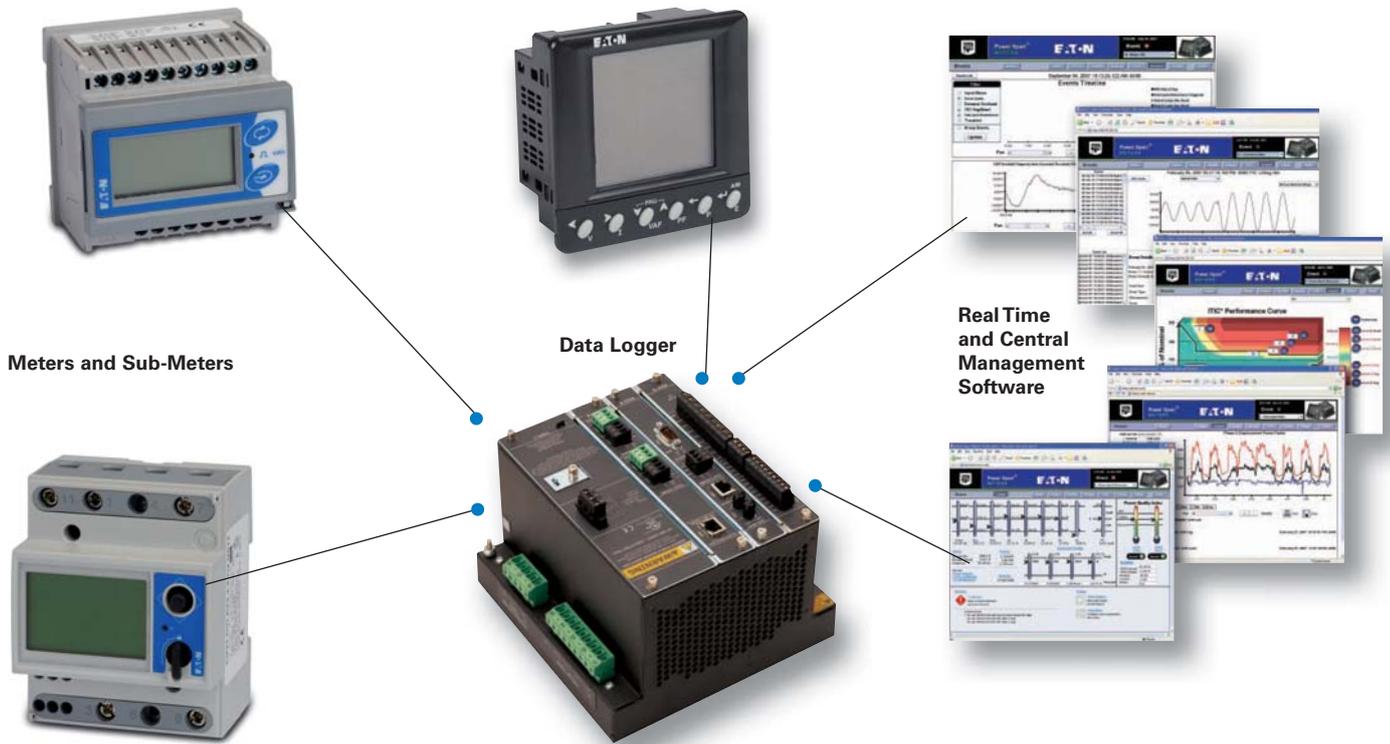


The current building regulations for energy monitoring in commercial buildings has resulted in an increased number of sub meters being utilised for energy management.

In buildings of over 1000m<sup>2</sup>, the only practical solution to gather the required energy data is to provide automatic metering and trending (AM&T), utilising networked meters. This requires the meters to have appropriate levels of connectivity to the chosen energy management system (EMS).

Meters with pulsed output kWh information provide the simplest form of connectivity at the lowest cost, whilst Modbus RS 485 versions facilitate access to enhanced monitoring capability.

Pulsed output of kWh information or Modbus RS 485 connection options, are available on all Eaton's MEM metering solutions.



# Eaton's metering solutions provide cost effective compliance

Building Regulations Part L2 requires a strategy for the collection and analysis of data to achieve its objectives – in other words, to ensure that sufficient meters and sub-meters are installed to enable owners or occupiers to measure their actual energy consumption.

Section 3.5 states: reasonable provision of meters would be to install sub metering meters in every building greater than 500m<sup>2</sup> floor area.

In buildings with a total useful floor area greater than 1000m<sup>2</sup>, to install automatic meter reading and data collection facilities is evolving into being the only practical solution.

The latest metering requirements including building regulations part L2 and the EU measuring instruments directive (MID) for billing applications are causing a complete change in the way we measure energy consumption in all commercial buildings.

The most practical and cost effective solution is to provide the metering integral to the electrical distribution equipment.

Eaton has developed an industry leading line of comprehensive metering solutions for MCB distribution boards and MCCB panelboards.

For MCB distribution board applications, Eaton's unique Smart power and lighting board delivers independent metering of power and lighting grouped loads.

## OPERATING COST EFFICIENCIES

Reduce operating costs with effective energy management and maintenance strategies.

# Eaton's unique Smart design for split lighting and power sub-distribution boards



Grouping lighting circuits together and having separate information for the grouped "small power" circuits provides substantial improvement in energy monitoring. This can be achieved by installing independent sub-distribution boards for each type of load. However a more cost-effective solution is to use split power and lighting boards which not only reduce the number of sub boards required but, more importantly, the number of sub distribution feeds required from the main board.



Eaton's unique solution uses smart meter technology to monitor embedded transducers in a high integrity shrouded 200A busbar assembly. This solution provides independent readings of each section of the board as net values, as well as providing information of the total demand on the board – all from a single smart meter.

A choice of two meter options provide either two pulsed output signals for kWh information, or Modbus RS 485 communication. Both meters display other useful parameters, including line voltage and current for

each section of the board, plus power factor and max demand information. Through the Modbus RS 485 version meter these parameters can also be accessed remotely.

Eaton's new smart metered board is available in 4 sizes up to 24TPN or 72SP ways. The board is supplied with a 200A switch disconnecter pre-installed and tested. The board is suitable for both three and single phase applications without the need for further accessories.

- Calculates the net values of each section of the distribution board without further external calculations
- Meter transducers within the busbar profile reduces overall board size, saving valuable space
- Meter and transducers are matched to ensure meter accuracy and MID compliance
- Pre-installed and tested main incomer minimises installation time
- Meter is pre-installed and ready for operation
- Additional high-integrity Earth connections are included as standard
- Standard Earth and additional high-integrity Earths can be configured as Functional Earths (Clean Earth) without additional accessories to ensure compatibility with a wide range of applications
- Removable side gland plates provide a variety of cabling options to match application needs

# Eaton's range of metering product solutions

## Type A Metered boards

### For electrical distribution applications

Eaton's sub-metering solutions, addresses the need to measure electricity consumption and now; Split Metering options for separate small power and lighting circuits have been added to the range to fully meet the needs of the L2 regulations. The meters provide a pulsed output for kWh for simple integration, with Modbus communication as an alternative option. In many cases, the Meters display other useful parameters, including Line voltage and current etc.

Eaton's Memshield 3 meter packs provide simple integration with matched aesthetics to the 'A' and 'B' style Memshield 3 MCB Distribution boards. Versions for type 'A' boards utilise MID compliant meters as standard and for type B boards, there is a version with an MID approved meter as well as an OFGEM version, for billing application.

### Type A metered boards

- Type A SPN boards with integrated meter
- Split load versions utilise a two channel meter, feeding two independent busbars and groups of MCB/RBDOs
- Split load versions provide independent monitoring of "Power" and "Lighting" loads and total load.
- Aids compliance with Part L2 of the building regulations (England & Wales)



**EAMMP65**  
Meterpack for SPN Type A  
(Fits alongside Type A, boards)



**EAM12M**  
12 way SPN Type A metered board  
(Pre-installed meter included)



**EAMSL93M**  
9 + 3 way SPN Type A split metered board  
(Pre-installed 2 channel meter included) for separate monitoring of Small Power and Lighting

### "Simple integration with matched aesthetics"

### MCB 'A' Boards provide independent monitoring of power and lighting

Memshield 3 'A' type boards

- Split bus arrangements provide greater breakdown of loads as well as reducing physical size and cost.

L1 supply is split into two channels here and feeds two independent Busbars at the bottom of the board



Unique two channel meter provides independent monitoring of channel 1 & channel 2 plus total values. Two separate pulsed outputs of Kwh as standard

Busbar 1      Supplied with meter and SD incomer pre-installed      Busbar 2      L1

## Type B Meterpack Assemblies

For Three phase applications, Eaton's EBMPCT250 employs a multi-function meter to measure the electrical parameters on the supplies to TPN Distribution Boards. It can also be used to meter single-phase loads. The unit is supplied complete with CT's and wiring terminals. Suitable for 100A – 250A applications with a pulsed output for kWh, the meter also monitors for display, other parameters, including line voltage and current. The voltage reference connection within the associated distribution board is facilitated on the main busbar, maintaining the full capacity of outgoing circuits.



**EBMMPDC120**  
120A direct connection, OFGEM approved meter



**EBMPCT250**  
250A multi-function (Located below Type B Distribution board)

## Type B Double meter pack assemblies

The double Meterpack provides for monitoring of two standard TPN distribution boards from one main cabled supply. Designed to provide a solution for separate "small power" and "lighting" applications. Two double meterpack versions cover 125A & 250A applications. The 250A version provides independent 125A protection to each board. Standard Memshield 3 boards can be mounted above, utilising the standard choice of connection options, within the main board e.g. Switch disconnector or lugs (see main catalogue).



**EBMMPSL250**  
250A split load meter pack (Shown fitted below two standard Memshield 3 type B boards)

Pre-installed and connected CT & meter components      Fuse protected voltage reference for meters

Fuse protected voltage reference for meters  
Independent 125A protection device for each board supply



250A rated main supply      Independent 125A protection device for each board supply

## Incoming and outgoing metering for Eaton's Memshield 3 Panelboards

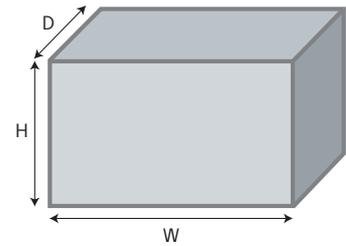


See main catalogue for comprehensive selection guide.

- Incoming (top or bottom mounted) and outgoing (side mounted) metering enclosures with pre-cut meter locations and hinged doors simplifies meter installation.
- Side mounted cable enclosures provide enough meter locations to cover all outgoing circuits on each side where TP MCCBs are used
- Panelboard design has removable end and side gland plates to facilitate easy cable routing.
- Plug and play CT and meter technology ensures much faster installation time and very significant reduction in possibility of wiring errors. Meter has in-built phase sequence detection.
- Alternative meters and CTs can be supplied as a factory-built assembly if required. For example, if MID or harmonic analysis is a requirement.



# Distribution Board Meterpacks



Use the following chart to select the most appropriate meterpack or metered board for your application.

	Rating (A)	Outgoing ways	Installed meter, characteristics				Load type compatibility		Size mm (W x H x D)
			Modbus	Pulsed output kWh	MID Certified	OFGEM Certified	MID Compliant	Single Phase	
<b>EAMMP65</b>	65	△		•			•	•	238 x 254 x 140
<b>EAM9M</b>	65	9		•			•	•	440 x 254 x 140
<b>EAM9MB</b>	65	9	•				•	•	440 x 254 x 140
<b>EAM12M</b>	65	12		•			•	•	454 x 254 x 140
<b>EAM12MB</b>	65	12	•				•	•	454 x 254 x 140
<b>EAMSL66M</b>	100	6+6		•			•	•	454 x 254 x 140
<b>EAMSL93M</b>	100	9+3		•			•	•	454 x 254 x 140
<b>EAMSL66MB</b>	100	6+6	•				•	•	454 x 254 x 140
<b>EAMSL93MB</b>	100	9+3	•				•	•	454 x 254 x 140
<b>EBMMPDC120</b>	120	□		•		•	•	•	440 x 430 x 130
<b>EBMMPSL125</b>	125	□		•			•	•	880 x 350 x 125
<b>EBMMPSL125M</b>	125	□	•				•	•	880 x 350 x 125
<b>EBMMPSL250</b>	250	□		•			•	•	880 x 350 x 125
<b>EBMMPSL250M</b>	250	□	•				•	•	880 x 350 x 125
<b>EBMMPCT250</b>	250	□		•			•	•	440 x 256 x 130
<b>EBMMPCT250MID</b>	250	□		•	•		•	•	440 x 256 x 130
<b>EBMMPCT250M</b>	250	□	•				•	•	440 x 256 x 130
<b>EBMSL642M</b>	200	6+4		•			•	•	440 x 1130 x 130
<b>EBMSL642MB</b>	200	6+4	•				•	•	440 x 1130 x 130
<b>EBMSL862M</b>	200	8+6		•			•	•	440 x 1236 x 130
<b>EBMSL862MB</b>	200	8+6	•				•	•	440 x 1236 x 130
<b>EBMSL1082M</b>	200	10+8		•			•	•	440 x 1342 x 130
<b>EBMSL1082MB</b>	200	10+8	•				•	•	440 x 1342 x 130
<b>EBMSL14102M</b>	200	14+10		•			•	•	440 x 1501 x 130
<b>EBMSL14102MB</b>	200	14+10	•				•	•	140 x 1501 x 130

△ For use with standard SPN type A boards

□ For use with standard 125A TPN type B boards

Eaton's Electrical Sector is a global leader in power distribution, power quality, control and automation, and monitoring products. When combined with Eaton's full-scale engineering services, these products provide customer-driven PowerChain Management® solutions to serve the power system needs of the data center, industrial, institutional, public sector, utility, commercial, residential, IT, mission critical, alternative energy and OEM markets worldwide.

PowerChain Management solutions help enterprises achieve sustainable and competitive advantages through proactive management of the power system as a strategic, integrated asset throughout its life cycle, resulting in enhanced safety, greater reliability and energy efficiency. For more information, visit [www.eaton.com/electrical](http://www.eaton.com/electrical).

**Eaton Electric Limited**  
Grimshaw Lane  
Middleton  
Manchester M24 1GQ  
United Kingdom  
Customer Support Centre  
Tel: +44 (0)8700 545 333  
Fax: +44 (0)8700 540 333  
email: [ukcommorders@eaton.com](mailto:ukcommorders@eaton.com)

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