



**NMI M6-1**



**Overview**

The PMC-230 Single-Phase Multifunction Meter is CET's latest offer for the low voltage energy metering market featuring DIN rail mount, compact construction, 63A direct input with an internal UC3 Disconnect Relay compliant with the Australia National Electricity Rules (NER) schedule 7.5 for the ability to disconnect/re-connect from the supply. The PMC-230 also complies with the IEC 62053-21 Class 1 kWh Accuracy Standard and has received the certificate of approval from the National Measurement Institute (NMI) of Australia for compliance with the M6-1 Electricity Meters, Part 1: Metrological and Technical Requirements. The PMC-230 provides 4MB Log Memory for Data Recording, 3xDI for Status Monitoring or Pulse Counting, 1xLED and 1xSS Pulse Output for energy pulsing. Further, the standard RS-485 port supporting Modbus RTU protocol with password protection allows the PMC-230 to become a vital component of an intelligent, multifunction monitoring solution for any secured Energy Management Systems.

**Typical Applications**

- DIN rail mount energy metering
- Industrial, Commercial and Utility Substation Metering
- Building, Factory and Process Automation
- Sub-metering and Cost Allocation
- NMI compliant Energy Management

**Features**

**Ease of use**

- Easy to read LCD for both data viewing and configuration
- Two LED indicators for Energy Pulsing and Disconnect Relay status
- Password protected setup via Front Panel or free PMC Setup software
- Easy installation with DIN rail mounting, no tools required

**Basic Measurements**

- IEC 62053-21 Class 1 and NMI M6-1 Certified by UL
- Direct Input up to 63A without external CT
- U, I, P, Q, S, PF, Frequency and Operating Time
- kWh and kvarh Imp./Exp. and kVAh
- Two TOU schedules, each providing
  - 4 Seasons
  - 12 Daily Profiles, each with 8 Periods in 15-minute interval
  - 30 Holidays or Alternate Days
  - 4 Tariffs, each providing kWh/kvarh Imp./Exp., kVAh
- Demands and Max. Demands for U, I and P/Q/S with timestamp for This Month & Last Month (or Since Last Reset & Before Last Reset)
- U and I THD
- DI Counters, Front Panel & Communication Programming Counters

**Disconnect Relay (Internal)**

- UC3 compliant Disconnect Relay that can be activated locally from the Front Panel or remotely via communications

**Energy Pulse Outputs**

- 1 LED Energy Pulse Output on the Front Panel
- 1 Solid State Relay Energy Pulse Output

**Digital Inputs**

- 3 channels for external status monitoring and pulse counting
- Self-excited, internally wetted at 12VDC
- 1000Hz sampling

**Data Recorder**

- One Data Recorder Log of 16 parameters
- Recording Interval from 1 second to 40 days.
- Configurable Depth (max. 65535) and Recording Offset
- 4MB Log Memory, capable of recording 16 parameters at 5-min interval for 6 months
- Available parameters: U, I, P, Q, S, PF, Freq., kWh Imp./Exp., kvarh Imp./Exp., kVAh, DI Counters, Relay Status, Demands and Max. Demands for U, I, P/Q/S.

**Monthly Energy Log**

- 12 historical monthly logs of kWh, kvarh Imp./Exp. and kVAh as well as kWh/kvarh Imp./Exp. and kVAh per Tariff

**SOE Log**

- 32 events time-stamped to ±1ms resolution

**Communications**

- Optically isolated RS-485 ports at 1,200 to 19,200 bps
- Modbus RTU protocol with configurable password protection

**Real-Time Clock**

- Battery backed RTC @ 6ppm (≤0.5s/day)
- Battery Life > 10 years

**System Integration**

- Supported by our PecStar® iEMS and PMC Setup
- Easy integration into other Automation or SCADA systems via Modbus RTU protocol

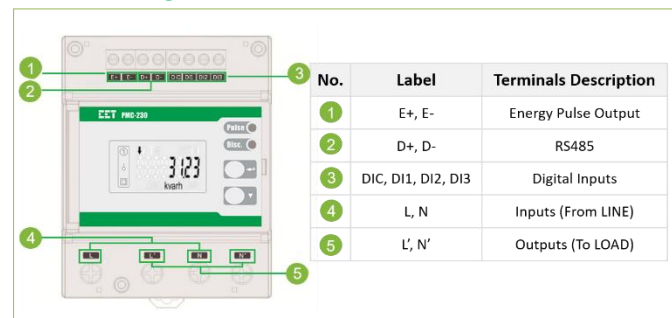
**Accuracy**

Parameters	Accuracy	Resolution
Voltage	±0.5%	0.1V
Current	±0.5%	0.001A
P, Q, S	±1.0%	0.001kW/kvar/kVA
kWh	IEC 62053-21 Class 1	0.01kWh
kvarh	IEC 62053-23 Class 2	0.01kvarh
PF	±1.0%	0.001
Frequency	±0.02Hz	0.01Hz

**Front Panel Display**



**Terminals Diagram**

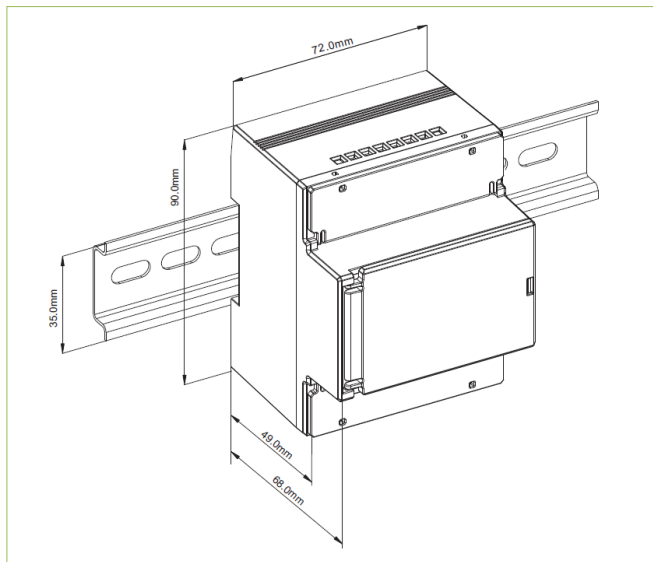




**Technical Specifications**

Measurement Inputs (L, N, L', N')	
Voltage (Un)	220VAC 230VAC 240VAC
Overrange (% Un)	120% 115% 110%
Range	95-264VAC
Burden	<3VA
Current (Ib / I <sub>max</sub> )	5A / 63A
Starting Current	0.4% Ib (20mA)
Minimum Current	5% Ib (0.25A)
Burden	<3VA
Frequency	50Hz/60Hz
Power Supply	Self-powered from 95 to 264VAC
Maximum Wire Size	25 mm <sup>2</sup> (4AWG)
Torque for L, N Terminals	2.5 N.m
Disconnect Relay	
Rated Load (Resistive)	100A @ 250VAC
Response Time	20ms
Short-time Overcurrents	7000A (-10% to +0%) @ 60ms
Service Life (Mech./Elec.)	100k/5k Operations
Rated Making Capacity @ 1.15Un and PF=1	63A Max.
Rated Breaking Capacity @ 1.15Un and PF=1	63A Max.
Dielectric (AC Voltage)	4kV @ 1minute (Contact to Coil) 2kV @ 1minute (Contact to Contact)
Insulation Resistance	1000MΩ/500VDC
SSR Pulse Output (E+, E-)	
Type	Optically Isolated Solid State Relay
Max. Load Voltage	80 VDC
Max. Forward Current	50 mA
Maximum Wire Size	1.5 mm <sup>2</sup> (16AWG)
Torque for Terminals	0.45 N.m
Communications (D+, D-)	
RS-485 (Modbus RTU)	Optically isolated @ 5kVrms
Maximum Wire Size	1.5mm <sup>2</sup> (16AWG)
Torque for RS-485 Terminals	0.45 N.m
Environmental Conditions	
Operating Temp.	-25°C to +70°C
Storage Temp.	-40°C to +85°C
Humidity	5% to 95% non-condensing
Atmospheric Pressure	70kPa to 106kPa
Pollution Degree	2
Mechanical Characteristics	
Unit Dimensions	72(W)x68(D)x90(H)mm
Mounting	DIN-Rail Mounting
IP Rating	IP51 (Front) IP30 (Body)

**Dimensions and Installation**



**Standards of Compliance**

Safety Requirements	
CE LVD 2014/35/EU	EN 61010-1: 2010 EN 61010-2-030: 2010
Electrical safety in low voltage distribution systems up to 1000Vac and 1500 Vdc	IEC 61557-12: 2018 (PMD)
Insulation	IEC 62052-11: 2003 IEC 62053-21: 2003 NMI M6-1
AC Voltage	4kV @ 1 minute
Impulse Voltage	12kV+0%, -15%, 1.2/50µs (NMI M6-1)
Electromagnetic Compatibility EMC 2014/30/EU (EN 61326: 2013)	
Electrostatic Discharge	EN 61000-4-2:2009
Radiated Fields	EN 61000-4-3: 2006+A1: 2008+A2: 2010
Fast Transients	EN 61000-4-4:2012
Surges	EN 61000-4-5:2014+A1: 2017
Conducted Disturbances	EN 61000-4-6:2014
Magnetic Fields	EN 61000-4-8:2010
Voltage Dips and Interruptions	EN 61000-4-11:2004+A1: 2017
Mechanical Tests	
Spring Hammer Test	IEC 62052-11: 2003
Vibration Test	IEC 62052-11: 2003
Shock Test	IEC 62052-11: 2003
Revenue Metering Approval	
NMI M6-1 of Australia	Approval Mark: NMI 14/2/109 UL Ref. # R4789222180_NMI

**Ordering Information**

**CET**  
Electric  
Technology

*Version 20200627*

Product Code	Description																								
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**Your Local Representative**

