

## MEET THE EMP+

The EMP+ revolutionizes traditional metering panels by introducing improvements in streamlining the installation processes and optimizing operational efficiency. One of its standout features is its compact design, which incorporates fewer boxes, conserving valuable wall space and simplifying conduit routing. This reduction in physical footprint results in cost savings, as installation expenses are lowered.

In addition to its space-saving benefits, the EMP+ boasts unparalleled versatility in its modular design allowing several meter panels to be vertically, and even horizontally, stacked and integrated, expanding the number of meter points substantially compared to any other product in the market. The EMP+ also has the ability to accommodate multiple configurations of electricity metering CTs and pulse inputs from external water and gas meters. This adaptability makes it an ideal solution for a wide range of applications, from mixed-use projects to large-scale commercial and institutional buildings.

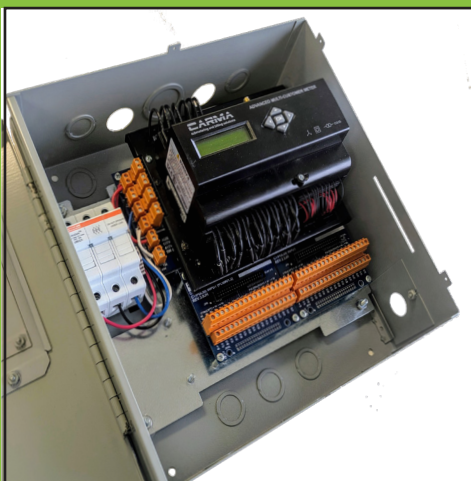
Each meter point is equipped to measure Active Energy (kWh), providing comprehensive insights into energy consumption patterns and enabling more informed decision-making regarding energy management strategies. Reactive Energy (kVARh) and Apparent Energy (kVAh) can be added to improve understanding of power factor and load performance in your facility.

The EMP+ represents a significant improvement in metering technology. We are confident that this innovative solution will set new standards in the industry and empower our customers to achieve their energy management goals with greater efficiency and ease.

Key features include:

- 18 CT inputs allow for various configurations:
  - 6 x poly-phase loads (2 or 3 CTs)
  - 9 x network loads
  - 18 x single-element loads
- Power shutdown not required during reverification of Measurement Canada Certifications
- Residential build of EMP+ includes multi-conductor cable with pre-crimped CTs to simplify and dramatically reduce installation time
- Embedded Ethernet includes FTP server for transmitting data to server
- Smart building/Building Automation Ready. Ethernet supports BACnet IP and MOD-BUS TCP. Serial port can be configured for Modbus-RTU and BACnet MSTP
- Compact terminal design carried over from CARMA's original EMP and Profiler to allow for easy installation for contractors. All CT and Pulse cables stay permanently connected to terminals so that once commissioned/inspected, no reinspection work required.
- Configured for hourly, 15-minute or 1-minute recording of active energy total register per meter point and daily file send (via FTP)
- Measurement Canada Approved when using approved CTs (100mA or 80mA) and supports 333mV Rogowski Coils "Split-Core CTs"

**A NEW STANDARD IN CAPTURING  
UTILITY AND SUSTAINABILITY DATA  
FOR OUR CUSTOMERS**



A comprehensive Installation Manual is provided that steps through the necessary procedures to properly install the system.

## MEETS ALL STANDARDS

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The final preparation of an EMP, before shipment from the production facility, involves calibration of the meters and Measurement Canada accuracy verification.

Our Measurement Canada accredited Innovation Centre verifies the required accuracy of each metering device and qualifies them for legal billing. All EMPs (and components) are safety certified to both Canadian and US standards.

## REVENUE VERIFICATION

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- Measurement Canada Approved
- Measurement Canada Factory Verification & Sealing (A-062)
- Approved by Measurement Canada as a multi-customer electricity meter and as a pulse recorder/totalizer (water, gas, electricity) for remote reading of pulse output meters

## INSIDE

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All designs of EMP+ include input provision for connecting line reference voltage, and if applicable, separate auxiliary power supply (for situations where power loss is to be continuously monitored/recorded).

The EMP+ offers Automated Meter Reading (AMR) and Advanced Meter Infrastructure (AMI) compatibility when configured for hourly, 15-minute or 1-minute recording of active energy total register per meter point and daily file send (via FTP).

- An additional 36-pin terminal strip is available for 18 pulse inputs (if water and gas pulse output meters are to be added to the system).

## MOUNTING DIMENSIONS AND SKETCHES

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The EMP+ is a durable metal enclosure measuring 12 inches wide by 12 inches high. Model M1 is 4 inches deep (commercial) and M2 is 6 inches deep (residential). The ideal location for mounting the EMP is directly beside the Electrical Distribution Panel being monitored.

Alternatively, cables can be run up to 300ft/91m from the EMP to remotely located CTs and pulse meters.



## APPLICATIONS

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- Hotels/Office Buildings
- Apartments/Condominiums
- Commercial Complex/Mall
- Tenant Submetering/Billing
- Hospitals/Public Services
- Energy Management Systems
- Branch Circuit Monitoring
- LEED Projects
- Data Centres

Metering			
Parameters	Accuracy	Resolution	Range
Voltage	0.5%	0.1V	10~400V
Current	0.5%	0.001A	5mA~10,000A
Real Power	0.5%	0.1W	4000.0kW
Reactive Power	0.5%	0.1var	4000.0kvar
Apparent Power	0.5%	0.1VA	4000.0kVA
Power Factor	0.5%	0.001	-1.000~1.000
Frequency	0.2%	0.01Hz	45~65Hz
Active Energy	0.5%	0.1kWh	0~99999999.9kWh
Reactive Energy	0.5%	0.1kvarh	0~99999999.9kvarh
Apparent Energy	0.5%	0.1kVAh	0~99999999.9kVAh
Real Power Demand	0.5%	0.1W	4000.0kW
Reactive Power Demand	0.5%	0.1var	4000.0kvar
Apparent Power Demand	0.5%	0.1VA	4000.0kVA
Current Demand	0.5%	0.001A	5mA~10,000A
Unbalance	1%	0.01%	0~300%
Harmonics	1%	0.01%	0~100%
Meter Running Time		0.01hour	0~999999.9 hours
Temperature Drift	less than 100ppm/°C(0-50°C)		

Input	
Current Inputs (Each Channel)	
Nominal Current Options	80mA, 100mA, 333mV, RCT Rogowski Coil
Accuracy	0.5% full scale
Voltage Inputs (Each Channel)	
Nominal Full Scale	400Vac L-N, 690Vac L-L
Input Impedance	2MΩ/per phase
Metering Frequency	45Hz~65Hz
Burden	<0.2VA
Communications	
RS-485	
1200-115200bps	
Protocols	
Modbus-RTU, Modbus-TCP/IP, BACnet-IP, BACnet MS/TP, IPv6	
Control Power	
AC/DC CONTROL POWER	
Operating Range	100~415Vac, 50~60Hz; 100-300Vdc
Power Consumption	5W
Operating Environment	
Operating Temperature	-25°C to 70°C (53°C) -13°F to 158°F
Storage Temperature	-40°C to 85°C -40°F to 176°F
Relative Humidity	5% to 95% Non-Condensing

I/O Options	
Digital Input	
Input Type	Contact Closure Type (2-wire Dray Contact real or simulated)
Input Current (Max)	2mA
Pulse Frequency (Max)	100Hz, 50% Duty Cycle
SEO Resolution	2ms
Digital Output (DO) (Photo-MOS)	
Minimum Pulse Width	20-100ms, Programmable
Pulse Constant	1-6000000imp/kWh, Programmable
Voltage Range	5-30Vdc
Load Current	5-50mA
Relay Output (RO)	
Load Voltage Range	250Vac, 30Vdc
Load Current	3A
Opening Time	10ms (Max)
Conduction Impedance	100mΩ (Max)
Isolation Voltage	4,000Vac
Mechanical Life	5,000,000 times
Power Supply For DI (Contact Closure Inputs)	
Output Voltage	15Vdc (wetting voltage)
Rated Power	1W
Standard Compliance & Certifications	
Measurement Standard	IEC 62053-22 class 0.5s, ANSI C12.20 0.5 class
Environmental Standard	CE, RoHS
Safety Standard	UL 61010-1
Protocol Conformance	BTL Listed

- Multi-Customer Submetering System meets Canada and USA safety approval regulations (cTUVus)
- Compliant with AMI Ontario and other Time of Use standards across North America
- Power quality features include: power factor, voltage/current THD, harmonics up to 31st order, voltage crest factor, current K factor. Values are real-time and can be logged in non-volatile memory.
- Measurement Canada Approved as a Multi-Customer Metering System for electricity and as a pulse recorded. Meets/exceeds ANSI C12.20 0.5 class and IEC 62053-22 class 0.5s
- 8MB memory standard. WEB2 option adds 8GB of non-volatile memory for storing energy & power quality data
- Combines easy remote meter access with industry leading security features
- Supplied with 2 ethernet ports (for “daisy chaining” if required) and 1 serial RS-485 port for Serial BAS integration. Wi-fi available with optional antenna
- Permanent wire connections and pluggable meter module allows for simplified installation and simplifies maintenance.

