PMC-340-A6

Digital Three-Phase Energy Meter

User Manual

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Standards Compliance

CE



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 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
  - Uln, 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 31st and Unbalance
  - Current K-Factor, Crest Factor, TDD, TDD Odd and TDD Even
  - Demand and Max. Demand for I, P, Q, S, Uln, 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 5VDC

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 ±1ms 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 (≤0.5s/day)
- Battery Life > 10 years

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

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

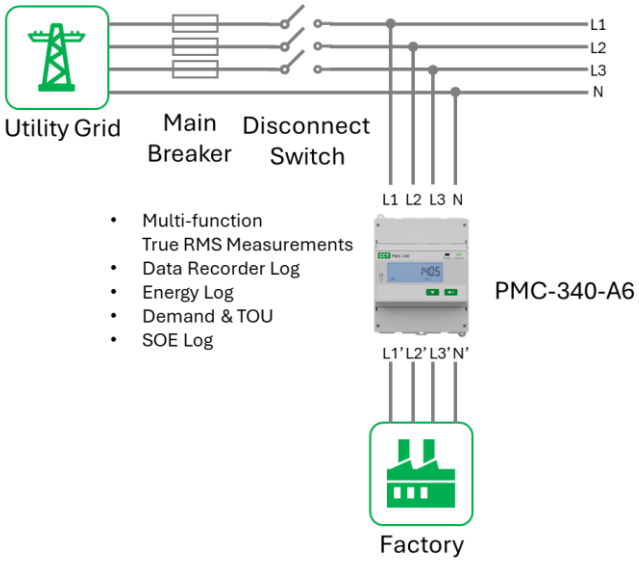


Figure 1-1 Typical Application

1.4 Getting More Information

Additional information is available from CET via the following sources:

- Visit www.cet-global.com
- Contact your local representative
- Contact CET directly via email or telephone

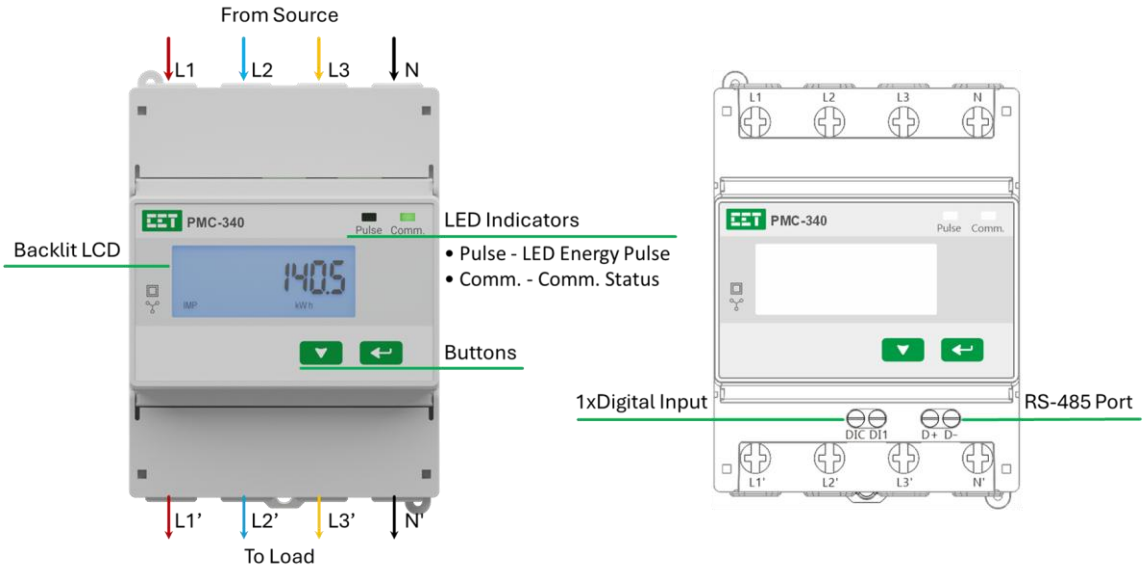
Chapter 2 Installation

Caution

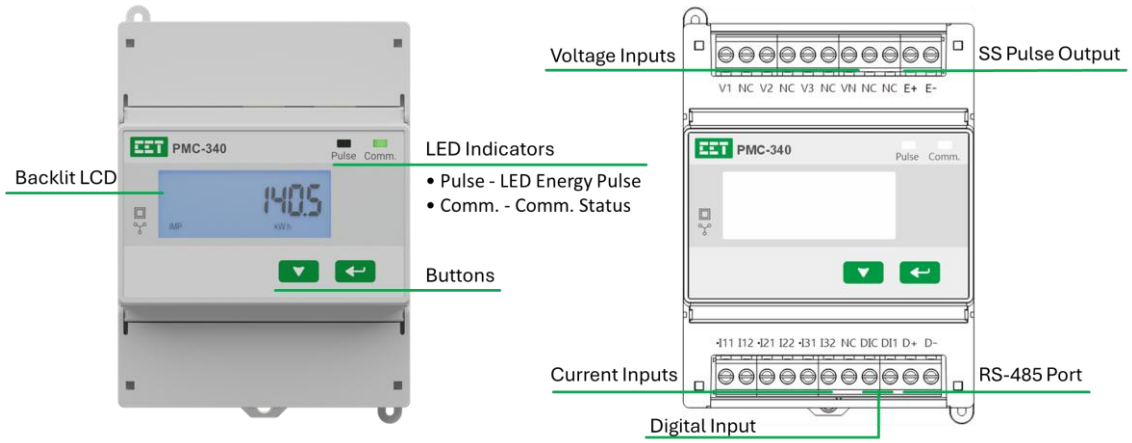
Installation of the PMC-340-A6 should only be performed by qualified, competent personnel that have the appropriate training and experience with high voltage and current devices. The meter must be installed in accordance with all local and national electrical codes.

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



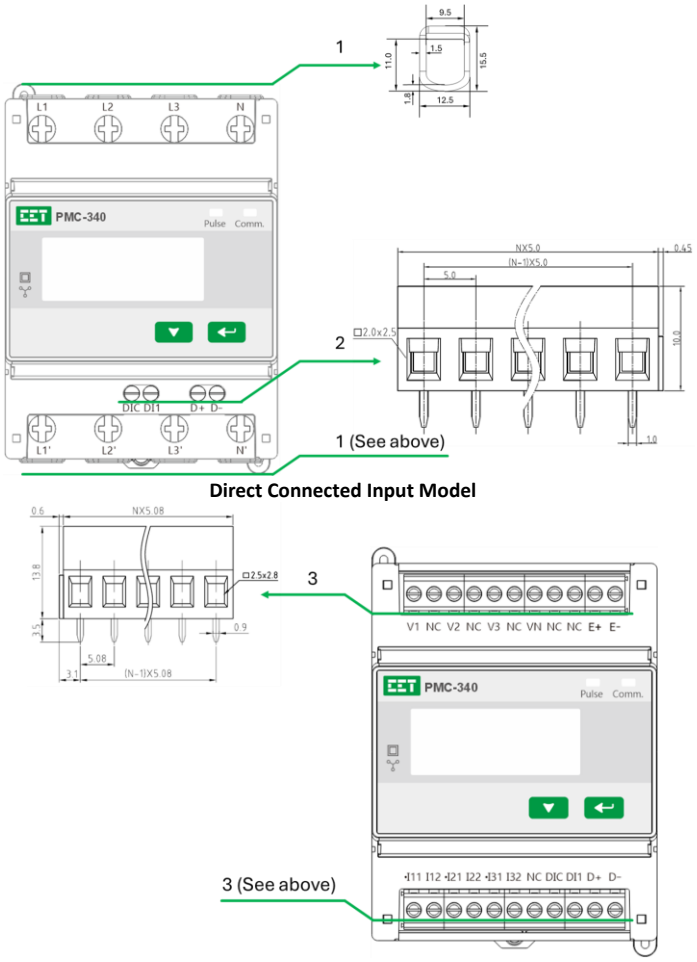
Direct Connected Input Model



CT Input Model

Figure 2-1 Appearance

2.2 Terminal Dimensions



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

Figure 2-2 Terminal Dimensions

2.3 Unit Dimensions

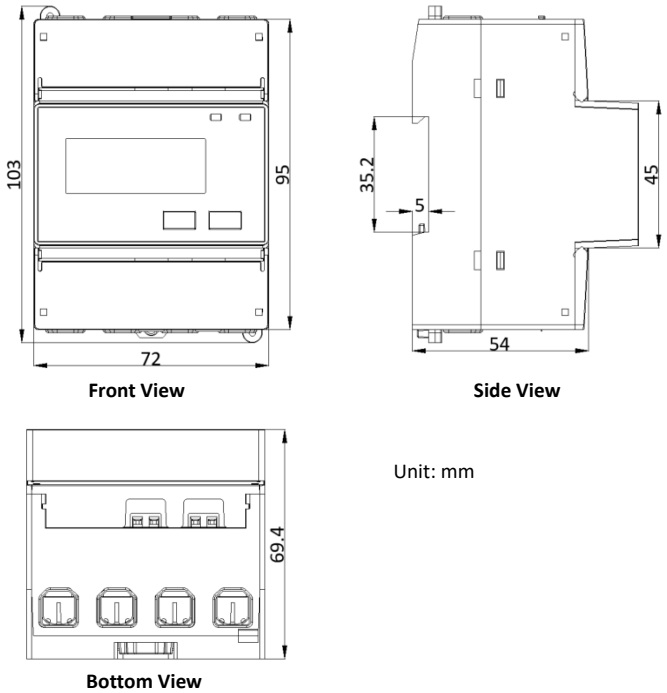


Figure 2-3 Unit Dimensions

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.

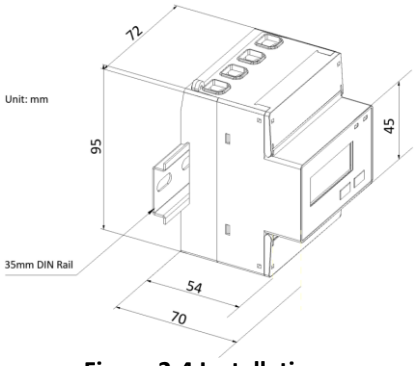
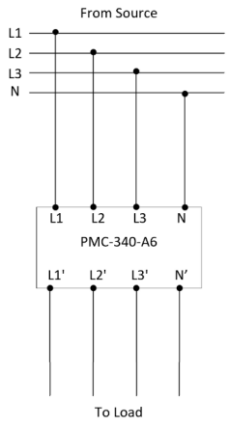


Figure 2-4 Installations

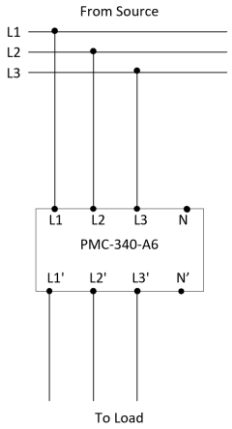
2.5 Wiring Connections

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.

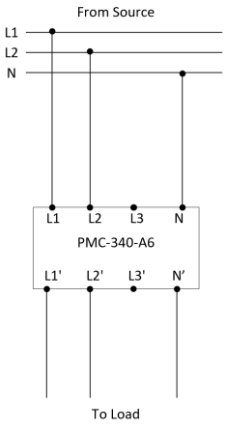
2.5.1 Direct Connected Input



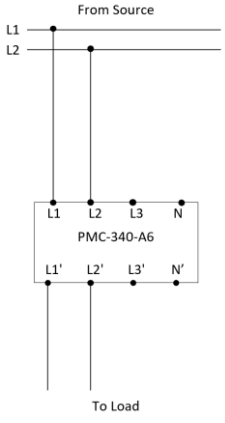
3P4W



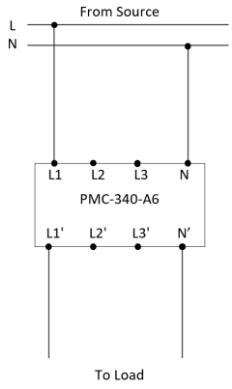
3P3W



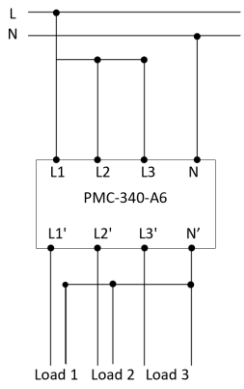
1P3W L-L-N



1P2W L-L



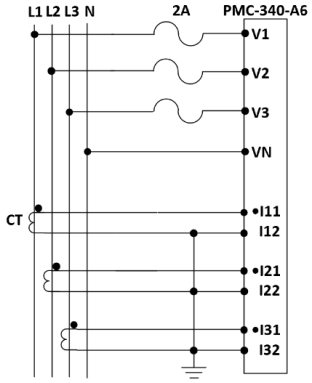
1P2W L-N



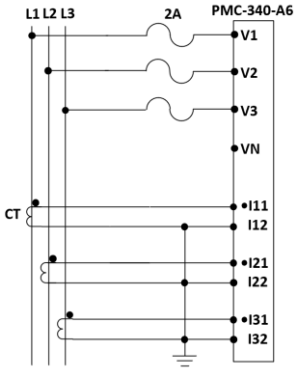
3x1P

Table 2-1 100A Direct Connected Input Wiring Connection

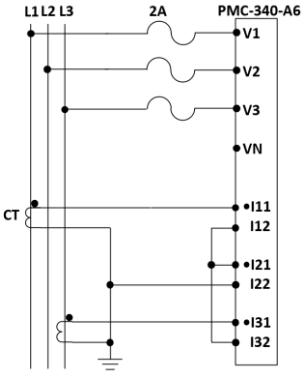
2.5.2 5A CT Input



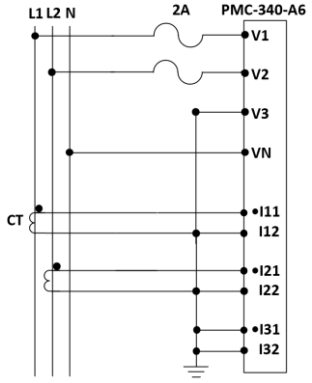
3P4W with 3CTs



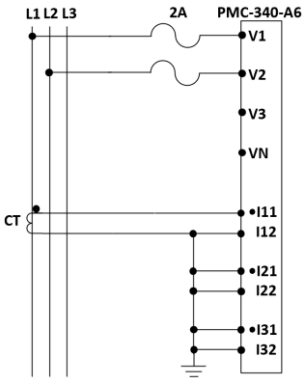
3P3W with 3CTs



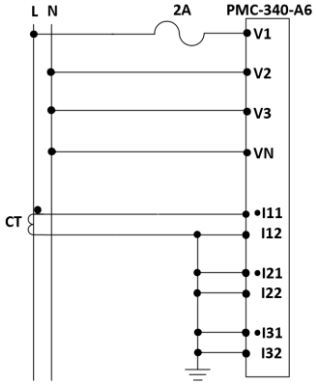
3P3W with 2CTs



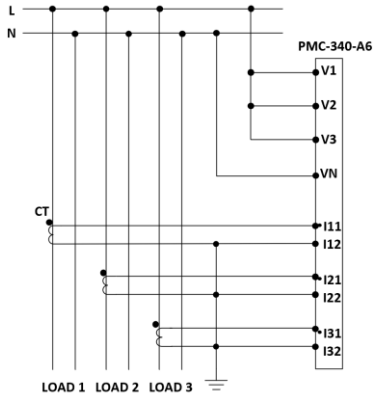
1P3W L-L-N with 2CTs



1P2W L-L with 1CT



1P2W L-N with 1CT



3x1P with 3CTs

Table 2-2 5A CT Input Wiring Connection

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.

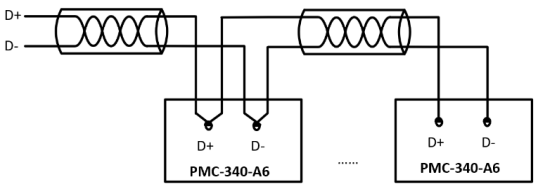


Figure 2-5 RS-485 Wiring

2.7 Digital Input

The following figure illustrates the Digital Input connections:

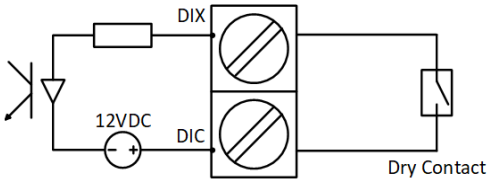


Figure 2-6 Digital Input

2.8 Pulse Output

The following figure illustrates the Solid State Relay connections for Energy Pulsing on the PMC-340-A6.

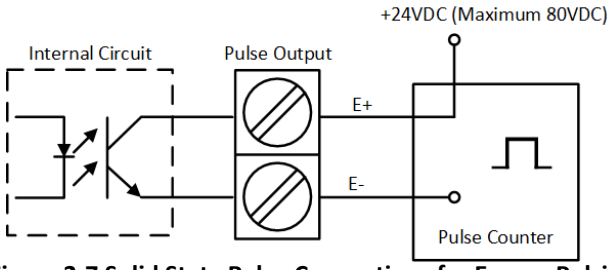


Figure 2-7 Solid State Relay Connections for Energy Pulsing

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.

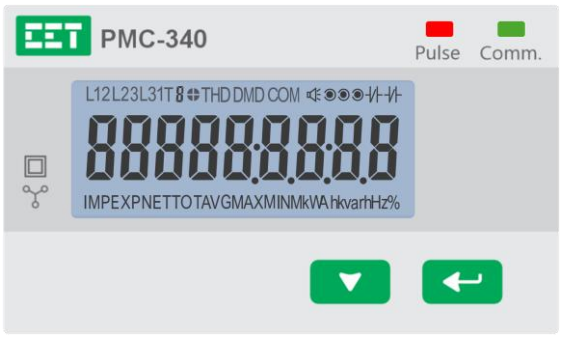


Figure 3-1 Front Panel Display

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 **Data Display** mode will jump to the next available menu item, depending on where the display is at the time. For example, if the display currently shows **Ib** under the **U/I** menu, pressing <↩> now will immediately jump to the **Power** menu.	Pressing this button for two seconds toggles between **Data Display** mode and **Setup Configuration** mode. Once inside the **Setup Configuration** mode, pressing this button selects a parameter for modification. Once a parameter is selected, the parameter value blinks while it's being changed. 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 save the current numeric value into memory.

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 T*x* indicates Tariff *x (x=1 to 5)*
	Quadrant Indicator
THD DMD	Total Harmonic Distortion/Demand Indicators
COM	Communication Activities Indicator
	Setpoint Alarm Indicator
	DI status
	DO status
888888888	Main Display Area for Measurements/Time/Version information
IMPEXPNETTOTAVG	kxh Import/Export/Net/Total/Average Indicators
MAXMIN	Max./Min. Indicators
MkWAhkvarhHz%	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".

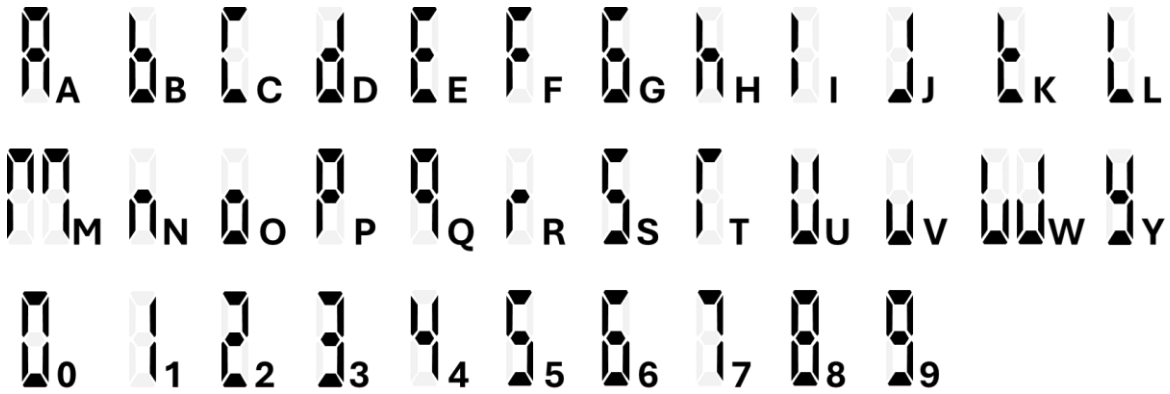


Figure 3-2 LCD Display Symbols

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 <▼>

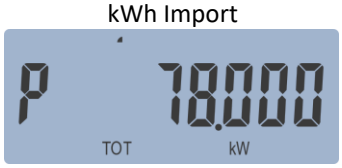
button to scroll through parameters or press <↩> to navigate to the next menu.



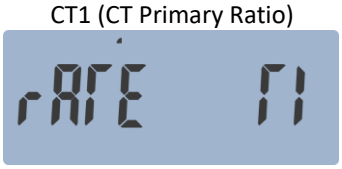
kWh Import



CT1 (CT Primary Ratio)



P/P Total



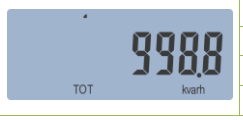
Present Tariff Rate

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 Uln, Uln 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
 **UI (Voltage/Current)**		Ua		Uab
		Ub		Ubc
		Uc		Uca
		Uln Average		Ull Average
		Ia		In
		Ib		
		Ic		
		I Average		
		Frequency		Ua/Uab Angle
				Ub/Ubc Angle
				Uc/Uca Angle
		Ia Angle		
		Ib Angle		
		Ic Angle		
 **PoWEr (Power)**		Pa		Qa
		Pb		Qb
		Pc		Qc
		P Total		Q Total
		Sa		PFa
		Sb		PFb
		Sc		PFc
		S Total		PF Total
 **EnErGy (Energy)**		kWh Import		kvarh Import
		kWh Export		kvarh Export
		kWh Net		kvarh Net
		kWh Total		kvarh Total
		kVAh Total		
 **ToU EnErGy (TOU Energy)**		T1 kWh Import		
		T1 kWh Export		
		T1 kvarh Import		
		T1 kvarh Export		
		T1 kVAh Total		

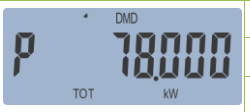
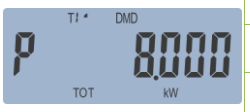
rEAL dMd (Demand)		Ia Demand		Ua Demand
		Ib Demand		Ub Demand
		Ic Demand		Uc Demand
		Uab Demand		Temperature Demand
		Ubc Demand		
		Uca Demand		
		P Total Demand		
		Q Total Demand		
		S Total Demand		
ToU dMd (TOU DMD)		T1 P Total DMD		
		T1 Q Total DMD		
		T1 S Total DMD		
MAx dMd (Max. DMD)		Ia Max. DMD		Ua Max. DMD
		Ib Max. DMD		Ub Max. DMD
		Ic Max. DMD		Uca Max. DMD
		Uab Max. DMD		Temperature Max. DMD
		Ubc Max. DMD		
		Uca Max. DMD		
		P Tot. Max. DMD		T1 P Tot. Max. DMD
		Q Tot. Max. DMD		T1 Q Tot. Max. DMD
		S Tot. Max. DMD		T1 S Tot. Max. DMD
THd (THD)		Ua/Uab THD		Ia THD
		Ub/Ubc THD		Ib THD
		Uc/Uca THD		Ic THD
TEMPEr (Temperature)		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/HD*xx* is phase AB/BC/CA Voltage THD/TOHD/TEHD/HD*xx*.

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 Menu Main Sub	Description	Options/Range	Default
ProGrAM	Setup Configuration	/	/
PW	Enter Password	0 to 9999	0
SET PW	Set New Password		
	Enter New Password	0 to 9999	0
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 (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 Exp., Q Imp., Q Exp.	P Tot.
CST	Select Pulse Constant[8]	1-999,999	500
WId	Set Pulse Width[9]	30-500ms	50
TIME SET	Date and Time		
	Enter the Current Date	YY-MM-DD	/
	Enter the Current Time	HH:MM:SS	/
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[13]	/	/
CCnT	Counter for Important Setup Parameter Changes via Communications[13]	/	/

Table 3-3 Setup Parameters

Notes:

1. 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.

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 5VDC. 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 **DI** can be configured as a Status Input or Pulse Counter.	0=Status Input 1=Pulse Counter*
DI1 Debounce	Specifies the minimum duration the **DI** must remain in the Active or Inactive state before a DI state change is considered to be valid.	1 to 1000 (ms) 20ms*
DIx 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 4,294,967,295 impulses per kWh or kvarh. If the **DO Energy Pulsing** (**do**) parameter is disabled, the PMC-340-A6 will output a 1PPS signal with a pulse width of 500ms ± 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 100,000,000.0 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 **# of Sliding Windows** is set as 1 and the **Demand Period** 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	The **Self-Read Time** allows the user to specify the time and day of the month for the Max. Demand Self-Read operation. The **Self-Read Time** supports 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 ≤ 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. • A 0xFFFF value will disable the Self-Read operation and replace it with manual operation. A manual reset will cause the Max. Demand of **This Month** to be transferred to the Max. Demand of **Last Month** and then reset. The terms **This Month** and **Last Month** will become **Since Last Reset** and **Before Last Reset**.	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:

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

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

THDr:

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

where the denominator represents the total RMS value and the numerator represents the RMS value of the harmonics from 2^{nd} to 31^{st}.

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.

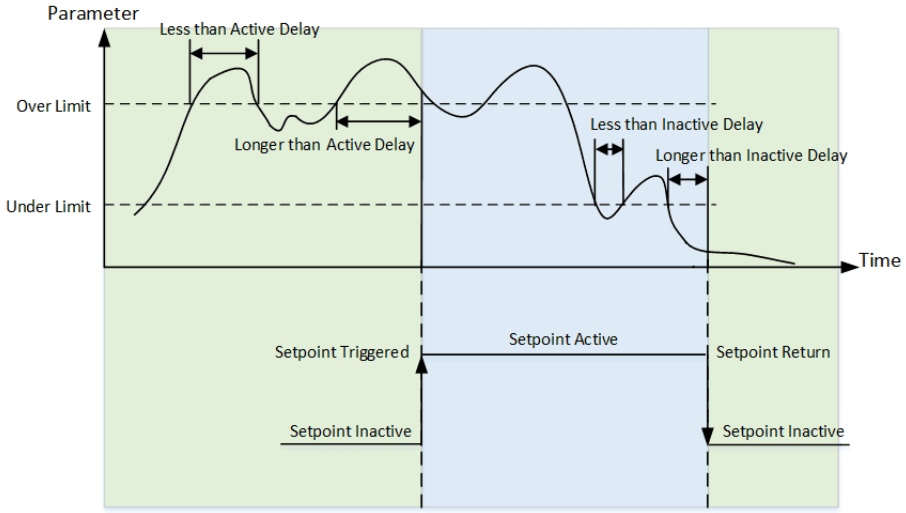


Figure 4-1 Over Setpoint

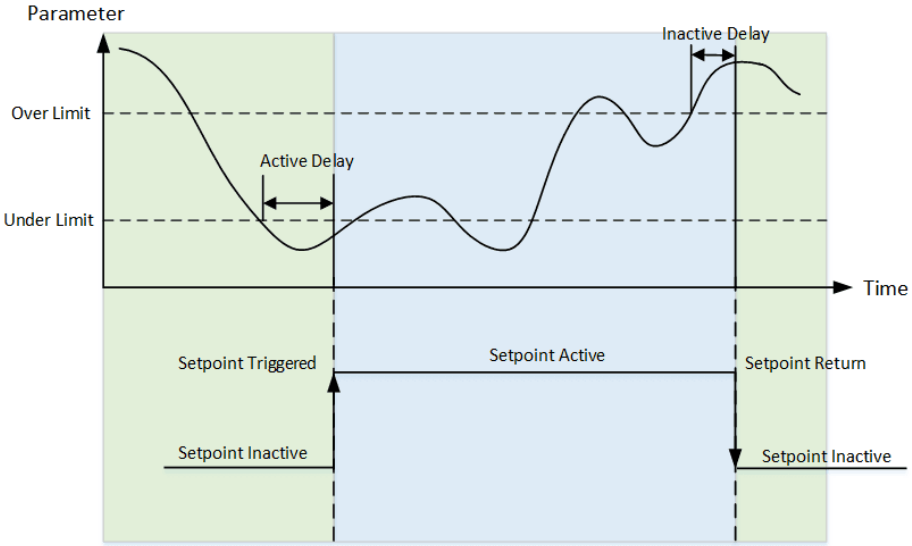


Figure 4-2 Under Setpoint

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

Parameter	Definition	Options/Default*
Setpoint Type	Over or Under Setpoint.	0=Disabled* 1=Over Setpoint 2=Under Setpoint
Setpoint Parameter	Specify the parameter to be monitored.	**See Table 4-4**
Over Limit	Specify the value that the setpoint parameter must exceed for Over Setpoint to become active or for Under Setpoint to become inactive.	0*
Under Limit	Specify the value that the setpoint parameter must go below for Over Setpoint to become inactive or for Under Setpoint to become active.	
Active Delay	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 **Active Delay** is between 0 and 9999 seconds.	0 to 9999s, 10s*
Inactive Delay	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 **Inactive Delay** 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 D1I 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 ≤ Hour ≤ 23 and 1 ≤ Day ≤ 28. For example, the value 1512 means that the Self-Read will take place at 12:00 pm on the 15th 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:

Active Energy	kWh Import/Export, Tariff 1 to Tariff 5 kWh Import/Export
Reactive Energy	kvarh Import/Export, Tariff 1 to Tariff 5 kvarh Import/Export
Apparent Energy	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 ±1ms 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 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 1st. 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.	Format: YYYYMMDDHH 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 3rd 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 (Master Station to PMC-340-A6)	
Field Name	**Bytes**
Slave Address	1 Byte
Function Code (0x03)	1 Byte
Starting Address Hi	1 Byte
Starting Address Lo	1 Byte
No. of Registers Hi	1 Byte
No. of Registers Lo	1 Byte
Error Check (CRC)	2 Bytes

Response Packet (PMC-340-A6 to Master Station)	
Field Name	**Bytes**
Slave Address	1 Byte
Function Code (0x03)	1 Byte
Byte Count N	1 Byte
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 5-1 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 (Master Station to PMC-340-A6)	
Field Name	**Bytes**
Slave Address	1 Byte
Function Code (0x10)	1 Byte
Starting Address Hi	1 Byte
Starting Address Lo	1 Byte
No. of Registers Hi	1 Byte
No. of Registers Lo	1 Byte
Byte Count N	1 Byte
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

Response Packet (PMC-340-A6 to Master Station)	
Field Name	**Bytes**
Slave Address	1 Byte
Function Code (0x10)	1 Byte
Starting Address Hi	1 Byte
Starting Address Lo	1 Byte
No. of Registers Hi	1 Byte
No. of Registers 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		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	x1	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		
0076	RO	Displacement PFb	FLOAT	x1	-
0078	RO	Displacement PFc	FLOAT		
0080~0089	--	Reserved	--	--	--
0090	RO	DI1 Status	UINT32		
0092	RO	FP Counter[1]	UINT16	x1	-
0093	RO	Comm. Counter[1]	UINT16	x1	-
0094	RO	SOE Log Pointer[2]	UINT32		
0096	RO	Data Recorder #1 Log Pointer[2]	UINT32		
0098	RO	Data Recorder #2 Log Pointer[2]	UINT32		
0100	RO	Setpoint Status[3]	UINT32		
0102	RO	Wiring Diagnostic Status[4]	UINT16		
0103	--	Reserved	--	--	--
0104	RO	Device Operating Time[5]	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 Max. 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	$Ull_{max.} < 20\%*U_{nom.}$ (and $I \neq 0$) or any two Ull differ by $>20\%*U_{nom.}$ (Register 6000) (3P4W only)
B03	$I_{max.} > 1\%*I_{nom.}$ 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 1,000,000,000 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[1)]	INT16	-	-
0981	RO	High-order Byte: Year (10-90) Low-order Byte: Month (1-12)	INT16	-	-
0982	RO	High-order Byte: Day (1-31) Low-order Byte: Hour (0-23)	INT16	-	-
0983	RO	High-order Byte: Minute (0-59) 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 DI Pulse Counter= Pulse Counter x 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/HD*xx* is phase AB/BC/CA voltage THD/TOHD/TEHD/HD*xx*.

2) When the **Wiring Mode** is **1P2W L-N** or **1P2W L-L**, the L2 and L3 phase voltages THD/TOHD/TEHD/HD*xx* have no meaning, and their registers are reserved. When the **Wiring Mode** is **1P3W L-N,** the L3 phase voltages THD/TOHD/TEHD/HD*xx* 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

5.10.6 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	10 to 90 (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	
20006-20007	RO	Parameter 1		According to Data Format for parameters in Table 5-35
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	10 to 90 (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	
20044-20045	RO	Parameter 1		According to Data Format for parameters in Table 5-35
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:

1. Writing a value *n* to the Data Recorder Index will load the nth 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 ≤ 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

5.10.7 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:

Register Address = 10000 + Modulo [(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	10-90 (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[1]	-
+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 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			Under Ic Setpoint Active/Return
	121			Under Temperature Setpoint Active/Return
	122		1=Closed 0=Open	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 Max. 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[1]

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

5.11 Device Setup

5.11.1 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[1]	UINT32	1 to 30,000 (A), 5* (CT Input)
6006	RW	CT Secondary[1]	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[1]	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[3]	UINT16	0=RMS, 1=Fundamental*
6027	--	Reserved	--	--
6028	RW	THD Calculation[4]	UINT16	0= THDf*, 1= THDr
6029	RW	Demand Period[5]	UINT16	1 to 60 (minutes), 15*
6030	RW	No. of Sliding Windows[5]	UINT16	1 to 15, 1*
6031-6032	--	Reserved	--	--
6033	RW	Self-Read Time[6]	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[7]	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[8]	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	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:

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

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

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

   where the denominator represents the total RMS value and the numerator represents the RMS value of the harmonics from 2^{nd} to 31^{st}.
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 ≤ 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.

- A 0xFFFF value means the automatic self-read operation is disabled and the log will be transferred manually.

7. 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.
8. 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

5.11.2 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 Weigh	UINT32	1* to 1,000,000

Table 5-31 I/O Setup Parameters

5.11.3 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	WO	Modify Level 2 (Read/Set Time) Password	UINT16	0 to 9999, 2222*
6304	WO	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:

1. 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.
2. 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.
3. 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.
4. Only when the user connects the meter with the Level 3 password, the Level 1 / Level 2 password could be read/write.
5. 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.

5.11.4 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

5.12 Data Recorder Setup

DR #1 Setup				
Register	**Property**	**Description**	**Format**	**Range, Default***
6500	RW	Trigger Mode[1]	UINT16	0=Disabled, 1=Triggered by Timer*
6501	RW	Recording Mode[1]	UINT16	0=Stop-when-Full, 1=First-In-First-Out*
6502	RW	Recording Depth[1, 3]	UINT16	0 to 65,535, 60,000*
6503	RW	Recording Interval[1]	UINT32	1 to 3,456,000s, 300s*
6505	RW	Offset Time[2]	UINT16	0* to 43,200s
6506	RW	Number of Parameters[1, 3]	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[1]	UINT16	0=Disabled, 1=Triggered by Timer*
6524	RW	Recording Mode[1]	UINT16	0=Stop-when-Full, 1=First-In-First-Out*
6525	RW	Recording Depth[1, 3]	UINT16	0 to 65,535, 60,000*
6526	RW	Recording Interval[1]	UINT32	1 to 3,456,000s, 300s*
6528	RW	Offset Time[2]	UINT16	0* to 43,200s
6529	RW	Number of Parameters[1, 3]	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

5.13 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	
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	
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	
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:

1. 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 5-37 Setpoint Parameters

2. If D1I 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".

5.14 TOU Setup

5.14.1 Basic

Register	Property	Description	Format	Range/Option
7000	RO	Current Tariff[1]	UINT16	0=T1, 1=T2, 2=T3, 3=T4 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 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 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 20th, 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

5.14.2 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[1]	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 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.

5.14.3 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[1]		UINT16	Default=0x0000
+1	RW	Period #1 Tariff		UINT16	0=T1, …, 4=T5
+2	RW	Period #2 Start Time	High-order Byte: Hour Low-order Byte: Min	UINT16	0 ≤ Hour < 24 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.

5.14.4 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 Alternative Day #2's Date is 8700+3 = 8703.

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

5.15 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	RW	High-order Byte: Year	UINT16	10-90 (Year-2000)
			Low-order Byte: Month		1 to 12
60001	9001	RW	High-order Byte: Day	UINT16	1 to 31
			Low-order Byte: Hour		0 to 23
60002	9002	RW	High-order Byte: Minute	UINT16	0 to 59
			Low-order Byte: Second		0 to 59
60003	9003	RW	Millisecond	UINT16	0 to 999
60004 ~ 60005	9004 ~ 9005	RW	UNIX Time	UINT32	0x4B3D3B00~0xE398E47F The corresponding time is 2010.01.01 00:00:00 to 2090.12.31 23:59:59 (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).

5.16 Clear/Reset Control

Register	Property	Description	Format	Note
9600	WO	Clear Monthly Energy Log[1]	UINT16	Writing "0xFF00" to the register execute the described action.
9601	WO	Clear Energy[2]		
9602	WO	Clear Monthly Energy Log of This Month[3]		
9603	WO	Clear Max. Demand Log of This Month (Since Last Reset)[4]		
9604	WO	Clear All Demand Registers[5]		
9605	WO	Clear Max./Min. Log of This Month (Since Last Reset)[6]		
9606	WO	Clear All Max./Min. Log[7]		
9607	WO	Clear Device Operating Time		
9608	WO	Clear All Data[8]		
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.

5.17 Meter Information

Register		Property	Description	Format	Note
60200~60219	9800~9819	RO	Meter model	UINT16	See Note 1
60220	9820	RO	Firmware Version	UINT16	e.g. 10000 shows the version is V1.00.00
60221	9821	RO	Protocol Version	UINT16	e.g. 10 shows the version is V1.0
60222	9822	RO	Firmware Update Date: Year-2000	UINT16	e.g. 240110 means January 10, 2024
60223	9823	RO	Firmware Update Date: Month	UINT16	
60224	9824	RO	Firmware Update Date: Day	UINT16	
60225	9825	RO	Serial Number	UINT32	
60227-60228	9827-9828	--	Reserved	--	--
60229	9829	RO	Feature Code	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 od 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)	220VAC	230VAC	240VAC
Overrange (%Un)	125%	120%	115%
Range (V)	88-276VAC (Self-powered)		
Burden	<2VA/phase		
Direct Input			
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		
CT Input			
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	1-0xFFFFFFFF 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^2 (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	±0.2%		0.01V
Current	±0.2%		0.001A
P, Q, S	±0.5%		0.001W/var/VA
kWh, kVAh	IEC 62053-21: 2020 & AS 62053.21: 2023 Class 0.5	IEC 62053-22: 2020 & AS 62053.22: 2023 Class 0.5S	0.01kXh
kvarh	IEC 62053-23: 2020 Class 1 IEC 62053-24: 2020 Class 1		0.01kvarh
PF	±0.5%		0.001
Frequency	±0.02Hz		0.01Hz
In (Cal.)	±1.0%		0.001A
THD	IEC 61000-4-7 Class II		0.001%
Temperature	±1°C		0.1°C

Appendix B – Standards of Compliance

Safety Requirements	
CE LVD 2014/35/EU	EN 61010-1: 2010 + A1: 2019 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 NMI AC Voltage Impulse Voltage	IEC 62052-31: 2015 AS 62052.31: 2017+A1:2021 M13-1 4kV @ 1 minute 6kV, 1.2/50µs
Electromagnetic Compatibility EMC 2014/30/EU (EN 61326: 2013)	
Electrostatic Discharge	EN 61000-4-2: 2009
Radiated Fields	EN 61000-4-3: 2006 + A1: 2008 + A2: 2010
Fast Transients	EN 61000-4-4: 2012
Surges	EN 61000-4-5: 2014 + A1: 2017
Conducted Disturbances	EN 61000-4-6: 2014
Magnetic Fields	EN 61000-4-8: 2010
Voltage Dips & 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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