

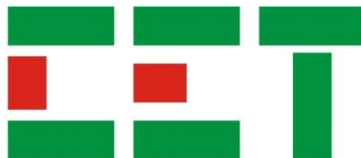
# **PMC-340-A6**

## **Digital Three-Phase Energy Meter**

### **User Manual**

#### **Version: V1.0**

June 24, 2025



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#### Standards Compliance



#### **DANGER**

This symbol indicates the presence of danger that may result in severe injury or death and permanent equipment damage if proper precautions are not taken during the installation, operation or maintenance of the device.



#### **CAUTION**

This symbol indicates the potential of personal injury or equipment damage if proper precautions are not taken during the installation, operation or maintenance of the device.



## DANGER

**Failure to observe the following instructions may result in severe injury or death and/or equipment damage.**

- Installation, operation and maintenance of the meter should only be performed by qualified, competent personnel that have the appropriate training and experience with high voltage and current devices. The meter must be installed in accordance with all local and national electrical codes.
- Ensure that all incoming AC power and other power sources are turned OFF before performing any work on the meter.
- Before connecting the meter to the power source, check the label on top of the meter to ensure that it is equipped with the appropriate power supply, and the correct voltage and current input specifications for your application.
- During normal operation of the meter, hazardous voltages are present on its terminal strips and throughout the connected potential transformers (PT) and current transformers (CT). PT and CT secondary circuits are capable of generating lethal voltages and currents with their primary circuits energized. Follow standard safety precautions while performing any installation or service work (i.e. removing PT fuses, shorting CT secondaries, ...etc).
- Do not use the meter for primary protection functions where failure of the device can cause fire, injury or death. The meter should only be used for shadow protection if needed.
- Under no circumstances should the meter be connected to a power source if it is damaged.
- To prevent potential fire or shock hazard, do not expose the meter to rain or moisture.
- Setup procedures must be performed only by qualified personnel familiar with the instrument and its associated electrical equipment.
- DO NOT open the instrument under any circumstances.

### **Limited warranty**

- CET Electric Technology (CET) offers the customer a minimum of 12-month functional warranty on the meter for faulty parts or workmanship from the date of dispatch from the distributor. This warranty is on a return to factory for repair basis.
- CET does not accept liability for any damage caused by meter malfunctions. CET accepts no responsibility for the suitability of the meter to the application for which it was purchased.
- Failure to install, set up or operate the meter according to the instructions herein will void the warranty.
- Only CET's duly authorized representative may open your meter. The unit should only be opened in a fully anti-static environment. Failure to do so may damage the electronic components and will void the warranty.

## Glossary

|             |                                            |
|-------------|--------------------------------------------|
| COM / Comm. | = Communication                            |
| CT          | = Current Transformer                      |
| DI / DO     | = Digital Input / Output                   |
| FP          | = Front Panel                              |
| Imp. / Exp. | = Import / Export                          |
| MB          | = Mega Byte                                |
| MBPW        | = Modbus Password                          |
| NER         | = National Electricity Rules               |
| NMI         | = National Measurement Institute           |
| PF          | = Power Factor                             |
| PPS         | = Pulse Per Second                         |
| RMS         | = Root Mean Square                         |
| RTC         | = Real-Time Clock                          |
| SCADA       | = Supervisory Control And Data Acquisition |
| SOE         | = Sequence of Events                       |
| THD         | = Total Harmonics Distortion               |
| TOU         | = Time of Use                              |
| UL          | = Underwriters Laboratories Inc.           |
| WAGES       | = Water, Air, Gas, Electricity and Steam   |

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## Chapter 1 Introduction

This manual explains how to use the PMC-340-A6 Three-Phase Multifunction Meter.

This chapter provides an overview of the PMC-340-A6 meter and summarizes many of its key features.

### 1.1 Overview

The PMC-340-A6 Digital Three-Phase Energy Meter is CET's latest offer for the low voltage power/energy metering market featuring DIN-Rail mount, high accuracy, multifunction true RMS measurements and a large, easy to read LCD display. The PMC-340-A6 complies with the IEC 62053-21: 2020 & AS 62053.21: 2023 Class 0.5 for 100A Direct Connected Input and IEC 62053-22: 2020 & AS 62053.22: 2023 Class 0.5S for CT Input. The PMC-340-A6 comes standard with a LED as well as a Solid State Pulse Output for energy pulsing. The PMC-340-A6 provides 16MB on-board non-volatile memory for Data Recording and 1xDigital Input for status monitoring and pulse counting for collecting WAGES (Water, Air, Gas, Electric and Steam) information. The standard RS-485 port and Modbus protocol support allows the PMC-340-A6 to become a vital component of an intelligent, multifunction monitoring solution for any Power and Energy Management Systems.

Following is a list of typical applications for the PMC-340-A6:

- 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

Contact CET Technical Support at [support@cet-global.com](mailto:support@cet-global.com) should you require further assistance with your application.

### 1.2 Features

#### Ease of Use

- Large, easy to read LCD for both data viewing and configuration
- Two LED indicators for Energy Pulsing and communication activities
- Password-protected setup via Front Panel or free configuration software
- Easy installation with DIN Rail mounting, no tools required
- Direct Connected Input up to 100A without external CT

#### Basic Measurements

- Multifunction True RMS measurements
  - UIn, Ull, I, Phase Angle, In (calculated), P, Q, S, PF, dPF, Frequency
  - Per-phase and Total kWh and kvarh Imp./Exp./Tot./Net and kVAh, 4-Quadrant kvarh as well as kWh/kvarh Imp./Exp./Tot./Net per Tariff
  - Voltage and Current THD, TOHD, TEHD, Individual Harmonics up to 31<sup>st</sup> and Unbalance
  - Current K-Factor, Crest Factor, TDD, TDD Odd and TDD Even
  - Demand and Max. Demand for I, P, Q, S, UIn, Ull and Temperature
  - Temperature and Operating Time
- Max./Min. Log
- 12 monthly recording of kWh, kvarh Imp./Exp./Tot./Net, kVAh and kvarh Q1-Q4 as well as kWh, kvarh Imp./Exp. and kVAh per Tariff
- Two TOU schedules, each providing
  - 12 Seasons
  - 20 Daily Profiles, each with 14 Periods
  - 90 Holidays or Alternate Days
  - 5 Tariffs, each providing the following information
    - kWh/kvarh Import/Export, kVAh
    - P/Q/S Max. Demands

#### Pulse Outputs

- 1 Front Panel LED and 1 Solid State Pulse Output for energy pulsing application

#### Digital Inputs

- 1 channel for external status monitoring or pulse counting
- Self-excited, internally wetted at 12VDC

#### Setpoint

- 20 user-programmable Setpoints with extensive list of monitoring parameters including Voltage, Current, Power, Temperature and DI Status, etc.
- Configurable thresholds and time delay

#### Tamper Detection and Alarm

- DI connected to external switch as Setpoint Parameter for Tamper Alarm
- Built-in sensors for Magnetic Tamper Detection
- Alarm Events are store in SOE Log

#### Data Recorder

- Two Data Recorder Log of Max. 16 parameters
- Recording Interval from 1 second to 40 days
- Configurable Recording Depth (Max. 65535) and Recording offset
- Capable of recording 16 parameters at 5-min interval for over 7 months
- Available parameters: U, I, P, Q, S, PF, Freq., Temperature, kWh Imp./Exp., kvarh Imp./Exp., Demands and Max. Demands for U, I, P/Q/S Total and DI Pulse Counter.

#### SOE Log

- 128 events time-stamped to  $\pm 1\text{ms}$  resolution

#### Communications

- Optically isolated RS-485 port, baud rate from 1,200 to 38,400 bps
- Modbus RTU protocol

#### Security

- Programmable Password protection for configurations on Front Panel
- 3-level independent security Comm. password protection and different access permissions

#### Real-Time Clock

- Battery backed RTC @ 6ppm ( $\leq 0.5\text{s/day}$ )

#### System Integration

- Supported by our PecStar® iEMS and PMC Setup
- Easy integration into other Automation or SCADA systems via Modbus RTU protocol
- Compatible with MV-90TM \*

### 1.3 PMC-340-A6's application in Power and Energy Management System

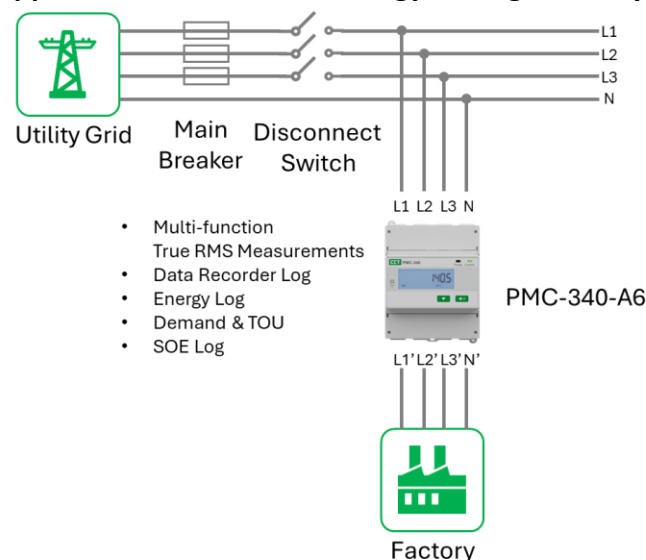


Figure 1-1 Typical Application

## 1.4 Getting More Information

Additional information is available from CET via the following sources:

- Visit [www.cet-global.com](http://www.cet-global.com)
- Contact your local representative
- Contact CET directly via email or telephone

## Chapter 2 Installation



### Caution

Installation of the PMC-340-A6 should only be performed by qualified, competent personnel that have the appropriate training and experience with high voltage and current devices. The meter must be installed in accordance with all local and national electrical codes.

During the operation of the meter, hazardous voltages are present at the input terminals. Failure to observe precautions can result in serious or even fatal injury and equipment damage.

### 2.1 Appearance

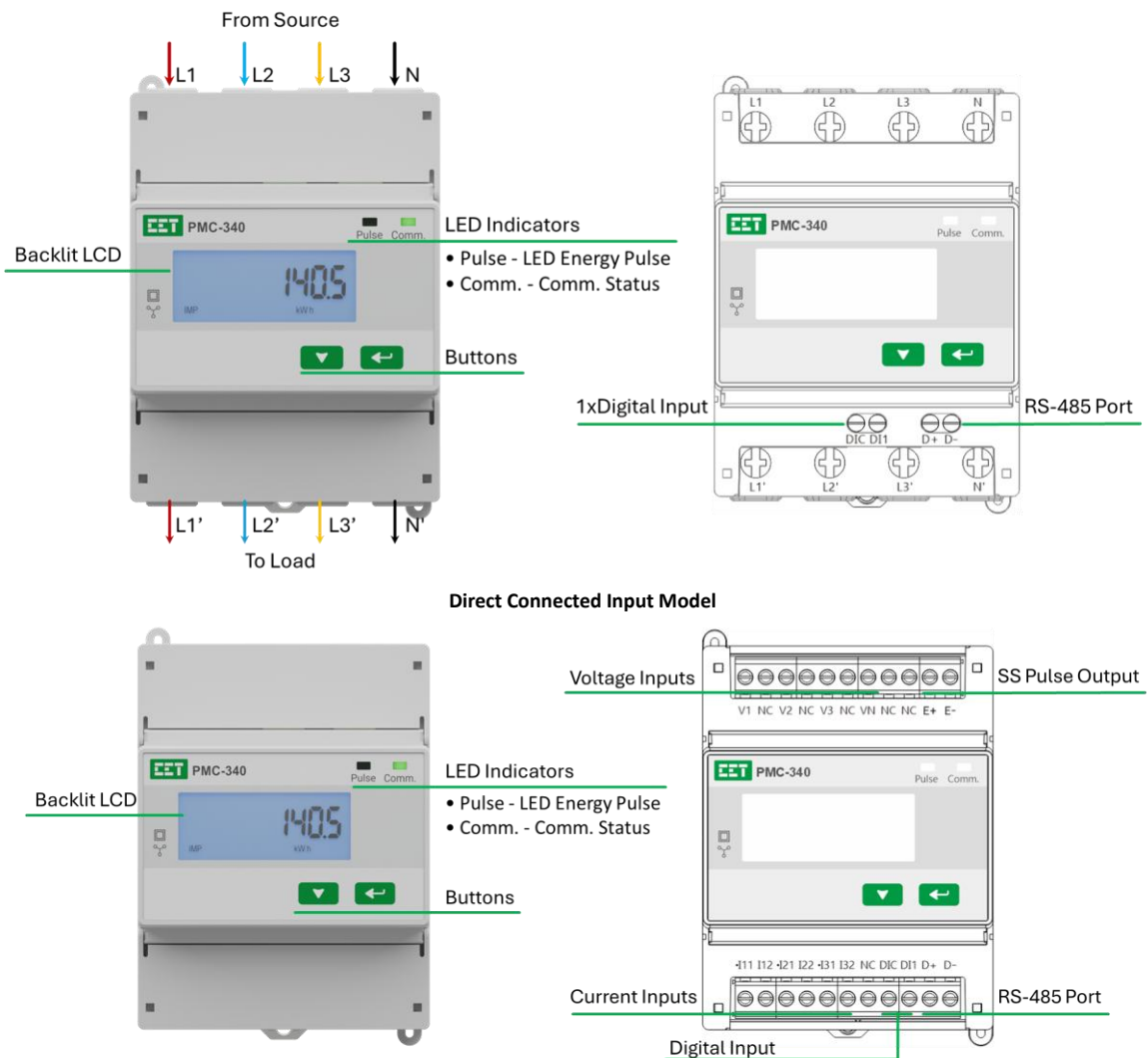
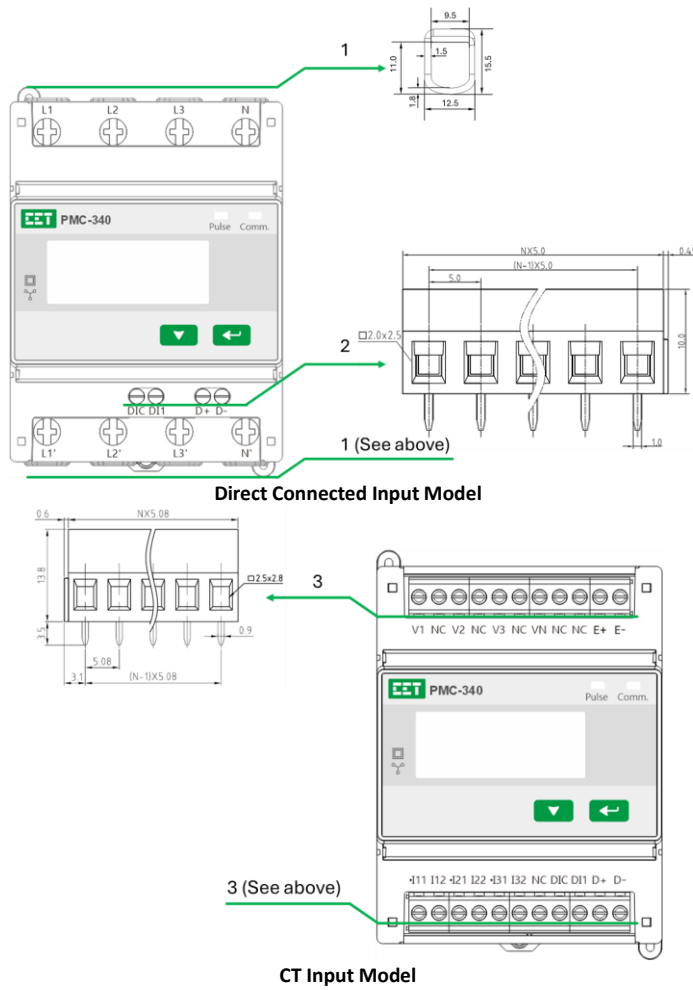


Figure 2-1 Appearance

## 2.2 Terminal Dimensions



| 1 (Direct Connected Input Model) |                                               |
|----------------------------------|-----------------------------------------------|
| Terminals                        | L1, L2, L3, N<br>L1', L2', L3', N'            |
| Terminal Dimensions              | 9.5mm x 11.0mm                                |
| Wire Size                        | 35.0mm <sup>2</sup>                           |
| Max. Torque                      | 25.0kgf.cm/M6<br>(21.7 lb-in)                 |
| 2 (Direct Connected Input Model) |                                               |
| Terminals                        | Digital Input/<br>Relay Output<br>RS-485 Port |
| Terminal Dimensions              | 2.0mm x 2.5mm                                 |
| Wire Size                        | 1.0mm <sup>2</sup>                            |
| Max. Torque                      | 4.5kgf.cm/M3<br>(3.9 lb-in)                   |
| 3 (CT Input Model)               |                                               |
| Terminals                        | All terminals in CT<br>Input Model            |
| Terminal Dimensions              | 2.5mm x 2.8mm                                 |
| Wire Size                        | 1.5mm <sup>2</sup>                            |
| Max. Torque                      | 4.5kgf.cm/M3<br>(3.9 lb-in)                   |

Figure 2-2 Terminal Dimensions

## 2.3 Unit Dimensions

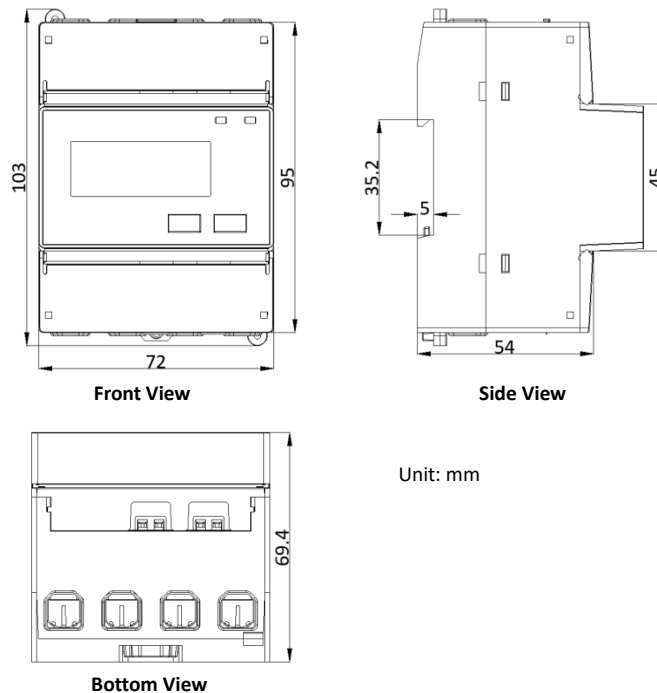


Figure 2-3 Unit Dimensions

## 2.4 Installations

The PMC-340-A6 should be installed in a dry environment with no dust and kept away from heat, radiation and electrical noise source.

Installation steps:

- Before installation, make sure that the DIN Rail is already in place.
- Move the installation clip at the back of the PMC-340-A6 downward to the “unlock” position.
- Mount the PMC-340-A6 on the DIN Rail.
- Push the installation clip upward to the “lock” position to secure the PMC-340-A6 on to the DIN Rail.

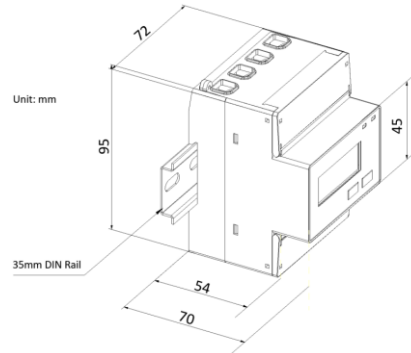


Figure 2-4 Installations

## 2.5 Wiring Connections

The PMC-340-A6 supports 100A Direct Connected Input or 5A CT Input. Please read this section carefully before installation and choose the correct wiring method for your power system.

### 2.5.1 Direct Connected Input

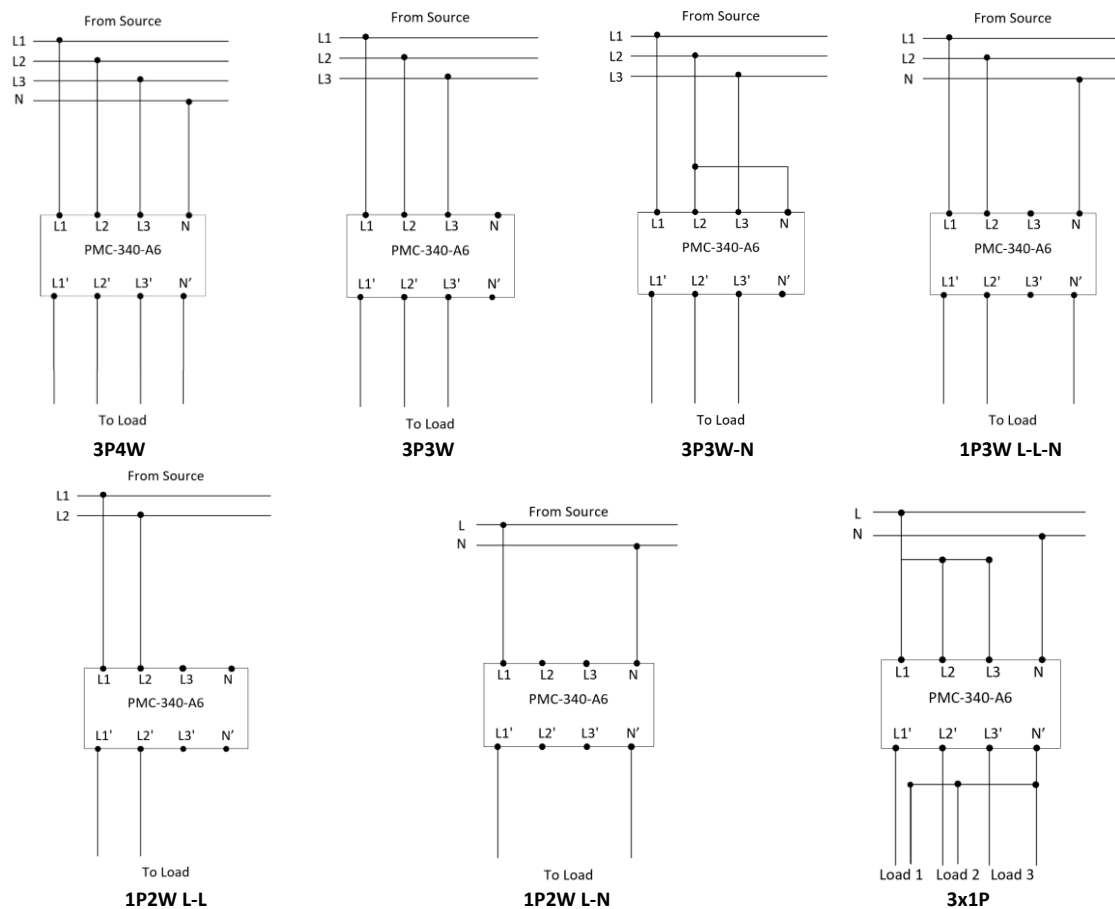
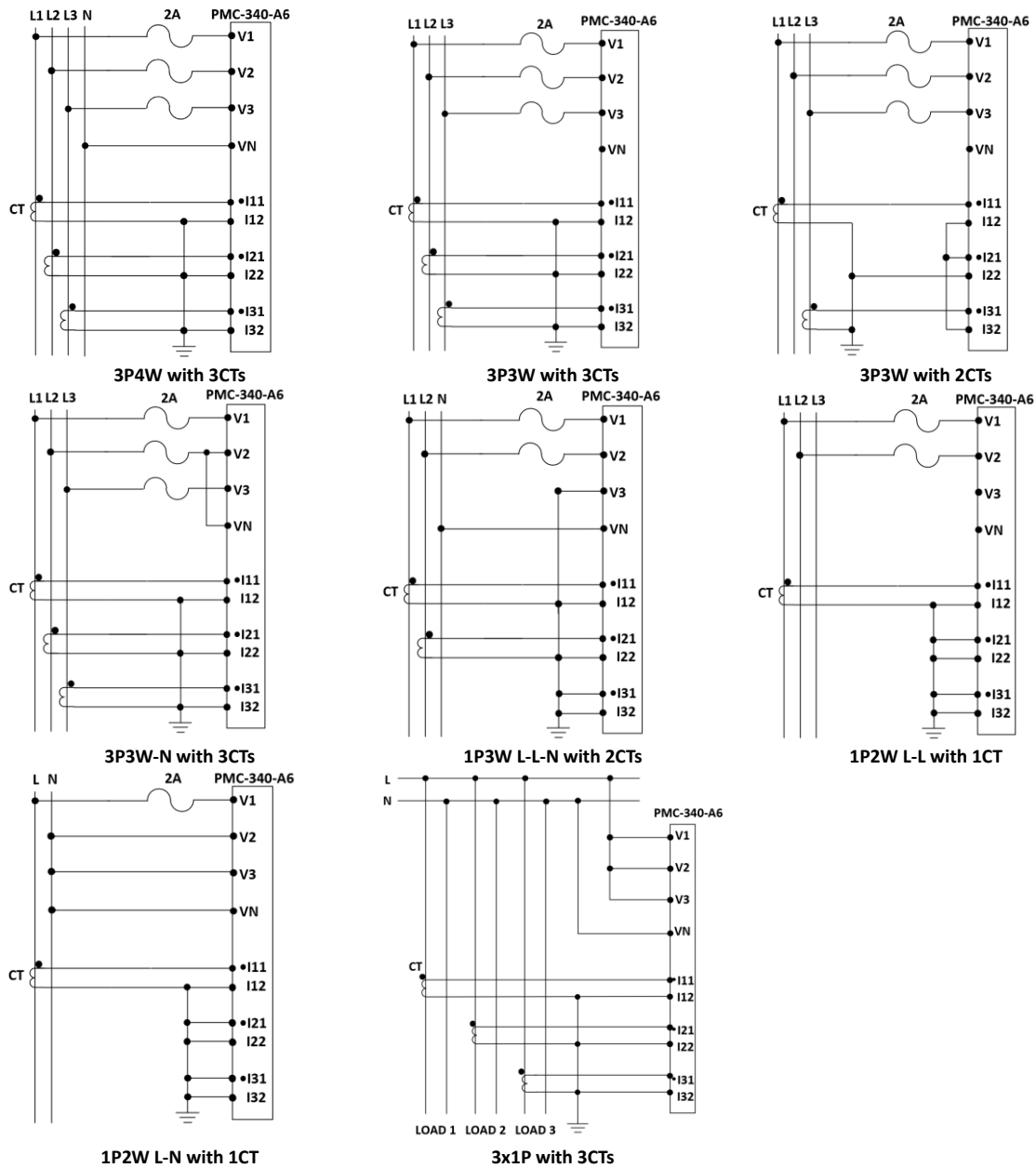


Table 2-1 100A Direct Connected Input Wiring Connection

## 2.5.2 5A CT Input



## 2.6 RS-485 Wiring

The PMC-340-A6 provides one standard RS-485 port that supports the Modbus RTU protocol. Up to 32 devices can be connected on an RS-485 bus. The overall length of the RS-485 cable connecting all devices should not exceed 1200m.

If the master station does not have an RS-485 port, an RS-232/RS-485 or USB/RS-485 converter with optically isolated outputs and surge protection should be used. The following figure illustrates the RS-485 connections on the PMC-340-A6. Please strip no more than 6mm of insulation from the wire end.

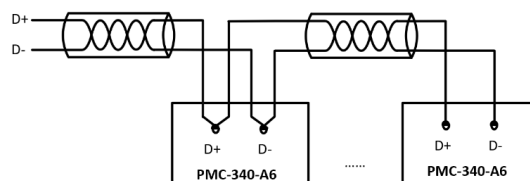


Figure 2-5 RS-485 Wiring

## 2.7 Digital Input

The following figure illustrates the Digital Input connections. Please strip no more than 6mm of insulation from the wire end.

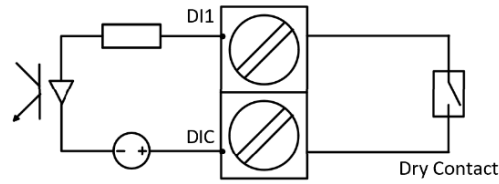


Figure 2-6 Digital Input

## 2.8 Pulse Output

The following figure illustrates the Solid State Relay connections for Energy Pulsing on the PMC-340-A6. Please strip no more than 6mm of insulation from the wire end.

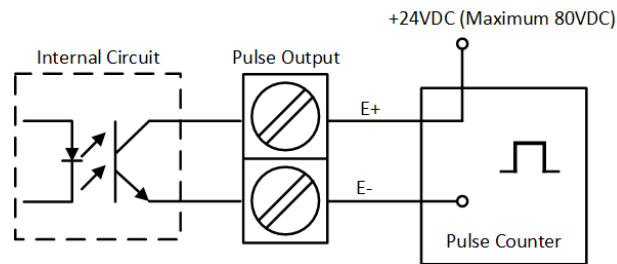


Figure 2-7 Solid State Relay Connections for Energy Pulsing

## Chapter 3 Front Panel

The meter's Front Panel is used for both display and configuration purposes. The LCD display and the two buttons provide access to measurements, meter information and configuration.



Figure 3-1 Front Panel Display

### 3.1 LED Indicator

The PMC-340-A6 comes standard with two LED indicators on its Front Panel, the meaning for the two indicators is described below:

| LED Indicator | Color | Status                                          | Description                         |
|---------------|-------|-------------------------------------------------|-------------------------------------|
| Pulse         | Red   | Pulsing based on the rate of Energy Consumption | Energy Pulse Output                 |
| Comm.         | Green | Blinking                                        | Receiving data or Transmitting data |

Table 3-1 LED Indicators

### 3.2 Front Panel Buttons

The following table provides an overview of the Front Panel buttons.

| Buttons | Data Display Mode                                                                                                                                                                                                                                                                                                     | Setup Configuration Mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <▼>     | While at a particular menu, pressing this button scrolls through the available measurements.                                                                                                                                                                                                                          | Before an item is selected, pressing this button scrolls to the next setup parameter. If the selected parameter is a numeric value, pressing this button increments the selected digit. If the selected parameter is an enumerated value, pressing this button scrolls through the selection list.                                                                                                                                                                                                                                                                                                    |
| <↔>     | Pressing this button at any time while in <b>Data Display</b> mode will jump to the next available menu item, depending on where the display is at the time.<br><br>For example, if the display currently shows <b>lb</b> under the <b>U/I</b> menu, pressing <↔> now will immediately jump to the <b>Power</b> menu. | Pressing this button for two seconds toggles between <b>Data Display</b> mode and <b>Setup Configuration</b> mode. Once inside the <b>Setup Configuration</b> mode, pressing this button selects a parameter for modification. Once a parameter is selected, the parameter value blinks while it's being changed.<br><br>If the selected parameter is a numeric value, the cursor is at the right most digit by default. Pressing this button moves the cursor one position to the left. Once the cursor has reached the left most digit, pressing this button again will confirm the current change. |

Table 3-2 Buttons Description

### 3.3 LCD Display

The PMC-340-A6 comes standard with a large, easy to read LCD display.



**Figure 3-2 LCD Display**

The following table shows the LCD display symbols:

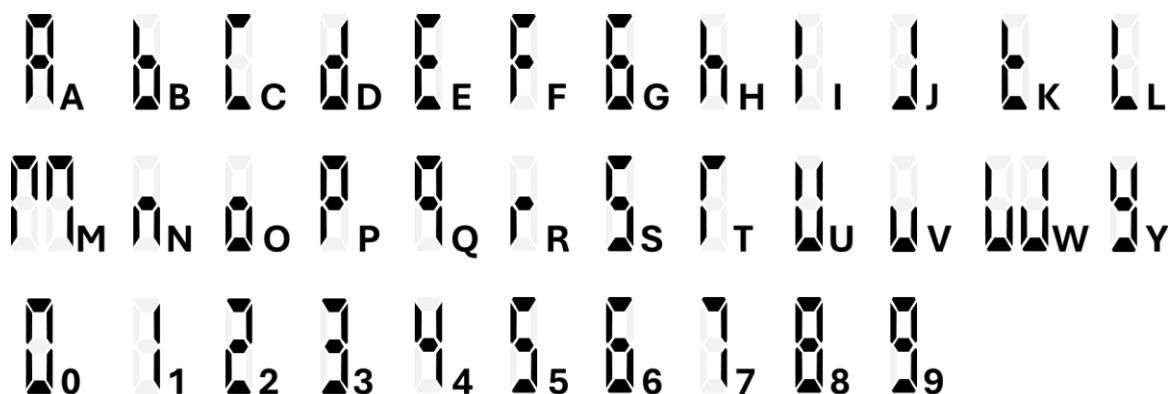
| Symbol          | Description                                                    |
|-----------------|----------------------------------------------------------------|
| L12L23L31       | Phase Indicator                                                |
| T8              | Active Tariff Indicator where Tx indicates Tariff x (x=1 to 5) |
| ⊕               | Quadrant Indicator                                             |
| THDDMD          | Total Harmonic Distortion/Demand Indicators                    |
| COM             | Communication Activities Indicator                             |
| 🔊               | Setpoint Alarm Indicator                                       |
| 👁👁👁             | DI status                                                      |
| 🔌🔌🔌             | DO status                                                      |
| 88888888        | Main Display Area for Measurements/Time/Version information    |
| IMPEXPNETTOTAVG | kxh Import/Export/Net/Total/Average Indicators                 |
| MAXMIN          | Max./Min. Indicators                                           |
| MkWhkvarhHz%    | Units                                                          |

**Table 3-3 LCD Display Symbols**

Throughout this document, the phase-to-neutral notations of A/B/C and L1/L2/L3 as well as the phase-to-phase notations of AB/BC/CA and L12/L23/L31 may be used interchangeably for specifying a certain parameter to be a phase-to-neutral or phase-to-phase value, respectively.

#### 3.3.1 LCD Display Symbols

The following figure shows the LCD display symbols based on “8”.



**Figure 3-2 LCD Display Symbols**

### 3.3.2 LCD Testing

Pressing both the <↔> and the <▼> buttons simultaneously for 2 seconds enter the **LCD Test** mode. During testing, all LCD segments are illuminated and will blink on and off three times before returning to the display screen before entering the **LCD Test** mode.

### 3.3.3 Default Display

The PMC-340-A6 has a **Default Display** menu that shows the following parameters. The user can press the <▼> button to scroll through parameters or press <↔> to navigate to the next menu.

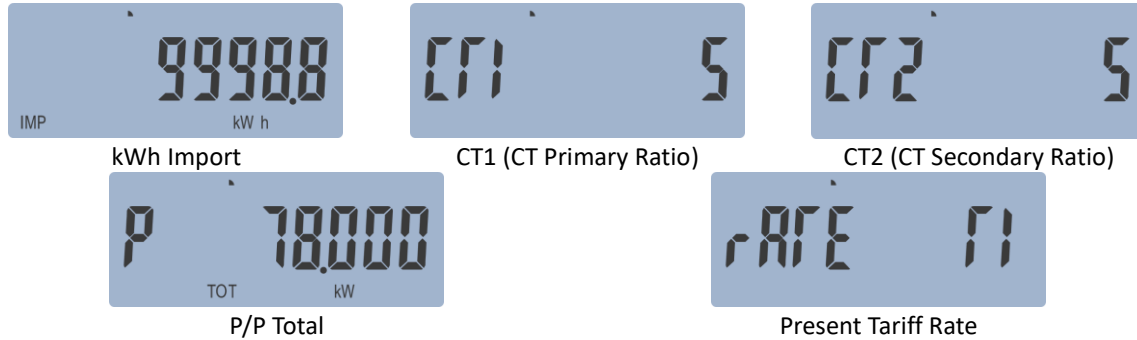


Table 3-2 Default Display Menu

If there is no Front Panel activity for 5 minutes or longer, the display will return to the **Default Display** menu.

### 3.3.4 Measurement Display

The following table illustrates the menu options and the available measurements under each menu. Depending on the **Wiring Mode** selected, certain measurements may not be available. For example, the per-phase UIn, UIn Average, In, per-phase P, Q, S and PF measurements are not available when the **Wiring Mode** is set to 3P3W or 1P2W L-L.

| Menu                        | Example Display    | Parameter   | Example Display    | Parameter    |
|-----------------------------|--------------------|-------------|--------------------|--------------|
| <br>UI<br>(Voltage/Current) | <br>219.4<br>V     | Ua          | <br>140.3<br>V     | Uab          |
|                             |                    | Ub          |                    | Ubc          |
|                             |                    | Uc          |                    | Uca          |
|                             | <br>5.300<br>A     | UIn Average | <br>0.300<br>A     | UIn Average  |
|                             |                    | Ia          |                    | In           |
|                             |                    | Ib          |                    |              |
|                             | <br>50.00<br>Hz    | Ic          |                    |              |
|                             |                    | I Average   | <br>0.000          | Ua/Uab Angle |
|                             |                    | Frequency   |                    | Ub/Ubc Angle |
|                             |                    |             |                    | Uc/Uca Angle |
| <br>PoWEr<br>(Power)        | <br>78000<br>kW    | Ia Angle    | <br>10.000<br>kvar | Qa           |
|                             |                    | Ib Angle    |                    | Qb           |
|                             |                    | Ic Angle    |                    | Qc           |
|                             | <br>880.000<br>kVA | Pa          | <br>10.000         | Q Total      |
|                             |                    | Pb          |                    | PFa          |
|                             |                    | Pc          |                    | PFb          |
| <br>EnErGy                  | <br>99988<br>kW h  | P Total     | <br>9988<br>kvarh  | PFc          |
|                             |                    | Sa          |                    | PF Total     |
|                             |                    | Sb          |                    | kvarh Import |
|                             |                    | Sc          |                    | kvarh Export |
|                             |                    | S Total     |                    | kvarh Net    |
|                             |                    | kWh Import  |                    | kvarh Total  |
|                             |                    | kWh Export  |                    |              |
|                             |                    | kWh Net     |                    |              |
|                             |                    | kWh Total   |                    |              |

|                                                                      |                                                          |                                                                                       |  |
|----------------------------------------------------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------|--|
| (Energy)                                                             | <div><div>112800</div><div>TOTkVAh</div></div>           | kVAh Total                                                                            |  |
| <div><div>Power by</div><div>ToU EnErGy<br/>(TOU Energy)</div></div> | <div><div>T1</div><div>IMP1.0</div><div>kW h</div></div> | T1 kWh Import<br>T1 kWh Export<br>T1 kvarh Import<br>T1 kvarh Export<br>T1 kVAh Total |  |

|                                                                 |                                                                            |                                                       |                                                                              |                                                                |
|-----------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------------|
| <div><div>rEAL dMNd</div><div>rEAL dMd<br/>(Demand)</div></div> | <div><div>L1</div><div>DMD</div><div>15.300</div><div>A</div></div>        | Ia DMD                                                | <div><div>L3</div><div>DMD</div><div>U21.94</div><div>V</div></div>          | Ua DMD                                                         |
|                                                                 |                                                                            | Ib DMD                                                |                                                                              | Ub DMD                                                         |
|                                                                 |                                                                            | Ic DMD                                                |                                                                              | Uc DMD                                                         |
|                                                                 | <div><div>L12</div><div>DMD</div><div>U1221.01</div><div>V</div></div>     | Uab DMD<br>Ubc DMD<br>Uca DMD                         | <div><div></div><div>DMD</div><div>r37.50</div></div>                        | Temperature DMD                                                |
| <div><div>ToU dMNd</div><div>(TOU DMD)</div></div>              | <div><div>P</div><div>DMD</div><div>TOT78.000</div><div>kW</div></div>     | P Total DMD<br>Q Total DMD<br>S Total DMD             |                                                                              |                                                                |
|                                                                 | <div><div>T1</div><div>DMD</div><div>P8.000</div><div>kW</div></div>       | T1 P Total DMD<br>T1 Q Total DMD<br>T1 S Total DMD    |                                                                              |                                                                |
|                                                                 |                                                                            |                                                       |                                                                              |                                                                |
|                                                                 |                                                                            |                                                       |                                                                              |                                                                |
| <div><div>Max dMNd</div><div>(Max. DMD)</div></div>             | <div><div>L1</div><div>DMD</div><div>15.300</div><div>MAXA</div></div>     | Ia Max. DMD<br>Ib Max. DMD<br>Ic Max. DMD             | <div><div>L3</div><div>DMD</div><div>U21.94</div><div>MAXV</div></div>       | Ua Max. DMD<br>Ub Max. DMD<br>Uca Max. DMD                     |
|                                                                 | <div><div>L12</div><div>DMD</div><div>U1221.01</div><div>MAXV</div></div>  | Uab Max. DMD<br>Ubc Max. DMD<br>Uca Max. DMD          | <div><div></div><div>DMD</div><div>r37.50</div><div>MAX</div></div>          | Temperature Max. DMD                                           |
|                                                                 | <div><div>P</div><div>DMD</div><div>TOT MAX78.000</div><div>kW</div></div> | P Tot. Max. DMD<br>Q Tot. Max. DMD<br>S Tot. Max. DMD | <div><div>T1</div><div>DMD</div><div>P8.000</div><div>TOT MAX kW</div></div> | T1 P Tot. Max. DMD<br>T1 Q Tot. Max. DMD<br>T1 S Tot. Max. DMD |
|                                                                 |                                                                            |                                                       |                                                                              |                                                                |
| <div><div>THd</div><div>(THD)</div></div>                       | <div><div>L1</div><div>THD</div><div>U5.00</div><div>%</div></div>         | Ua/Uab THD<br>Ub/Ubc THD<br>Uc/Uca THD                | <div><div>L1</div><div>THD</div><div>15.00</div><div>%</div></div>           | Ia THD<br>Ib THD<br>Ic THD                                     |
|                                                                 |                                                                            |                                                       |                                                                              |                                                                |
|                                                                 | <div><div>TEMP</div><div>(Temperature)</div></div>                         | <div><div></div><div></div><div>r37.50</div></div>    | Temperature                                                                  |                                                                |

Table 3-3 Data Display Pages

**Notes:**

- 1) When the **Wiring Mode** is **3P3W** or **1P2W L-L**, the phase A/B/C Voltage THD/TOHD/TEHD/HDxx is phase AB/BC/CA Voltage THD/TOHD/TEHD/HDxx.
- 2) Real-time data display adapts decimal places based on value magnitude, showing up to 3 decimal places. Value maintains 5-digit display (excluding numbers < 10). Uses K/M units for scaling. For example, a voltage of 220000V displays as 220.00 kV.

### 3.4 Setup Configuration

#### 3.4.1 Functions of buttons

The two front panel buttons take on different meanings in the **Setup Configuration** mode:

- <↔>:** Pressing this button for two seconds toggles between **Data Display** and **Setup Configuration**. Once inside **Setup Configuration**, pressing <↔> either enters a sub-menu or selects a parameter for modification. If inside a sub-menu, pressing <↔> for two seconds will return to the main menu. If a parameter is selected, its value will blink while it's being changed. If the parameter is a numeric value, pressing <↔> will move the cursor one digit to the left. When the left most digit has been reached, pressing <↔> again will save the current value into memory.
- <▼>:** Once inside **Setup Configuration**, pressing <▼> scrolls to the next setup parameter or sub-menu. If the selected parameter is a numeric value, pressing <▼> increments the current digit. If the selected parameter is an enumerated value, pressing <▼> scrolls to the next item in the enumerated list. When finished, press <↔> to save the current value into memory.

#### Making setup changes:

- Hold <↔> for two seconds to enter **Setup Configuration**, and the LCD displays **PROGRAM**.
  - Press <▼> to advance to the Password page.
  - A correct password must be entered before changes are allowed. The factory default password is 0000 (zero). Use <▼> to cycle through digits (0-9) and press <↔> to confirm each digit. If the password is correct, the LCD displays "PW ok". Otherwise, an indicator of "PW Err" occurs. Please retry or contact the admin.
  - Use <▼> to scroll to the desired menu or parameter.
  - Press <↔> to enter a sub-menu or select a setup parameter for modification.
  - Once a parameter has been selected, its value will blink.
  - Use <▼> to change the value and press <↔> to confirm.
  - Hold <↔> for two seconds to return to the main menu. LCD displays "SAvE" with options:
    - "y" (Yes): Save changes (press <↔> to confirm).
    - "n" (No): Discard changes (press <▼> to select).
  - Press <↔> for two seconds again to exit the **Setup Configuration** mode.
- Also the **Setup Configuration** will be automatically exited if there is a period of inactivity of 5 minute or longer.

#### 3.4.2 Configuration

The Setup Configuration mode provides access to the following setup parameters:

| Label    |       | Description                      | Options/Range                                                   | Default |
|----------|-------|----------------------------------|-----------------------------------------------------------------|---------|
| Main     | Sub   |                                  |                                                                 |         |
| ProGRAM  |       | Setup Configuration              | /                                                               | /       |
| PW       |       | Enter Password                   | 0 to 9999                                                       | 0000    |
| SyS SET  |       | Basic Parameters                 |                                                                 |         |
|          |       | Set Meter's wiring connection    | DEMO, 1P2W_LN, 1P2W_LL, 1P3W, 3P3W, 3P4W, 3x1P, 3P3W_N          | 3P4W    |
|          | CT1   | Set CT Primary Ratio             | 1 to 30,000                                                     | 5       |
|          | CT2   | Set CT Secondary Ratio           | 1 to 5                                                          | 5       |
|          | PF    | Set PF Convention                | IEC/IEEE/-IEEE                                                  | IEC     |
|          | kvA   | Set kVA Calculation Method       | V=Vector, S=Scalar                                              | V       |
|          | A rEv | Reverse Phase A CT Polarity      | YES/NO                                                          | NO      |
|          | B rEv | Reverse Phase B CT Polarity      | YES/NO                                                          | NO      |
|          | C rEv | Reverse Phase C CT Polarity      | YES/NO                                                          | NO      |
| CoM SET  |       | Comm. Parameters                 |                                                                 |         |
|          | Id    | Set Meter Address                | 1 to 247                                                        | 100     |
|          | bAUd  | Set Baud Rate in Bits Per Second | 1200/2400/4800/9600/19200/38400 (bps)                           | 9600    |
|          | CFG   | Set Comm. Port Data Format       | 8N2/8O1/8E1/8N1/8O2/8E2                                         | 8E1     |
| PULS SET |       | Energy Pulse                     |                                                                 |         |
|          | do    | Set SS Pulse Output              | OFF, P Tot., Q Tot., P Imp., P Exp., Q Imp., Q Exp., SEC (1PPS) | P Tot.  |
|          | LEd   | Enable LED Energy Pulsing        | OFF, P Tot., Q Tot., P Imp., P                                  | P Tot.  |

|          |                                                                  |                                                              |     |
|----------|------------------------------------------------------------------|--------------------------------------------------------------|-----|
|          |                                                                  | Exp., Q Imp., Q Exp.                                         |     |
| CST      | Select Pulse Constant                                            | 1-999,999                                                    | 500 |
| WIDTh    | Set Pulse Width                                                  | 30-500ms                                                     | 50  |
| TIME SET | Date and Time                                                    |                                                              |     |
|          | Enter the Current Date                                           | YY-MM-DD                                                     | /   |
|          | Enter the Current Time                                           | HH:MM:SS                                                     | /   |
| PW SET   | Set New Password                                                 |                                                              |     |
|          | Enter New Password                                               | 0 to 9999                                                    | 0   |
| InFo     | View Meter Information (Read Only)                               |                                                              |     |
| FW       | Firmware Version                                                 | For example, 1.00.00 means the firmware version is V1.10.00. | /   |
| Pro      | Protocol Version                                                 | e.g. 10 means V1.0                                           | /   |
|          | Firmware Release Date                                            | e.g. 20250228                                                | /   |
| Sn       | The left 5 digits of SN                                          | XXXXX                                                        | /   |
|          | The right 5 digits of SN                                         | YYYYY                                                        | /   |
| FCnT     | Counter for Important Setup Parameter Changes via Front Panel    | /                                                            | /   |
| CCnT     | Counter for Important Setup Parameter Changes via Communications | /                                                            | /   |
| CLr SET  | Clear Data                                                       |                                                              |     |
| CLr EnGy | Clear all Energy                                                 | YES/NO                                                       | NO  |
| CLr dMd  | Clear all Demand                                                 | YES/NO                                                       | NO  |
| CLr MAX  | Clear all Max./Min. Log                                          | YES/NO                                                       | NO  |
| CLr SoE  | Clear SOE Log                                                    | YES/NO                                                       | NO  |
| CLr dI   | Clear DI1 Counter                                                | YES/NO                                                       | NO  |

**Table 3-3 Setup Parameters**

**Notes:**

1. **CT Primary** and **CT Secondary** settings are only valid for PMC-340-A6 with CT Input.
2. There are two ways to calculate kVA:

**Mode V** (Vector method): 
$$kVA_{total} = \sqrt{kW_{total}^2 + kvar_{total}^2}$$

**Mode S** (Scalar method): 
$$kVA_{total} = kVA_a + kVA_b + kVA_c$$

3. The Pulse Constant indicates how many output pulses are generated per unit of energy consumed. One would use a higher Pulse Constant for a light-load system in an accuracy testing situation to reduce the test time.
4. The FP Counter and Comm. Counter will be incremented every time some important setup parameters, which may affect the accuracy of Energy registers and DI Pulse Counters or the way they are calculated, are changed via Front Panel or Communication, respectively. The range of the FP Counter and Comm. Counter is between 0 and 9999. It will roll over to 0 if its current value is 9999. The FP Counter is incremented every time a relevant setup parameter is changed via the Front Panel, while the Comm. Counter is incremented every time a single packet is sent to change one or more relevant setup parameters through communications. The following actions may trigger these counters to increment:

- Changing Setup Parameters:
  - Wiring Mode, PT and CT ratios and I Polarities
  - DI setup parameters
  - Energy Pulse Constant
  - Preset Energy Value
  - Demand Period and No. of Sliding Windows
  - TOU setup registers
  - Manual Time Set (via Front Panel only)
- Clear Actions via Front Panel:
  - Clear All Energy
  - Clear All Demand
  - Clear All Max./Min. Log
  - Clear DI1 Counter
  - Clear SOE Log
- Clear Actions via Communication:
  - Clear Monthly Energy Log (Register 9600)
  - Clear Energy (Register 9601)
  - Clear Monthly Energy Log of Present Month (Register 9602)
  - Clear Max. Demand Log of This Month (Register 9603)

- Clear All Demand Registers and Logs (Register 9604)
  - Clear Device Operating Time (Register 9607)
  - Clear All Data (Register 9608)
  - Clear DI1 Counter (Register 9609) (only when DI1 = Energy Pulse Counter)
- 5. Select **CLr EnGy** to clear the 3-Ø Total, Per-Phase energy and TOU Energy.
- 6. Select **CLr dMd** to clear all Demand registers and logs, including Real-time Present Demand, Max. Demand Log of This Month (Since Last Reset) and Last Month (Before Last Reset).
- 7. Select **CLr Mn** to clear both the Max./Min Log of This Month (Since Last Reset) and the Max./Min. Log of Last Month (Before Last Reset).

## Chapter 4 Applications

### 4.1 Inputs and Outputs

#### 4.1.1 Digital Input

The PMC-340-A6 comes standard with a self-excited Digital Inputs that are internally wetted at 12VDC. Digital Inputs on the PMC-340-A6 can be used in the following applications:

- 1) **Status Input** The digital input is typically used for status monitoring which can help prevent equipment damage, improve maintenance, and track security breaches. The real-time statuses of the Digital Inputs are available through communications. Changes in Digital Input status are stored as events in the SOE Log in 1 ms resolution.
- 2) **Pulse Counting** Pulse counting is supported with programmable debounce and pulse weight to facilitate WAGES (Water, Air, Gas, Electricity and Steam) information collection.

The following table describes the DI Setup Parameters that can be programmed over communications:

| Setup Parameter  | Definition                                                                                                                                   | Options/Default*                   |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| DI1 Function     | Each <b>DI</b> can be configured as a Status Input or Pulse Counter.                                                                         | 0=Status Input<br>1=Pulse Counter* |
| DI1 Debounce     | Specifies the minimum duration the <b>DI</b> must remain in the Active or Inactive state before a DI state change is considered to be valid. | 1 to 1000 (ms)<br>20ms*            |
| DI1 Pulse Weight | Specifies the incremental value for each received pulse. This is only used when a DI is configured as a Pulse Counter.                       | 1* to 1,000,000                    |

**Table 4-1 Digital Input Setup**

#### 4.1.2 Energy Pulse / 1 PPS Output

The PMC-340-A6 comes standard with one Front Panel LED Pulse Output and one Solid State Relay Output for kWh or kvarh Energy Pulsing. Energy Pulse Output is typically used for accuracy testing. Energy Pulsing is enabled by default and can be disabled from the Front Panel or through communications. The Pulse Constant is programmable with a range of 1 to 999,999 impulses per kWh or kvarh. If the **DO Energy Pulsing (do)** parameter is configured as SEC (1PPS), the PMC-340-A6 will output a 1PPS signal with a pulse width of 500ms  $\pm$  0.5ms at the Energy Pulse Output terminals (**E+**, **E-**) for the accuracy testing of its internal clock.

### 4.2 Metering

#### 4.2.1 Basic Measurements

The PMC-340-A6 provides real time measurements for I, U, P, Q, S, PF, Freq., Temperature (supported in Firmware V2.00.02 and later), U THD, I THD and Operating Time.

#### 4.2.2 Energy Measurements

The PMC-340-A6 provides Energy measurements for kWh, kvarh Import/Export and kVAh at a resolution of 0.1 kxh and a maximum value of 99 999 999.9 kxh. When the maximum value is reached, it will automatically roll over to zero. The energy measurements can be reset manually via the Front Panel or through communications as well as preset via communications.

### 4.2.3 Demands

Demand is defined as the average consumption over a fixed interval based on the sliding window method. The PMC-340-A6 provides the Present Demand, Max. Demand for This Month (Since Last Reset) and Last Month (Before Last Reset) for I, U, P, Q, S and Temperature. The Present Demand and Max. Demand measurements can be retrieved via communications, and its Setup Parameters can be configured via the Front Panel (except for the **Self-Read Time** parameter) and through communications.

The PMC-340-A6 provides the following Demand Setup parameters:

| Parameter            | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Options/Default*    |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Period               | 1 to 60 minutes. For example, if the <b># of Sliding Windows</b> is set as 1 and the <b>Demand Period</b> is 15, the demand cycle will be 1×15=15min.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1 to 60 minutes, 5* |
| # of Sliding Windows | Number of Sliding Windows.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1 to 15, 1*         |
| Self-Read Time       | <p>The <b>Self-Read Time</b> allows the user to specify the time and day of the month for the Max. Demand Self-Read operation. The <b>Self-Read Time</b> supports three options:</p> <ul style="list-style-type: none"> <li>A zero value means that the Self-Read will take place at 00:00 of the first day of each month.</li> <li>A non-zero value means that the Self-Read will take place at a specific time and day based on the formula: Self-Read Time = Day x 100 + Hour where 0 ≤ Hour ≤ 23 and 1 ≤ Day ≤ 28. For example, the value 1512 means that the Self-Read will take place at 12:00pm on the 15th day of each month.</li> <li>A 0xFFFF value will disable the Self-Read operation and replace it with manual operation. A manual reset will cause the Max. Demand of <b>This Month</b> to be transferred to the Max. Demand of <b>Last Month</b> and then reset. The terms <b>This Month</b> and <b>Last Month</b> will become <b>Since Last Reset</b> and <b>Before Last Reset</b>.</li> </ul> | 0xFFFF*             |

Table 4-2 Demand Setup

### 4.2.4 Harmonics

The PMC-340-A6 provides the U THD and I THD measurements which can be retrieved via the Front Panel or through communications. There are two methods for calculating the THD:

THDf:

$$THD = \frac{\sqrt{\sum_{h=2}^{31} V_h^2}}{V_1} \times 100\%$$

where  $V_1$  represents the amplitude of the fundamental component and  $V_h$  represents the amplitude of the  $h^{th}$  harmonic ( $h=2, 3, \dots, 31$ ).

THDr:

$$THD = \frac{\sqrt{\sum_{h=2}^{31} V_h^2}}{\sqrt{\sum_{h=1}^{31} V_h^2}} \times 100\%$$

where the denominator represents the total RMS value and the numerator represents the RMS value of the harmonics from 2<sup>nd</sup> to 31<sup>st</sup>.

### 4.3 Setpoint

The PMC-340-A6 comes standard with 20 user-programmable Setpoints which provide extensive control by allowing a user to initiate an action in response to a specific condition. Typical setpoint applications include alarming, fault detection and power quality monitoring.

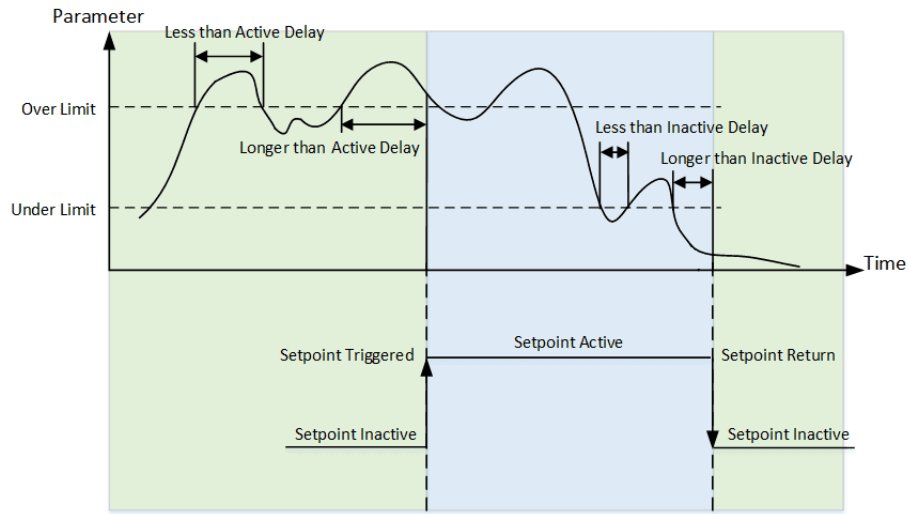


Figure 4-1 Over Setpoint

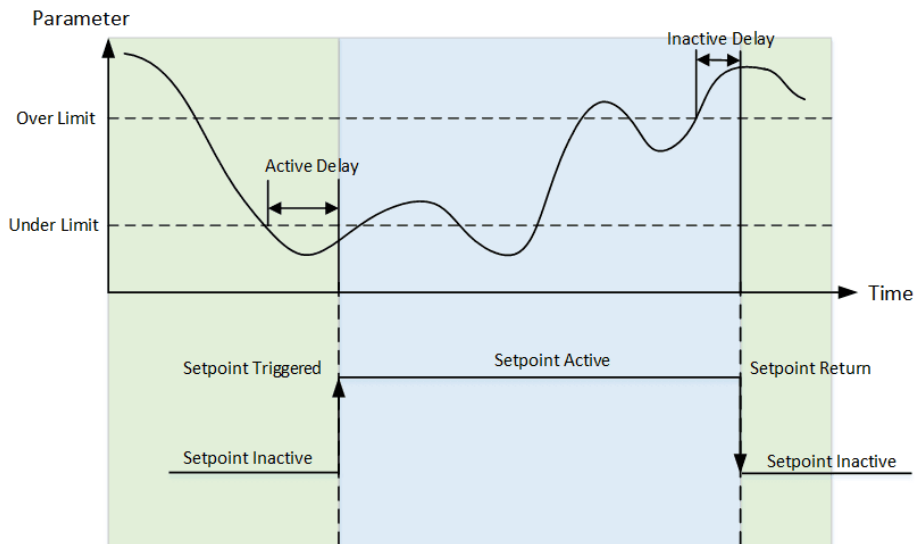


Figure 4-2 Under Setpoint

Setpoints can be programmed via communications and have the following setup parameters:

| Parameter                 | Definition                                                                                                                                                                                                                         | Options/Default*                                   |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
| <b>Setpoint Type</b>      | Over or Under Setpoint.                                                                                                                                                                                                            | 0=Disabled*<br>1=Over Setpoint<br>2=Under Setpoint |
| <b>Setpoint Parameter</b> | Specify the parameter to be monitored.                                                                                                                                                                                             | See Table 4-4                                      |
| <b>Over Limit</b>         | Specify the value that the setpoint parameter must exceed for Over Setpoint to become active or for Under Setpoint to become inactive.                                                                                             | 0*                                                 |
| <b>Under Limit</b>        | Specify the value that the setpoint parameter must go below for Over Setpoint to become inactive or for Under Setpoint to become active.                                                                                           |                                                    |
| <b>Active Delay</b>       | Specify the minimum duration that the setpoint condition must be met before the setpoint becomes active. An event will be generated and stored in the SOE Log. The range of the <b>Active Delay</b> is between 0 and 9999 seconds. | 0 to 9999s, 10s*                                   |
| <b>Inactive Delay</b>     | Specify the minimum duration that the setpoint return condition                                                                                                                                                                    | 0 to 9999s, 10s*                                   |

|  |                                                                                                                                                                               |  |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  | must be met before the setpoint becomes inactive. An event will be generated and stored in the SOE Log. The range of the <b>Inactive Delay</b> is between 0 and 9999 seconds. |  |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

Table 4-3 Description for Setpoint Parameters

The table below illustrates the Setpoint Parameters.

| Key | Setpoint Parameter | Scale | Unit | Key | Setpoint Parameter | Scale | Unit |
|-----|--------------------|-------|------|-----|--------------------|-------|------|
| 0   | Null               | --    | --   | 12  | Ua                 | x1    | V    |
| 1   | Uln                | x1    | V    | 13  | Ub                 | x1    | V    |
| 2   | Ull                | x1    | V    | 14  | Uc                 | x1    | V    |
| 3   | I                  | x1    | A    | 15  | Uab                | x1    | V    |
| 4   | Frequency          | x1    | Hz   | 16  | Ubc                | x1    | V    |
| 5   | P Total            | x1    | kW   | 17  | Uca                | x1    | V    |
| 6   | PF Total           | x1    | --   | 18  | Ia                 | x1    | A    |
| 7   | P Total DMD        | x1    | kW   | 19  | Ib                 | x1    | A    |
| 8   | Voltage THD        | x1    | %    | 20  | Ic                 | x1    | A    |
| 9   | Current THD        | x1    | %    | 21  | Temperature        | x1    | °C   |
| 10  | Voltage Unbalance  | x1    | %    | 22  | DI1                | --    | --   |
| 11  | Current Unbalance  | x1    | %    |     |                    |       |      |

Table 4-4 Setpoint Parameters

**Notes:**

1. If DI1 is configured as Setpoint Parameter, the Over Limit/Under Limit would be invalid. If DI1 is configured as Setpoint Parameter, the events description in SOE would be "DI1 Open/Closed Alarm" or "DI1 Open/Closed Return".

## 4.4 Logs

### 4.4.1 Monthly Energy Log

The PMC-340-A6 stores the monthly energy data for the present month and the last 12 months. The **Monthly Energy Log Self-Read Time** setup parameter allows the user to specify the time and day of the month for the Recorder's self-read operation via communications. The Monthly Energy Logs are stored in the meter's non-volatile memory and will not suffer any loss in the event of power failure, and they are stored on a First-in-First-out basis where the newest log will overwrite the oldest one.

The **Monthly Energy Log Self-Read Time** supports two options:

- A zero value means that the Self-Read will take place at 00:00 of the first day of each month.
- A non-zero value means that the Self-Read will take place at a specific time and day based on the formula: Energy Self-Read Time = Day x 100 + Hour where  $0 \leq \text{Hour} \leq 23$  and  $1 \leq \text{Day} \leq 28$ . For example, the value 1512 means that the Self-Read will take place at 12:00 pm on the 15<sup>th</sup> day of each month.

The Monthly Energy Logs can be reset manually via communications.

The PMC-340-A6 provides the following Energy data for the Present Month and the last 12 months:

|                        |                                                               |
|------------------------|---------------------------------------------------------------|
| <b>Active Energy</b>   | kWh Import/Export, Tariff 1 to Tariff 5 kWh Import/Export     |
| <b>Reactive Energy</b> | kvarh Import/Export, Tariff 1 to Tariff 5 kvarh Import/Export |
| <b>Apparent Energy</b> | kVAh, Tariff 1 to Tariff 4 kVAh                               |

Table 4-5 Energy Measurement for Monthly Energy Log

### 4.4.2 SOE Log

The PMC-340-A6's SOE Log can store up to 128 events such as Power-on, Power-off, Digital Input Status changes, Setpoint, Self-diagnostics and Setup changes in its non-volatile memory. Each event record includes the event classification, its relevant parameter values and a timestamp in  $\pm 1\text{ms}$  resolution. The SOE Log can be retrieved via communications for display. If there are more than 128 events, the newest event will replace the oldest one on a First-in-First-Out basis. The SOE Log can be reset through the Front Panel or via communications.

#### 4.4.3 Data Recorder Log

The PMC-340-A6 provides two Data Recorder capable of recording 16 parameters each at a 5-min interval for over 6 months. The Data Recorder log is stored in the device's non-volatile memory and will not suffer any loss in the event of a power failure.

The programming of the Data Recorder is only supported over communications. The Data Recorder provides the following setup parameters.

| Parameters           | Value/Option                                | Default                            |
|----------------------|---------------------------------------------|------------------------------------|
| Trigger Mode         | 0=Disabled / 1=Triggered by Timer           | 1                                  |
| Recording Mode       | 0=Stop-When-Full / 1=First-In-First-Out     | 1                                  |
| Recording Depth      | 1 to 65535 (entry)                          | 60000                              |
| Recording Interval   | 1 to 3,456,000 seconds                      | 300s                               |
| Offset Time          | 0 to 43,200 seconds, 0 indicates no offset. | 0                                  |
| Number of Parameters | 0 to 16                                     | 14                                 |
| Parameter 1 to 16    | See Table 5-35 Data Recorder Parameters     | See Table 5-34 Data Recorder Setup |

**Table 4-6 Data Recorder Setup**

The Data Recorder Log is only operational when the values of Trigger Mode, Recording Depth, Recording Interval, and Number of Parameters are all non-zero.

The Recording Offset can be used to delay the recording by a fixed time from the Recording Interval. For example, if the Recording Interval parameter is set to 3600 (hourly) and the Recording Offset parameter is set to 300 (5 minutes), the recording will take place at 5 minutes after the hour every hour, i.e. 00:05, 01:05, 02:05, etc. The value of the Recording Offset parameter should be less than the Recording Interval parameter.

#### 4.5 Time of Use (TOU)

TOU is used for Electricity Pricing that varies depending on the time of day, day of week, and season. The TOU system allows the user to configure an electricity price schedule inside the PMC-340-A6 and accumulate energy consumption into different TOU tariffs based on the time of consumption. TOU programming is only supported through communications.

The TOU feature on PMC-340-A6 supports two TOU schedules, which can be switched at a pre-defined time. Each TOU schedule supports:

- Up to 12 Seasons
- 90 Holidays or Alternate Days
- 20 Daily Profiles, each with 14 periods
- 5 Tariffs

Each TOU Schedule has the following setup parameters and can only be programmed via communications:

| Parameters       | Definition                                                                                                                                                                                 | Options                                                                                |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Daily Profile #  | Specify a daily rate schedule which can be divided into a maximum of 14 periods<br>Up to 20 Daily Profiles can be programmed for each TOU schedule.                                        | 1 to 20, the first period starts at any time of day and the last period ends at 24:00. |
| Season #         | A year can be divided into a maximum of 12 seasons. Each season is specified with a Start Date and ends with the next season's Start Date.                                                 | 1 to 12, starting from any day.                                                        |
| Alternate Days # | A day can be defined as an Alternate Day, such as May 1 <sup>st</sup> . Each Alternate Day is assigned a Daily Profile.                                                                    | 1 to 90.                                                                               |
| Day Types        | Specify the day type of the week. Each day of a week can be assigned a day type such as Weekday1, Weekday2, Weekday3 and Alternate Days. The Alternate Day has the highest priority.       | Weekday1, Weekday2, Weekday3 & Alternate Days.                                         |
| Switching Time   | Specify when to switch from one TOU schedule to another. Writing 0xFFFFFFFF to this parameter disables switching between TOU schedules. Write 0xFF00 to manually switch the TOU schedules. | Format: YYMMDDHH<br>Default=0xFFFFFFFF                                                 |

**Table 4-7 TOU Setup**

For each of the 5 Tariffs, the PMC-340-A6 provides the kWh, kvarh Import/Export and kVAh measurement.

## Chapter 5 Modbus Map

This chapter provides a complete description of the Modbus register map (**Protocol Version 1.0**) for the PMC-340-A6 to facilitate the development of 3<sup>rd</sup> party Modbus RTU communications driver for accessing information on the meter.

The PMC-340-A6 supports the following Modbus functions:

- 1) Read Holding Registers (Function Code 0x03)
- 2) Preset Multiple Registers (Function Code 0x10)

For a complete Modbus Protocol Specification, please visit <http://www.modbus.org>.

### 5.1 Function Code and Data Format

#### 5.1.1 03 (0x03) Read Holding Registers

The following table illustrates the Data Format for Read Holding Registers Request/Response packet.

| Request Packet<br>(Master Station to PMC-340-A6) |         | Response Packet<br>(PMC-340-A6 to Master Station) |         |
|--------------------------------------------------|---------|---------------------------------------------------|---------|
| Field Name                                       | Bytes   | Field Name                                        | Bytes   |
| Slave Address                                    | 1 Byte  | Slave Address                                     | 1 Byte  |
| Function Code (0x03)                             | 1 Byte  | Function Code (0x03)                              | 1 Byte  |
| Starting Address Hi                              | 1 Byte  | Byte Count N                                      | 1 Byte  |
| Starting Address Lo                              | 1 Byte  | Data 1 Hi                                         | 1 Byte  |
| No. of Registers Hi                              | 1 Byte  | Data 1 Lo                                         | 1 Byte  |
| No. of Registers Lo                              | 1 Byte  | ...                                               |         |
| Error Check (CRC)                                | 2 Bytes | Data N/2 Hi                                       | 1 Byte  |
|                                                  |         | Data N/2 Lo                                       | 1 Byte  |
|                                                  |         | Error Check (CRC)                                 | 2 Bytes |

Table 5-1 Data Format for 0x03 Request/Response Packet

#### 5.1.2 16 (0x10) Write Multiple Registers

The following table illustrates the Data Format for Write Multiple Registers request/response packet.

| Request Packet<br>(Master Station to PMC-340-A6) |         | Response Packet<br>(PMC-340-A6 to Master Station) |         |
|--------------------------------------------------|---------|---------------------------------------------------|---------|
| Field Name                                       | Bytes   | Field Name                                        | Bytes   |
| Slave Address                                    | 1 Byte  | Slave Address                                     | 1 Byte  |
| Function Code (0x10)                             | 1 Byte  | Function Code (0x10)                              | 1 Byte  |
| Starting Address Hi                              | 1 Byte  | Starting Address Hi                               | 1 Byte  |
| Starting Address Lo                              | 1 Byte  | Starting Address Lo                               | 1 Byte  |
| No. of Registers Hi                              | 1 Byte  | No. of Registers Hi                               | 1 Byte  |
| No. of Registers Lo                              | 1 Byte  | No. of Registers Lo                               | 1 Byte  |
| Byte Count N                                     | 1 Byte  | Error Check (CRC)                                 | 2 Bytes |
| Data 1 Hi                                        | 1 Byte  |                                                   |         |
| Data 1 Lo                                        | 1 Byte  |                                                   |         |
| ...                                              |         |                                                   |         |
| Data N/2 Hi                                      | 1 Byte  |                                                   |         |
| Data N/2 Lo                                      | 1 Byte  |                                                   |         |
| Error Check (CRC)                                | 2 Bytes |                                                   |         |

Table 5-2 Data Format for 0x10 Request/Response Packet

### 5.2 Register Format

The following table provides a description of the different data formats used for the Modbus registers.

| Format       | Description                                                         |
|--------------|---------------------------------------------------------------------|
| UINT16/INT16 | Unsigned/signed 16-bit integer                                      |
| UINT32/INT32 | Unsigned/signed 32-bit integer                                      |
| INT64        | Signed 64-bit integer                                               |
| FLOAT        | IEEE 754 32-bit floating point number (single precision)            |
| CHAR         | 16-bit binary register which represents a single Unicode character. |

Table 5-3 Register Format

### 5.3 Data Encoding

The PMC-340-A6 uses the Big-Endian byte ordering system. This means that when a numeric quantity larger than a single byte is transmitted, the most significant byte is sent first. For example, value of Register 0000 is "0x44 71 13 88", the first byte sent is "0x44", then "0x71", "0x13" and finally "0x88".

### 5.4 Basic Measurements

| Register  | Property | Description                               | Format | Scale | Unit |
|-----------|----------|-------------------------------------------|--------|-------|------|
| 0000      | RO       | Ua                                        | FLOAT  | x1    | V    |
| 0002      | RO       | Ub                                        | FLOAT  |       | V    |
| 0004      | RO       | Uc                                        | FLOAT  |       | V    |
| 0006      | RO       | Uln Average                               | FLOAT  |       | V    |
| 0008      | RO       | Uab                                       | FLOAT  |       | V    |
| 0010      | RO       | Ubc                                       | FLOAT  |       | V    |
| 0012      | RO       | Uca                                       | FLOAT  |       | V    |
| 0014      | RO       | Ull Average                               | FLOAT  |       | V    |
| 0016      | RO       | Ia                                        | FLOAT  |       | A    |
| 0018      | RO       | Ib                                        | FLOAT  |       | A    |
| 0020      | RO       | Ic                                        | FLOAT  |       | A    |
| 0022      | RO       | I Average                                 | FLOAT  |       | A    |
| 0024      | RO       | Pa                                        | FLOAT  |       | W    |
| 0026      | RO       | Pb                                        | FLOAT  |       | W    |
| 0028      | RO       | Pc                                        | FLOAT  |       | W    |
| 0030      | RO       | P Total                                   | FLOAT  |       | W    |
| 0032      | RO       | Qa                                        | FLOAT  |       | var  |
| 0034      | RO       | Qb                                        | FLOAT  |       | var  |
| 0036      | RO       | Qc                                        | FLOAT  |       | var  |
| 0038      | RO       | Q Total                                   | FLOAT  |       | var  |
| 0040      | RO       | Sa                                        | FLOAT  |       | VA   |
| 0042      | RO       | Sb                                        | FLOAT  |       | VA   |
| 0044      | RO       | Sc                                        | FLOAT  |       | VA   |
| 0046      | RO       | S Total                                   | FLOAT  |       | VA   |
| 0048      | RO       | PFa                                       | FLOAT  |       |      |
| 0050      | RO       | PFb                                       | FLOAT  |       |      |
| 0052      | RO       | PFc                                       | FLOAT  |       |      |
| 0054      | RO       | PF Total                                  | FLOAT  |       |      |
| 0056      | RO       | Frequency                                 | FLOAT  |       | Hz   |
| 0058      | RO       | Ua/Uab (3P3W) Angle                       | FLOAT  |       | °    |
| 0060      | RO       | Ub/Ubc (3P3W) Angle                       | FLOAT  |       | °    |
| 0062      | RO       | Uc/Uca (3P3W) Angle                       | FLOAT  |       | °    |
| 0064      | RO       | Ia Angle                                  | FLOAT  |       |      |
| 0066      | RO       | Ib Angle                                  | FLOAT  |       |      |
| 0068      | RO       | Ic Angle                                  | FLOAT  |       |      |
| 0070      | RO       | In (Calculated)                           | FLOAT  |       | A    |
| 0072      | RO       | Temperature                               | FLOAT  |       | °C   |
| 0074      | RO       | Displacement PFa                          | FLOAT  | x1    | -    |
| 0076      | RO       | Displacement PFb                          | FLOAT  |       |      |
| 0078      | RO       | Displacement PFc                          | FLOAT  |       |      |
| 0080~0089 | --       | Reserved                                  | --     | --    | --   |
| 0090      | RO       | DI1 Status                                | UINT32 |       |      |
| 0092      | RO       | FP Counter <sup>1</sup>                   | UINT16 | x1    | -    |
| 0093      | RO       | Comm. Counter <sup>1</sup>                | UINT16 | x1    | -    |
| 0094      | RO       | SOE Log Pointer <sup>2</sup>              | UINT32 |       |      |
| 0096      | RO       | Data Recorder #1 Log Pointer <sup>2</sup> | UINT32 |       |      |
| 0098      | RO       | Data Recorder #2 Log Pointer <sup>2</sup> | UINT32 |       |      |
| 0100      | RO       | Setpoint Status <sup>3</sup>              | UINT32 |       |      |
| 0102      | RO       | Wiring Diagnostic Status <sup>4</sup>     | UINT16 |       |      |
| 0103      | --       | Reserved                                  | --     | --    | --   |
| 0104      | RO       | Device Operating Time <sup>5</sup>        | UINT32 | x0.1  | Hour |

**Table 5-4 Basic Measurements**

**Notes:**

1. The FP Counter and Comm. Counter will be incremented every time some important setup parameters, which may affect the accuracy of Energy registers and DI Pulse Counters or the way they are calculated, are changed via Front Panel or Communication, respectively. The range of the FP Counter and Comm. Counter is between 0 and 9999. It will roll over to 0 if its current value is 9999. The FP Counter is incremented every time a relevant setup parameter is changed via the Front Panel, while the Comm. Counter is incremented every

time a single packet is sent to change one or more relevant setup parameters through communications. The following actions may trigger these counters to increment:

- Changing Setup Parameters:
    - Wiring Mode, PT and CT ratios and I Polarities
    - DI setup parameters
    - Energy Pulse Constant
    - Preset Energy Value
    - Demand Period and No. of Sliding Windows
    - TOU setup registers
    - Manual Time Set (via Front Panel only)
  - Clear Actions via Front Panel:
    - Clear All Energy
    - Clear All Demand
    - Clear All Max./Min. Log
    - Clear DI1 Counter
    - Clear SOE Log
  - Clear Actions via Communication:
    - Clear Monthly Energy Log (Register 9600)
    - Clear Energy (Register 9601)
    - Clear Monthly Energy Log of Present Month (Register 9602)
    - Clear Max. Demand Log of This Month (Register 9603)
    - Clear All Demand Registers and Logs (Register 9604)
    - Clear Device Operating Time (Register 9607)
    - Clear All Data (Register 9608)
    - Clear DI1 Counter (Register 9609) (only when DI1 = Energy Pulse Counter)
2. The range of the **Log Pointer** (SOE and DR) is between 0 and 0xFFFFFFFF, and it is incremented by one for every new log generated and will roll over to 0 if its current value is 0xFFFFFFFF. A value of zero indicates that the SOE or DR does not contain any Log. If a Clear SOE/DR Log is performed via communications, the corresponding Log Pointer will be reset to zero and the SOE Log Pointer will be immediately incremented by one with a new Clear SOE/DR Log event.
3. For the **Setpoint Status** register, the bit values indicate the various Setpoint states with “1” meaning Active and “0” meaning Inactive. The following table illustrates the details of the **Alarm Status** register.

| Bit31       | Bit30      | Bit29      | Bit28      | Bit27      | Bit26      | Bit25      | Bit24      |
|-------------|------------|------------|------------|------------|------------|------------|------------|
| Reserved    | Reserved   | Reserved   | Reserved   | Reserved   | Reserved   | Reserved   | Reserved   |
| Bit23       | Bit22      | Bit21      | Bit20      | Bit19      | Bit18      | Bit17      | Bit16      |
| Reserved    | Reserved   | Reserved   | Reserved   | Setpoint20 | Setpoint19 | Setpoint18 | Setpoint17 |
| Bit15       | Bit14      | Bit13      | Bit12      | Bit11      | Bit10      | Bit9       | Bit8       |
| Setpoint 16 | Setpoint15 | Setpoint14 | Setpoint13 | Setpoint12 | Setpoint11 | Setpoint10 | Setpoint9  |
| Bit7        | Bit6       | Bit5       | Bit4       | Bit3       | Bit2       | Bit1       | Bit0       |
| Setpoint8   | Setpoint7  | Setpoint6  | Setpoint5  | Setpoint4  | Setpoint3  | Setpoint2  | Setpoint1  |

Table 5-5 Setpoint Status

4. The following table illustrates the **Wiring Diagnostic Status** with 0 meaning Normal and 1 meaning Abnormal:

| Bit     | Description                                                                                                                      |
|---------|----------------------------------------------------------------------------------------------------------------------------------|
| B00     | Summary Bit (Set if any other bit is set)                                                                                        |
| B01     | Frequency is out of range from 45 to 65 Hz (3P4W and 3P3W)                                                                       |
| B02     | $U_{llmax} < 20\% \cdot U_{nom.}$ (and $I \neq 0$ ) or any two Ull differ by $> 20\% \cdot U_{nom.}$ (Register 6000) (3P4W only) |
| B03     | $I_{max} > 1\% \cdot I_{nom.}$ and $I_{min.} = 0$ (Register 6004) (3P4W or 3P3W)                                                 |
| B04~B05 | Reserved                                                                                                                         |
| B06     | Voltage Phase Reversal (3P4W or 3P3W)                                                                                            |
| B07     | Current Phase Reversal (3P4W or 3P3W)                                                                                            |
| B08     | Negative P Total may be abnormal (3P4W or 3P3W)                                                                                  |
| B09     | Negative Pa may be abnormal (3P4W only)                                                                                          |
| B10     | Negative Pb may be abnormal (3P4W only)                                                                                          |
| B11     | Negative Pc may be abnormal (3P4W only)                                                                                          |
| B12     | CTa polarity may be reversed (3P4W only)                                                                                         |
| B13     | CTb polarity may be reversed (3P4W only)                                                                                         |
| B14     | CTc polarity may be reversed (3P4W only)                                                                                         |
| B15     | Reserved                                                                                                                         |

Table 5-2 Wiring Diagnostic Status Register

5. The **Device Operating Time** means the accumulated Operating Time whenever any per-phase Current exceeds 100mA. The Device Operating Time data is stored in non-volatile memory and will not suffer any loss in the event of a power failure.

## 5.5 Energy Measurements

The Energy registers have a maximum value of 99 999 999.9 and will roll over to zero automatically when it is reached. The actual energy value is 0.1 times of the register value.

### 5.5.1 3-Phase Energy Measurements

| Register | Property | Description        | Format | Scale | Unit  |
|----------|----------|--------------------|--------|-------|-------|
| 0500     | RW       | kWh Import         | INT32  | x0.1  | kWh   |
| 0502     | RW       | kWh Export         | INT32  | x0.1  | kWh   |
| 0504     | RO       | kWh Net            | INT32  | x0.1  | kWh   |
| 0506     | RO       | kWh Total          | INT32  | x0.1  | kWh   |
| 0508     | RW       | kvarh Import       | INT32  | x0.1  | kvarh |
| 0510     | RW       | kvarh Export       | INT32  | x0.1  | kvarh |
| 0512     | RO       | kvarh Net          | INT32  | x0.1  | kvarh |
| 0514     | RO       | kvarh Total        | INT32  | x0.1  | kvarh |
| 0516     | RW       | kVAh               | INT32  | x0.1  | kVAh  |
| 0518     | RW       | kvarh Q1           | INT32  | x0.1  | kvarh |
| 0520     | RW       | kvarh Q2           | INT32  | x0.1  | kvarh |
| 0522     | RW       | kvarh Q3           | INT32  | x0.1  | kvarh |
| 0524     | RW       | kvarh Q4           | INT32  | x0.1  | kvarh |
| 0526     | RW       | kWh Import of T1   | INT32  | x0.1  | kWh   |
| 0528     | RW       | kWh Export of T1   | INT32  | x0.1  | kWh   |
| 0530     | RW       | kvarh Import of T1 | INT32  | x0.1  | kvarh |
| 0532     | RW       | kvarh Export of T1 | INT32  | x0.1  | kvarh |
| 0534     | RW       | kVAh of T1         | INT32  | x0.1  | kVAh  |
| 0536     | RW       | kWh Import of T2   | INT32  | x0.1  | kWh   |
| 0538     | RW       | kWh Export of T2   | INT32  | x0.1  | kWh   |
| 0540     | RW       | kvarh Import of T2 | INT32  | x0.1  | kvarh |
| 0542     | RW       | kvarh Export of T2 | INT32  | x0.1  | kvarh |
| 0544     | RW       | kVAh of T2         | INT32  | x0.1  | kVAh  |
| 0546     | RW       | kWh Import of T3   | INT32  | x0.1  | kWh   |
| 0548     | RW       | kWh Export of T3   | INT32  | x0.1  | kWh   |
| 0550     | RW       | kvarh Import of T3 | INT32  | x0.1  | kvarh |
| 0552     | RW       | kvarh Export of T3 | INT32  | x0.1  | kvarh |
| 0554     | RW       | kVAh of T3         | INT32  | x0.1  | kVAh  |
| 0556     | RW       | kWh Import of T4   | INT32  | x0.1  | kWh   |
| 0558     | RW       | kWh Export of T4   | INT32  | x0.1  | kWh   |
| 0560     | RW       | kvarh Import of T4 | INT32  | x0.1  | kvarh |
| 0562     | RW       | kvarh Export of T4 | INT32  | x0.1  | kvarh |
| 0564     | RW       | kVAh of T4         | INT32  | x0.1  | kVAh  |
| 0566     | RW       | kWh Import of T5   | INT32  | x0.1  | kWh   |
| 0568     | RW       | kWh Export of T5   | INT32  | x0.1  | kWh   |
| 0570     | RW       | kvarh Import of T5 | INT32  | x0.1  | kvarh |
| 0572     | RW       | kvarh Export of T5 | INT32  | x0.1  | kvarh |
| 0574     | RW       | kVAh of T5         | INT32  | x0.1  | kVAh  |

Table 5-6 3-Phase Energy Measurements

### 5.5.2 Phase A (L1) Energy Measurements

| Register | Property | Description        | Format | Scale | Unit  |
|----------|----------|--------------------|--------|-------|-------|
| 0620     | RW       | kWh Import         | INT32  | x0.1  | kWh   |
| 0622     | RW       | kWh Export         | INT32  | x0.1  | kWh   |
| 0624     | RO       | kWh Net            | INT32  | x0.1  | kWh   |
| 0626     | RO       | kWh Total          | INT32  | x0.1  | kWh   |
| 0628     | RW       | kvarh Import       | INT32  | x0.1  | kvarh |
| 0630     | RW       | kvarh Export       | INT32  | x0.1  | kvarh |
| 0632     | RO       | kvarh Net          | INT32  | x0.1  | kvarh |
| 0634     | RO       | kvarh Total        | INT32  | x0.1  | kvarh |
| 0636     | RW       | kVAh               | INT32  | x0.1  | kVAh  |
| 0638     | RW       | kvarh Q1           | INT32  | x0.1  | kvarh |
| 0640     | RW       | kvarh Q2           | INT32  | x0.1  | kvarh |
| 0642     | RW       | kvarh Q3           | INT32  | x0.1  | kvarh |
| 0644     | RW       | kvarh Q4           | INT32  | x0.1  | kvarh |
| 0646     | RW       | kWh Import of T1   | INT32  | x0.1  | kWh   |
| 0648     | RW       | kWh Export of T1   | INT32  | x0.1  | kWh   |
| 0650     | RW       | kvarh Import of T1 | INT32  | x0.1  | kvarh |

|      |    |                    |       |      |       |
|------|----|--------------------|-------|------|-------|
| 0652 | RW | kvarh Export of T1 | INT32 | x0.1 | kvarh |
| 0654 | RW | kVAh of T1         | INT32 | x0.1 | kVAh  |
| 0656 | RW | kWh Import of T2   | INT32 | x0.1 | kWh   |
| 0658 | RW | kWh Export of T2   | INT32 | x0.1 | kWh   |
| 0660 | RW | kvarh Import of T2 | INT32 | x0.1 | kvarh |
| 0662 | RW | kvarh Export of T2 | INT32 | x0.1 | kvarh |
| 0664 | RW | kVAh of T2         | INT32 | x0.1 | kVAh  |
| 0666 | RW | kWh Import of T3   | INT32 | x0.1 | kWh   |
| 0668 | RW | kWh Export of T3   | INT32 | x0.1 | kWh   |
| 0670 | RW | kvarh Import of T3 | INT32 | x0.1 | kvarh |
| 0672 | RW | kvarh Export of T3 | INT32 | x0.1 | kvarh |
| 0674 | RW | kVAh of T3         | INT32 | x0.1 | kVAh  |
| 0676 | RW | kWh Import of T4   | INT32 | x0.1 | kWh   |
| 0678 | RW | kWh Export of T4   | INT32 | x0.1 | kWh   |
| 0680 | RW | kvarh Import of T4 | INT32 | x0.1 | kvarh |
| 0682 | RW | kvarh Export of T4 | INT32 | x0.1 | kvarh |
| 0684 | RW | kVAh of T4         | INT32 | x0.1 | kVAh  |
| 0686 | RW | kWh Import of T5   | INT32 | x0.1 | kWh   |
| 0688 | RW | kWh Export of T5   | INT32 | x0.1 | kWh   |
| 0690 | RW | kvarh Import of T5 | INT32 | x0.1 | kvarh |
| 0692 | RW | kvarh Export of T5 | INT32 | x0.1 | kvarh |
| 0694 | RW | kVAh of T5         | INT32 | x0.1 | kVAh  |

Table 5-7 Phase A (L1) Energy Measurements

## 5.5.3 Phase B (L2) Energy Measurements

| Register | Property | Description        | Format | Scale | Unit  |
|----------|----------|--------------------|--------|-------|-------|
| 0740     | RW       | kWh Import         | INT32  | x0.1  | kWh   |
| 0742     | RW       | kWh Export         | INT32  | x0.1  | kWh   |
| 0744     | RO       | kWh Net            | INT32  | x0.1  | kWh   |
| 0746     | RO       | kWh Total          | INT32  | x0.1  | kWh   |
| 0748     | RW       | kvarh Import       | INT32  | x0.1  | kvarh |
| 0750     | RW       | kvarh Export       | INT32  | x0.1  | kvarh |
| 0752     | RO       | kvarh Net          | INT32  | x0.1  | kvarh |
| 0754     | RO       | kvarh Total        | INT32  | x0.1  | kvarh |
| 0756     | RW       | kVAh               | INT32  | x0.1  | kVAh  |
| 0758     | RW       | kvarh Q1           | INT32  | x0.1  | kvarh |
| 0760     | RW       | kvarh Q2           | INT32  | x0.1  | kvarh |
| 0762     | RW       | kvarh Q3           | INT32  | x0.1  | kvarh |
| 0764     | RW       | kvarh Q4           | INT32  | x0.1  | kvarh |
| 0766     | RW       | kWh Import of T1   | INT32  | x0.1  | kWh   |
| 0768     | RW       | kWh Export of T1   | INT32  | x0.1  | kWh   |
| 0770     | RW       | kvarh Import of T1 | INT32  | x0.1  | kvarh |
| 0772     | RW       | kvarh Export of T1 | INT32  | x0.1  | kvarh |
| 0774     | RW       | kVAh of T1         | INT32  | x0.1  | kVAh  |
| 0776     | RW       | kWh Import of T2   | INT32  | x0.1  | kWh   |
| 0778     | RW       | kWh Export of T2   | INT32  | x0.1  | kWh   |
| 0780     | RW       | kvarh Import of T2 | INT32  | x0.1  | kvarh |
| 0782     | RW       | kvarh Export of T2 | INT32  | x0.1  | kvarh |
| 0784     | RW       | kVAh of T2         | INT32  | x0.1  | kVAh  |
| 0786     | RW       | kWh Import of T3   | INT32  | x0.1  | kWh   |
| 0788     | RW       | kWh Export of T3   | INT32  | x0.1  | kWh   |
| 0790     | RW       | kvarh Import of T3 | INT32  | x0.1  | kvarh |
| 0792     | RW       | kvarh Export of T3 | INT32  | x0.1  | kvarh |
| 0794     | RW       | kVAh of T3         | INT32  | x0.1  | kVAh  |
| 0796     | RW       | kWh Import of T4   | INT32  | x0.1  | kWh   |
| 0798     | RW       | kWh Export of T4   | INT32  | x0.1  | kWh   |
| 0800     | RW       | kvarh Import of T4 | INT32  | x0.1  | kvarh |
| 0802     | RW       | kvarh Export of T4 | INT32  | x0.1  | kvarh |
| 0804     | RW       | kVAh of T4         | INT32  | x0.1  | kVAh  |
| 0806     | RW       | kWh Import of T5   | INT32  | x0.1  | kWh   |
| 0808     | RW       | kWh Export of T5   | INT32  | x0.1  | kWh   |
| 0810     | RW       | kvarh Import of T5 | INT32  | x0.1  | kvarh |
| 0812     | RW       | kvarh Export of T5 | INT32  | x0.1  | kvarh |
| 0814     | RW       | kVAh of T5         | INT32  | x0.1  | kVAh  |

Table 5-8 Phase B (L2) Energy Measurements

## 5.5.4 Phase C (L3) Energy Measurements

| Register | Property | Description        | Format | Scale | Unit  |
|----------|----------|--------------------|--------|-------|-------|
| 0860     | RW       | kWh Import         | INT32  | x0.1  | kWh   |
| 0862     | RW       | kWh Export         | INT32  | x0.1  | kWh   |
| 0864     | RO       | kWh Net            | INT32  | x0.1  | kWh   |
| 0866     | RO       | kWh Total          | INT32  | x0.1  | kWh   |
| 0868     | RW       | kvarh Import       | INT32  | x0.1  | kvarh |
| 0870     | RW       | kvarh Export       | INT32  | x0.1  | kvarh |
| 0872     | RO       | kvarh Net          | INT32  | x0.1  | kvarh |
| 0874     | RO       | kvarh Total        | INT32  | x0.1  | kvarh |
| 0876     | RW       | kVAh               | INT32  | x0.1  | kVAh  |
| 0878     | RW       | kvarh Q1           | INT32  | x0.1  | kvarh |
| 0880     | RW       | kvarh Q2           | INT32  | x0.1  | kvarh |
| 0882     | RW       | kvarh Q3           | INT32  | x0.1  | kvarh |
| 0884     | RW       | kvarh Q4           | INT32  | x0.1  | kvarh |
| 0886     | RW       | kWh Import of T1   | INT32  | x0.1  | kWh   |
| 0888     | RW       | kWh Export of T1   | INT32  | x0.1  | kWh   |
| 0890     | RW       | kvarh Import of T1 | INT32  | x0.1  | kvarh |
| 0892     | RW       | kvarh Export of T1 | INT32  | x0.1  | kvarh |
| 0894     | RW       | kVAh of T1         | INT32  | x0.1  | kVAh  |
| 0896     | RW       | kWh Import of T2   | INT32  | x0.1  | kWh   |
| 0898     | RW       | kWh Export of T2   | INT32  | x0.1  | kWh   |
| 0900     | RW       | kvarh Import of T2 | INT32  | x0.1  | kvarh |
| 0902     | RW       | kvarh Export of T2 | INT32  | x0.1  | kvarh |
| 0904     | RW       | kVAh of T2         | INT32  | x0.1  | kVAh  |
| 0906     | RW       | kWh Import of T3   | INT32  | x0.1  | kWh   |
| 0908     | RW       | kWh Export of T3   | INT32  | x0.1  | kWh   |
| 0910     | RW       | kvarh Import of T3 | INT32  | x0.1  | kvarh |
| 0912     | RW       | kvarh Export of T3 | INT32  | x0.1  | kvarh |
| 0914     | RW       | kVAh of T3         | INT32  | x0.1  | kVAh  |
| 0916     | RW       | kWh Import of T4   | INT32  | x0.1  | kWh   |
| 0918     | RW       | kWh Export of T4   | INT32  | x0.1  | kWh   |
| 0920     | RW       | kvarh Import of T4 | INT32  | x0.1  | kvarh |
| 0922     | RW       | kvarh Export of T4 | INT32  | x0.1  | kvarh |
| 0924     | RW       | kVAh of T4         | INT32  | x0.1  | kVAh  |
| 0926     | RW       | kWh Import of T5   | INT32  | x0.1  | kWh   |
| 0928     | RW       | kWh Export of T5   | INT32  | x0.1  | kWh   |
| 0930     | RW       | kvarh Import of T5 | INT32  | x0.1  | kvarh |
| 0932     | RW       | kvarh Export of T5 | INT32  | x0.1  | kvarh |
| 0934     | RW       | kVAh of T5         | INT32  | x0.1  | kVAh  |

Table 5-9 Phase C (L3) Energy Measurements

## 5.6 Monthly Energy Log

| Register | Property | Description                                                     | Format | Scale | Unit  |
|----------|----------|-----------------------------------------------------------------|--------|-------|-------|
| 0980     | RW       | Month <sup>1)</sup>                                             | INT16  | -     | -     |
| 0981     | RO       | High-order Byte: Year (00-99)<br>Low-order Byte: Month (1-12)   | INT16  | -     | -     |
| 0982     | RO       | High-order Byte: Day (1-31)<br>Low-order Byte: Hour (0-23)      | INT16  | -     | -     |
| 0983     | RO       | High-order Byte: Minute (0-59)<br>Low-order Byte: Second (0-59) | INT16  | -     | -     |
| 0984     | RO       | kWh Import                                                      | INT32  | x0.1  | kWh   |
| 0986     | RO       | kWh Export                                                      | INT32  | x0.1  | kWh   |
| 0988     | RO       | kWh Net                                                         | INT32  | x0.1  | kWh   |
| 0990     | RO       | kWh Total                                                       | INT32  | x0.1  | kWh   |
| 0992     | RO       | kvarh Import                                                    | INT32  | x0.1  | kvarh |
| 0994     | RO       | kvarh Export                                                    | INT32  | x0.1  | kvarh |
| 0996     | RO       | kvarh Net                                                       | INT32  | x0.1  | kvarh |
| 0998     | RO       | kvarh Total                                                     | INT32  | x0.1  | kvarh |
| 1000     | RO       | kVAh                                                            | INT32  | x0.1  | kVAh  |
| 1002     | RO       | kvarh Q1                                                        | INT32  | x0.1  | kvarh |
| 1004     | RO       | kvarh Q2                                                        | INT32  | x0.1  | kvarh |
| 1006     | RO       | kvarh Q3                                                        | INT32  | x0.1  | kvarh |
| 1008     | RO       | kvarh Q4                                                        | INT32  | x0.1  | kvarh |
| 1010     | RO       | kWh Import of T1                                                | INT32  | x0.1  | kWh   |

|      |    |                    |       |      |       |
|------|----|--------------------|-------|------|-------|
| 1012 | RO | kWh Export of T1   | INT32 | x0.1 | kWh   |
| 1014 | RO | kvarh Import of T1 | INT32 | x0.1 | kvarh |
| 1016 | RO | kvarh Export of T1 | INT32 | x0.1 | kvarh |
| 1018 | RO | kVAh of T1         | INT32 | x0.1 | kVAh  |
| 1020 | RO | kWh Import of T2   | INT32 | x0.1 | kWh   |
| 1022 | RO | kWh Export of T2   | INT32 | x0.1 | kWh   |
| 1024 | RO | kvarh Import of T2 | INT32 | x0.1 | kvarh |
| 1026 | RO | kvarh Export of T2 | INT32 | x0.1 | kvarh |
| 1028 | RO | kVAh of T2         | INT32 | x0.1 | kVAh  |
| 1030 | RO | kWh Import of T3   | INT32 | x0.1 | kWh   |
| 1032 | RO | kWh Export of T3   | INT32 | x0.1 | kWh   |
| 1034 | RO | kvarh Import of T3 | INT32 | x0.1 | kvarh |
| 1036 | RO | kvarh Export of T3 | INT32 | x0.1 | kvarh |
| 1038 | RO | kVAh of T3         | INT32 | x0.1 | kVAh  |
| 1040 | RO | kWh Import of T4   | INT32 | x0.1 | kWh   |
| 1042 | RO | kWh Export of T4   | INT32 | x0.1 | kWh   |
| 1044 | RO | kvarh Import of T4 | INT32 | x0.1 | kvarh |
| 1046 | RO | kvarh Export of T4 | INT32 | x0.1 | kvarh |
| 1048 | RO | kVAh of T4         | INT32 | x0.1 | kVAh  |
| 1050 | RO | kWh Import of T5   | INT32 | x0.1 | kWh   |
| 1052 | RO | kWh Export of T5   | INT32 | x0.1 | kWh   |
| 1054 | RO | kvarh Import of T5 | INT32 | x0.1 | kvarh |
| 1056 | RO | kvarh Export of T5 | INT32 | x0.1 | kvarh |
| 1058 | RO | kVAh of T5         | INT32 | x0.1 | kVAh  |

Table 5-10 Monthly Energy Log

**Notes:**

- 1) This register represents the Month when it is read. To read the Monthly Energy Log, this register must be first written to indicate to the PMC-340-A6 which log to load from memory. The range of this register is from 0 to 12, which represents the Present Month and the Last 12 Months. For example, if the current month is 2025/04, "0" means 2025/04, "1" means 2025/03, "2" means 2025/02, ..... "12" means "2024/04".
- 2) For each Monthly Energy Log, the time stamp shows the exact self-read time (20YY/MM/DD HH:MM:SS) when the log was recorded. For the Monthly Energy Log of the Present Month, the time stamp shows the current time of the meter because the present month is not yet over.

**5.7 DI Pulse Counter**

| Register | Property | Description       | Format | Range/Unit                                                                 |
|----------|----------|-------------------|--------|----------------------------------------------------------------------------|
| 1200     | RW       | DI1 Pulse Counter | INT32  | 0 to 999, 999, 999<br>DI Pulse Counter= Pulse Counter x<br>DI Pulse Weight |

Table 5-11 DI Pulse Counter

**5.8 Harmonic Measurements****5.8.1 Basic PQ Measurements**

| Register | Property | Description       | Format | Scale | Unit |
|----------|----------|-------------------|--------|-------|------|
| 1300     | RO       | Ia TDD            | FLOAT  | x1    | -    |
| 1302     | RO       | Ib TDD            | FLOAT  | x1    | -    |
| 1304     | RO       | Ic TDD            | FLOAT  | x1    | -    |
| 1306     | RO       | Ia TDD Odd        | FLOAT  | x1    | -    |
| 1308     | RO       | Ib TDD Odd        | FLOAT  | x1    | -    |
| 1310     | RO       | Ic TDD Odd        | FLOAT  | x1    | -    |
| 1312     | RO       | Ia TDD Even       | FLOAT  | x1    | -    |
| 1314     | RO       | Ib TDD Even       | FLOAT  | x1    | -    |
| 1316     | RO       | Ic TDD Even       | FLOAT  | x1    | -    |
| 1318     | RO       | Ia K-Factor       | FLOAT  | x1    | -    |
| 1320     | RO       | Ib K-Factor       | FLOAT  | x1    | -    |
| 1322     | RO       | Ic K-Factor       | FLOAT  | x1    | -    |
| 1324     | RO       | Ia Crest Factor   | FLOAT  | x1    | -    |
| 1326     | RO       | Ib Crest Factor   | FLOAT  | x1    | -    |
| 1328     | RO       | Ic Crest Factor   | FLOAT  | x1    | -    |
| 1330     | RO       | Voltage Unbalance | FLOAT  | x1    | -    |
| 1332     | RO       | Current Unbalance | FLOAT  | x1    | -    |

Table 5-12 Basic PQ Measurements

### 5.8.2 Current Harmonic Measurements

| Register  | Property | Description | Format | Scale | Unit |
|-----------|----------|-------------|--------|-------|------|
| 1400      | RO       | Ia THD      | FLOAT  | x1    | -    |
| 1402      | RO       | Ib THD      | FLOAT  | x1    | -    |
| 1404      | RO       | Ic THD      | FLOAT  | x1    | -    |
| 1406      | RO       | Ia TOHD     | FLOAT  | x1    | -    |
| 1408      | RO       | Ib TOHD     | FLOAT  | x1    | -    |
| 1410      | RO       | Ic TOHD     | FLOAT  | x1    | -    |
| 1412      | RO       | Ia TEHD     | FLOAT  | x1    | -    |
| 1414      | RO       | Ib TEHD     | FLOAT  | x1    | -    |
| 1416      | RO       | Ic TEHD     | FLOAT  | x1    | -    |
| 1418      | RO       | Ia HD02     | FLOAT  | x1    | -    |
| 1420      | RO       | Ib HD02     | FLOAT  | x1    | -    |
| 1422      | RO       | Ic HD02     | FLOAT  | x1    | -    |
| 1424-1590 | RO       | ...         | FLOAT  | x1    | -    |
| 1592      | RO       | Ia HD31     | FLOAT  | x1    | -    |
| 1594      | RO       | Ib HD31     | FLOAT  | x1    | -    |
| 1596      | RO       | Ic HD31     | FLOAT  | x1    | -    |

Table 5-13 Current Harmonic Measurements

### 5.8.3 Voltage Harmonic Measurements

| Register  | Property | Description | Format | Scale | Unit |
|-----------|----------|-------------|--------|-------|------|
| 1600      | RO       | Ua/Uab THD  | FLOAT  | x1    | -    |
| 1602      | RO       | Ub/Ubc THD  | FLOAT  | x1    | -    |
| 1604      | RO       | Uc/Uca THD  | FLOAT  | x1    | -    |
| 1606      | RO       | Ua/Uab TOHD | FLOAT  | x1    | -    |
| 1608      | RO       | Ub/Ubc TOHD | FLOAT  | x1    | -    |
| 1610      | RO       | Uc/Uca TOHD | FLOAT  | x1    | -    |
| 1612      | RO       | Ua/Uab TEHD | FLOAT  | x1    | -    |
| 1614      | RO       | Ub/Ubc TEHD | FLOAT  | x1    | -    |
| 1616      | RO       | Uc/Uca TEHD | FLOAT  | x1    | -    |
| 1618      | RO       | Ua/Uab HD02 | FLOAT  | x1    | -    |
| 1620      | RO       | Ub/Ubc HD02 | FLOAT  | x1    | -    |
| 1622      | RO       | Uc/Uca HD02 | FLOAT  | x1    | -    |
| 1624-1790 | RO       | ...         | FLOAT  | x1    | -    |
| 1792      | RO       | Ua/Uab HD31 | FLOAT  | x1    | -    |
| 1794      | RO       | Ub/Ubc HD31 | FLOAT  | x1    | -    |
| 1796      | RO       | Uc/Uca HD31 | FLOAT  | x1    | -    |

Table 5-14 Voltage Harmonic Measurements

#### Notes:

- 1) When the **Wiring Mode** is **3P3W** or **1P2W L-L**, the phase A/B/C voltage THD/TOHD/TEHD/HDxx is phase AB/BC/CA voltage THD/TOHD/TEHD/HDxx.
- 2) When the **Wiring Mode** is **1P2W L-N** or **1P2W L-L**, the L2 and L3 phase voltages THD/TOHD/TEHD/HDxx have no meaning, and their registers are reserved. When the **Wiring Mode** is **1P3W L-N**, the L3 phase voltages THD/TOHD/TEHD/HDxx have no meaning, and their registers are reserved.

## 5.9 Demand

### 5.9.1 Present Demand

| Register | Property | Description   | Format | Scale | Unit |
|----------|----------|---------------|--------|-------|------|
| 3000     | RO       | Ia            | FLOAT  | x1    | A    |
| 3002     | RO       | Ib            | FLOAT  | x1    | A    |
| 3004     | RO       | Ic            | FLOAT  | x1    | A    |
| 3006     | RO       | P Total       | FLOAT  | x1    | W    |
| 3008     | RO       | Q Total       | FLOAT  | x1    | var  |
| 3010     | RO       | S Total       | FLOAT  | x1    | VA   |
| 3012     | RO       | Ua            | FLOAT  | x1    | V    |
| 3014     | RO       | Ub            | FLOAT  | x1    | V    |
| 3016     | RO       | Uc            | FLOAT  | x1    | V    |
| 3018     | RO       | Uab           | FLOAT  | x1    | V    |
| 3020     | RO       | Ubc           | FLOAT  | x1    | V    |
| 3022     | RO       | Uca           | FLOAT  | x1    | V    |
| 3024     | RO       | Temperature   | FLOAT  | x1    | °C   |
| 3026     | RO       | P Total of T1 | FLOAT  | x1    | W    |
| 3028     | RO       | Q Total of T1 | FLOAT  | x1    | var  |

|      |    |               |       |    |     |
|------|----|---------------|-------|----|-----|
| 3030 | RO | S Total of T1 | FLOAT | x1 | VA  |
| 3032 | RO | P Total of T2 | FLOAT | x1 | W   |
| 3034 | RO | Q Total of T2 | FLOAT | x1 | var |
| 3036 | RO | S Total of T2 | FLOAT | x1 | VA  |
| 3038 | RO | P Total of T3 | FLOAT | x1 | W   |
| 3040 | RO | Q Total of T3 | FLOAT | x1 | var |
| 3042 | RO | S Total of T3 | FLOAT | x1 | VA  |
| 3044 | RO | P Total of T4 | FLOAT | x1 | W   |
| 3046 | RO | Q Total of T4 | FLOAT | x1 | var |
| 3048 | RO | S Total of T4 | FLOAT | x1 | VA  |
| 3050 | RO | P Total of T5 | FLOAT | x1 | W   |
| 3052 | RO | Q Total of T5 | FLOAT | x1 | var |
| 3054 | RO | S Total of T5 | FLOAT | x1 | VA  |

**Table 5-15 Present Demand Measurement**

### 5.9.2 Max. Demand Log of This Month (Since Last Reset)

| Register  | Property | Description   | Format         | Scale | Unit |
|-----------|----------|---------------|----------------|-------|------|
| 3400-3405 | RO       | Ia            | See Table 5-18 | x1    | A    |
| 3406-3411 | RO       | Ib            | See Table 5-18 | x1    | A    |
| 3412-3417 | RO       | Ic            | See Table 5-18 | x1    | A    |
| 3418-3423 | RO       | P Total       | See Table 5-18 | x1    | W    |
| 3424-3429 | RO       | Q Total       | See Table 5-18 | x1    | var  |
| 3430-3435 | RO       | S Total       | See Table 5-18 | x1    | VA   |
| 3436-3441 | RO       | P Total of T1 | See Table 5-18 | x1    | W    |
| 3442-3447 | RO       | Q Total of T1 | See Table 5-18 | x1    | var  |
| 3448-3453 | RO       | S Total of T1 | See Table 5-18 | x1    | VA   |
| 3454-3459 | RO       | P Total of T2 | See Table 5-18 | x1    | W    |
| 3460-3465 | RO       | Q Total of T2 | See Table 5-18 | x1    | var  |
| 3466-3471 | RO       | S Total of T2 | See Table 5-18 | x1    | VA   |
| 3472-3477 | RO       | P Total of T3 | See Table 5-18 | x1    | W    |
| 3478-3483 | RO       | Q Total of T3 | See Table 5-18 | x1    | var  |
| 3484-3489 | RO       | S Total of T3 | See Table 5-18 | x1    | VA   |
| 3490-3495 | RO       | P Total of T4 | See Table 5-18 | x1    | W    |
| 3496-3501 | RO       | Q Total of T4 | See Table 5-18 | x1    | var  |
| 3502-3507 | RO       | S Total of T4 | See Table 5-18 | x1    | VA   |
| 3508-3513 | RO       | P Total of T5 | See Table 5-18 | x1    | W    |
| 3514-3519 | RO       | Q Total of T5 | See Table 5-18 | x1    | var  |
| 3520-3525 | RO       | S Total of T5 | See Table 5-18 | x1    | VA   |
| 3526-3531 | RO       | Ua            | See Table 5-18 | x1    | V    |
| 3532-3537 | RO       | Ub            | See Table 5-18 | x1    | V    |
| 3538-3543 | RO       | Uc            | See Table 5-18 | x1    | V    |
| 3544-3549 | RO       | Uab           | See Table 5-18 | x1    | V    |
| 3550-3555 | RO       | Ubc           | See Table 5-18 | x1    | V    |
| 3556-3561 | RO       | Uca           | See Table 5-18 | x1    | V    |
| 3562-3567 | RO       | Temperature   | See Table 5-18 | x1    | °C   |

**Table 5-16 Max. Demand Log of This Month (Since Last Reset)**

### 5.9.3 Max. Demand Log of Last Month (Before Last Reset)

| Register  | Property | Description   | Format         | Scale | Unit |
|-----------|----------|---------------|----------------|-------|------|
| 3600-3605 | RO       | Ia            | See Table 5-18 | x1    | A    |
| 3606-3611 | RO       | Ib            | See Table 5-18 | x1    | A    |
| 3612-3617 | RO       | Ic            | See Table 5-18 | x1    | A    |
| 3618-3623 | RO       | P Total       | See Table 5-18 | x1    | W    |
| 3624-3629 | RO       | Q Total       | See Table 5-18 | x1    | var  |
| 3630-3635 | RO       | S Total       | See Table 5-18 | x1    | VA   |
| 3636-3641 | RO       | P Total of T1 | See Table 5-18 | x1    | W    |
| 3642-3647 | RO       | Q Total of T1 | See Table 5-18 | x1    | var  |
| 3648-3653 | RO       | S Total of T1 | See Table 5-18 | x1    | VA   |
| 3654-3659 | RO       | P Total of T2 | See Table 5-18 | x1    | W    |
| 3660-3665 | RO       | Q Total of T2 | See Table 5-18 | x1    | var  |
| 3666-3671 | RO       | S Total of T2 | See Table 5-18 | x1    | VA   |
| 3672-3677 | RO       | P Total of T3 | See Table 5-18 | x1    | W    |
| 3678-3683 | RO       | Q Total of T3 | See Table 5-18 | x1    | var  |
| 3684-3689 | RO       | S Total of T3 | See Table 5-18 | x1    | VA   |
| 3690-3695 | RO       | P Total of T4 | See Table 5-18 | x1    | W    |

|           |    |               |                |    |     |
|-----------|----|---------------|----------------|----|-----|
| 3696-3701 | RO | Q Total of T4 | See Table 5-18 | x1 | var |
| 3702-3707 | RO | S Total of T4 | See Table 5-18 | x1 | VA  |
| 3708-3713 | RO | P Total of T5 | See Table 5-18 | x1 | W   |
| 3714-3719 | RO | Q Total of T5 | See Table 5-18 | x1 | var |
| 3720-3725 | RO | S Total of T5 | See Table 5-18 | x1 | VA  |
| 3726-3731 | RO | Ua            | See Table 5-18 | x1 | V   |
| 3732-3737 | RO | Ub            | See Table 5-18 | x1 | V   |
| 3738-3743 | RO | Uc            | See Table 5-18 | x1 | V   |
| 3744-3749 | RO | Uab           | See Table 5-18 | x1 | V   |
| 3750-3755 | RO | Ubc           | See Table 5-18 | x1 | V   |
| 3756-3761 | RO | Uca           | See Table 5-18 | x1 | V   |
| 3762-3767 | RO | Temperature   | See Table 5-18 | x1 | °C  |

**Table 5-17 Max. Demand Log of Last Month (Before Last Reset)**

**Notes:**

The following table illustrates Demand Data Structure:

| Offset |      | Description          |
|--------|------|----------------------|
| +0     | High | Year - 2000          |
|        | Low  | Month                |
| +1     | High | Day                  |
|        | Low  | Hour                 |
| +2     | High | Minute               |
|        | Low  | Second               |
| +3     | -    | Millisecond          |
| +4~+5  | -    | Record Value (FLOAT) |

**Table 5-18 Demand Data Structure**

## 5.10 Max./Min. Log

### 5.10.1 Max. Log of This Month (Since Last Reset)

| Register  | Property | Description     | Format         | Scale | Unit |
|-----------|----------|-----------------|----------------|-------|------|
| 4000-4005 | RO       | Ua              | See Table 5-23 | x1    | V    |
| 4006-4011 | RO       | Ub              | See Table 5-23 | x1    | V    |
| 4012-4017 | RO       | Uc              | See Table 5-23 | x1    | V    |
| 4018-4023 | RO       | Uln Average     | See Table 5-23 | x1    | V    |
| 4024-4029 | RO       | Uab             | See Table 5-23 | x1    | V    |
| 4030-4035 | RO       | Ubc             | See Table 5-23 | x1    | V    |
| 4036-4041 | RO       | Uca             | See Table 5-23 | x1    | V    |
| 4042-4047 | RO       | Ull Average     | See Table 5-23 | x1    | V    |
| 4048-4053 | RO       | Ia              | See Table 5-23 | x1    | A    |
| 4054-4059 | RO       | Ib              | See Table 5-23 | x1    | A    |
| 4060-4065 | RO       | Ic              | See Table 5-23 | x1    | A    |
| 4066-4071 | RO       | I Average       | See Table 5-23 | x1    | A    |
| 4072-4077 | RO       | Pa              | See Table 5-23 | x1    | W    |
| 4078-4083 | RO       | Pb              | See Table 5-23 | x1    | W    |
| 4084-4089 | RO       | Pc              | See Table 5-23 | x1    | W    |
| 4090-4095 | RO       | P Total         | See Table 5-23 | x1    | W    |
| 4096-4101 | RO       | Qa              | See Table 5-23 | x1    | var  |
| 4102-4107 | RO       | Qb              | See Table 5-23 | x1    | var  |
| 4108-4113 | RO       | Qc              | See Table 5-23 | x1    | var  |
| 4114-4119 | RO       | Q Total         | See Table 5-23 | x1    | var  |
| 4120-4125 | RO       | Sa              | See Table 5-23 | x1    | VA   |
| 4126-4131 | RO       | Sb              | See Table 5-23 | x1    | VA   |
| 4132-4137 | RO       | Sc              | See Table 5-23 | x1    | VA   |
| 4138-4143 | RO       | S Total         | See Table 5-23 | x1    | VA   |
| 4144-4149 | RO       | PFa             | See Table 5-23 | x1    | -    |
| 4150-4155 | RO       | PFb             | See Table 5-23 | x1    | -    |
| 4156-4161 | RO       | PFc             | See Table 5-23 | x1    | -    |
| 4162-4167 | RO       | PF Total        | See Table 5-23 | x1    | -    |
| 4168-4173 | RO       | Frequency       | See Table 5-23 | x1    | Hz   |
| 4174-4179 | RO       | In (Calculated) | See Table 5-23 | x1    | A    |
| 4180-4185 | RO       | Ua/Uab THD      | See Table 5-23 | x1    | -    |
| 4186-4191 | RO       | Ub/Ubc THD      | See Table 5-23 | x1    | -    |
| 4192-4197 | RO       | Uc/Uca THD      | See Table 5-23 | x1    | -    |
| 4198-4203 | RO       | Ia THD          | See Table 5-23 | x1    | -    |

|           |    |                   |                |    |   |
|-----------|----|-------------------|----------------|----|---|
| 4204-4209 | RO | Ib THD            | See Table 5-23 | x1 | - |
| 4210-4215 | RO | Ic THD            | See Table 5-23 | x1 | - |
| 4216-4221 | RO | Ia K-Factor       | See Table 5-23 | x1 | - |
| 4222-4227 | RO | Ib K-Factor       | See Table 5-23 | x1 | - |
| 4228-4233 | RO | Ic K-Factor       | See Table 5-23 | x1 | - |
| 4234-4239 | RO | Ia Crest Factor   | See Table 5-23 | x1 | - |
| 4240-4245 | RO | Ib Crest Factor   | See Table 5-23 | x1 | - |
| 4246-4251 | RO | Ic Crest Factor   | See Table 5-23 | x1 | - |
| 4252-4257 | RO | Voltage Unbalance | See Table 5-23 | x1 | - |
| 4258-4263 | RO | Current Unbalance | See Table 5-23 | x1 | - |

**Table 5-19 Max. Log of This Month (Since Last Reset)**

### 5.10.2 Min. Log of This Month (Since Last Reset)

| Register  | Property | Description       | Format         | Scale | Unit |
|-----------|----------|-------------------|----------------|-------|------|
| 4300-4305 | RO       | Ua                | See Table 5-23 | x1    | V    |
| 4306-4311 | RO       | Ub                | See Table 5-23 | x1    | V    |
| 4312-4317 | RO       | Uc                | See Table 5-23 | x1    | V    |
| 4318-4323 | RO       | Uln Average       | See Table 5-23 | x1    | V    |
| 4324-4329 | RO       | Uab               | See Table 5-23 | x1    | V    |
| 4330-4335 | RO       | Ubc               | See Table 5-23 | x1    | V    |
| 4336-4341 | RO       | Uca               | See Table 5-23 | x1    | V    |
| 4342-4347 | RO       | Ull Average       | See Table 5-23 | x1    | V    |
| 4348-4353 | RO       | Ia                | See Table 5-23 | x1    | A    |
| 4354-4359 | RO       | Ib                | See Table 5-23 | x1    | A    |
| 4360-4365 | RO       | Ic                | See Table 5-23 | x1    | A    |
| 4366-4371 | RO       | I Average         | See Table 5-23 | x1    | A    |
| 4372-4377 | RO       | Pa                | See Table 5-23 | x1    | W    |
| 4378-4383 | RO       | Pb                | See Table 5-23 | x1    | W    |
| 4384-4389 | RO       | Pc                | See Table 5-23 | x1    | W    |
| 4390-4395 | RO       | P Total           | See Table 5-23 | x1    | W    |
| 4396-4401 | RO       | Qa                | See Table 5-23 | x1    | var  |
| 4402-4407 | RO       | Qb                | See Table 5-23 | x1    | var  |
| 4408-4413 | RO       | Qc                | See Table 5-23 | x1    | var  |
| 4414-4419 | RO       | Q Total           | See Table 5-23 | x1    | var  |
| 4420-4425 | RO       | Sa                | See Table 5-23 | x1    | VA   |
| 4426-4431 | RO       | Sb                | See Table 5-23 | x1    | VA   |
| 4432-4437 | RO       | Sc                | See Table 5-23 | x1    | VA   |
| 4438-4443 | RO       | S Total           | See Table 5-23 | x1    | VA   |
| 4444-4449 | RO       | PFa               | See Table 5-23 | x1    | -    |
| 4450-4455 | RO       | PFb               | See Table 5-23 | x1    | -    |
| 4456-4461 | RO       | PFc               | See Table 5-23 | x1    | -    |
| 4462-4467 | RO       | PF Total          | See Table 5-23 | x1    | -    |
| 4468-4473 | RO       | Frequency         | See Table 5-23 | x1    | Hz   |
| 4474-4479 | RO       | In (Calculated)   | See Table 5-23 | x1    | A    |
| 4480-4485 | RO       | Ua/Uab THD        | See Table 5-23 | x1    | -    |
| 4486-4491 | RO       | Ub/Ubc THD        | See Table 5-23 | x1    | -    |
| 4492-4497 | RO       | Uc/Uca THD        | See Table 5-23 | x1    | -    |
| 4498-4503 | RO       | Ia THD            | See Table 5-23 | x1    | -    |
| 4504-4509 | RO       | Ib THD            | See Table 5-23 | x1    | -    |
| 4510-4515 | RO       | Ic THD            | See Table 5-23 | x1    | -    |
| 4516-4521 | RO       | Ia K-Factor       | See Table 5-23 | x1    | -    |
| 4522-4527 | RO       | Ib K-Factor       | See Table 5-23 | x1    | -    |
| 4528-4533 | RO       | Ic K-Factor       | See Table 5-23 | x1    | -    |
| 4534-4539 | RO       | Ia Crest Factor   | See Table 5-23 | x1    | -    |
| 4540-4545 | RO       | Ib Crest Factor   | See Table 5-23 | x1    | -    |
| 4546-4551 | RO       | Ic Crest Factor   | See Table 5-23 | x1    | -    |
| 4552-4557 | RO       | Voltage Unbalance | See Table 5-23 | x1    | -    |
| 4558-4563 | RO       | Current Unbalance | See Table 5-23 | x1    | -    |

**Table 5-20 Min. Log of This Month (Since Last Reset)**

### 5.10.3 Max. Log of Last Month (Before Last Reset)

| Register  | Property | Description | Format         | Scale | Unit |
|-----------|----------|-------------|----------------|-------|------|
| 4600-4605 | RO       | Ua          | See Table 5-23 | x1    | V    |
| 4606-4611 | RO       | Ub          | See Table 5-23 | x1    | V    |

|           |    |                   |                |    |     |
|-----------|----|-------------------|----------------|----|-----|
| 4612-4617 | RO | Uc                | See Table 5-23 | x1 | V   |
| 4618-4623 | RO | Uln Average       | See Table 5-23 | x1 | V   |
| 4624-4629 | RO | Uab               | See Table 5-23 | x1 | V   |
| 4630-4635 | RO | Ubc               | See Table 5-23 | x1 | V   |
| 4636-4641 | RO | Uca               | See Table 5-23 | x1 | V   |
| 4642-4647 | RO | Ull Average       | See Table 5-23 | x1 | V   |
| 4648-4653 | RO | Ia                | See Table 5-23 | x1 | A   |
| 4654-4659 | RO | Ib                | See Table 5-23 | x1 | A   |
| 4660-4665 | RO | Ic                | See Table 5-23 | x1 | A   |
| 4666-4671 | RO | I Average         | See Table 5-23 | x1 | A   |
| 4672-4677 | RO | Pa                | See Table 5-23 | x1 | W   |
| 4678-4683 | RO | Pb                | See Table 5-23 | x1 | W   |
| 4684-4689 | RO | Pc                | See Table 5-23 | x1 | W   |
| 4690-4695 | RO | P Total           | See Table 5-23 | x1 | W   |
| 4696-4701 | RO | Qa                | See Table 5-23 | x1 | var |
| 4702-4707 | RO | Qb                | See Table 5-23 | x1 | var |
| 4708-4713 | RO | Qc                | See Table 5-23 | x1 | var |
| 4714-4719 | RO | Q Total           | See Table 5-23 | x1 | var |
| 4720-4725 | RO | Sa                | See Table 5-23 | x1 | VA  |
| 4726-4731 | RO | Sb                | See Table 5-23 | x1 | VA  |
| 4732-4737 | RO | Sc                | See Table 5-23 | x1 | VA  |
| 4738-4743 | RO | S Total           | See Table 5-23 | x1 | VA  |
| 4744-4749 | RO | PFa               | See Table 5-23 | x1 | -   |
| 4750-4755 | RO | PFb               | See Table 5-23 | x1 | -   |
| 4756-4761 | RO | PFc               | See Table 5-23 | x1 | -   |
| 4762-4767 | RO | PF Total          | See Table 5-23 | x1 | -   |
| 4768-4773 | RO | Frequency         | See Table 5-23 | x1 | Hz  |
| 4774-4779 | RO | In (Calculated)   | See Table 5-23 | x1 | A   |
| 4780-4785 | RO | Ua/Uab THD        | See Table 5-23 | x1 | -   |
| 4786-4791 | RO | Ub/Ubc THD        | See Table 5-23 | x1 | -   |
| 4792-4797 | RO | Uc/Uca THD        | See Table 5-23 | x1 | -   |
| 4798-4803 | RO | Ia THD            | See Table 5-23 | x1 | -   |
| 4804-4809 | RO | Ib THD            | See Table 5-23 | x1 | -   |
| 4810-4815 | RO | Ic THD            | See Table 5-23 | x1 | -   |
| 4816-4821 | RO | Ia K-Factor       | See Table 5-23 | x1 | -   |
| 4822-4827 | RO | Ib K-Factor       | See Table 5-23 | x1 | -   |
| 4828-4833 | RO | Ic K-Factor       | See Table 5-23 | x1 | -   |
| 4834-4839 | RO | Ia Crest Factor   | See Table 5-23 | x1 | -   |
| 4840-4845 | RO | Ib Crest Factor   | See Table 5-23 | x1 | -   |
| 4846-4851 | RO | Ic Crest Factor   | See Table 5-23 | x1 | -   |
| 4852-4857 | RO | Voltage Unbalance | See Table 5-23 | x1 | -   |
| 4858-4863 | RO | Current Unbalance | See Table 5-23 | x1 | -   |

**Table 5-21 Max. Log of Last Month (Before Last Reset)**

#### 5.10.4 Min. Log of Last Month (Before Last Reset)

| Register  | Property | Description | Format         | Scale | Unit |
|-----------|----------|-------------|----------------|-------|------|
| 4900-4905 | RO       | Ua          | See Table 5-23 | x1    | V    |
| 4906-4911 | RO       | Ub          | See Table 5-23 | x1    | V    |
| 4912-4917 | RO       | Uc          | See Table 5-23 | x1    | V    |
| 4918-4923 | RO       | Uln Average | See Table 5-23 | x1    | V    |
| 4924-4929 | RO       | Uab         | See Table 5-23 | x1    | V    |
| 4930-4935 | RO       | Ubc         | See Table 5-23 | x1    | V    |
| 4936-4941 | RO       | Uca         | See Table 5-23 | x1    | V    |
| 4942-4947 | RO       | Ull Average | See Table 5-23 | x1    | V    |
| 4948-4953 | RO       | Ia          | See Table 5-23 | x1    | A    |

|           |    |                   |                |    |     |
|-----------|----|-------------------|----------------|----|-----|
| 4954-4959 | RO | Ib                | See Table 5-23 | x1 | A   |
| 4960-4965 | RO | Ic                | See Table 5-23 | x1 | A   |
| 4966-4971 | RO | I Average         | See Table 5-23 | x1 | A   |
| 4972-4977 | RO | Pa                | See Table 5-23 | x1 | W   |
| 4978-4983 | RO | Pb                | See Table 5-23 | x1 | W   |
| 4984-4989 | RO | Pc                | See Table 5-23 | x1 | W   |
| 4990-4995 | RO | P Total           | See Table 5-23 | x1 | W   |
| 4996-5001 | RO | Qa                | See Table 5-23 | x1 | var |
| 5002-5007 | RO | Qb                | See Table 5-23 | x1 | var |
| 5008-5013 | RO | Qc                | See Table 5-23 | x1 | var |
| 5014-5019 | RO | Q Total           | See Table 5-23 | x1 | var |
| 5020-5025 | RO | Sa                | See Table 5-23 | x1 | VA  |
| 5026-5031 | RO | Sb                | See Table 5-23 | x1 | VA  |
| 5032-5037 | RO | Sc                | See Table 5-23 | x1 | VA  |
| 5038-5043 | RO | S Total           | See Table 5-23 | x1 | VA  |
| 5044-5049 | RO | PFa               | See Table 5-23 | x1 | -   |
| 5050-5055 | RO | PFb               | See Table 5-23 | x1 | -   |
| 5056-5061 | RO | PFc               | See Table 5-23 | x1 | -   |
| 5062-5067 | RO | PF Total          | See Table 5-23 | x1 | -   |
| 5068-5073 | RO | Frequency         | See Table 5-23 | x1 | Hz  |
| 5074-5079 | RO | In (Calculated)   | See Table 5-23 | x1 | A   |
| 5080-5085 | RO | Ua/Uab THD        | See Table 5-23 | x1 | -   |
| 5086-5091 | RO | Ub/Ubc THD        | See Table 5-23 | x1 | -   |
| 5092-5097 | RO | Uc/Uca THD        | See Table 5-23 | x1 | -   |
| 5098-5103 | RO | Ia THD            | See Table 5-23 | x1 | -   |
| 5104-5109 | RO | Ib THD            | See Table 5-23 | x1 | -   |
| 5110-5115 | RO | Ic THD            | See Table 5-23 | x1 | -   |
| 5116-5121 | RO | Ia K-Factor       | See Table 5-23 | x1 | -   |
| 5122-5127 | RO | Ib K-Factor       | See Table 5-23 | x1 | -   |
| 5128-5133 | RO | Ic K-Factor       | See Table 5-23 | x1 | -   |
| 5134-5139 | RO | Ia Crest Factor   | See Table 5-23 | x1 | -   |
| 5140-5145 | RO | Ib Crest Factor   | See Table 5-23 | x1 | -   |
| 5146-5151 | RO | Ic Crest Factor   | See Table 5-23 | x1 | -   |
| 5152-5157 | RO | Voltage Unbalance | See Table 5-23 | x1 | -   |
| 5158-5163 | RO | Current Unbalance | See Table 5-23 | x1 | -   |

**Table 5-22 Min. Log of Last Month (Before Last Reset)**

### 5.10.5 Max./Min. Log Structure

| Offset |      | Description          |
|--------|------|----------------------|
| +0     | High | Year - 2000          |
|        | Low  | Month                |
| +1     | High | Day                  |
|        | Low  | Hour                 |
| +2     | High | Minute               |
|        | Low  | Second               |
| +3     | -    | Millisecond          |
| +4~+5  | -    | Record Value (FLOAT) |

**Table 5-23 Max./Min. Log Data Structure**

### 5.11 Data Recorder Log

| DR #1 Log |          |                         |        |                     |
|-----------|----------|-------------------------|--------|---------------------|
| Register  | Property | Description             | Format | Note                |
| 20000     | RW       | Data Recorder #1 Index  | UINT32 | See Note 1          |
| 20002     | RO       | High-order Byte: Year   | UINT16 | 0 to 99 (Year-2000) |
|           |          | Low-order Byte: Month   |        | 1 to 12             |
| 20003     | RO       | High-order Byte: Day    | UINT16 | 1 to 31             |
|           |          | Low-order Byte: Hour    |        | 0 to 23             |
| 20004     | RO       | High-order Byte: Minute | UINT16 | 0 to 59             |

|             |          |                         |        |                                                             |
|-------------|----------|-------------------------|--------|-------------------------------------------------------------|
|             |          | Low-order Byte: Second  |        | 0 to 59                                                     |
| 20005       | RO       | Millisecond             | UINT16 | According to Data<br>Format for parameters<br>in Table 5-35 |
| 20006-20007 | RO       | Parameter 1             |        |                                                             |
| 20008-20009 | RO       | Parameter 2             |        |                                                             |
| 20010-20011 | RO       | Parameter 3             |        |                                                             |
| 20012-20013 | RO       | Parameter 4             |        |                                                             |
| 20014-20015 | RO       | Parameter 5             |        |                                                             |
| 20016-20017 | RO       | Parameter 6             |        |                                                             |
| 20018-20019 | RO       | Parameter 7             |        |                                                             |
| 20020-20021 | RO       | Parameter 8             |        |                                                             |
| 20022-20023 | RO       | Parameter 9             |        |                                                             |
| 20024-20025 | RO       | Parameter 10            |        |                                                             |
| 20026-20027 | RO       | Parameter 11            |        |                                                             |
| 20028-20029 | RO       | Parameter 12            |        |                                                             |
| 20030-20031 | RO       | Parameter 13            |        |                                                             |
| 20032-20033 | RO       | Parameter 14            |        |                                                             |
| 20034-20035 | RO       | Parameter 15            |        |                                                             |
| 20036-20037 | RO       | Parameter 16            |        |                                                             |
| DR #2 Log   |          |                         |        |                                                             |
| Register    | Property | Description             | Format | Note                                                        |
| 20038       | RW       | Data Recorder #1 Index  | UINT32 | See Note 1                                                  |
| 20040       | RO       | High-order Byte: Year   | UINT16 | 0 to 99 (Year-2000)                                         |
|             |          | Low-order Byte: Month   |        | 1 to 12                                                     |
| 20041       | RO       | High-order Byte: Day    | UINT16 | 1 to 31                                                     |
|             |          | Low-order Byte: Hour    |        | 0 to 23                                                     |
| 20042       | RO       | High-order Byte: Minute | UINT16 | 0 to 59                                                     |
|             |          | Low-order Byte: Second  |        | 0 to 59                                                     |
| 20043       | RO       | Millisecond             | UINT16 | According to Data<br>Format for parameters<br>in Table 5-35 |
| 20044-20045 | RO       | Parameter 1             |        |                                                             |
| 20046-20047 | RO       | Parameter 2             |        |                                                             |
| 20048-20049 | RO       | Parameter 3             |        |                                                             |
| 20050-20051 | RO       | Parameter 4             |        |                                                             |
| 20052-20053 | RO       | Parameter 5             |        |                                                             |
| 20054-20055 | RO       | Parameter 6             |        |                                                             |
| 20056-20057 | RO       | Parameter 7             |        |                                                             |
| 20058-20059 | RO       | Parameter 8             |        |                                                             |
| 20060-20061 | RO       | Parameter 9             |        |                                                             |
| 20062-20063 | RO       | Parameter 10            |        |                                                             |
| 20064-20065 | RO       | Parameter 11            |        |                                                             |
| 20066-20067 | RO       | Parameter 12            |        |                                                             |
| 20068-20069 | RO       | Parameter 13            |        |                                                             |
| 20070-20071 | RO       | Parameter 14            |        |                                                             |
| 20072-20073 | RO       | Parameter 15            |        |                                                             |
| 20074-20075 | RO       | Parameter 16            |        |                                                             |

Table 5-24 Data Recorder

**Note:**

- Writing a value  $n$  to the Data Recorder Index will load the  $n$ th Log into the buffer from memory, and the valid range of the DR Index is:
  - Between **1** and **DR Log Pointer** when DR Log Pointer  $\leq$  DR Log Depth (see Section 5.9 for DR Log Depth)
  - Between **DR Log Pointer - (DR Log Depth - 1)** and **DR Log Pointer** when the DR Log Pointer  $>$  DR Log Depth

**5.12 SOE Log**

The SOE Log Pointer points to the current logging position within the SOE Log where the next event will be stored. The following formula is used to determine the starting register address of the SOE log referenced by a particular SOE Log Pointer value:

$$\text{Register Address} = 10000 + \text{Modulo}[(\text{SOE Log Pointer} - 1) / 128] * 8$$

| Register    | Property | Description | Format                                |
|-------------|----------|-------------|---------------------------------------|
| 10000-10007 | RO       | Event 1     | See Table 5-26 SOE Log Data Structure |
| 10008-10015 | RO       | Event 2     |                                       |
| 10016-10023 | RO       | Event 3     |                                       |
| 10024-10031 | RO       | Event 4     |                                       |
| .....       |          | ...         |                                       |
| 11016-11023 | RO       | Event 128   |                                       |

Table 5-25 SOE Log

## SOE Log Data Structure

| Offset | Property | Description                           | Unit                              |
|--------|----------|---------------------------------------|-----------------------------------|
| +0     | RO       | High-order Byte: Event Classification | See Table 5-27 SOE Classification |
|        | RO       | Low-order Byte: Sub-Classification    |                                   |
| +1     | RO       | High-order Byte: Year                 | 0 to 99 (Year-2000)               |
|        | RO       | Low-order Byte: Month                 | 1 to 12                           |
| +2     | RO       | High-order Byte: Day                  | 1 to 31                           |
|        | RO       | Low-order Byte: Hour                  | 0 to 23                           |
| +3     | RO       | High-order Byte: Minute               | 0 to 59                           |
|        | RO       | Low-order Byte: Second                | 0 to 59                           |
| +4     | RO       | Record Time: Millisecond              | 0 to 999                          |
| +5     | RO       | High-order Byte: Reserved             | -                                 |
|        | RO       | Low-order Byte: Status <sup>1</sup>   | -                                 |
| +6~+7  | RO       | Event Value (FLOAT)                   | -                                 |

Table 5-26 SOE Log Data Structure

## Notes:

1. The value "1" means DI Inactive or Setpoint Return, while the value "2" means DI Active or Setpoint Active.

## SOE Classification

| Event Classification | Sub-Classification | Status | Event Value                  | Description                                       |
|----------------------|--------------------|--------|------------------------------|---------------------------------------------------|
| 1=DI Changes         | 1                  | 1/2    | 0                            | 1=DI1 Inactive, 2=DI1 Active                      |
| 3=Setpoint Status    | 1                  | 2/1    | Trigger Value / Return Value | Over Uln Setpoint Active/Return                   |
|                      | 2                  |        |                              | Over Ull Setpoint Active/Return                   |
|                      | 3                  |        |                              | Over Current Setpoint Active/Return               |
|                      | 4                  |        |                              | Over Frequency Setpoint Active/Return             |
|                      | 5                  |        |                              | Over P Total Setpoint Active/Return               |
|                      | 6                  |        |                              | Over PF Total Setpoint Active/Return              |
|                      | 7                  |        |                              | Over P Total Present DMD Setpoint Active/Return   |
|                      | 8                  |        |                              | Over U THD Setpoint Active/Return                 |
|                      | 9                  |        |                              | Over I THD Setpoint Active/Return                 |
|                      | 10                 |        |                              | Over Voltage Unbalance Setpoint Active/Return     |
|                      | 11                 |        |                              | Over Current Unbalance Setpoint Active/Return     |
|                      | 12                 |        |                              | Over Ua Setpoint Active/Return                    |
|                      | 13                 |        |                              | Over Ub Setpoint Active/Return                    |
|                      | 14                 |        |                              | Over Uc Setpoint Active/Return                    |
|                      | 15                 |        |                              | Over Uab Setpoint Active/Return                   |
|                      | 16                 |        |                              | Over Ubc Setpoint Active/Return                   |
|                      | 17                 |        |                              | Over Uca Setpoint Active/Return                   |
|                      | 18                 |        |                              | Over Ia Setpoint Active/Return                    |
|                      | 19                 |        |                              | Over Ib Setpoint Active/Return                    |
|                      | 20                 |        |                              | Over Ic Setpoint Active/Return                    |
|                      | 21                 |        |                              | Over Temperature Setpoint Active/Return           |
|                      | 22                 |        | 1=Closed<br>0=Open           | DI1 Closed Alarm/Return (Lid Tamper Alarm/Return) |
|                      | 23-100             | --     | --                           | Reserved                                          |
|                      | 101                | 2/1    | Trigger Value / Return Value | Under Uln Setpoint Active/Return                  |
|                      | 102                |        |                              | Under Ull Setpoint Active/Return                  |
|                      | 103                |        |                              | Under Current Setpoint Active/Return              |
|                      | 104                |        |                              | Under Frequency Setpoint Active/Return            |
|                      | 105                |        |                              | Under P Total Setpoint Active/Return              |
|                      | 106                |        |                              | Under PF Total Setpoint Active/Return             |
|                      | 107                |        |                              | Under P Total Present DMD Setpoint Active/Return  |
|                      | 108                |        |                              | Under U THD Setpoint Active/Return                |
|                      | 109                |        |                              | Under I THD Setpoint Active/Return                |
|                      | 110                |        |                              | Under Voltage Unbalance Setpoint Active/Return    |
|                      | 111                |        |                              | Under Current Unbalance Setpoint Active/Return    |
|                      | 112                |        |                              | Under Ua Setpoint Active/Return                   |
|                      | 113                |        |                              | Under Ub Setpoint Active/Return                   |
|                      | 114                |        |                              | Under Uc Setpoint Active/Return                   |
|                      | 115                |        |                              | Under Uab Setpoint Active/Return                  |
|                      | 116                |        |                              | Under Ubc Setpoint Active/Return                  |
|                      | 117                |        |                              | Under Uca Setpoint Active/Return                  |
|                      | 118                |        |                              | Under Ia Setpoint Active/Return                   |
|                      | 119                |        |                              | Under Ib Setpoint Active/Return                   |

|                   |     |    |                    |                                                                                      |
|-------------------|-----|----|--------------------|--------------------------------------------------------------------------------------|
|                   | 120 |    | 1=Closed<br>0=Open | Under Ic Setpoint Active/Return                                                      |
|                   | 121 |    |                    | Under Temperature Setpoint Active/Return                                             |
|                   | 122 |    |                    | DI1 Open Alarm/Return (Lid Tamper Alarm/Return)                                      |
| 4=Self-diagnostic | 1   | 0  | 0                  | Flash Fault                                                                          |
|                   | 2   | 0  | 0                  | FRAM Fault                                                                           |
|                   | 3   | 0  | 0                  | System Parameters Fault                                                              |
|                   | 4   | 0  | 0                  | Magnetic Tamper                                                                      |
| 5=Operations      | 1   | 0  | 0                  | Power On                                                                             |
|                   | 2   | 0  | 0                  | Power Off                                                                            |
|                   | 3   | 0  | 0                  | Setup Parameter Changes via Comm.                                                    |
|                   | 4   | 0  | 0                  | Setup Parameter Changes via Front Panel                                              |
|                   | 5   | 0  | 0                  | Clear Monthly Energy Log of the Last 12 Months via Comm.                             |
|                   | 6   | 0  | 0                  | Clear Per-phase and Total Energy registers as well as TOU Energy registers via Comm. |
|                   | 7   | 0  | 0                  | Clear Monthly Energy Log of This Month via Comm.                                     |
|                   | 8   | 0  | 0                  | Clear Per-phase and Total Energy registers as well as TOU Energy via Front Panel     |
|                   | 9   | 0  | 0                  | Clear Present Max. Demand via Comm.                                                  |
|                   | 10  | 0  | 0                  | Clear All Max. Demand via Comm.                                                      |
|                   | 11  | 0  | 0                  | Clear All Demand via Front Panel                                                     |
|                   | 12  | 0  | 0                  | Clear This Max./Min. Log via Comm.                                                   |
|                   | 13  | 0  | 0                  | Clear All Max./Min. Log via Comm.                                                    |
|                   | 14  | 0  | 0                  | Clear All Max./Min. Log via Front Panel                                              |
|                   | 15  | 0  | 0                  | Clear Operating Time via Comm.                                                       |
|                   | 16  | 0  | 0                  | Clear All Data via Comm.                                                             |
|                   | 17  | 0  | 0                  | Set Clock via Front Panel                                                            |
|                   | 18  | 0  | 0                  | Set Clock via Comm.                                                                  |
|                   | 19  | 0  | 0                  | Factory Restore via Comm.                                                            |
|                   | 20  | 0  | 0                  | Clear Data Recorder Log via Comm.                                                    |
|                   | 21  | 0  | 0                  | Clear SOE Log via Comm.                                                              |
|                   | 22  | 0  | 0                  | Clear DI1 Counter via Comm.                                                          |
|                   | 23  | 0  | 0                  | Clear FP Counter and Comm. Counter via Comm.                                         |
|                   | 24  | 0  | 0                  | Clear SOE Log via Front Panel                                                        |
|                   | 25  | 0  | 0                  | Clear DI1 Counter via Front Panel                                                    |
|                   | 26  | -- | --                 | Reserved                                                                             |
|                   | 27  | 0  | 0                  | Communication locked out for 15 minutes after 3 incorrect password attempts!         |
|                   | 28  | 0  | 0                  | Preset Per-phase and Total Energy                                                    |
|                   | 29  | 0  | 0                  | Preset TOU Energy                                                                    |
|                   | 46  | 0  | 1 to 4             | Switch TOU Schedule <sup>1</sup>                                                     |

Table 5-27 SOE Classification

**Note:**

1. The event values of **Switch TOU Schedule** are illustrated in the table below:

| Record Value | Description                                   |
|--------------|-----------------------------------------------|
| 1            | Switch Schedule 1 to Schedule 2 manually      |
| 2            | Switch Schedule 2 to Schedule 1 manually      |
| 3            | Switch Schedule 1 to Schedule 2 automatically |
| 4            | Switch Schedule 2 to Schedule 1 automatically |

Table 5-28 TOU Switch Records

## 5.13 Device Setup

### 5.13.1 Basic Setup

| Register  | Property | Description               | Format | Range, Default*                |
|-----------|----------|---------------------------|--------|--------------------------------|
| 6000      | RW       | PT Primary                | UINT32 | 1 to 1,000,000 (V), 380*       |
| 6002      | RW       | PT Secondary              | UINT32 | 1 to 690 (V), 380*             |
| 6004      | RW       | CT Primary <sup>1</sup>   | UINT32 | 1 to 30,000 (A), 5* (CT Input) |
| 6006      | RW       | CT Secondary <sup>1</sup> | UINT32 | 1 to 10 (A), 5* (CT Input)     |
| 6008-6016 | --       | Reserved                  | --     | --                             |
| 6018      | RW       | Language                  | UINT16 | 0=Chinese, 1=English*          |
| 6019      | --       | Reserved                  | --     | --                             |

|           |    |                                               |        |                                                                                                        |
|-----------|----|-----------------------------------------------|--------|--------------------------------------------------------------------------------------------------------|
| 6020      | RW | Wiring Mode                                   | UINT16 | 0=DEMO, 1=1P2W L-N, 2=1P2W L_L, 3=1P3W L_L_N, 4=3P3W, 5=3P4W*, 6=3x1P, 7=3P3W_N                        |
| 6021      | RW | Power Factor Convention                       | UINT16 | 0=IEC*, 1=IEEE, 2=-IEEE                                                                                |
| 6022      | RW | kVA Calculation <sup>1</sup>                  | UINT16 | 0=Vector*, 1=Scalar                                                                                    |
| 6023      | RW | Ia Polarity                                   | UINT16 | 0=Normal*, 1=Reverse                                                                                   |
| 6024      | RW | Ib Polarity                                   | UINT16 |                                                                                                        |
| 6025      | RW | Ic Polarity                                   | UINT16 |                                                                                                        |
| 6026      | RW | kvarh Calculation <sup>3</sup>                | UINT16 | 0=RMS, 1=Fundamental*                                                                                  |
| 6027      | -- | Reserved                                      | --     | --                                                                                                     |
| 6028      | RW | THD Calculation <sup>4</sup>                  | UINT16 | 0= THDf*, 1= THDr                                                                                      |
| 6029      | RW | Demand Period <sup>5</sup>                    | UINT16 | 1 to 60 (minutes), 15*                                                                                 |
| 6030      | RW | No. of Sliding Windows <sup>5</sup>           | UINT16 | 1 to 15, 1*                                                                                            |
| 6031-6032 | -- | Reserved                                      | --     | --                                                                                                     |
| 6033      | RW | Self-Read Time <sup>6</sup>                   | UINT16 | Default=0xFFFF                                                                                         |
| 6034      | RW | Monthly Energy Log Self-Read Time             | UINT16 | 0* (self-read takes place at 00:00 of the first day of each month)                                     |
| 6035      | RW | Energy Pulse Constant <sup>7</sup>            | UINT32 | 1-999,999, 500* (Direct Connected Input) or 10000* (CT Input)                                          |
| 6037      | RW | LED Pulse Output                              | UINT16 | 0=N/A, 1=kWh Total*, 2=kvarh Total, 3=kWh Import, 4=kWh Export, 5=kvarh Import, 6=kvarh Export         |
| 6038      | RW | SS Pulse Output                               | UINT16 | 0=N/A, 1=kWh Total*, 2=kvarh Total, 3=kWh Import, 4=kWh Export, 5=kvarh Import, 6=kvarh Export, 7=1PPS |
| 6039      | RW | Time Zone <sup>8</sup>                        | UINT16 | 0 to 32, 26 (GMT+8:00)*                                                                                |
| 6040      | -- | Reserved                                      | --     | --                                                                                                     |
| 6041      | RW | SS Pulse Width                                | UINT16 | 30-500 (ms), 50*                                                                                       |
| 6042      | RW | Enable Magnetic Tamper Detection <sup>9</sup> | UINT16 | 0=No, 1=Yes*                                                                                           |

**Table 5-29 Basic Setup Parameters**

**Notes:**

1. **CT Primary** and **CT Secondary** registers are only valid for PMC-340-A6 with CT Input.
2. There are two ways to calculate kVA:

**Mode V** (Vector method): 
$$kVA_{total} = \sqrt{kW_{total}^2 + kvar_{total}^2}$$

**Mode S** (Scalar method): 
$$kVA_{total} = kVA_a + kVA_b + kVA_c$$

3. The PMC-340-A6 guarantees Class 1 accuracy for kvarh measurements in accordance with IEC standards, depending on the selected calculation method:
  - a) **RMS (register 6026=0)**: PMC-340-A6 complies with IEC 62053-23: 2020 Class 1. Ensure accuracy under sinusoidal and non-sinusoidal conditions.
  - b) **Fundamental (register 6026 =1)**: PMC-340-A6 complies with IEC 62053-24: 2020 Class 1. Measures kvarh based solely on the fundamental frequency component, excluding harmonics.
4. There are two ways to calculate THD:

THDf:

$$THD = \frac{\sqrt{\sum_{h=2}^{31} V_h^2}}{V_1} \times 100\%$$

where  $V_1$  represents the amplitude of the fundamental component and  $V_h$  represents the amplitude of the  $h^{th}$  harmonic ( $h=2, 3, \dots, 31$ ).  
THDr:

$$THD = \frac{\sqrt{\sum_{h=2}^{31} V_h^2}}{\sqrt{\sum_{h=1}^{31} V_h^2}} \times 100\%$$

where the denominator represents the total RMS value and the numerator represents the RMS value of the harmonics from 2<sup>nd</sup> to 31<sup>st</sup>.

5. The Present Demand will be reset once the Demand Period/No. of Sliding Windows is changed.
6. The Self-Read Time applies to both the Max. Demand Log as well as the Max./Min. Log and supports the following three options:
  - A zero value means that the Self-Read will take place at 00:00 of the first day of each month.
  - A non-zero value means that the Self-Read will take place at a specific time and day based on the formula: Self-Read Time = Day

x 100 + Hour where  $0 \leq \text{Hour} \leq 23$  and  $1 \leq \text{Day} \leq 28$ . For example, the value 1512 means that the Self-Read will take place at 12:00pm on the 15th day of each month.

- A 0xFFFF value means the automatic self-read operation is disabled and the log will be transferred manually.
- The Pulse Constant indicates how many output pulses are generated per unit of energy consumed. One would use a higher Pulse Constant for a light-load system in an accuracy testing situation to reduce the test time.
  - The following table lists the Time Zones supported:

| Code | Time Zone | Code | Time Zone |
|------|-----------|------|-----------|
| 0    | GMT-12:00 | 17   | GMT+03:30 |
| 1    | GMT-11:00 | 18   | GMT+04:00 |
| 2    | GMT-10:00 | 19   | GMT+04:30 |
| 3    | GMT-09:00 | 20   | GMT+05:00 |
| 4    | GMT-08:00 | 21   | GMT+05:30 |
| 5    | GMT-07:00 | 22   | GMT+05:45 |
| 6    | GMT-06:00 | 23   | GMT+06:00 |
| 7    | GMT-05:00 | 24   | GMT+06:30 |
| 8    | GMT-04:00 | 25   | GMT+07:00 |
| 9    | GMT-03:30 | 26   | GMT+08:00 |
| 10   | GMT-03:00 | 27   | GMT+09:00 |
| 11   | GMT-02:00 | 28   | GMT+09:30 |
| 12   | GMT-01:00 | 29   | GMT+10:00 |
| 13   | GMT+00:00 | 30   | GMT+11:00 |
| 14   | GMT+01:00 | 31   | GMT+12:00 |
| 15   | GMT+02:00 | 32   | GMT+13:00 |
| 16   | GMT+03:00 |      |           |

Table 5-30 Time Zones

- The PMC-340-A6 is equipped with two magnetic sensors to detect tamper. If **Magnetic Tamper Detection** is enabled and a magnetic field is detected, it logs a 'Magnetic Tamper' event in the SOE.

### 5.13.2 I/O Setup

| Register | Property | Description      | Format | Range, Default*                    |
|----------|----------|------------------|--------|------------------------------------|
| 6200     | RW       | DI1 Function     | UINT16 | 0=Digital Input*, 1=Pulse Counting |
| 6201     | RW       | DI1 Debounce     | UINT16 | 1 to 1000 (ms), 20*                |
| 6202     | RW       | DI1 Pulse Weight | UINT32 | 1* to 1,000,000                    |

Table 5-31 I/O Setup Parameters

### 5.13.3 3-Level Permission Setup

| Register | Property | Description                             | Format | Range, Default*      |
|----------|----------|-----------------------------------------|--------|----------------------|
| 6300     | WO       | Enter Comm. Permission Password         | UINT16 | 0 to 9999, 0*        |
| 6301     | RW       | Valid Time for Entered Password         | UINT16 | 60 to 3600 (s), 180* |
| 6302     | RW       | Modify Level 1 (Read-only) Password     | UINT16 | 0 to 9999, 1111*     |
| 6303     | RW       | Modify Level 2 (Read/Set Time) Password | UINT16 | 0 to 9999, 2222*     |
| 6304     | RW       | Modify Level 3 (Read/Write) Password    | UINT16 | 0 to 9999, 3333*     |
| 6305     | RW       | Enable 3-Level Permission Password      | UINT16 | 0=No*, 1=Yes         |
| 6306     | RW       | Enable Clear Operations on Front Panel  | UINT16 | 0=Yes*, 1=No         |

Table 5-32 3-Level Permission Setup

#### Notes:

- 3-level comm. permissions to the PMC-340-A6 are supported. Level 1, with the lowest level of access, is for obtaining meter readings or logs. Level 2 is higher than Level 1, other than reading permission, it is allowed to set the meter clock. Level 3 is the highest authority, with additional permission to change meter settings or perform operations. To perform different levels of Modbus operations with the PMC-340-A6, it's necessary to write the password for the corresponding level to register 6300.
- If an incorrect Comm. Permission Password has been written to register 6300 for 3 consecutive times, Modbus access will be locked out for approximately 5 minutes.
- If the Comm. Permission Password is correct, the master software will be able to communicate continuously with the same PMC-340-A6 until the time longer than the Valid Time for Entered Password has elapsed.
- Only when the user connects the meter with the Level 3 password, the Level 1 / Level 2 password could be read/write.
- When the register value of **Enable Clear Operations on Front Panel** (register 6306) is set to 1, the following operations on the Front Panel will not be displayed and could not be operated via Front Panel, including Clear Energy, Clear Demand, Clear DI Counter, Clear SOE and Clear Max./Min. Log. Furthermore, the Date/Time on the Front Panel is read-only and cannot be set via Front Panel at the same time.

### 5.13.4 Communication Setup

| Register | Property | Description | Format | Range, Default*                                   |
|----------|----------|-------------|--------|---------------------------------------------------|
| 6401     | RW       | Unit ID     | UINT16 | 1 to 247, 100*                                    |
| 6402     | RW       | Baud Rate   | UINT16 | 0=1200, 1=2400, 2=4800, 3=9600*, 4=19200, 5=38400 |

|      |    |                      |        |                                           |
|------|----|----------------------|--------|-------------------------------------------|
| 6403 | RW | COM Port Data Format | UINT16 | 0=8N2, 1=8O1, 2=8E1*, 3=8N1, 4=8O2, 5=8E2 |
|------|----|----------------------|--------|-------------------------------------------|

Table 5-33 Communication Setup

## 5.14 Data Recorder Setup

| DR #1 Setup |          |                                     |        |                                         |
|-------------|----------|-------------------------------------|--------|-----------------------------------------|
| Register    | Property | Description                         | Format | Range, Default*                         |
| 6500        | RW       | Trigger Mode <sup>1</sup>           | UINT16 | 0=Disabled, 1=Triggered by Timer*       |
| 6501        | RW       | Recording Mode <sup>1</sup>         | UINT16 | 0=Stop-when-Full, 1=First-In-First-Out* |
| 6502        | RW       | Recording Depth <sup>1,3</sup>      | UINT16 | 0 to 65,535, 60,000*                    |
| 6503        | RW       | Recording Interval <sup>1</sup>     | UINT32 | 1 to 3,456,000s, 300s*                  |
| 6505        | RW       | Offset Time <sup>2</sup>            | UINT16 | 0* to 43,200s                           |
| 6506        | RW       | Number of Parameters <sup>1,3</sup> | UINT16 | 0 to 16, 14*                            |
| 6507        | RW       | Parameter #1                        | UINT16 | 100* (kWh Import)                       |
| 6508        | RW       | Parameter #2                        | UINT16 | 101* (kWh Export)                       |
| 6509        | RW       | Parameter #3                        | UINT16 | 104* (kvarh Import)                     |
| 6510        | RW       | Parameter #4                        | UINT16 | 105* (kWh Import)                       |
| 6511        | RW       | Parameter #5                        | UINT16 | 108* (kVAh)                             |
| 6512        | RW       | Parameter #6                        | UINT16 | 603* (P Present Demand)                 |
| 6513        | RW       | Parameter #7                        | UINT16 | 604* (Q Present Demand)                 |
| 6514        | RW       | Parameter #8                        | UINT16 | 605* (S Present Demand)                 |
| 6515        | RW       | Parameter #9                        | UINT16 | 600* (Ia Present Demand)                |
| 6516        | RW       | Parameter #10                       | UINT16 | 601* (Ib Present Demand)                |
| 6517        | RW       | Parameter #11                       | UINT16 | 602* (Ic Present Demand)                |
| 6518        | RW       | Parameter #12                       | UINT16 | 0* (Null)                               |
| 6519        | RW       | Parameter #13                       | UINT16 | 0* (Null)                               |
| 6520        | RW       | Parameter #14                       | UINT16 | 0* (Null)                               |
| 6521        | RW       | Parameter #15                       | UINT16 | 0* (Null)                               |
| 6522        | RW       | Parameter #16                       | UINT16 | 0* (Null)                               |
| DR #2 Setup |          |                                     |        |                                         |
| Register    | Property | Description                         | Format | Range, Default*                         |
| 6523        | RW       | Trigger Mode <sup>1</sup>           | UINT16 | 0=Disabled, 1=Triggered by Timer*       |
| 6524        | RW       | Recording Mode <sup>1</sup>         | UINT16 | 0=Stop-when-Full, 1=First-In-First-Out* |
| 6525        | RW       | Recording Depth <sup>1,3</sup>      | UINT16 | 0 to 65,535, 60,000*                    |
| 6526        | RW       | Recording Interval <sup>1</sup>     | UINT32 | 1 to 3,456,000s, 300s*                  |
| 6528        | RW       | Offset Time <sup>2</sup>            | UINT16 | 0* to 43,200s                           |
| 6529        | RW       | Number of Parameters <sup>1,3</sup> | UINT16 | 0 to 16, 14*                            |
| 6530        | RW       | Parameter #1                        | UINT16 | 100* (kWh Import)                       |
| 6531        | RW       | Parameter #2                        | UINT16 | 101* (kWh Export)                       |
| 6532        | RW       | Parameter #3                        | UINT16 | 104* (kvarh Import)                     |
| 6533        | RW       | Parameter #4                        | UINT16 | 105* (kWh Import)                       |
| 6534        | RW       | Parameter #5                        | UINT16 | 108* (kVAh)                             |
| 6535        | RW       | Parameter #6                        | UINT16 | 603* (P Present Demand)                 |
| 6536        | RW       | Parameter #7                        | UINT16 | 604* (Q Present Demand)                 |
| 6537        | RW       | Parameter #8                        | UINT16 | 605* (S Present Demand)                 |
| 6538        | RW       | Parameter #9                        | UINT16 | 600* (Ia Present Demand)                |
| 6539        | RW       | Parameter #10                       | UINT16 | 601* (Ib Present Demand)                |
| 6540        | RW       | Parameter #11                       | UINT16 | 602* (Ic Present Demand)                |
| 6541        | RW       | Parameter #12                       | UINT16 | 0* (Null)                               |
| 6542        | RW       | Parameter #13                       | UINT16 | 0* (Null)                               |
| 6543        | RW       | Parameter #14                       | UINT16 | 0* (Null)                               |
| 6544        | RW       | Parameter #15                       | UINT16 | 0* (Null)                               |
| 6545        | RW       | Parameter #16                       | UINT16 | 0* (Null)                               |

Table 5-34 Data Recorder Setup

## Notes:

1. Changing any of these Data Recorder setup registers will reset the Data Recorder.
2. **Recording Offset** can be used to delay the recording by a fixed amount of time from the **Recording Interval**. For example, if the **Recording Interval** is set to 3600 (hourly) and the **Recording Offset** is set to 300 (5 minutes), the recording will take place at 5 minutes after the hour every hour, i.e. 00:05, 01:05, 02:05...etc. The value of the **Recording Offset** parameter should be less than the **Recording Interval** parameter.
3. Please refer to **Section 4.4.3** to configure the **Recording Depth** and **Number of Parameters**.
4. Please refer to the following table for a complete list of Data Recorder Parameters.

| Real-time Measurements |           |        |    |           |        |    |           |        |
|------------------------|-----------|--------|----|-----------|--------|----|-----------|--------|
| ID                     | Parameter | Format | ID | Parameter | Format | ID | Parameter | Format |
| 0                      | Null      | --     | 14 | Pa        | FLOAT  | 28 | PFc       | FLOAT  |
| 1                      | Ua        | FLOAT  | 15 | Pb        | FLOAT  | 29 | PF Total  | FLOAT  |

| 2                   | Ub                 | FLOAT  | 16  | Pc                    | FLOAT  | 30  | Frequency             | FLOAT  |
|---------------------|--------------------|--------|-----|-----------------------|--------|-----|-----------------------|--------|
| 3                   | Uc                 | FLOAT  | 17  | P Total               | FLOAT  | 31  | Ua/Uab Angle          | FLOAT  |
| 4                   | Uln Average        | FLOAT  | 18  | Qa                    | FLOAT  | 32  | Ub/Ubc Angle          | FLOAT  |
| 5                   | Uab                | FLOAT  | 19  | Qb                    | FLOAT  | 33  | Uc/Uca Angle          | FLOAT  |
| 6                   | Ubc                | FLOAT  | 20  | Qc                    | FLOAT  | 34  | Ia Angle              | FLOAT  |
| 7                   | Uca                | FLOAT  | 21  | Q Total               | FLOAT  | 35  | Ib Angle              | FLOAT  |
| 8                   | Ull Average        | FLOAT  | 22  | Sa                    | FLOAT  | 36  | Ic Angle              | FLOAT  |
| 9                   | Ia                 | FLOAT  | 23  | Sb                    | FLOAT  | 37  | dPFa                  | FLOAT  |
| 10                  | Ib                 | FLOAT  | 24  | Sc                    | FLOAT  | 38  | dPFb                  | FLOAT  |
| 11                  | Ic                 | FLOAT  | 25  | S Total               | FLOAT  | 39  | dPFc                  | FLOAT  |
| 12                  | I Average          | FLOAT  | 26  | PFa                   | FLOAT  | 40  | Temperature           | FLOAT  |
| 13                  | In (Calculated)    | FLOAT  | 27  | PFb                   | FLOAT  |     |                       |        |
| Energy Measurements |                    |        |     |                       |        |     |                       |        |
| ID                  | Parameter          | Format | ID  | Parameter             | Format | ID  | Parameter             | Format |
| 100                 | kWh Import         | INT32  | 151 | L1 kvarh Q4           | INT32  | 202 | L2 kvarh Import of T3 | INT32  |
| 101                 | kWh Export         | INT32  | 152 | L1 kWh Import of T1   |        | 203 | L2 kvarh Export of T3 | INT32  |
| 102                 | kWh Net            | INT32  | 153 | L1 kWh Export of T1   |        | 204 | L2 kVAh of T3         | INT32  |
| 103                 | kWh Total          | INT32  | 154 | L1 kvarh Import of T1 | INT32  | 205 | L2 kWh Import of T4   | INT32  |
| 104                 | kvarh Import       | INT32  | 155 | L1 kvarh Export of T1 | INT32  | 206 | L2 kWh Export of T4   | INT32  |
| 105                 | kvarh Export       | INT32  | 156 | L1 kVAh of T1         | INT32  | 207 | L2 kvarh Import of T4 | INT32  |
| 106                 | kvarh Net          | INT32  | 157 | L1 kWh Import of T2   | INT32  | 208 | L2 kvarh Export of T4 | INT32  |
| 107                 | kvarh Total        | INT32  | 158 | L1 kWh Export of T2   | INT32  | 209 | L2 kVAh of T4         | INT32  |
| 108                 | kVAh               | INT32  | 159 | L1 kvarh Import of T2 | INT32  | 210 | L2 kWh Import of T5   | INT32  |
| 109                 | DI1 Pulse Cnt.     | UINT32 | 160 | L1 kvarh Export of T2 | INT32  | 211 | L2 kWh Export of T5   | INT32  |
| 110                 | kvarh Q1           | INT32  | 161 | L1 kVAh of T2         | INT32  | 212 | L2 kvarh Import of T5 | INT32  |
| 111                 | kvarh Q2           | INT32  | 162 | L1 kWh Import of T3   | INT32  | 213 | L2 kvarh Export of T5 | INT32  |
| 112                 | kvarh Q3           | INT32  | 163 | L1 kWh Export of T3   | INT32  | 214 | L2 kVAh of T5         | INT32  |
| 113                 | kvarh Q4           | INT32  | 164 | L1 kvarh Import of T3 | INT32  | 215 | L3 kWh Import         | INT32  |
| 114                 | kWh Import of T1   | INT32  | 165 | L1 kvarh Export of T3 | INT32  | 216 | L3 kWh Export         | INT32  |
| 115                 | kWh Export of T1   | INT32  | 166 | L1 kVAh of T3         | INT32  | 217 | L3 kWh Net            | INT32  |
| 116                 | kvarh Import of T1 | INT32  | 167 | L1 kWh Import of T4   | INT32  | 218 | L3 kWh Total          | INT32  |
| 117                 | kvarh Export of T1 | INT32  | 168 | L1 kWh Export of T4   | INT32  | 219 | L3 kvarh Import       | INT32  |
| 118                 | kVAh of T1         | INT32  | 169 | L1 kvarh Import of T4 | INT32  | 220 | L3 kvarh Export       | INT32  |
| 119                 | kWh Import of T2   | INT32  | 170 | L1 kvarh Export of T4 | INT32  | 221 | L3 kvarh Net          | INT32  |
| 120                 | kWh Export of T2   | INT32  | 171 | L1 kVAh of T4         | INT32  | 222 | L3 kvarh Total        | INT32  |
| 121                 | kvarh Import of T2 | INT32  | 172 | L1 kWh Import of T5   | INT32  | 223 | L3 kVAh               | INT32  |
| 122                 | kvarh Export of T2 | INT32  | 173 | L1 kWh Export of T5   | INT32  | 224 | L3 kvarh Q1           | INT32  |
| 123                 | kVAh of T2         | INT32  | 174 | L1 kvarh Import of T5 | INT32  | 225 | L3 kvarh Q2           | INT32  |
| 124                 | kWh Import of T3   | INT32  | 175 | L1 kvarh Export of T5 | INT32  | 226 | L3 kvarh Q3           | INT32  |
| 125                 | kWh Export of T3   | INT32  | 176 | L1 kVAh of T5         | INT32  | 227 | L3 kvarh Q4           | INT32  |
| 126                 | kvarh Import of T3 | INT32  | 177 | L2 kWh Import         | INT32  | 228 | L3 kWh Import of T1   | INT32  |
| 127                 | kvarh Export of T3 | INT32  | 178 | L2 kWh Export         | INT32  | 229 | L3 kWh Export of T1   | INT32  |
| 128                 | kVAh of T3         | INT32  | 179 | L2 kWh Net            | INT32  | 230 | L3 kvarh Import of T1 | INT32  |
| 129                 | kWh Import of T4   | INT32  | 180 | L2 kWh Total          | INT32  | 231 | L3 kvarh Export of T1 | INT32  |
| 130                 | kWh Export of T4   | INT32  | 181 | L2 kvarh Import       | INT32  | 232 | L3 kVAh of T1         | INT32  |
| 131                 | kvarh Import of T4 | INT32  | 182 | L2 kvarh Export       | INT32  | 233 | L3 kWh Import of T2   | INT32  |
| 132                 | kvarh Export of T4 | INT32  | 183 | L2 kvarh Net          | INT32  | 234 | L3 kWh Export of T2   | INT32  |
| 133                 | kVAh of T4         | INT32  | 184 | L2 kvarh Total        | INT32  | 235 | L3 kvarh Import of T2 | INT32  |
| 134                 | kWh Import of T5   | INT32  | 185 | L2 kVAh               | INT32  | 236 | L3 kvarh Export of T2 | INT32  |
| 135                 | kWh Export of T5   | INT32  | 186 | L2 kvarh Q1           | INT32  | 237 | L3 kVAh of T2         | INT32  |
| 136                 | kvarh Import of T5 | INT32  | 187 | L2 kvarh Q2           | INT32  | 238 | L3 kWh Import of T3   | INT32  |
| 137                 | kvarh Export of T5 | INT32  | 188 | L2 kvarh Q3           | INT32  | 239 | L3 kWh Export of T3   | INT32  |
| 138                 | kVAh of T5         | INT32  | 189 | L2 kvarh Q4           | INT32  | 240 | L3 kvarh Import of T3 | INT32  |
| 139                 | L1 kWh Import      | INT32  | 190 | L2 kWh Import of T1   | INT32  | 241 | L3 kvarh Export of T3 | INT32  |
| 140                 | L1 kWh Export      | INT32  | 191 | L2 kWh Export of T1   | INT32  | 242 | L3 kVAh of T3         | INT32  |
| 141                 | L1 kWh Net         | INT32  | 192 | L2 kvarh Import of T1 | INT32  | 243 | L3 kWh Import of T4   | INT32  |
| 142                 | L1 kWh Total       | INT32  | 193 | L2 kvarh Export of T1 | INT32  | 244 | L3 kWh Export of T4   | INT32  |
| 143                 | L1 kvarh Import    | INT32  | 194 | L2 kVAh of T1         | INT32  | 245 | L3 kvarh Import of T4 | INT32  |
| 144                 | L1 kvarh Export    | INT32  | 195 | L2 kWh Import of T2   | INT32  | 246 | L3 kvarh Export of T4 | INT32  |
| 145                 | L1 kvarh Net       | INT32  | 196 | L2 kWh Export of T2   | INT32  | 247 | L3 kVAh of T4         | INT32  |
| 146                 | L1 kvarh Total     | INT32  | 197 | L2 kvarh Import of T2 | INT32  | 248 | L3 kWh Import of T5   | INT32  |
| 147                 | L1 kVAh            | INT32  | 198 | L2 kvarh Export of T2 | INT32  | 249 | L3 kWh Export of T5   | INT32  |
| 148                 | L1 kvarh Q1        | INT32  | 199 | L2 kVAh of T2         | INT32  | 250 | L3 kvarh Import of T5 | INT32  |
| 149                 | L1 kvarh Q2        | INT32  | 200 | L2 kWh Import of T3   | INT32  | 251 | L3 kvarh Export of T5 | INT32  |
| 150                 | L1 kvarh Q3        | INT32  | 201 | L2 kWh Export of T3   | INT32  | 252 | L3 kVAh of T5         | INT32  |

| Power Quality |                    |        |     |                       |        |     |                       |        |
|---------------|--------------------|--------|-----|-----------------------|--------|-----|-----------------------|--------|
| ID            | Parameter          | Format | ID  | Parameter             | Format | ID  | Parameter             | Format |
| 300           | Ia TDD             | FLOAT  | 317 | Ua/Uab THD            | FLOAT  | 417 | Ib THD                | FLOAT  |
| 301           | Ib TDD             | FLOAT  | 318 | Ub/Ubc THD            | FLOAT  | 418 | Ic THD                | FLOAT  |
| 302           | Ic TDD             | FLOAT  | 319 | Uc/Uca THD            | FLOAT  | 419 | Ia TOHD               | FLOAT  |
| 303           | Ia TDD Odd         | FLOAT  | 320 | Ua/Uab TOHD           | FLOAT  | 420 | Ib TOHD               | FLOAT  |
| 304           | Ib TDD Odd         | FLOAT  | 321 | Ub/Ubc TOHD           | FLOAT  | 421 | Ic TOHD               | FLOAT  |
| 305           | Ic TDD Odd         | FLOAT  | 322 | Uc/Uca TOHD           | FLOAT  | 422 | Ia TEHD               | FLOAT  |
| 306           | Ia TDD Even        | FLOAT  | 323 | Ua/Uab TEHD           | FLOAT  | 423 | Ib TEHD               | FLOAT  |
| 307           | Ib TDD Even        | FLOAT  | 324 | Ub/Ubc TEHD           | FLOAT  | 424 | Ic TEHD               | FLOAT  |
| 308           | Ic TDD Even        | FLOAT  | 325 | Uc/Uca TEHD           | FLOAT  | 425 | Ia HD02               | FLOAT  |
| 309           | Ia K-factor        | FLOAT  | 326 | Ua/Uab HD02           | FLOAT  | 426 | Ib HD02               | FLOAT  |
| 310           | Ib K-factor        | FLOAT  | 327 | Ub/Ubc HD02           | FLOAT  | 427 | Ic HD02               | FLOAT  |
| 311           | Ic K-factor        | FLOAT  | 328 | Uc/Uca HD02           | FLOAT  | ... | ...                   | FLOAT  |
| 312           | Ia Crest Factor    | FLOAT  | ... | ...                   | FLOAT  | 512 | Ia HD31               | FLOAT  |
| 313           | Ib Crest Factor    | FLOAT  | 413 | Ua/Uab HD31           | FLOAT  | 513 | Ib HD31               | FLOAT  |
| 314           | Ic Crest Factor    | FLOAT  | 414 | Ub/Ubc HD31           | FLOAT  | 514 | Ic HD31               | FLOAT  |
| 315           | Voltage Unbalance  | FLOAT  | 415 | Uc/Uca HD31           | FLOAT  |     |                       |        |
| 316           | Current Unbalance  | FLOAT  | 416 | Ia THD                | FLOAT  |     |                       |        |
| Demand        |                    |        |     |                       |        |     |                       |        |
| ID            | Parameter          | Format | ID  | Parameter             | Format | ID  | Parameter             | Format |
| 600           | Ia Present Demand  | FLOAT  | 612 | P Tot. Max. DMD of T1 | FLOAT  | 624 | P Tot. Max. DMD of T5 | FLOAT  |
| 601           | Ib Present Demand  | FLOAT  | 613 | Q Tot. Max. DMD of T1 | FLOAT  | 625 | Q Tot. Max. DMD of T5 | FLOAT  |
| 602           | Ic Present Demand  | FLOAT  | 614 | S Tot. Max. DMD of T1 | FLOAT  | 626 | S Tot. Max. DMD of T5 | FLOAT  |
| 603           | P Present Demand   | FLOAT  | 615 | P Tot. Max. DMD of T2 | FLOAT  | 627 | Ua Present Demand     | FLOAT  |
| 604           | Q Present Demand   | FLOAT  | 616 | Q Tot. Max. DMD of T2 | FLOAT  | 628 | Ub Present Demand     | FLOAT  |
| 605           | S Present Demand   | FLOAT  | 617 | S Tot. Max. DMD of T2 | FLOAT  | 629 | Uc Present Demand     | FLOAT  |
| 606           | Ia Max. Demand     | FLOAT  | 618 | P Tot. Max. DMD of T3 | FLOAT  | 630 | Uab Present Demand    | FLOAT  |
| 607           | Ib Max. Demand     | FLOAT  | 619 | Q Tot. Max. DMD of T3 | FLOAT  | 631 | Ubc Present Demand    | FLOAT  |
| 608           | Ic Max. Demand     | FLOAT  | 620 | S Tot. Max. DMD of T3 | FLOAT  | 632 | Uca Present Demand    | FLOAT  |
| 609           | P Tot. Max. Demand | FLOAT  | 621 | P Tot. Max. DMD of T4 | FLOAT  | 633 | Temp. Present Demand  | FLOAT  |
| 610           | Q Tot. Max. Demand | FLOAT  | 622 | Q Tot. Max. DMD of T4 | FLOAT  |     |                       |        |
| 611           | S Tot. Max. Demand | FLOAT  | 623 | S Tot. Max. DMD of T4 | FLOAT  |     |                       |        |

Table 5-35 Data Recorder Parameters

## 5.15 Setpoint Setup

| Register  | Property | Description                 | Format | Range, Default*              |
|-----------|----------|-----------------------------|--------|------------------------------|
| 6600      | RW       | Setpoint #1 Type            | UINT16 | 0=Disabled*, 1=Over, 2=Under |
| 6601      | RW       | Setpoint #1 Parameter       | UINT16 | 0 to 22 (See Note 1), 0*     |
| 6602      | RW       | Setpoint #1 Over Limit      | Float  | 0*                           |
| 6604      | RW       | Setpoint #1 Under Limit     | Float  | 0*                           |
| 6606      | RW       | Setpoint #1 Active Delay    | UINT16 | 0 to 9999 (s), 10*           |
| 6607      | RW       | Setpoint #1 Inactive Delay  | UINT16 | 0 to 9999 (s), 10*           |
| 6708~6709 | --       | Reserved                    | --     | --                           |
| 6610      | RW       | Setpoint #2 Type            | UINT16 | 0=Disabled*, 1=Over, 2=Under |
| 6611      | RW       | Setpoint #2 Parameter       | UINT16 | 0 to 22 (See Note 1), 0*     |
| 6612      | RW       | Setpoint #2 Over Limit      | Float  | 0*                           |
| 6614      | RW       | Setpoint #2 Under Limit     | Float  | 0*                           |
| 6616      | RW       | Setpoint #2 Active Delay    | UINT16 | 0 to 9999 (s), 10*           |
| 6617      | RW       | Setpoint #2 Inactive Delay  | UINT16 | 0 to 9999 (s), 10*           |
| 6618~6619 | --       | Reserved                    | --     | --                           |
| ...       | ...      | ...                         | ...    | ...                          |
| 6790      | RW       | Setpoint #20 Type           | UINT16 | 0=Disabled*, 1=Over, 2=Under |
| 6791      | RW       | Setpoint #20 Parameter      | UINT16 | 0 to 22 (See Note 1), 0*     |
| 6792      | RW       | Setpoint #20 Over Limit     | Float  | 0*                           |
| 6794      | RW       | Setpoint #20 Under Limit    | Float  | 0*                           |
| 6796      | RW       | Setpoint #20 Active Delay   | UINT16 | 0 to 9999 (s), 10*           |
| 6797      | RW       | Setpoint #20 Inactive Delay | UINT16 | 0 to 9999 (s), 10*           |
| 6798~6799 | --       | Reserved                    | --     | --                           |

Table 5-36 Setpoint Setup

### Notes:

- The table below illustrates the Setpoint Parameters.

| Key | Setpoint Parameter | Scale | Unit | Key | Setpoint Parameter | Scale | Unit |
|-----|--------------------|-------|------|-----|--------------------|-------|------|
| 0   | Null               | --    | --   | 12  | Ua                 | x1    | V    |
| 1   | Uln                | x1    | V    | 13  | Ub                 | x1    | V    |

|    |                   |    |    |    |             |    |    |
|----|-------------------|----|----|----|-------------|----|----|
| 2  | UII               | x1 | V  | 14 | Uc          | x1 | V  |
| 3  | I                 | x1 | A  | 15 | Uab         | x1 | V  |
| 4  | Frequency         | x1 | Hz | 16 | Ubc         | x1 | V  |
| 5  | P Total           | x1 | kW | 17 | Uca         | x1 | V  |
| 6  | PF Total          | x1 | -- | 18 | Ia          | x1 | A  |
| 7  | P Total DMD       | x1 | kW | 19 | Ib          | x1 | A  |
| 8  | Voltage THD       | x1 | %  | 20 | Ic          | x1 | A  |
| 9  | Current THD       | x1 | %  | 21 | Temperature | x1 | °C |
| 10 | Voltage Unbalance | x1 | %  | 22 | DI1         | -- | -- |
| 11 | Current Unbalance | x1 | %  |    |             |    |    |

**Table 5-37 Setpoint Parameters**

2. If DI1 is configured as Setpoint Parameter, the Over Limit/Under Limit would be invalid. If DI1 is configured as Setpoint Parameter, the events description in SOE would be "DI1 Open/Closed Alarm" or "DI1 Open/Closed Return".

## 5.16 TOU Setup

### 5.16.1 Basic

| Register | Property | Description                 | Format | Range/Option                                           |
|----------|----------|-----------------------------|--------|--------------------------------------------------------|
| 7000     | RO       | Current Tariff <sup>1</sup> | UINT16 | 0=T1, 1=T2, 2=T3, 3=T4<br>4=T5                         |
| 7001     | RO       | Current Season              | UINT16 | 0 to 11 (Season #1 to #12)                             |
| 7002     | RO       | Current Period              | UINT16 | 0 to 11 (Period #1 to #14)                             |
| 7003     | RO       | Current Daily Profile No.   | UINT16 | 0 to 19 (Daily Profile #1 to #20)                      |
| 7004     | RO       | Current Day Type            | UINT16 | 0=Weekday1, 1=Weekday2<br>2=Weekday3, 3= Alternate Day |
| 7005     | RO       | Current TOU No.             | UINT16 | 0=TOU #1, 1=TOU #2                                     |
| 7006     | RW       | TOU Switch Time             | UINT32 | See Note 1)                                            |
| 7008     | WO       | Switch TOU Manually         | UINT16 | Write 0xFF00 to manually switch the TOU schedules      |
| 7009     | RW       | Sunday Setup                | UINT16 | 0=Weekday1*, 1=Weekday2<br>2=Weekday3                  |
| 7010     | RW       | Monday Setup                | UINT16 |                                                        |
| 7011     | RW       | Tuesday Setup               | UINT16 |                                                        |
| 7012     | RW       | Wednesday Setup             | UINT16 |                                                        |
| 7013     | RW       | Thursday Setup              | UINT16 |                                                        |
| 7014     | RW       | Friday Setup                | UINT16 |                                                        |
| 7015     | RW       | Saturday Setup              | UINT16 |                                                        |

**Table 5-38 TOU Basic Setup**

**Notes:**

- 1) The following table illustrates the data structure for the TOU Switch Time. For example, 0x1003140C indicates a switch time of 12:00pm on March 20<sup>th</sup>, 2016. Writing 0xFFFFFFFF to this register disables the switching between TOU schedules.

| Byte 3            | Byte 2       | Byte 1     | Byte 0       |
|-------------------|--------------|------------|--------------|
| Year-2000 (10-99) | Month (1-12) | Day (1-31) | Hour (00-23) |

**Table 5-39 TOU Switch Time Format**

### 5.16.2 Season

The PMC-340-A6 has two sets of Season setup parameters, one for each TOU. The Base Addresses for the two sets are 7050 and 8050, respectively, where the Register Address = Base Address + Offset. For example, the register address for TOU #1's Season #2's Start Date is 7050+4 = 7054.

| Offset | Property | Description                        | Format | Range/Note                                    |
|--------|----------|------------------------------------|--------|-----------------------------------------------|
| 0      | RW       | Season #1: Start Date <sup>1</sup> | UINT16 | Default=0x0101                                |
| 1      | RW       | Season #1: Weekday#1 Daily Profile | UINT16 | 0 to 19                                       |
| 2      | RW       | Season #1: Weekday#2 Daily Profile | UINT16 |                                               |
| 3      | RW       | Season #1: Weekday#3 Daily Profile | UINT16 |                                               |
| 4      | RW       | Season #2: Start Date              | UINT16 | High-order Byte: Month<br>Low-order Byte: Day |
| 5      | RW       | Season #2: Weekday#1 Daily Profile | UINT16 | 0 to 19                                       |
| 6      | RW       | Season #2: Weekday#2 Daily Profile | UINT16 |                                               |
| 7      | RW       | Season #2: Weekday#3 Daily Profile | UINT16 |                                               |
| 8      | RW       | Season #3: Start Date              | UINT16 | See Season #2: Start Date                     |
| 9      | RW       | Season #3: Weekday#1 Daily Profile | UINT16 | 0 to 19                                       |
| 10     | RW       | Season #3: Weekday#2 Daily Profile | UINT16 |                                               |
| 11     | RW       | Season #3: Weekday#3 Daily Profile | UINT16 |                                               |
| 12     | RW       | Season #4: Start Date              | UINT16 | See Season #2: Start Date                     |

|    |    |                                     |        |                           |
|----|----|-------------------------------------|--------|---------------------------|
| 13 | RW | Season #4: Weekday#1 Daily Profile  | UINT16 | 0 to 19                   |
| 14 | RW | Season #4: Weekday#2 Daily Profile  | UINT16 |                           |
| 15 | RW | Season #4: Weekday#3 Daily Profile  | UINT16 |                           |
| 16 | RW | Season #5: Start Date               | UINT16 | See Season #2: Start Date |
| 17 | RW | Season #5: Weekday#1 Daily Profile  | UINT16 | 0 to 19                   |
| 18 | RW | Season #5: Weekday#2 Daily Profile  | UINT16 |                           |
| 19 | RW | Season #5: Weekday#3 Daily Profile  | UINT16 |                           |
| 20 | RW | Season #6: Start Date               | UINT16 | See Season #2: Start Date |
| 21 | RW | Season #6: Weekday#1 Daily Profile  | UINT16 | 0 to 19                   |
| 22 | RW | Season #6: Weekday#2 Daily Profile  | UINT16 |                           |
| 23 | RW | Season #6: Weekday#3 Daily Profile  | UINT16 |                           |
| 24 | RW | Season #7: Start Date               | UINT16 | See Season #2: Start Date |
| 25 | RW | Season #7: Weekday#1 Daily Profile  | UINT16 | 0 to 19                   |
| 26 | RW | Season #7: Weekday#2 Daily Profile  | UINT16 |                           |
| 27 | RW | Season #7: Weekday#3 Daily Profile  | UINT16 |                           |
| 28 | RW | Season #8: Start Date               | UINT16 | See Season #2: Start Date |
| 29 | RW | Season #8: Weekday#1 Daily Profile  | UINT16 | 0 to 19                   |
| 30 | RW | Season #8: Weekday#2 Daily Profile  | UINT16 |                           |
| 31 | RW | Season #8: Weekday#3 Daily Profile  | UINT16 |                           |
| 32 | RW | Season #9: Start Date               | UINT16 | See Season #2: Start Date |
| 33 | RW | Season #9: Weekday#1 Daily Profile  | UINT16 | 0 to 19                   |
| 34 | RW | Season #9: Weekday#2 Daily Profile  | UINT16 |                           |
| 35 | RW | Season #9: Weekday#3 Daily Profile  | UINT16 |                           |
| 36 | RW | Season #10: Start Date              | UINT16 | See Season #2: Start Date |
| 37 | RW | Season #10: Weekday#1 Daily Profile | UINT16 | 0 to 19                   |
| 38 | RW | Season #10: Weekday#2 Daily Profile | UINT16 |                           |
| 39 | RW | Season #10: Weekday#3 Daily Profile | UINT16 |                           |
| 40 | RW | Season #11: Start Date              | UINT16 | See Season #2: Start Date |
| 41 | RW | Season #11: Weekday#1 Daily Profile | UINT16 | 0 to 19                   |
| 42 | RW | Season #11: Weekday#2 Daily Profile | UINT16 |                           |
| 43 | RW | Season #11: Weekday#3 Daily Profile | UINT16 |                           |
| 44 | RW | Season #12: Start Date              | UINT16 | See Season #2: Start Date |
| 45 | RW | Season #12: Weekday#1 Daily Profile | UINT16 | 0 to 19                   |
| 46 | RW | Season #12: Weekday#2 Daily Profile | UINT16 |                           |
| 47 | RW | Season #12: Weekday#3 Daily Profile | UINT16 |                           |

Table 5-40 Season Setup

## Notes:

- 1) **Start Date** for Season #1 can be set as any day within the calendar year.
- 2) Setting a Season's **Start Date** as 0xFFFF terminates the TOU's Season settings. All subsequent Seasons' setup parameters will be ignored since the previous Season's duration is from its **Start Date** to the end of the year.
- 3) The **Start Date** of a particular Season must be later than the previous Season's.

## 5.16.3 Daily Profile

The PMC-340-A6 has two sets of Daily Profile setup parameters, one for each TOU.

| Register Address | Property | Description       | Format         |
|------------------|----------|-------------------|----------------|
| 7100-7127        | RW       | Daily Profile #1  | See Table 5-43 |
| 7128-7155        | RW       | Daily Profile #2  |                |
| 7156-7183        | RW       | Daily Profile #3  |                |
| 7184-7211        | RW       | Daily Profile #4  |                |
| 7212-7239        | RW       | Daily Profile #5  |                |
| 7240-7267        | RW       | Daily Profile #6  |                |
| 7268-7295        | RW       | Daily Profile #7  |                |
| 7296-7323        | RW       | Daily Profile #8  |                |
| 7324-7351        | RW       | Daily Profile #9  |                |
| 7352-7379        | RW       | Daily Profile #10 |                |
| 7380-7407        | RW       | Daily Profile #11 |                |
| 7408-7435        | RW       | Daily Profile #12 |                |
| 7436-7463        | RW       | Daily Profile #13 |                |
| 7464-7491        | RW       | Daily Profile #14 |                |
| 7492-7519        | RW       | Daily Profile #15 |                |
| 7520-7547        | RW       | Daily Profile #16 |                |
| 7548-7575        | RW       | Daily Profile #17 |                |
| 7576-7603        | RW       | Daily Profile #18 |                |
| 7604-7631        | RW       | Daily Profile #19 |                |

|           |    |                   |  |
|-----------|----|-------------------|--|
| 7632-7659 | RW | Daily Profile #20 |  |
|-----------|----|-------------------|--|

Table 5-41 TOU #1's Daily Profile Setup

| Register Address | Property | Description       | Format         |
|------------------|----------|-------------------|----------------|
| 8100-8127        | RW       | Daily Profile #1  | See Table 5-43 |
| 8128-8155        | RW       | Daily Profile #2  |                |
| 8156-8183        | RW       | Daily Profile #3  |                |
| 8184-8211        | RW       | Daily Profile #4  |                |
| 8212-8239        | RW       | Daily Profile #5  |                |
| 8240-8267        | RW       | Daily Profile #6  |                |
| 8268-8295        | RW       | Daily Profile #7  |                |
| 8296-8323        | RW       | Daily Profile #8  |                |
| 8324-8351        | RW       | Daily Profile #9  |                |
| 8352-8379        | RW       | Daily Profile #10 |                |
| 8380-8407        | RW       | Daily Profile #11 |                |
| 8408-8435        | RW       | Daily Profile #12 |                |
| 8436-8463        | RW       | Daily Profile #13 |                |
| 8464-8491        | RW       | Daily Profile #14 |                |
| 8492-8519        | RW       | Daily Profile #15 |                |
| 8520-8547        | RW       | Daily Profile #16 |                |
| 8548-8575        | RW       | Daily Profile #17 |                |
| 8576-8603        | RW       | Daily Profile #18 |                |
| 8604-8631        | RW       | Daily Profile #19 |                |
| 8632-8659        | RW       | Daily Profile #20 |                |

Table 5-42 TOU #2's Daily Profile Setup

| Offset | Property | Description                       | Format | Note                                 |
|--------|----------|-----------------------------------|--------|--------------------------------------|
| +0     | RW       | Period #1 Start Time <sup>1</sup> | UINT16 | Default=0x0000                       |
| +1     | RW       | Period #1 Tariff                  | UINT16 | 0=T1, ..., 4=T5                      |
| +2     | RW       | Period #2 Start Time              | UINT16 | 0 ≤ Hour < 24<br>Min = 0, 15, 30, 45 |
| +3     | RW       | Period #2 Tariff                  | UINT16 | 0=T1, ..., 4=T5                      |
| +4     | RW       | Period #3 Start Time              | UINT16 | See Period #2 Start Time             |
| +5     | RW       | Period #3 Tariff                  | UINT16 | 0=T1, ..., 4=T5                      |
| +6     | RW       | Period #4 Start Time              | UINT16 | See Period #2 Start Time             |
| +7     | RW       | Period #4 Tariff                  | UINT16 | 0=T1, ..., 4=T5                      |
| +8     | RW       | Period #5 Start Time              | UINT16 | See Period #2 Start Time             |
| +9     | RW       | Period #5 Tariff                  | UINT16 | 0=T1, ..., 4=T5                      |
| +10    | RW       | Period #6 Start Time              | UINT16 | See Period #2 Start Time             |
| +11    | RW       | Period #6 Tariff                  | UINT16 | 0=T1, ..., 4=T5                      |
| +12    | RW       | Period #7 Start Time              | UINT16 | See Period #2 Start Time             |
| +13    | RW       | Period #7 Tariff                  | UINT16 | 0=T1, ..., 4=T5                      |
| +14    | RW       | Period #8 Start Time              | UINT16 | See Period #2 Start Time             |
| +15    | RW       | Period #8 Tariff                  | UINT16 | 0=T1, ..., 4=T5                      |
| +16    | RW       | Period #9 Start Time              | UINT16 | See Period #2 Start Time             |
| +17    | RW       | Period #9 Tariff                  | UINT16 | 0=T1, ..., 4=T5                      |
| +18    | RW       | Period #10 Start Time             | UINT16 | See Period #2 Start Time             |
| +19    | RW       | Period #10 Tariff                 | UINT16 | 0=T1, ..., 4=T5                      |
| +20    | RW       | Period #11 Start Time             | UINT16 | See Period #2 Start Time             |
| +21    | RW       | Period #11 Tariff                 | UINT16 | 0=T1, ..., 4=T5                      |
| +22    | RW       | Period #12 Start Time             | UINT16 | See Period #2 Start Time             |
| +23    | RW       | Period #12 Tariff                 | UINT16 | 0=T1, ..., 4=T5                      |
| +24    | RW       | Period #13 Start Time             | UINT16 | See Period #2 Start Time             |
| +25    | RW       | Period #13 Tariff                 | UINT16 | 0=T1, ..., 4=T5                      |
| +26    | RW       | Period #14 Start Time             | UINT16 | See Period #2 Start Time             |
| +27    | RW       | Period #14 Tariff                 | UINT16 | 0=T1, ..., 4=T5                      |

Table 5-43 Daily Profile Data Structure

**Notes:**

1. **Daily Profile #1's Period #1 Start Time** can be set to any time of day.
2. Setting a Period's **Start Time** as 0xFFFF terminates the Daily Profile's settings. All later Daily Profile' setup parameters will be ignored, and the previous Period's duration is from its **Start Time** to the end of the day.
3. The **Start Time** of a particular Period must be later than the previous Period's.

**5.16.4 Alternate Days**

Each Alternate Day is assigned a Daily Profile and has a higher priority than Season. If a particular date is set as an Alternate Day, its assigned Daily Profile will override the "normal" Daily Profile for this day according to the

TOU settings.

The PMC-340-A6 has two sets of Alternate Days setup parameters, one for each TOU. The Base Addresses for the two sets are 7700 and 8700, respectively, where the Register Address = Base Address + Offset. For example, the register address for TOU #2's Alternate Day #2's Date is 8700+3 = 8703.

| Offset | Property | Description                         | Format | Note           |
|--------|----------|-------------------------------------|--------|----------------|
| 0      | RW       | Alternate Day #1 Date <sup>1</sup>  | UINT32 | See Table 5-45 |
| 2      | RW       | Alternate Day #1 Daily Profile      | UINT16 | 0 to 19        |
| 3      | RW       | Alternate Day #2 Date <sup>1</sup>  | UINT32 | See Table 5-45 |
| 5      | RW       | Alternate Day #2 Daily Profile      | UINT16 | 0 to 19        |
| 6      | RW       | Alternate Day #3 Date <sup>1</sup>  | UINT32 | See Table 5-45 |
| 8      | RW       | Alternate Day #3 Daily Profile      | UINT16 | 0 to 19        |
| 9      | RW       | Alternate Day #4 Date <sup>1</sup>  | UINT32 | See Table 5-45 |
| 11     | RW       | Alternate Day #4 Daily Profile      | UINT16 | 0 to 19        |
| 12     | RW       | Alternate Day #5 Date <sup>1</sup>  | UINT32 | See Table 5-45 |
| 14     | RW       | Alternate Day #5 Daily Profile      | UINT16 | 0 to 19        |
| ...    | RW       | ...                                 | UINT32 | ...            |
| ...    | RW       | ...                                 | UINT16 | ...            |
| 255    | RW       | Alternate Day #86 Date <sup>1</sup> | UINT32 | See Table 5-45 |
| 256    | RW       | Alternate Day #86 Daily Profile     | UINT16 | 0 to 19        |
| 258    | RW       | Alternate Day #87 Date <sup>1</sup> | UINT32 | See Table 5-45 |
| 260    | RW       | Alternate Day #87 Daily Profile     | UINT16 | 0 to 19        |
| 261    | RW       | Alternate Day #88 Date <sup>1</sup> | UINT32 | See Table 5-45 |
| 263    | RW       | Alternate Day #88 Daily Profile     | UINT16 | 0 to 19        |
| 264    | RW       | Alternate Day #89 Date <sup>1</sup> | UINT32 | See Table 5-45 |
| 266    | RW       | Alternate Day #89 Daily Profile     | UINT16 | 0 to 19        |
| 267    | RW       | Alternate Day #90 Date <sup>1</sup> | UINT32 | See Table 5-45 |
| 269    | RW       | Alternate Day #90 Daily Profile     | UINT16 | 0 to 19        |

**Table 5-44 Alternate Days Setup**

**Notes:**

- 1) The following table illustrates the data structure for the Date register:

| Byte 3   | Byte 2            | Byte 1       | Byte 0     |
|----------|-------------------|--------------|------------|
| Reserved | Year-2000 (10-90) | Month (1-12) | Day (1-31) |

**Table 5-45 Date Format**

When the Year and/or Month are set as 0xFF, it means the Alternate Day is repetitive by year and/or month, i.e., the same day of every year or every month is an Alternate Day.

## 5.17 Time

There are two sets of Time registers supported by the PMC-340-A6 - Year / Month / Day / Hour / Minute / Second (Registers # 60000 to 60002) and UNIX Time (Register # 60004). When sending time to the PMC-230 over Modbus communications, care should be taken to only write one of the two Time register sets. All registers within a Time register set must be written in a single transaction. If registers 60000 to 60004 are being written at the same time, both Time register sets will be updated to reflect the new time specified in the UNIX Time register set (60004) and the time specified in registers 60000-60002 will be ignored. Writing to the Millisecond register (60003) is optional during a Time Set operation. When broadcasting time, the function code must be set to 0x10 (Pre-set Multiple Registers). Incorrect date or time values will be rejected by the meter. In addition, attempting to write a Time value less than Jan 1, 2000, 00:00:00 will be rejected.

| Register            | Property          | Description             | Format | Note                                                                                                                         |
|---------------------|-------------------|-------------------------|--------|------------------------------------------------------------------------------------------------------------------------------|
| 60000               | 9000              | High-order Byte: Year   | UINT16 | 10-90 (Year-2000)                                                                                                            |
|                     |                   | Low-order Byte: Month   |        | 1 to 12                                                                                                                      |
| 60001               | 9001              | High-order Byte: Day    | UINT16 | 1 to 31                                                                                                                      |
|                     |                   | Low-order Byte: Hour    |        | 0 to 23                                                                                                                      |
| 60002               | 9002              | High-order Byte: Minute | UINT16 | 0 to 59                                                                                                                      |
|                     |                   | Low-order Byte: Second  |        | 0 to 59                                                                                                                      |
| 60003               | 9003              | Millisecond             | UINT16 | 0 to 999                                                                                                                     |
| 60004<br>~<br>60005 | 9004<br>~<br>9005 | UNIX Time               | UINT32 | 0x4B3D3B00~0xE398E47F<br>The corresponding time is<br>2010.01.01 00:00:00 to<br>2090.12.31 23:59:59<br>(GMT+00:00 Time Zone) |

**Table 5-46 Time Registers**

**Note:**

1. The UNIX time in GMT+00:00 Time Zone should be used when writing the meter's time. The meter will compute internally and display in Local Time based on the setting of the Time Zone setup register (6014).

**5.18 Clear/Reset Control**

| Register | Property | Description                                                         | Format | Note                                                           |
|----------|----------|---------------------------------------------------------------------|--------|----------------------------------------------------------------|
| 9600     | WO       | Clear Monthly Energy Log <sup>1</sup>                               | UINT16 | Writing "0xFF00" to the register execute the described action. |
| 9601     | WO       | Clear Energy <sup>2</sup>                                           |        |                                                                |
| 9602     | WO       | Clear Monthly Energy Log of This Month <sup>3</sup>                 |        |                                                                |
| 9603     | WO       | Clear Max. Demand Log of This Month (Since Last Reset) <sup>4</sup> |        |                                                                |
| 9604     | WO       | Clear All Demand Registers <sup>5</sup>                             |        |                                                                |
| 9605     | WO       | Clear Max./Min. Log of This Month (Since Last Reset) <sup>6</sup>   |        |                                                                |
| 9606     | WO       | Clear All Max./Min. Log <sup>7</sup>                                |        |                                                                |
| 9607     | WO       | Clear Device Operating Time                                         |        |                                                                |
| 9608     | WO       | Clear All Data <sup>8</sup>                                         |        |                                                                |
| 9609     | WO       | Clear Data Recorder Logs                                            |        |                                                                |
| 9610     | WO       | Clear SOE Log                                                       |        |                                                                |
| 9611     | WO       | Clear FP Counter & Comm. Counter                                    |        |                                                                |
| 9612     | WO       | Clear DI Counter                                                    |        |                                                                |

**Table 5-47 Clear/Reset Control****Notes:**

1. Writing 0xFF00 to the **Clear Monthly Energy Log** register to clear the Monthly Energy Log of the last 1 to 12 months, excluding the Monthly Energy Log for the Present Month.
2. Writing 0xFF00 to the **Clear Energy** register to clear the 3-Ø Total, Per-Phase energy and TOU Energy registers.
3. Writing 0xFF00 to the **Clear Monthly Energy Log of Present Month** register to clear the Monthly Energy Log of the Present Month.
4. Writing 0xFF00 to the **Clear Max. Demand Log of This Month** register to clear Max. Demand Log of This Month (Since Last Reset) when the **Self-Read Time** register is set for automatic Self-Read operation. The Max. Demand of Last Month will not be cleared. If the **Self-Read Time** register is set for manual operation with a register value of 0xFFFF, the Max. Demand of This Month (Since Last Reset) will be transferred to the Max. Demand of Last Month (Before Last Reset) and then cleared.
5. Writing 0xFF00 to the **Clear All Demand Registers** register to clear all Demand registers and logs, including Real-time Present Demand, Max. Demand Log of This Month (Since Last Reset) and Last Month (Before Last Reset).
6. Writing 0xFF00 to the **Clear Max./Min. Log of This Month** register to clear the Max./Min. log of This Month (Since Last Reset) when the **Self-Read Time** register is set for automatic Self-Read operation. The Max./Min. log of Last Month will not be cleared. If the **Self-Read Time** register is set for manual operation with a register value of 0xFFFF, the Max./Min. log of This Month (Since Last Reset) will be transferred to the Max./Min. log of Last Month (Before Last Reset) and then cleared.
7. Writing 0xFF00 to the **Clear All Max./Min. Log** register to clear both the Max./Min Log of This Month (Since Last Reset) and the Max./Min. Log of Last Month (Before Last Reset).
8. Writing 0xFF00 to the **Clear All Data** register to perform the Clear operation for the action specified in registers # 9600 to 9607 and # 9609 to 9613.

**5.19 Meter Information**

| Register    | Property  | Description | Format | Note                                     |
|-------------|-----------|-------------|--------|------------------------------------------|
| 60200~60219 | 9800~9819 | RO          | UINT16 | See Note 1                               |
| 60220       | 9820      | RO          | UINT16 | e.g. 10000 shows the version is V1.00.00 |
| 60221       | 9821      | RO          | UINT16 | e.g. 10 shows the version is V1.0        |
| 60222       | 9822      | RO          | UINT16 | e.g. 240110 means January 10, 2024       |
| 60223       | 9823      | RO          | UINT16 |                                          |
| 60224       | 9824      | RO          | UINT16 |                                          |
| 60225       | 9825      | RO          | UINT32 |                                          |
| 60227-60228 | 9827-9828 | --          | --     | --                                       |
| 60229       | 9829      | RO          | UINT16 | See Note 2                               |

**Table 5-48 Meter Information****Note:**

1. The Meter Model Appears from registers 60200 to 60219 and contains the ASCII encoding of the string "PMC-340-A6" as shown in the

following table.

| Register    | Value (Hex) | ASCII |
|-------------|-------------|-------|
| 60200       | 0x50        | P     |
| 60201       | 0x4D        | M     |
| 60202       | 0x43        | C     |
| 60203       | 0x2D        | -     |
| 60204       | 0x33        | 3     |
| 60205       | 0x34        | 4     |
| 60206       | 0x30        | 0     |
| 60207       | 0x2D        | -     |
| 60208       | 0x41        | A     |
| 60209       | 0x36        | 6     |
| 60210-60219 | 0x20        | Null  |

**Table 5-49 ASCII Code for “PMC-340-A6”**

2. The following table illustrates the details for the Feature Code register.

| B5 (I/O)                     | B3 to B4 (Current Input) | B0 to B2 (Reserved) |
|------------------------------|--------------------------|---------------------|
| 0=SS Pulse Output            | 0=Direct Connected Input | 0                   |
| 1=DI Input                   | 1=5A CT Input            |                     |
| 2=DI Input + SS Pulse Output |                          |                     |

**Table 5-50 Feature Code**

## Appendix A – Technical Specification

| Inputs (L1, L2, L3, N)                                   |                                |        |        |        |
|----------------------------------------------------------|--------------------------------|--------|--------|--------|
| Voltage (Un)                                             | 110VAC                         | 220VAC | 230VAC | 240VAC |
| Overrange (%Un)                                          | 276%                           | 125%   | 120%   | 115%   |
| Range (V)                                                | 88-276VAC (Self-powered)       |        |        |        |
| Burden                                                   | <2VA/phase                     |        |        |        |
| <b>Direct Input</b>                                      |                                |        |        |        |
| Current (In/Imax)                                        | 10A/100A                       |        |        |        |
| Range                                                    | 0.4% In to Imax                |        |        |        |
| Starting Current (Ist)                                   | 0.4% In (40mA)                 |        |        |        |
| Minimum Current (Imin)                                   | 5% In (0.5A)                   |        |        |        |
| Burden                                                   | <0.2VA/phase                   |        |        |        |
| <b>CT Input</b>                                          |                                |        |        |        |
| Current (In/Imax)                                        | 1A/10A                         |        |        |        |
| Range                                                    | 0.1% In to Imax                |        |        |        |
| Starting Current (Ist)                                   | 0.1% In (1mA)                  |        |        |        |
| Minimum Current (Imin)                                   | 1% In (0.01A)                  |        |        |        |
| Burden                                                   | <0.2VA/phase                   |        |        |        |
| Frequency                                                | 45Hz-65Hz                      |        |        |        |
| Solid State Energy Pulse Output (Selectable - kWh/kvarh) |                                |        |        |        |
| Isolation                                                | Optical                        |        |        |        |
| Max. Load Voltage                                        | 80V                            |        |        |        |
| Max. Forward Current                                     | 50mA                           |        |        |        |
| Pulse Width                                              | 30-500ms configurable          |        |        |        |
| Pulse Constant                                           | 1-999 999 configurable         |        |        |        |
| Direct Connected Input                                   | 500 imp./kWh (default)         |        |        |        |
| CT Input                                                 | 10000 imp./kWh (default)       |        |        |        |
| Communications                                           |                                |        |        |        |
| RS-485                                                   | Modbus RTU                     |        |        |        |
| Baud Rate                                                | 1.2/2.4/4.8/9.6/19.2/38.4 kbps |        |        |        |
| Maximum Wire Size                                        | 1.5mm <sup>2</sup> (16AWG)     |        |        |        |
| Maximum Torque                                           | 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                                     | 70 kPa to 106 kPa              |        |        |        |
| Pollution Degree                                         | 2                              |        |        |        |
| Mechanical Characteristics                               |                                |        |        |        |
| Mounting                                                 | DIN Rail                       |        |        |        |
| Unit Dimensions                                          | 72x95x70mm                     |        |        |        |
| IP Rating                                                | 51 (Front), 30 (Body)          |        |        |        |

## Accuracy

| Parameters  | Accuracy                                                 |                                                      | Resolution           |
|-------------|----------------------------------------------------------|------------------------------------------------------|----------------------|
|             | Direct Connected Input                                   | CT Input                                             |                      |
| Voltage     | $\pm 0.2\%$                                              |                                                      | 0.01V                |
| Current     | $\pm 0.2\%$                                              |                                                      | 0.001A               |
| P, Q, S     | $\pm 0.5\%$                                              |                                                      | 0.001W/var/VA        |
| kWh, kVAh   | IEC 62053-21: 2020 & AS<br>62053.21: 2023 Class 0.5      | IEC 62053-22: 2020 & AS<br>62053.22: 2023 Class 0.5S | 0.01kXh              |
| kvarh       | IEC 62053-23: 2020 Class 1<br>IEC 62053-24: 2020 Class 1 |                                                      | 0.01kvarh            |
| PF          | $\pm 0.5\%$                                              |                                                      | 0.001                |
| Frequency   | $\pm 0.02\text{Hz}$                                      |                                                      | 0.01Hz               |
| In (Cal.)   | $\pm 1.0\%$                                              |                                                      | 0.001A               |
| Harmonics   | IEC 61000-4-7 Class II                                   |                                                      | 0.001%               |
| Temperature | $\pm 1^\circ\text{C}$                                    |                                                      | 0.1 $^\circ\text{C}$ |

## Appendix B – Standards of Compliance

| Safety Requirements                                                              |                                                                                             |
|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| CE LVD 2014/35/EU                                                                | EN 61010-1: 2010 + A1: 2019<br>EN 61010-2-030: 2010                                         |
| Electrical Safety in Low Voltage Distribution Systems up to 1000Vac and 1500 Vdc | IEC 61557-12: 2021 (PMD)                                                                    |
| Products Safety Requirements and Tests<br>NMI<br>AC Voltage<br>Impulse Voltage   | IEC 62052-31: 2015<br>AS 62052.31: 2017+A1:2021<br>M13-1<br>4kV @ 1 minute<br>6kV, 1.2/50µs |
| Electromagnetic Compatibility<br>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 & Interruptions                                                     | EN 61000-4-11: 2004 + A1: 2017                                                              |
| Ring Wave                                                                        | EN 61000-4-12: 2017                                                                         |
| Mechanical Tests                                                                 |                                                                                             |
| Spring Hammer Test                                                               | IEC 62052-31: 2015 & AS 62052.31: 2017 + A1:2021                                            |
| Vibration Test                                                                   | IEC 62052-11: 2020 & AS 62052.11: 2023                                                      |
| Shock Test                                                                       | IEC 62052-11: 2020 & AS 62052.11: 2023                                                      |
| Revenue Metering Approval                                                        |                                                                                             |
| NMI M13-1 of Australia                                                           | Approval Mark: NMI XX/X/XXX                                                                 |

## Appendix C – Ordering Guide

|                                                                                   |  |  |  |  |  |  |  |  |  |                  |    |   |   |   |                                                                                                                                                                             |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|------------------|----|---|---|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|-------------------------------------|--|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |  |  | Version 20250110 |    |   |   |   |                                                                                                                                                                             |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| Product Code                                                                      |  |  |  |  |  |  |  |  |  |                  |    |   |   |   | Description                                                                                                                                                                 |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| PMC-340 Digital Three-Phase Energy Meter                                          |  |  |  |  |  |  |  |  |  |                  |    |   |   |   |                                                                                                                                                                             |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| Basic Function                                                                    |  |  |  |  |  |  |  |  |  |                  |    |   |   |   |                                                                                                                                                                             |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| A6                                                                                |  |  |  |  |  |  |  |  |  |                  |    |   |   |   | 3-Phase Metering, Bi-directional Energy, Demands and Max. Demands, Max. & Min., Monthly Energy Log, Multi-Tariff TOU, Setpoint, SOE Log, Data Recorder Log, 16MB Log Memory |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| Display                                                                           |  |  |  |  |  |  |  |  |  |                  |    |   |   |   |                                                                                                                                                                             |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| L                                                                                 |  |  |  |  |  |  |  |  |  |                  |    |   |   |   | 7-segment Backlit LCD Display                                                                                                                                               |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| Input Current~                                                                    |  |  |  |  |  |  |  |  |  |                  |    |   |   |   |                                                                                                                                                                             |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| A                                                                                 |  |  |  |  |  |  |  |  |  |                  |    |   |   |   | 10A (100A), Direct Connected Input                                                                                                                                          |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| B                                                                                 |  |  |  |  |  |  |  |  |  |                  |    |   |   |   | 1A (10A), CT Input                                                                                                                                                          |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| Input Voltage                                                                     |  |  |  |  |  |  |  |  |  |                  |    |   |   |   |                                                                                                                                                                             |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| 3                                                                                 |  |  |  |  |  |  |  |  |  |                  |    |   |   |   | 110-240VLN/190-415VLL (-20% to +15%)                                                                                                                                        |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| System Frequency                                                                  |  |  |  |  |  |  |  |  |  |                  |    |   |   |   |                                                                                                                                                                             |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| 5                                                                                 |  |  |  |  |  |  |  |  |  |                  |    |   |   |   | 45-65Hz                                                                                                                                                                     |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| I/O~                                                                              |  |  |  |  |  |  |  |  |  |                  |    |   |   |   |                                                                                                                                                                             |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| A                                                                                 |  |  |  |  |  |  |  |  |  |                  |    |   |   |   | 1xSS Pulse Output                                                                                                                                                           |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| B                                                                                 |  |  |  |  |  |  |  |  |  |                  |    |   |   |   | 1xDI                                                                                                                                                                        |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| C                                                                                 |  |  |  |  |  |  |  |  |  |                  |    |   |   |   | 1xSS Pulse Output + 1xDI                                                                                                                                                    |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| Communications                                                                    |  |  |  |  |  |  |  |  |  |                  |    |   |   |   |                                                                                                                                                                             |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| A                                                                                 |  |  |  |  |  |  |  |  |  |                  |    |   |   |   | 1xRS-485 Port                                                                                                                                                               |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| Protocol                                                                          |  |  |  |  |  |  |  |  |  |                  |    |   |   |   |                                                                                                                                                                             |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| M                                                                                 |  |  |  |  |  |  |  |  |  |                  |    |   |   |   | Modbus                                                                                                                                                                      |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| Display Language                                                                  |  |  |  |  |  |  |  |  |  |                  |    |   |   |   |                                                                                                                                                                             |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| E                                                                                 |  |  |  |  |  |  |  |  |  |                  |    |   |   |   | English                                                                                                                                                                     |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
|                                                                                   |  |  |  |  |  |  |  |  |  |                  |    |   |   |   |                                                                                                                                                                             |   |   |   |   |                                     |  |  |  |  |  |  |  |  |  |
| PMC-340                                                                           |  |  |  |  |  |  |  |  |  | -                | A6 | L | A | 3 | 5                                                                                                                                                                           | A | A | M | E | PMC-340-A6LA35AAME (Standard Model) |  |  |  |  |  |  |  |  |  |

~Device with Input Current "A" can work with I/O option "A" or "B".  
 Device with Input Current "B" is only available with I/O option "C".

## Contact us

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