

Advanced multi-function meters + IOs

PQMR84 & PQMR86



The PQMR84 & 86 series meters are having benchmark and precision metering features. It is having more capability in metering industry with simplicity, quality, cost effective, compact, easy installation and rich features set in PQMR84 & 86 series meters with LCD display variants.

Application

- Control panels
- Power distribution boards
- Cost and Load management
- Energy Billing applications
- Power Quality analysis
- Building management systems
- Network management

Benefit for

System integrators –

- Ease of integration, Ease of setup, Cost effectiveness

Panel builders

- Easy installation, Cost effectiveness,

End Users -

- Ease of use, High accuracy, billing flexibility, high performance, Safety, Cyber security features

- **PQMR84 & 86 series:** LCD display type: Monochrome graphical LCD of 128 x 64 pixels. Users read all three phases' values simultaneously. The bright display enables easy reading even in extreme lighting conditions and viewing angles with icons and graphics.

• Main Features:

- Accuracy class – Class 0.5 and Class 0.2
- Wide Current measurement range 5mA to 7500 mA

- Power Quality analysis: THD, TOHD, TEHD and individual harmonics up to 63rd level odd and even order
- Phasor Diagram for Voltage and Current
- Total Energy and phase wise energy and Permanent(non-resettable) energy values
- Present, Last, Predictive and Max demand for W, VA, VAR and A
- 4 Rate values – Parameter, Units, unit code selectable
- Min/Max values of instantaneous parameters
- 2 Digital Inputs, 2 Digital Outputs and 2 Relay Outputs
- 16 Alarms – under/Over with time delay configurable
- Multi-source energy metering selectable
- Wide range of baud rate 1200 to 128000 bps
- Cyber security: Editable password, Password lock, OTP if forgot the password, Modbus register read write access selection.

• **Main characteristics:**

- **Usability:**
 - **Easy to install:** Mounts using two clips, pluggable screw terminal connector for Aux power and Voltage inputs and IOs. Compact 96x96x59 mm depth, connectable up to 480 ±10% AC Volts L-L without voltage transformers for installations compliant with measurement category III
 - Easy to operate: Easy and fast navigation with 4 keys and Cal LED for test and calibration on site or lab. Heartbeat LED indicates normal functioning and communication status if connected to RS-485 network. Line Status indicators for Voltage or Current
 - LCD display: 7+3 digits for energy, 5 digits for other parameters, with auto scaling.
- **Product standard compliance**
 - Active energy Class 0.5 and Class 0.2 accuracy as per IEC 62053-22
 - Reactive energy Class 0.5 accuracy as per IEC 62053-24
- **Metering Data and logs**
 - Starting voltage and Current: Minimum value of Volage (5 to 40V) and current (5 to 40mA) detection can be settable for all variants. Default staring voltage 10V and current 5mA
 - Energy and demand and other measurement parameters
 - Month wise energy and Max Demand for last 12 months and Day wise energy and Max demand for 14 days on display and communication
 - Incremental energy and Max Demand value on display and communication
 - Peak and off-peak hours energy and Max Demand values on display and communication
 - Load management: present (raising), last, predicted demand and Max demand for W, VA, VAR, A
 - Timer and Counters: Meter on hours, Feeder on hours, Load on hours and power interruptions
 - Rate counters: 4 Rates counters, parameter, units and unit codes are configurable (unit code: none, INR, Dollar, Euro, Yuan, Dinar, Yen, Kg.Co2, Liter, Gal, Kg, LBS, KLBS, PSI, BTU, m3)
 - Maximum Minimum value: Maximum Minimum values log for all RMS and THD values, Source can be set to log Max-Min value.
 - Mean High Low Values: Mean High Low values log for all RMS and THD values, Source and interval time can be set to log Max-Min value
- **Power quality measurement:**
 - THD, TOHD, TEHD, TDF, TODF, TEDF on voltage and current- average and phase wise
 - K-factor, Crest factor, TDD
 - Individual harmonic % on voltage and current up to the 63rd order – average and phase wise
 - Phasor diagram for voltage and current, available in LCD meters only

- **Communication:**
 - o RS485, 2 wire connection, Modbus RTU, baud rate support from 1200 to 128000 bps,
 - o Pluggable screw terminal connector
- **Cyber security:**
 - o Modbus registers read write access permission selection
 - o 5 digits editable password for securing setup information and prevent tampering of integrated values.
 - o Password lock, OTP if forgot the password,
 - o Firmware download enable/disable option
 - o Anti tamper protection seals for hardware
- **Input Outputs:**
 - o Digital Inputs: 2 Digital Inputs status, counters and timers, can be used for multi-source energy metering
 - o Digital Output: 2 Digital Outputs status, counters and timers, can be used for Alarm control or Energy pulse out counter
- **Alarms:** 16 predefined alarms to log event data and to perform the control functions, Trigger on condition (Over/under) with time delay and normal / Pre alarm selection
- **Energy pulse Output:** Energy pulses can be generated via digital outputs.
- **Multi-source energy values:** 4 multi energy metering, can be activated through digital input mode.
- **Frequently viewing Modbus registers:** Maximum 60 parameters (120 registers) can be settable with communication port
- **Favorite page:** 2 favorite pages, Pick and configure any 3 parameters for display from Instantaneous and THD parameters
- **Diagnostic Information:** Meter status, Current reverse, Voltage missing, Phase rotation, Counters for setup, Reset logins, Password change and counters for each integrated value reset

Commercial References

Model	Product code	
	Class 0.5	Class 0.2
PQMR84	PQMR8405	PQMR8402
PQMR86	PQMR8605	PQMR8602

Features selection

Features	PQMR84	PQMR86
Accuracy		
Active energy accuracy: Class 0.5	☐	☐
Class 0.2	☐	☐
Instantaneous Values		
Basic and Power parameters – 3 phase and phase wise	☐	☐
V-A, V-V Phase angle – Phase wise	☐	☐
% Unbalance A, VLL, VLN - Phase wise and worst	☐	☐
Energy Values		

Energy Values		
KWh, kVAh, kVARh, Run hours – Forward/Import, Reverse/Export, Total and Net	☐	☐
Partial, Phase wise, Quadrant wise and Permanent energy values	☐	☐
Conditional, incremental, Peak & off-peak energy values	☐	☐
Month wise energy for last 12 months, on display and communication	☐	☐
Day wise energy for last 14 days, on display and communication	☐	☐
Multi-Tariff (Command/TOD), 8 tariffs	☐	☐
Demand Values		
KW, KVA, KVAR, A - Present, Last, Predictive and Max Demand with time stamp	☐	☐
Demand update time selectable 1 – 60 sec		
Demand calculated mode - Sliding, Block	☐	☐
Phase wise demands and Max demand with time stamp	☐	☐
conditional, incremental, peak & off-peak Max demand values	☐	☐
Month wise Max demand for last 12 months	☐	☐
Day wise Max demand for last 14 days	☐	☐
Rate Values		
4 Rate Values. Selectable Parameter, unit, unit code	☐	☐
Old Rate Values – Last cleared Rate values, on Communication only		
Power Quality Measurements, 1 Sec update		
THD, TOHD, TEHD on VLL, VLN, A – Average and Phase wise	☐	☐
TDF, TODF, TEDF on VLL, VLN, A – Average and Phase wise	☐	☐
K-factor, Crest factor and TDD	☐	☐
Individual harmonic % on A, VLL, VLN – average, phase wise	63	63
Phasor diagram for Voltage and Current magnitude and angle	☐	☐
Communication		
RS485 Serial port with Modbus RTU, baud rate 1200 –128000 bps	☐	☐
Data Recording		
Max/Min of instantaneous and THD values	☐	☐
Mean High Low of instantaneous, demand and THD values	☐	☐
Event log with date time	☐	☐
Data Log, 4MB memory, up to 12 parameters and interval time configurable		☐
RTC (Real Time Clock)		
Date Time	☐	☐
Daylight Saving Time (DST)	☐	☐
Inputs and Outputs		
Digital Inputs		2
Digital Outputs	2	2
Relay Outputs		
Alarms and control		
Alarms, over/under with time delay configurable	16	16
Active Alarms (16) and History Alarms (32)	☐	☐
Set point response time (sec)	☐	☐
Energy Pulse Output		
Energy pulse counter	☐	☐
Multi-source Energy metering		
Max 4 multi-source energies, selectable in digital input mode		☐
WAGES (Input metering)		
WAGES monitoring, Selectable in digital input mode		☐

Note: 'o' = Optional

Electrical Characteristics

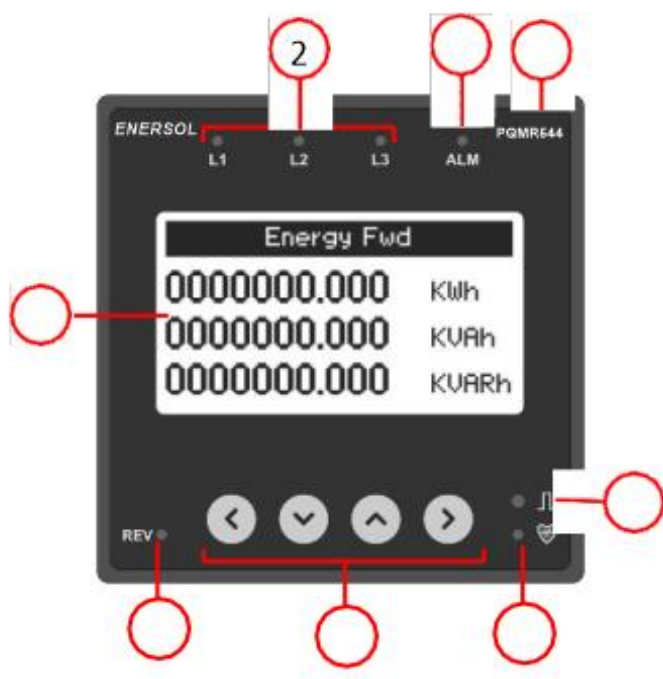
Measurement Accuracy	
Sampling rate	256 samples per cycle at 50/60 Hz
Active energy	Class 0.5 as per IEC62053-22, Class 0.2 optional
Reactive energy	Class 0.5 as per IEC 62053-24
Apparent Energy	±0.2%
Active Power	±0.2%
Reactive Power	±0.5%
Apparent Power	±0.2%
Voltage	±0.2%
Current	±0.2%
Frequency	±0.005%
Input Voltage	
VT Primary	1000 KV LL Max, Default 415V LL
Measured voltage range	10 to 277 V L-N / 18 to 480 V L-L at 50/60Hz nominal, CAT III
Impedance	5M Ohms (normal)
Frequency	45 to 65 Hz
Burden	< 0.2 VA at 277 V L-N
Input Current	
Current Nominal	Nominal 5A, Selectable 1A to 5A,
Operating Current Range	50 mA to 7.5 A, Default Starting current 5mA Starting Current selectable: 5mA to 40mA,
With stand	Continuous 12A, 50 A @10sec/hr
Frequency Measurement Range	45 to 65 Hz ±10%
VA burden	< 0.03 VA at 7.5 A
AC Control Power	
Operating range	80 - 277 Vac L-n ±10%), CAT III 277V
Burden	< 8 VA at 277 V L-N
Frequency	45 to 65 Hz
Ride through time	150ms at 110V
DC Control Power	
Operating range	100 to 277 DC ±10%
Burden	< 4 W at 277 V DC
Ride through time	150ms at 110V
Display Update	
Instantaneous	1 sec
Demand update time	1 sec minimum
THD and Harmonics	1 sec
Communication	
RS-485 with Modbus RTU	RS485 2 wire connection, baud rate 1200 to 128000 bps Parity – Even1, Odd1, None2, None1, Odd2, Even2 (1 or 2 stop bits) Plug-in terminal block: RS485
Firmware file upgrade	Meter firmware upgrade via Serial Communication port
Isolation	2.5 kV rms, double insulated
Human Machine Interface	
Display type	LCD display: Monochrome graphical LCD of 128 x 64 pixels with viewable area of 70 X 40 mm
Key pad	4 keys
Green LED	Meter Health / Communication Active LED

CAL LED Indicator	Red LED for testing energy accuracy in site. Pulse constant is configurable for kWh / kVAh / kVARh
Status LEDs on Top	4 Red LEDs - L1, L2, L3 Line status indicators for voltage / Current ALM – Alarm ON/OFF status indicator
REV LED (Reverse Energy) Indicator	Red LED - Reverse Energy Indicator
Digital Inputs	
ON Voltage	18 to 36 V DC
OFF Voltage	0 to 4 V DC
Opto Isolation	2.5 kV rms
Response time	20 msec
Update time	1 sec
Input burden	2mA @ 24V DC
Digital Outputs	
Max load voltage	40 V DC
Max load current	50 mA
On Resistance	50 Ω max
Meter constant / Pulse weight	Selectable 1 to 99999 pulses per k h
Pulse width for Digital Output	5, 10, 20, 25, 50, 100, 125, 200, 250 mS
Pulse frequency for Digital Output	100 Hz max
Isolation	2.5 kV rms
Relay Outputs	
Max load voltage	230 V AC
Max load current	5 A
Isolation	2.5 KV rms
Optical outputs (CAL LED)	
Energy Test Pulse width (LED)	200 us
Parameter Selection	KWh / KVAh / KVARh Forward / Reverse / total
Meter constant	From 1 to 9999999 pulses per k h
Mechanical	
Product Weight	340 g
Mounting position	Vertical
IP degree of protection	IP54 front, IP30 body conforming to IEC 60529
Dimensions W x H x D	96 x 96 x 59mm
Mounting mode	Clip-on
Environmental Characteristics	
Meter Operating temperature	-10 °C to +60 °C
Meter Storage temperature	-25 °C to +70 °C
Humidity range	5 to 95 % RH at 50 °C (non-condensing)
Pollution degree	2
Altitude for operating	<= 2000 meter.
Service Life of meter	5 years
Electromagnetic Compatibility	
Electrostatic discharge	IEC 61000-4-2
Immunity to radiated fields	IEC 61000-4-3
Immunity to fast transients	IEC 61000-4-4
Immunity to surge	IEC 61000-4-5
Conducted immunity 150kHz to 80MHz	IEC 61000-4-6
Immunity to magnetic fields	IEC 61000-4-8

Immunity to voltage dips	IEC 61000-4-11
Radiated Emissions	CISPR11
Safety	
Measurement category (Voltage and Current inputs)	CAT III up to 480 V LL
Over voltage category	CAT III up to 300 V L-N

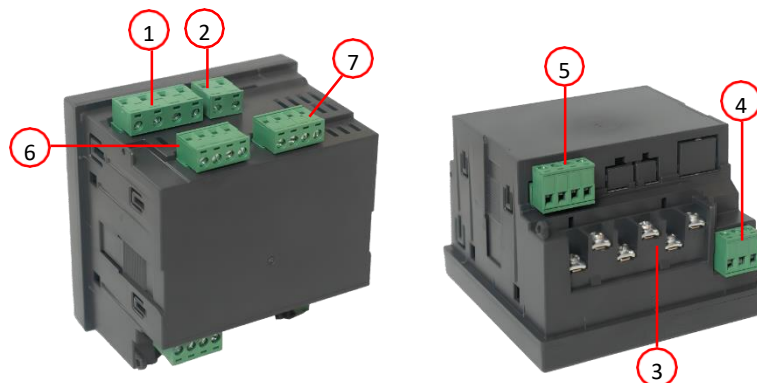
Meter Description

Front Side



1. Model
2. Line Indicators (L1 L2 L3)
3. Display LCD
4. 4 Keys
5. Meter Health / Comm
6. CAL LED
7. REV Energy Indicator
8. Alarm LED (ALM)

Rear Side



1. Voltage Inputs (V1 V2 V3 VN)
2. Auxiliary Power (L1 L2)
3. Current Inputs (A1+ A1- A2+ A2- A3+ A3-)
4. RS485 (+ -- c)
5. Digital Inputs – 2nos
6. Digital Outputs – 2 nos
7. Relay Outputs – 2nos

Meter dimensions

