

Energy Management Solution



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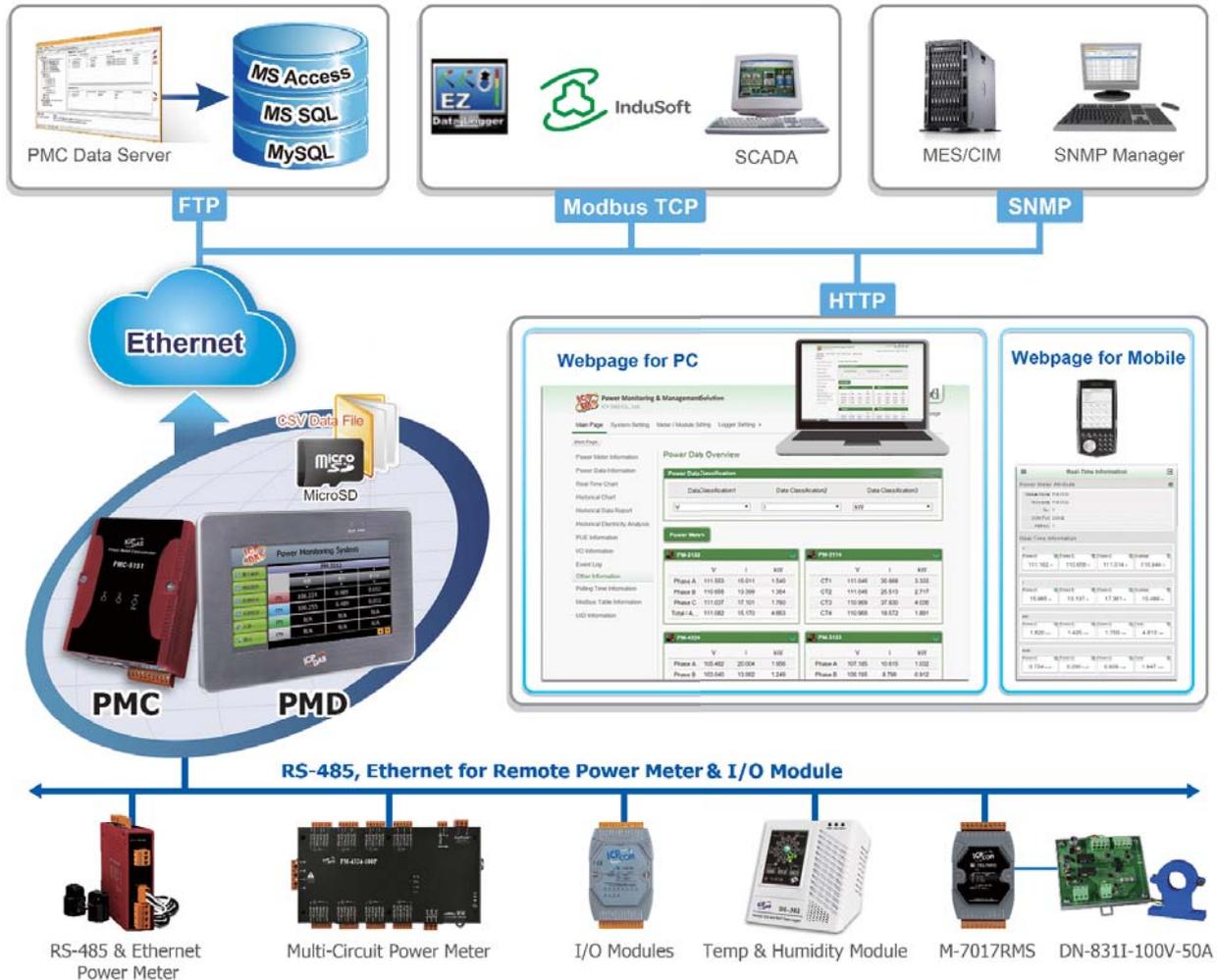


Energy Management Solutions - EM Brochure

- True RMS Input Module
- TouchPAD - VPD series
- Smart Power Meter
- Smart Power Meter Concentrator
- Power Data Management Software

Or refer to <http://www.icpdas.com/root/support/catalog/pdf/Brochure/EM-Brochure-en.pdf>

1. Energy Management Solution



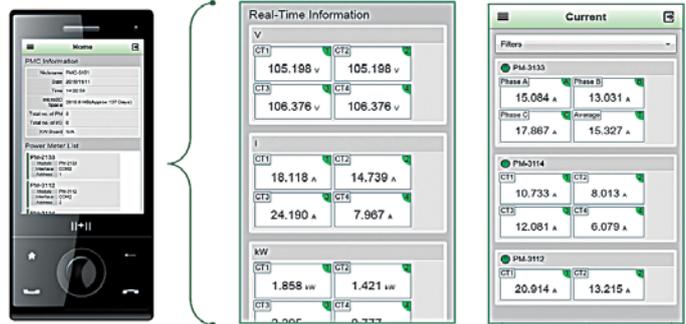
▲ System Architecture

For the resources of the earth are getting depleted faster in recent years, countries around the world and all walks of life all set off a wave of energy saving and carbon reduction in order to avoid the waste of resources and pursue living a sustainable life to extend earth's resources. Under the trend of energy saving and carbon reduction, power monitoring gradually becomes an important project for maximizing energy efficiency by power monitoring always contributing to significant energy savings no matter on the individual, corporate or national level. In order to achieve more efficient use of energy and reduce resources consumption, ICP DAS provides an innovative total solution in energy saving by connecting PMC/PMD (Power Meter Concentrator) to the Power Meters via RS-485 or Ethernet interface, it can measure and monitor the power consumption of the devices, machines, lighting, air conditioning or other electricity equipments. In addition, PMC/PMD also provides power demand management and alarm notification functions. With the integration of ICP DAS I/O modules and the standard Modbus I/O devices, it can perform logic control or load shedding of the devices based on the power demand in real time. PMC/PMD also supports Modbus TCP/RTU protocol for seamless integration with SCADA. So that the administrator can monitor the status of power consumption of each device and perform statistics and analysis of the power information, thus improving the overall efficiency in electricity consumption to save costs on utility bills.

This innovative total solution for energy saving includes: front-end Smart Power Meter, Power Meter Concentrator, back-end software tool for database import operation (PMC Data Server) and InduSoft SCADA software. In addition to hardware devices, ICP DAS also provides total solution so that the user could easily view power data by their mobile phones or PC, the administrator could set up the system quickly and the data can be recorded in real time for energy consumption inquiry to achieve effective energy saving. During the early stage, if the scale of the application is small, the user could simply use Smart Power Meter and PMC/PMD to set up a simple power monitoring system, once the scale of the application is expanded, the user could get the back-end software tool involved and build an easy-to-expand power monitoring system via blocks stacked structure. By this way, the system will be highly flexible and could be implemented in phases to meet various requirements.

2. Power Meter Concentrator

PMC/PMD Features:



No extra software tool, using browsers to perform system operations

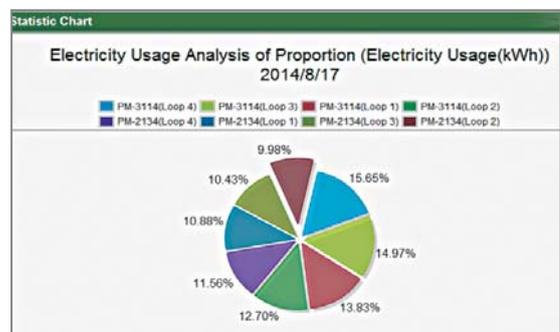
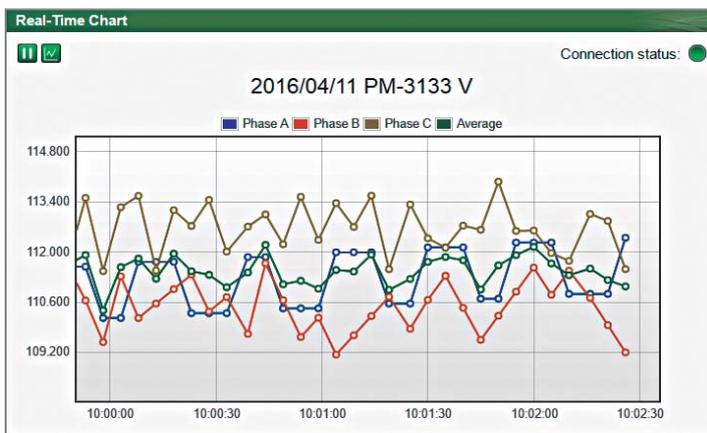
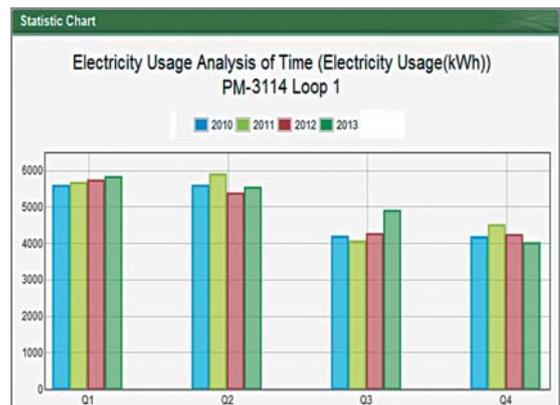
Featuring web-based HMI for easy operations, the user could connect to PMC/PMD webpage via browsers to view the power data, set up system parameters, manage power demand and perform logic editing function for alarm notification.

Built-in Micro SD card for power data logging

The PMC/PMD features a built-in Micro SD card. After the PMC/PMD retrieving the power data from the power meter, the system will save the power data in CSV format in the Micro SD card and regularly send back the data files to the backend management center for data analysis and statistics.

Display real-time or historical power data trend

In addition to display power data of the power meter in text form, the power data can also be displayed in real-time and historical trend chart for user to easily identify the variation of the electricity usage of the devices.



FTP Server/Client for data file management and file recovery mechanism supported

The built-in FTP Client function of PMC/PMD allows regular transmission of the power data logger files saved in the Micro SD card of PMC/PMD to the backend management center for data analysis and statistics. The PMC/PMD offers a complete data file recovery mechanism so that when experiencing network disconnection, the data log files will be recovered after the network is resumed to ensure the system operates properly. With the FTP Server of PMC/PMD, the user could also use FTP Client utility to retrieve the power data files saved in PMC/PMD from the PC side easily.

■ Built-in IF-THEN-ELSE logic engine for thought-out power demand management and auto alarm notification when unusual events occurs

PMC/PMD is equipped with IF-THEN-ELSE logic engine. The user could complete the control logic via web page and download the logic rules to the PMC/PMD. The logic engine will loop execute the rules in order. By editing the IF-THEN-ELSE logic rules, the user could include the following information in the IF condition, such as: "fail to connect to power meter", "FTP upload failed", "insufficient disk space", "power demand management", "abnormal power data", etc. In addition, the Schedule setting and channel values of I/O modules that are connected to the PMC/PMD can be also included in the IF condition. When the evaluation of the IF condition is matched, the corresponding Action will be executed (such as: Email/SMS alarm message sending or AO/DO channel value of the I/O modules setting). By this way, the user could quickly implement applications for power demand management, electricity control of the devices and alarm notification sending.

The image shows two screenshots from the ICPDAS web interface. The left screenshot, titled "Rule Overview", displays a list of rules. Rule 1 is expanded to show its logic: IF COM2 PM-3112(3:Room3) CT1 Actual Demand < 30, THEN COM2 PM-3112(3:Room3) DO0 = ON (One Time), ELSE COM2 PM-3112(3:Room3) DO0 = OFF (One Time). Rule 2 is also shown with similar logic for a different room. The right screenshot, titled "Rule Content Setting", shows the configuration for a rule. It has three sections: IF, THEN, and ELSE. The IF section has a dropdown for "Set a Condition" with a menu open showing options like "Power Meter", "Connection Status", "SD Card Status", "Basic Values", "Statistical Values", and "Other Information". The THEN and ELSE sections have dropdowns for "Set an Action" with a menu open showing options like "Actual Demand", "Forecast Demand", "Hourly Maximum Demand", "Daily Maximum Demand", "Monthly Maximum Demand", "Daily Accumulated Electricity", "Monthly Accumulated Electricity", and "Yearly Accumulated Electricity".

■ Provide Schedule function

PMC/PMD provides Schedule function that allows to edit logic for applications that requires Schedule function. The Calendar interface allows to easily set up the schedule for weekdays or weekends so that the user could schedule the operations for the devices as required for power saving.

The screenshot shows the "Schedule Content Setting" interface. It includes a "Mode" section with radio buttons for "Calendar" (selected) and "Repeat". The "Date" section has a "Starting Month" dropdown set to "2013 November" and a "Duration" dropdown set to "3 Month(s)". There is a "Time Range(s)" section with a time range of "08:00:00 ~ 17:00:00" and an "Add" button. Below this are "Select All", "Unselect All", "Select Weekday", and "Select Weekend" buttons. The main area shows three calendar grids for the years 2013, 2013, and 2014, with days of the week and dates displayed. "In Range" and "Out of Range" buttons are also present.

■ Provide historical power data statistics report

PMC/PMD provides historical data report inquiry and display function, the easy-to-read daily and monthly report of the historical power data would help to understand current electricity usage of the devices.

The screenshot shows a "Central Air Conditioning - Monthly Report" table. The table has columns for Date, Max. Demand (kW), kW/h (kWh), Avg. PF (%), Lc(A), Lc(A), Lc(A), Vc(V), Vc(V), Vc(V), kVA, and Accr Tot. (kvarh). The data is organized into rows for each day of the month. At the bottom of the table, there are summary statistics: "Total Electricity: 3633.401 kWh", "Monthly Highest Usage: 5.625 kW", and "Occurrence Time: 2015/9/14 10:14".

Date	Max. Demand (kW)	kWh (kWh)	Avg. PF (%)	Lc(A)	Lc(A)	Lc(A)	Vc(V)	Vc(V)	Vc(V)	kVA	Accr Tot. (kvarh)
1	4.934	117.189	94.2	15.495	13.494	17.494	111.497	110.497	112.506	5.183	1.72
2	4.934	117.223	94.3	15.499	13.493	17.495	111.499	110.51	112.495	5.183	1.718
3	4.931	117.219	94.3	15.499	13.495	17.493	111.499	110.505	112.499	5.183	1.716
4	4.931	117.188	94.3	15.499	13.495	17.494	111.503	110.498	112.492	5.183	1.719
5	4.93	117.213	94.3	15.499	13.494	17.494	111.5	110.506	112.501	5.183	1.719
6	4.934	117.189	94.2	15.495	13.496	17.494	111.494	110.493	112.498	5.183	1.72
7	4.935	117.207	94.3	15.498	13.494	17.493	111.498	110.496	112.501	5.183	1.718
8	4.93	117.215	94.3	15.498	13.493	17.494	111.495	110.502	112.498	5.183	1.718
9	4.938	117.211	94.3	15.499	13.493	17.494	111.498	110.514	112.49	5.183	1.719
10	4.938	117.197	94.2	15.496	13.494	17.493	111.496	110.511	112.5	5.183	1.72
11	4.938	117.213	94.3	15.499	13.494	17.495	111.498	110.519	112.5	5.184	1.718
12	4.93	117.203	94.3	15.499	13.495	17.494	111.5	110.494	112.5	5.183	1.719
13	4.93	117.221	94.3	15.498	13.493	17.491	111.493	110.494	112.495	5.183	1.716
14	4.943	117.211	94.3	15.499	13.493	17.495	111.499	110.5	112.512	5.183	1.718
15	4.938	117.211	94.3	15.495	13.495	17.494	111.499	110.501	112.5	5.183	1.718

■ Modbus TCP/RTU for seamless integration with SCADA

The PMC/PMD supports Modbus TCP/RTU Slave protocol to connect to SCADA software or HMI devices in control center so that it could perform real-time monitoring and control of the electricity usage for the devices. Therefore, the regulation of the system will be more flexible.

■ Provide Timer Function

Timer function provides Timeout/Not Timeout status for condition evaluations. With the timer function, the users are able to edit logic that requires timing approach. In addition, the timer function can be reset/started in real time that increases flexibility when performing logic control.

Support a variety of wide-range I/O modules to achieve power control and load shedding of the devices

According to the requirements of the application and based on the devices connected, the PMC/PMD is able to connect to M-7000 I/O modules, standard Modbus TCP/RTU Slave modules or DO Relay channel of the PM Series power meter for real time I/O control operation of the devices, the abundant selections enable maximum flexibility for system set up and power saving.

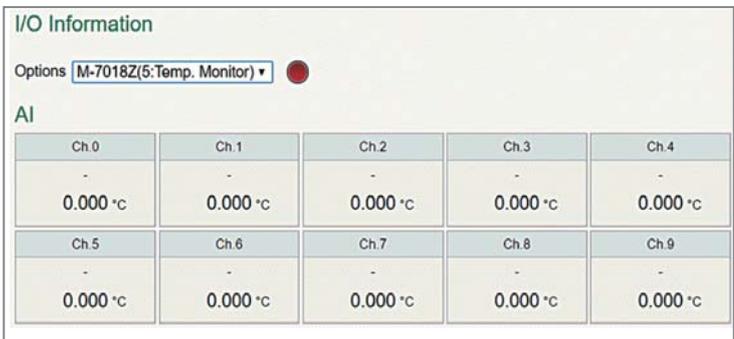
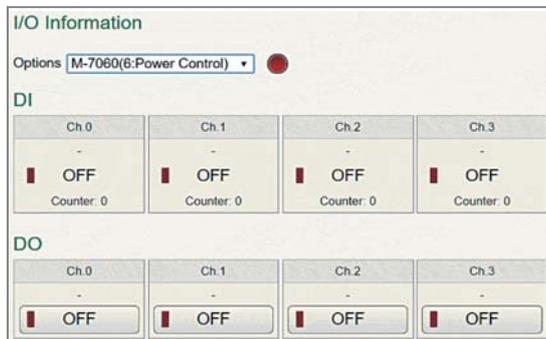
Meter / Module Setting Page

XW-Board

None

COM2 | Modbus RTU Master

No.	Module Name / Nickname	Address	Polling Timeout(ms)
1	ICP DAS PM-3133(Room1)	1	1000
2	ICP DAS PM-3133(Room2)	2	1000
3	ICP DAS PM-3112(Room3)	3	1000
4	ICP DAS PM-3114(Room4)	4	1000
5	M-7018Z(Temp. Monitor)	5	300
6	M-7060(Power Control)	6	300



On-Site Power data viewing and Power Meter setting

PMD (Power Meter Concentrator with Display) series is equipped with TFT LCD (with Touch Panel). It provides an easy way for viewing the power data and set up the Power Meter parameters on sites.

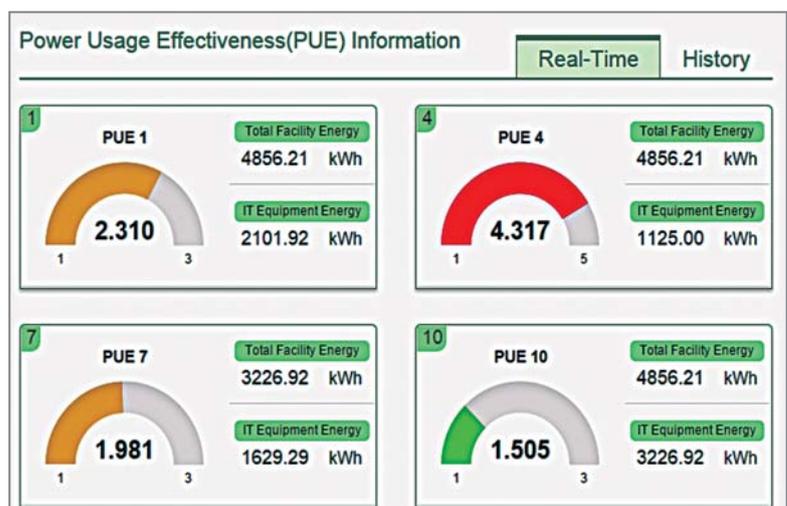


Support SNMP Function

In addition to Modbus protocol, PMC/PMD also supports SNMP function that allows seamless integration with IT Management software. The users could integrate PMC/PMD with the existing management system and collect the power data of each device by SNMP function easily.

Provide "Power Usage Effectiveness (PUE)" calculation operation

Power usage effectiveness (PUE) is a measure of how efficiently a computer data center uses energy; specifically, how much energy is used by the computing equipment (in contrast to cooling and other overhead). PUE is the ratio of total amount of energy used by a computer data center facility to the energy delivered to computing equipment. The PUE will be greater than 1. The larger the PUE number the less efficient your utilization is. PMC/PMD provides the PUE calculation operation and also display the PUE data in two modes (Real-Time and History) through Web page.



3. Smart Power Meter & Devices

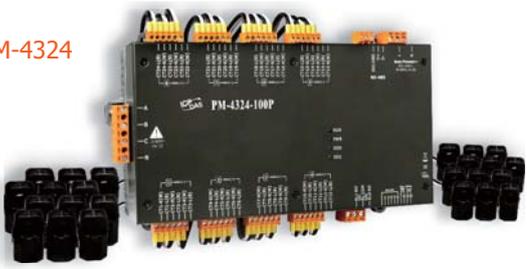
PM Smart Power Meter Features

- Provide multi-phase multi-circuit power measurement function
 - PM-3033: 1 Three Phase Circuit
 - PM-3133: 1 Three Phase Circuit
 - PM-3112: 2 Single Phase Circuits
 - PM-3114: 4 Single Phase Circuits
 - PM-4324: 8 Three Phase Circuits or 24 Single Phase Circuits
- Support multiple communication interfaces:
 - RS-485
 - Ethernet
 - CANopen
- Support multiple standard communication protocols:
 - Modbus RTU
 - Modbus TCP
 - CANopen
- Support 2 built-in Power Relay Output
- With CT W Accuracy Better than 0.5% (PF=1)
- Clip on CT for easy installation
- Compact size, easy to install, suitable for a variety of industrial applications









True RMS Input Module Features

M-7017RMS





- 8-channel True RMS Input
- ±0.15% Factory Calibrated Accuracy
- RMS Input Range: +150 mVrms ~ +10 Vrms
- For Standard Operation with Frequencies: 45 Hz ~ 10 KHz
- Individual Channel Configurable
- 4 kV ESD Protection
- ±35 VDC Overvoltage Protection
- 2500 VDC Intra-module Isolation

Industrial Multi-power-meter Display

7" Series



TPD-703-PM



VPD-173-PM

4.3" Series



TPD-433-PM

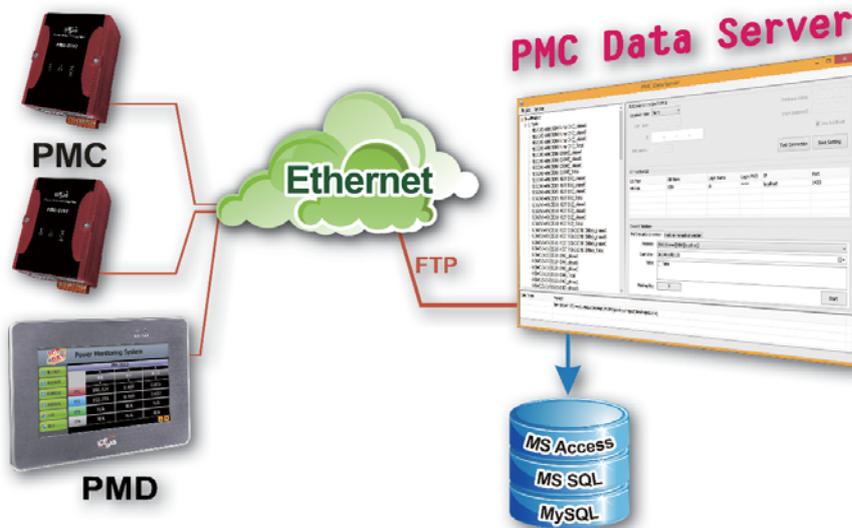


VPD-143N-PM



- Built-in HMI for Information Display of Power Meters
- IP40/IP60 Ingress Protection for Front Panel
- Support Modbus TCP/RTU Protocols
- Support Max. of 8 Single-phase/3-phase Power Meters (PM-3xxx series) or One PM-4324
- Support Max. of 4 Modbus/TCP Connections for SCADA Software
- Support Phase Sequence Detection
- Support Fine Tune of Voltage and Current Ratio

4. Software Utility



■ PMC Data Server

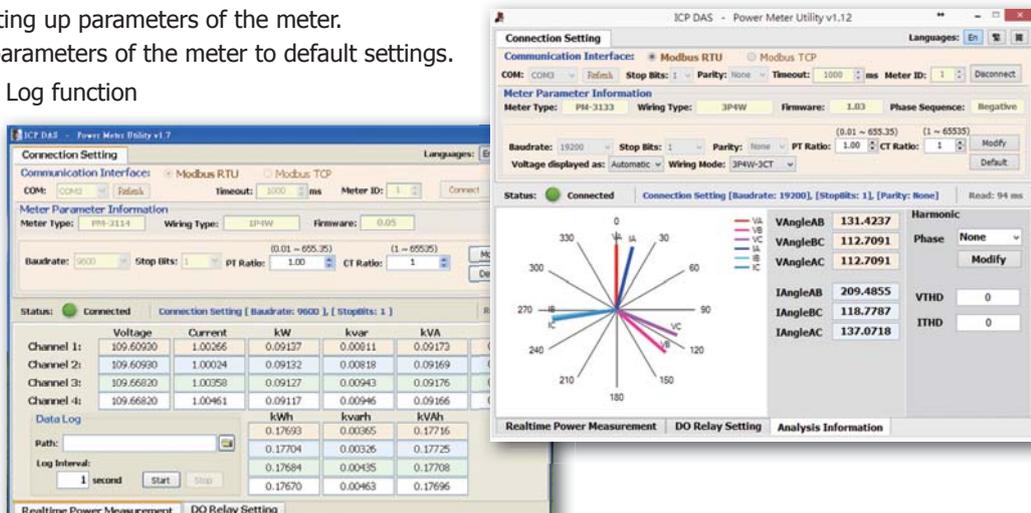
The PMC Data Server is a database utility designed for connecting to the PMC/PMD concentrators. When PMC/PMD Data Server is connected to these PMC/PMDs by Ethernet, the PMC/PMDs will send the power data logger files to the PMC Data Server at scheduled time, and these power data will be transformed to MS Access/MS SQL/MySQL database format for easy data review or inquiry. During the whole process of system development, no programming is required. It takes only a few settings for users to quickly retrieve and view the power data of the devices based on database system and furthermore, enables further process of the data for statistics and analysis.

■ Power Meter Utility

Power Meter Utility has to be installed on PC and it enables to retrieve and display the power measurement values that measured by power meter via COM Port or Ethernet. The users will be able to read the power measurement values and to perform parameter settings of the meter. When connecting with ICP DAS power meters by RS-485 communication protocol interface, it requires to convert RS-232 or USB on PC to RS-485 communication interface, converter modules (such as ICP DAS I-7561, I-7520) might be required; When connecting with ICP DAS power meters by Ethernet interface, it must setup the correct IP address to retrieve the power measurement values easily.

Features:

- By Modbus RTU or Modbus TCP protocol, it enables to connect with ICP DAS Power Meters and data retrieving.
- Real time monitor power measurement values of the meter.
- Real time setting up parameters of the meter.
- Restore the parameters of the meter to default settings.
- Support Data Log function



Power Meter Concentrator



PMC-5151

Features:

- No extra software tool is required, using browsers to operate system
- Support at most 24 ICP DAS Modbus Power Meter and 8 Modbus I/O modules (COM2, COM3 and LAN interface can connect to Max. 16 power meters.)
- Display real-time or historical power data (in data table or chart form)
- Provide power data statistics report (Daily and Monthly report)
- Data file auto send-back & recovery when network is resumed after disconnection
- Built-in IF-THEN-ELSE logic engine for power demand management
- Provide alarm message notification function via Email or SMS (for SMS message sending, GTM-203M-3GWA is required)
- Adjust device operations by its power status via Modbus I/O modules
- Provide Schedule function for operations of I/O modules (devices)
- Support Modbus TCP/RTU Slave protocol for seamless integration with SCADA
- Support Standard SNMP Protocol

Introduction:

The PMC-5151 is a web-based intelligent Power Meter Concentrator developed by ICP DAS. It offers webpage interface, and features various functions such as: power data collection, logic control, power demand management, data logger and alarm notification functions. PMC-5151 allows connections to ICP DAS Smart Power Meters via RS-485 or Ethernet interface to read the power data of the devices measured by the power meters; and then real-time record the power values in the data logger file. It also provides data logger file auto send-back function; together with PMC Data Server software or SCADA software, it allows collection and analysis of the power data.

Power Meter Concentrator With Display



10.4" TFT LCD 7" TFT LCD
PMD-4201 PMD-2201

Features:

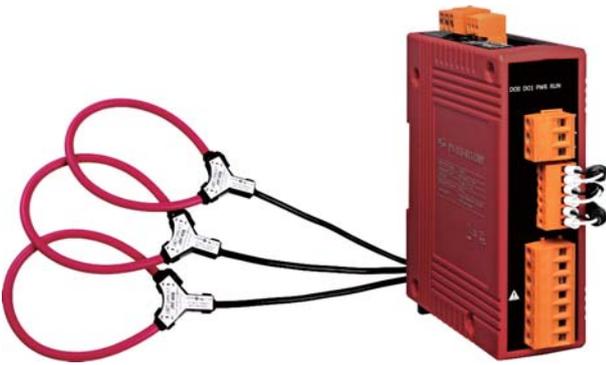
- Provide 7"/10.4" Touch Panel for On-Site operations
- Provide remote connection using browsers to login for operations
- Support up to 24 ICP DAS Modbus Power Meter and 8 Modbus I/O (COM2, COM3 and LAN interface can connect to Max. 16 power meters.)
- Provide real-time/historical power data statistics report
- Provide microSD card to store power data information
- Data file auto send-back & recovery when disconnected network is resumed
- Built-in IF-THEN-ELSE logic engine for power demand management
- Provide alarm message notification function via Email
- Adjust device operations by its power status via Modbus I/O modules
- Provide Schedule function for operations of I/O modules (devices)
- Support Modbus TCP/RTU Slave protocol for integration with SCADA
- Support SNMP Protocol

Introduction:

The PMD is a web-based intelligent Power Meter Concentrator with Display. It offers webpage interface, and features various functions such as: power data collection, logic control, power demand management, data logger, local display/Web page data display and alarm notification functions. PMD allows connections to ICP DAS Smart Power Meters via RS-485 or Ethernet interface to read and record the power data of the devices measured by the power meters. PMD also provides data logger file auto send-back function; together with PMC Data Server software or SCADA software, it allows collection and analysis of the power data.

PMD is equipped with 7"/10.4" TFT LCD (with Touch Panel). It provides an easy way for viewing the power data and setting the system parameters on sites. In addition, it can also access built-in Web Server on the PMD via browsers for the above operations. PMD also offers Modbus TCP/RTU Slave function that allows seamless integration with most SCADA software

Three-phase Smart Power Meter



PM-3133-RCT/-MTCP/-CPS

Features:

- True RMS Power Measurements
- Energy Analysis for 3P4W, 3P3W, 1P3W, 1P2W
- Current Measurements Up to 2000 A
- Voltage Measurements Up to 500 V
- Rogowski Coil Soft CT for Easy Installation
- W Accuracy Better than 1% (PF=1; Input Current >50A)
- Supports RS-485, Ethernet (PoE) or CANopen Interface
- Supports Modbus RTU, Modbus TCP or CANopen Protocol
- Supports 2 Power Relay Output (Form A)
- Total Harmonic Distortion (THD)

Introduction:

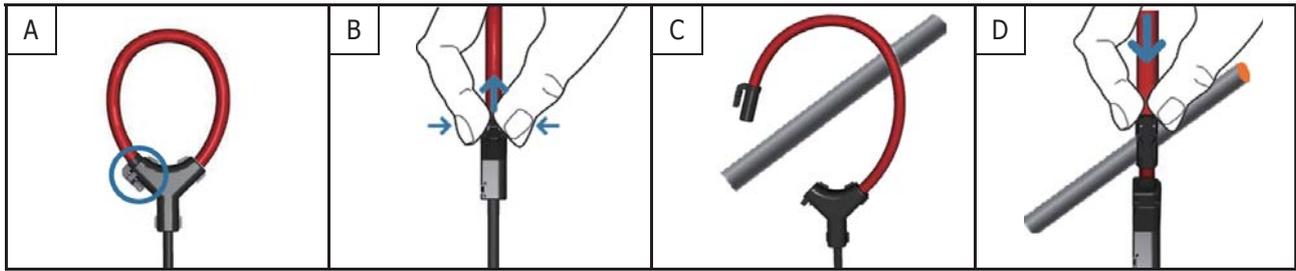
ICP DAS brings the most powerful, cost-effective, advanced Smart Power Meters PM-3133-RCT that gives you access to real-time electric usage for three-phase power measurement. With its high accuracy (<1%, PF=1; Input Current >50A), this series can be used to both low voltage primary side and medium/high voltage secondary side and enables the users to obtain reliable and accurate energy consumption readings from the monitored equipments in real time under operation. These compact size and cost-effective power meters monitoring equipment with Rogowski Coil CT is "rope-style" Current Transformer which delivers "Easy Installation" features for large window size (55 ~ 105mm) and mechanical flexibility for tight space.

It operates over a wide range of input voltages 10 ~ 500 VAC which allows universal compatibility. Also, with 2 channels relay outputs, it can be linked with sirens or lightings for alarm messages. It also supports Modbus RTU, Modbus TCP or CANopen protocols for easy integration.

Specifications:

Models	PM-3133-RCT	PM-3133-RCT-MTCP	PM-3133-RCT-CPS
AC Power Measurement			
Wiring	3P4W-3CT, 3P3W-2CT, 3P3W-3CT, 1P2W-1CT, 1P3W-2CT		
Measurement Voltage	10 ~ 500 V		
Measurement Current	CTØ55 mm (500 A), CTØ80 mm (1000 A), CTØ105 mm (2000 A)		
Measurement Frequency	50/60 Hz		
W Accuracy	Better than 1% (PF=1; Input Current >50 A)		
Power Parameter Measurement	True RMS voltage (Vrms), True RMS current (Irms), Active Power (kW), Active Energy (kWh), Apparent Power (kVA), Apparent Energy (kVAh), Reactive Power (kVAR), Reactive Energy (kVARh), Power Factor (PF), Frequency, THD		
Data Update Rate	1 Second		
Communication			
Interface	RS-485	Ethernet (PoE)	CANopen
Protocol	Modbus-RTU	Modbus TCP	CANopen
Baud rate	9600,19200 (default), 38400, 115200; DIP Switch Selectable	-	125 k (default), 250 k, 500 k, 1 M; DIP Switch Selectable
Data format	N,8,1 (default); N,8,2; E,8,1; E,8,2; O,8,1; O,8,2	-	-
Isolation	3000 VDC	-	3000 VDC
Alarm Output			
Power Relay	Form A (Normal Open) x 2; Relay Contact Voltage Range: 5 A @ 250 VAC (47 ~ 63Hz), 5 A @ 30 VDC		
Power			
Power Input	+12 ~ 48 VDC	+12 ~ 48 VDC or PoE	+12 ~ 48 VDC
Power Consumption	2 W		
Environment			
Temperature	Operating Temperature: -20 ~ +70 °C / Storage Temperature: -25 ~ +80 °C		
Ambient Relative Humidity	10% ~ 90% RH, Non-condensing		

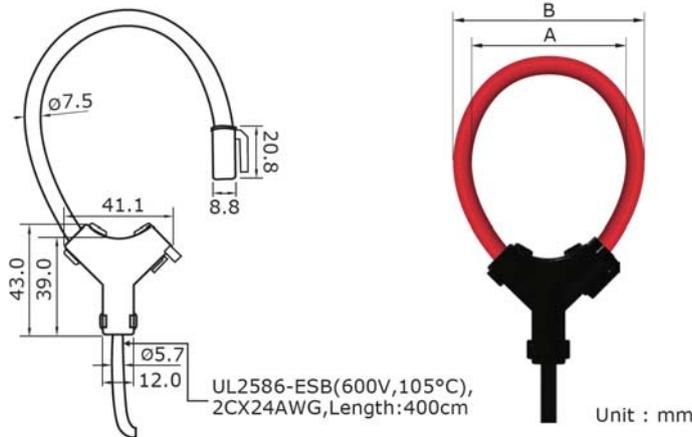
Installation



Rogowski Coil Soft CT Installation



Dimensions (Units: mm):



Models	A	B
PM-3133-RCT500P	55.0	68.5
PM-3133-RCT1000P	80.0	93.5
PM-3133-RCT2000P	105.0	118.5

Ordering Information:

RS-485 Interface	
PM-3133-RCT500P	Modbus RTU, 3-phase power meter, 500A Rogowski Coil CT
PM-3133-RCT1000P	Modbus RTU, 3-phase power meter, 1000A Rogowski Coil CT
PM-3133-RCT2000P	Modbus RTU, 3-phase power meter, 2000A Rogowski Coil CT

Ethernet Interface Available soon	
PM-3133-RCT500P-MTCP	Modbus TCP, 3-phase power meter, 500A Rogowski Coil CT
PM-3133-RCT1000P-MTCP	Modbus TCP, 3-phase power meter, 1000A Rogowski Coil CT
PM-3133-RCT2000P-MTCP	Modbus TCP, 3-phase power meter, 2000A Rogowski Coil CT

CANopen Interface Available soon	
PM-3133-RCT500P-CPS	CANopen, 3-phase power meter, 500A Rogowski Coil CT
PM-3133-RCT1000P-CPS	CANopen, 3-phase power meter, 1000A Rogowski Coil CT
PM-3133-RCT2000P-CPS	CANopen, 3-phase power meter, 2000A Rogowski Coil CT

Three-phase Smart Power Meter



PM-3133/-MTCP/-CPS

Features:

- True RMS Power Measurements
- Energy Analysis for 3P4W, 3P3W, 1P3W, 1P2W
- Current Measurements Up to 400 A with Different CT Ratio
- Voltage Measurements Up to 500 V
- Clip-on CT for Easy Installation
- W Accuracy Better than 0.5% (PF=1)
- Supports RS-485, Ethernet (PoE) or CANopen Interface
- Supports Modbus RTU, Modbus TCP or CANopen Protocol
- Supports 2 Power Relay Output (Form A)
- Total Harmonic Distortion (THD)
- IEC 61010-1 and EN 61010-1

Introduction:

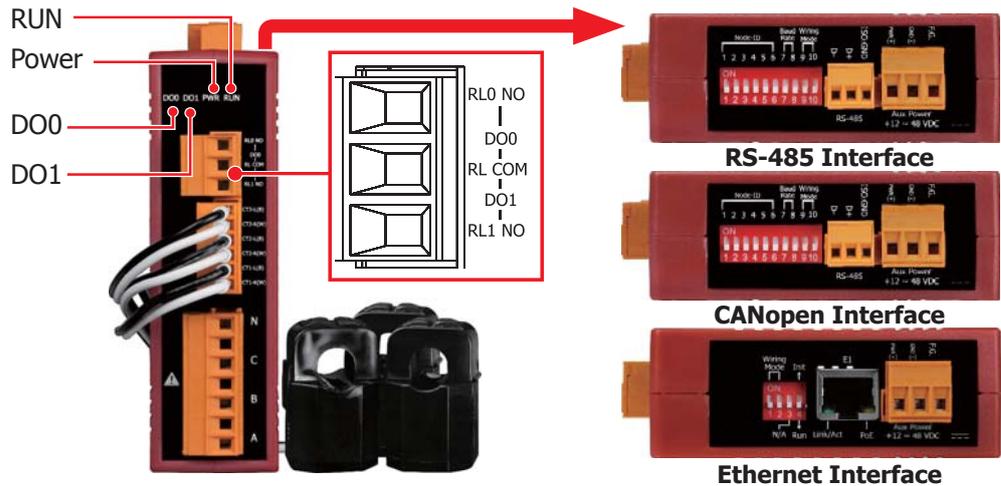
ICP DAS brings the most powerful, cost-effective, advanced Smart Power Meters PM-3133 series that gives you access to real-time electric usage for three-phase power measurement. With its high accuracy (<0.5%, PF=1), the PM-3133 series can be applied to both low voltage primary side and/or medium/high voltage secondary side and enables the users to obtain reliable and accurate energy consumption readings from the monitored equipments in real time under operation. These compact size and cost-effective power meters are equipped with revolutionary wired clip-on CT (various types, support input current up to 400 A). It operates over a wide input voltages range 10 ~ 500 VAC which allows worldwide compatibility. And with 2 channels relay outputs, it can be linked with sirens or lightings for alarm messages. It also supports Modbus RTU, Modbus TCP or CANopen protocols for easy integration. You can use CT's that you currently own with PM-3133P (without CTs) Power Meter. The CT inputs of the PM-3133P can handle a maximum of 333mV of AC current.

Specifications:

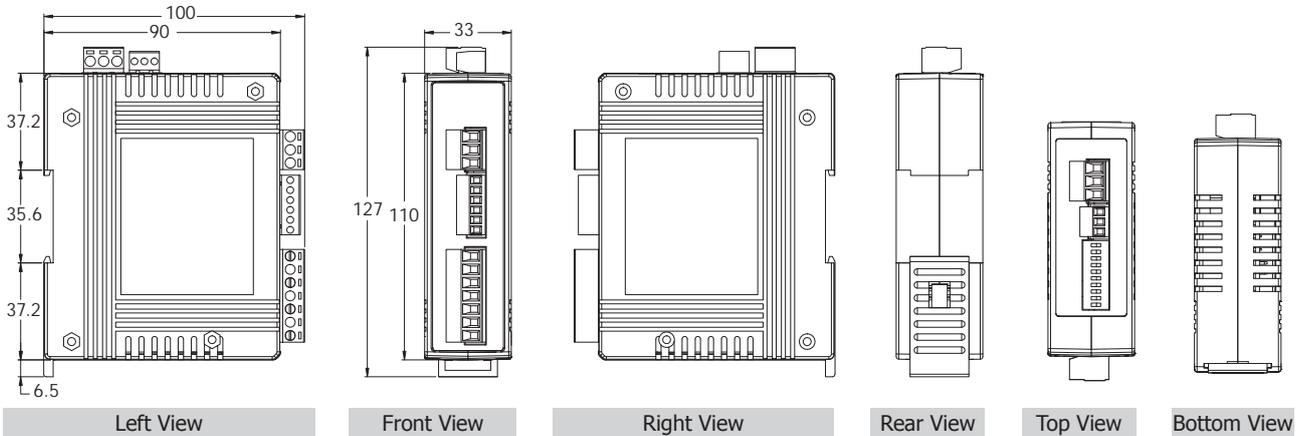
Models	PM-3133	PM-3133-MTCP	PM-3133-CPS
AC Power Measurement			
Wiring	3P4W-3CT, 3P3W-2CT, 3P3W-3CT, 1P2W-1CT, 1P3W-2CT		
Measurement Voltage	10 ~ 500 V		
Measurement Current	CTØ10 mm (60 A); CTØ16 mm (100 A); CTØ24 mm (200 A); CTØ36 mm (300 A); CTØ36 mm (400 A)		
Measurement Frequency	50/60 Hz		
W Accuracy	Better than 0.5% (PF=1)		
Power Parameter Measurement	True RMS voltage (Vrms), True RMS current (Irms), Active Power (kW), Active Energy (kWh), Apparent Power (kVA), Apparent Energy (kVAh), Reactive Power (kVAR), Reactive Energy (kVARh), Power Factor (PF), Frequency		
Data Update Rate	1 Second		
Communication			
RS-485	Protocol	Modbus-RTU	-
	Baud rate	9600,19200 (default), 38400, 115200; DIP Switch Selectable	-
	Data format	N,8,1	-
	Isolation	3000 VDC	-
Ethernet (PoE)	Protocol	-	Modbus TCP
	Protocol	-	-
CANopen	Protocol	-	CANopen
	Baud rate	-	125 k (default), 250 k, 500 k, 1 M; DIP Switch Selectable
	Isolation	-	3000 VDC
Alarm Output			
Power Relay	Form A (Normal Open) × 2; Relay Contact Voltage Range: 5 A @ 250 VAC (47 ~ 63Hz), 5 A @ 30 VDC		
Power			
Power Input	+12 ~ 48 VDC	+12 ~ 48 VDC or PoE	+12 ~ 48 VDC
Power Consumption	2 W		
Environment			
Temperature	Operating Temperature: -20 ~ +70°C / Storage Temperature: -25 ~ +80°C		
Ambient Relative Humidity	10% ~ 90% RH, Non-condensing		

Appearance:

LED indicators



Dimensions (Units: mm):



Selection Guide:

PM-3133 - X X X P - X X X

CT size (measurement)
 100: CTΦ10 mm, 60 A Max.
 160: CTΦ16 mm, 100 A Max.
 240: CTΦ24 mm, 200 A Max.
 360P: CTΦ36 mm, 300 A Max.
 400P: CTΦ36 mm, 400 A Max.

Current Transformers (Secondary voltage 333mV)

Communication
 □: RS-485
 □: CANopen
 MTCP: Modbus TCP

Ordering Information:

RS-485 Interface	
PM-3133P	Modbus RTU, 3-phase power meter (Compatible with CTs from 50 to 1000 A/333 mV output)
PM-3133-100	Modbus RTU, 3-phase power meter (60 A)
PM-3133-160	Modbus RTU, 3-phase power meter (100 A)
PM-3133-240	Modbus RTU, 3-phase power meter (200 A)
PM-3133-360P	Modbus RTU, 3-phase power meter (300 A)
PM-3133-400P	Modbus RTU, 3-phase power meter (400 A)

Ethernet Interface	
PM-3133-100-MTCP	Modbus TCP, 3-phase power meter (60 A)
PM-3133-160-MTCP	Modbus TCP, 3-phase power meter (100 A)
PM-3133-240-MTCP	Modbus TCP, 3-phase power meter (200 A)
PM-3133-360P-MTCP	Modbus TCP, 3-phase power meter (300 A)
PM-3133-400P-MTCP	Modbus TCP, 3-phase power meter (400 A)

CANopen Interface	
PM-3133-100-CPS	CANopen, 3-phase power meter (60 A)
PM-3133-160-CPS	CANopen, 3-phase power meter (100 A)
PM-3133-240-CPS	CANopen, 3-phase power meter (200 A)
PM-3133-360P-CPS	CANopen, 3-phase power meter (300 A)
PM-3133-400P-CPS	CANopen, 3-phase power meter (400 A)

Three-phase Smart Power Meter



PM-3033/-MTCP/-CPS

Features:

- True RMS Power Measurements
- Energy Analysis for 3P4W, 3P3W, 1P3W, 1P2W
- Direct input of secondary side 1A/5A CT
- Voltage Measurements Up to 500 V
- W Accuracy Better than 0.5% (PF=1)
- Supports RS-485, Ethernet (PoE) or CANopen Interface
- Supports Modbus RTU/Modbus TCP or CANopen Protocol
- Total Harmonic Distortion (THD)
- IEC 61010-1 and EN 61010-1
- Total Harmonic Distortion (THD)
- IEC 61010-1and EN 61010-1

Introduction:

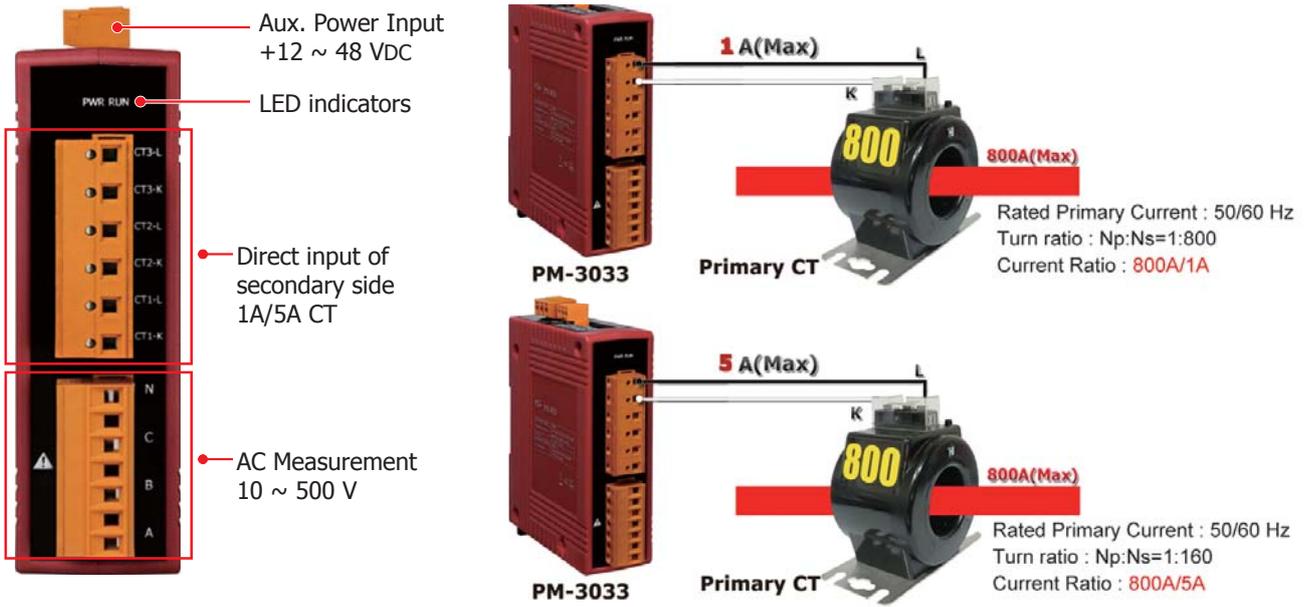
ICP DAS brings the most powerful, cost-effective, advanced Smart Power Meters PM-3033 series that gives you access to real-time electric usage for three-phase power measurement. With its high accuracy (<0.5%, PF=1), the PM-3033 series can be applied to both low voltage primary side and/or medium/high voltage secondary side and enables the users to obtain reliable and accurate energy consumption readings from the monitored equipments in real time under operation.

Direct input from "secondary side 1A/5A" type CTs. Dedicated CTs are no longer needed, which lowers the cost of implementation. It operates over a wide input voltages range 10 ~ 500 VAC which allows worldwide compatibility. It also supports Modbus RTU, Modbus TCP or CANopen protocols for easy integration.

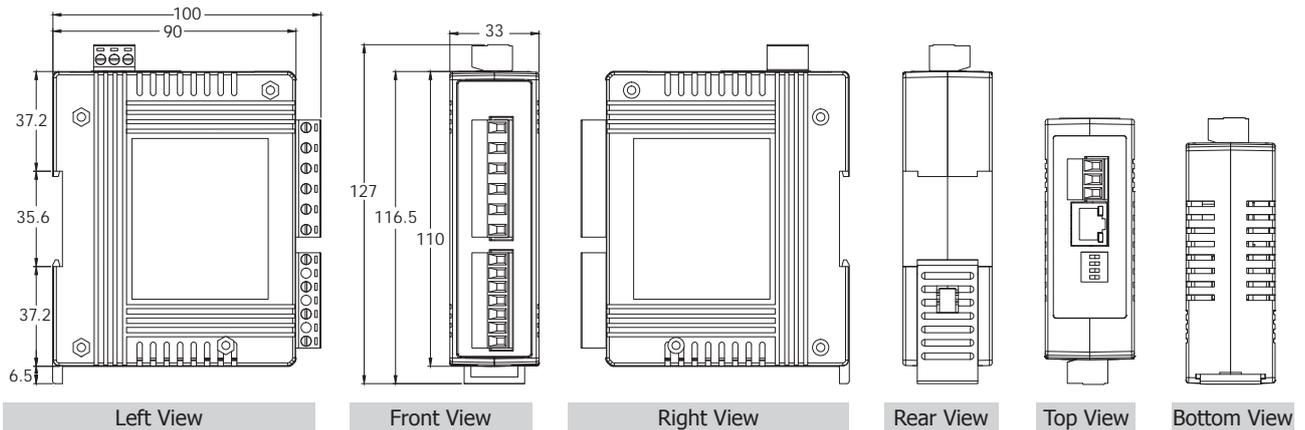
Specifications:

Models	PM-3033	PM-3033-MTCP	PM-3033-CPS
AC Power Measurement			
Wiring	3P4W-3CT, 3P3W-2CT, 3P3W-3CT, 1P2W-1CT, 1P3W-2CT		
Measurement Voltage	10 ~ 500 V		
Measurement Current	1A or 5A		
Measurement Frequency	50/60 Hz		
W Accuracy	Better than 0.5% (PF=1)		
Power Parameter Measurement	True RMS voltage (Vrms), True RMS current (Irms), Active Power (kW), Active Energy (kWh), Apparent Power (kVA), Apparent Energy (kVAh), Reactive Power (kVAR), Reactive Energy (kVARh), Power Factor (PF), Frequency		
Data Update Rate	1 Second		
Communication			
RS-485	Protocol	Modbus-RTU	-
	Baud rate	9600,19200 (default), 38400, 115200; DIP Switch Selectable	-
	Data format	N,8,1 (default); N,8,2; E,8,1; E,8,2; O,8,1; O,8,2	-
	Isolation	3000 VDC	-
Ethernet (PoE)	Protocol	-	Modbus TCP
CANopen	Protocol	-	CANopen
	Baud rate	-	125 k (default), 250 k, 500 k, 1 M; DIP Switch Selectable
	Isolation	-	3000 VDC
Power			
Power Input	+12 ~ 48 VDC	+12 ~ 48 VDC or PoE	+12 ~ 48 VDC
Power Consumption	2 W		
Environment			
Temperature	Operating Temperature: -20 ~ +70°C / Storage Temperature: -25 ~ +80°C		
Ambient Relative Humidity	10% ~ 90% RH, Non-condensing		

CT Installation and Wiring:



Dimensions (Units: mm):



Selection Guide:

PM-3033 - X X X

↓
Communication
□: RS-485
CPS: CANopen
MTCP: Modbus TCP

Ordering Information:

RS-485 Interface	
PM-3033	Modbus RTU, 3-phase power meter (1A/5A CT Input type)
Ethernet Interface	
PM-3033-MTCP	Modbus TCP, 3-phase power meter (1A/5A CT Input type)
CANopen Interface	
PM-3033-CPS	CANopen, 3-phase power meter (1A/5A CT Input type)

Single-phase Smart Power Meter



PM-3112/-MTCP/-CPS
PM-3114/-MTCP/-CPS

Features:

- True RMS Power Measurements
- Energy Analysis for 1P2W, 1P4W
- Current Measurements Up to 200 A with Different CT Ratio
- Voltage Measurements Up to 300 V
- Clip-on CT for Easy Installation
- W Accuracy Better than 0.5% (PF=1)
- Supports RS-485, Ethernet or CANopen Interface
- Supports Modbus RTU, Modbus TCP or CANopen Protocol
- Supports 2 Power Relay Output (Form A)
- IEC 61010-1 and EN 61010-1

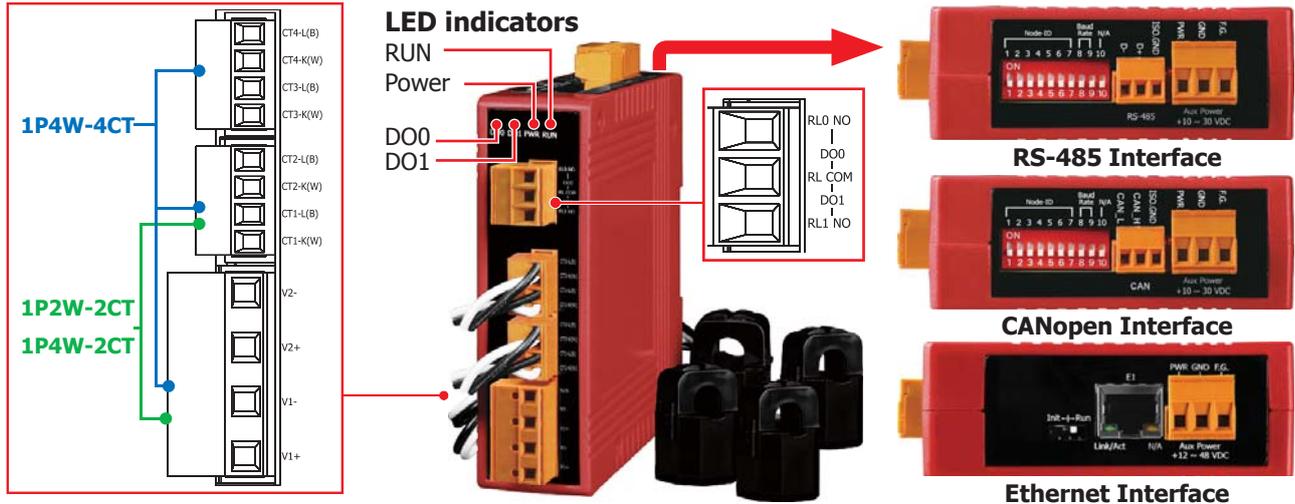
Introduction:

ICP DAS brings the most powerful, cost-effective, advanced Smart Power Meters PM-3000 series that gives you access to real-time electric usage for single-phase power measurement. With its high accuracy ($< 0.5\%$, $PF=1$), the PM-3000 series can be applied to both low voltage primary side and/or medium/high voltage secondary side and enables the users to obtain reliable and accurate energy consumption readings from the monitored equipments in real time under operation. These compact size and cost-effective power meters are equipped with revolutionary wired clip-on CT (various types, support input current up to 200 A). It operates over a wide input voltages range $10 \sim 300$ VAC which allows worldwide compatibility. And with 2 channels relay outputs, it can be linked with sirens or lightings for alarm messages. It also supports Modbus RTU, Modbus TCP or CANopen protocols for easy integration.

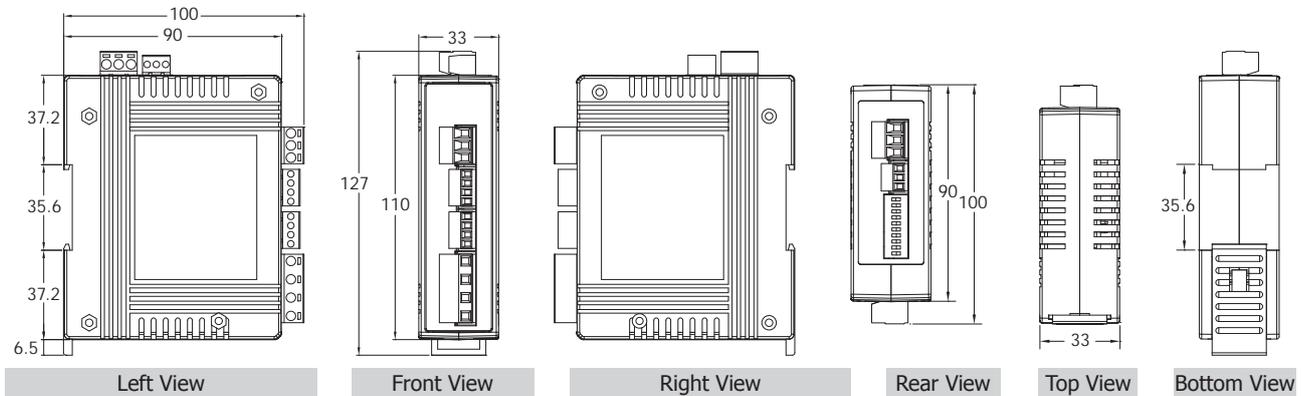
Specifications:

Models	PM-3112	PM-3114	PM-3112-MTCP	PM-3114-MTCP	PM-3112-CPS	PM-3114-CPS
AC Power Measurement						
Wiring	1P2W-2CT	1P4W-4CT	1P2W-2CT	1P4W-4CT	1P2W-2CT	1P4W-4CT
Input Voltage	10 ~ 300 V					
Input Current	CTØ10 mm (60 A); CTØ16 mm (100 A); CTØ24 mm (200 A)					
Input Frequency	50/60 Hz					
W Accuracy	Better than 0.5% (PF=1)					
Starting Current	$>0.03A$ (60 A), $>0.05A$ (100A), $>0.09A$ (200A)					
Power Parameter Measurement	True RMS voltage (V_{rms}), True RMS current (I_{rms}), Active Power (kW), Active Energy (kWh), Apparent Power (kVA), Apparent Energy (kVAh), Reactive Power (kVAR), Reactive Energy (kVARh), Power Factor (PF), Frequency					
Data Update Rate	1 Second					
Communication						
RS-485	Protocol	Modbus-RTU	-	-	-	-
	Baud rate	9600,19200 (default), 38400, 115200; DIP Switch Selectable	-	-	-	-
	Data format	N,8,1	-	-	-	-
	Isolation	3000 VDC	-	-	-	-
Ethernet (PoE)	Protocol	-	Modbus TCP	-	-	-
CANopen	Protocol	-	-	-	CANopen	
	Baud rate	-	-	-	125 k (default), 250 k, 500 k, 1 M; DIP Switch Selectable	
Alarm Output						
Power Relay	Form A (Normal Open) × 2; Relay Contact Voltage Range: 5 A @ 250 VAC (47 ~ 63 Hz), 5 A @ 30 VDC					
Power						
Input Range	+12 ~ 48 VDC		+12 ~ 48 VDC		+12 ~ 48 VDC	
Power Consumption	2 W					
Environment						
Temperature	Operating Temperature: $-20 \sim +70^{\circ}C$ / Storage Temperature: $-25 \sim +80^{\circ}C$					
Ambient Relative Humidity	10% ~ 90% RH, Non-condensing					

Appearance:



Dimensions (Units: mm):



Selection Guide:

PM-311 **X** - **X X X** - **X X X**

Channel: 2: 2 Circuits, 4: 4 Circuits
 CT size (measurement): 100: CTΦ10 mm (0 ~ 60 A), 160: CTΦ16 mm (0 ~ 100 A), 240: CTΦ24 mm (0 ~ 200 A)
 Communication: □: RS-485, CPS: CANopen, MTCP: Modbus TCP

Ordering Information:

RS-485 Interface	
PM-3112-100	Modbus RTU, 2 single-phase circuits Power Meter with 2 CTs (60 A)
PM-3112-160	Modbus RTU, 2 single-phase circuits Power Meter with 2 CTs (100 A)
PM-3112-240	Modbus RTU, 2 single-phase circuits Power Meter with 2 CTs (200 A)
Ethernet Interface	
PM-3112-100-MTCP	Modbus TCP, 2 single-phase circuits Power Meter with 2 CTs (60 A)
PM-3112-160-MTCP	Modbus TCP, 2 single-phase circuits Power Meter with 2 CTs (100 A)
PM-3112-240-MTCP	Modbus TCP, 2 single-phase circuits Power Meter with 2 CTs (200 A)
CANopen Interface	
PM-3112-100-CPS	CANOpen, 2 single-phase circuits Power Meter with 2 CTs (60 A)
PM-3112-160-CPS	CANOpen, 2 single-phase circuits Power Meter with 2 CTs (100 A)
PM-3112-240-CPS	CANOpen, 2 single-phase circuits Power Meter with 2 CTs (200 A)

RS-485 Interface	
PM-3114-100	Modbus RTU, 4 single-phase circuits power meter (60 A)
PM-3114-160	Modbus RTU, 4 single-phase circuits power meter (100 A)
PM-3114-240	Modbus RTU, 4 single-phase circuits power meter (200 A)
Ethernet Interface	
PM-3114-100-MTCP	Modbus TCP, 4 single-phase circuits power meter (60 A)
PM-3114-160-MTCP	Modbus TCP, 4 single-phase circuits power meter (100 A)
PM-3114-240-MTCP	Modbus TCP, 4 single-phase circuits power meter (200 A)
CANopen Interface	
PM-3114-100-CPS	CANOpen, 4 single-phase circuits power meter (60 A)
PM-3114-160-CPS	CANOpen, 4 single-phase circuits power meter (100 A)
PM-3114-240-CPS	CANOpen, 4 single-phase circuits power meter (200 A)

Multi-circuit Smart Power Meter



PM-4324/-MTCP/-CPS PM-4324A/-MTCP/-CPS

Features:

- 8 Three Phase Circuits or 24 Single Phase Circuits
- True RMS Power Measurements
- Energy Analysis for 3P4W, 3P3W, 1P3W, 1P2W
- 2 Independent main circuit inputs for PM-4324A series
- Current Measurements Up to 400 A with Different CT Ratio
- Voltage Measurements Up to 500 V
- Easy install with split core CT
- W Accuracy Better than 0.5% (PF=1)
- Support RS-485, Ethernet or CAN bus Interface
- Support 2 Power Relay Output (Form A)
- Total Harmonic Distortion (THD)

Introduction:

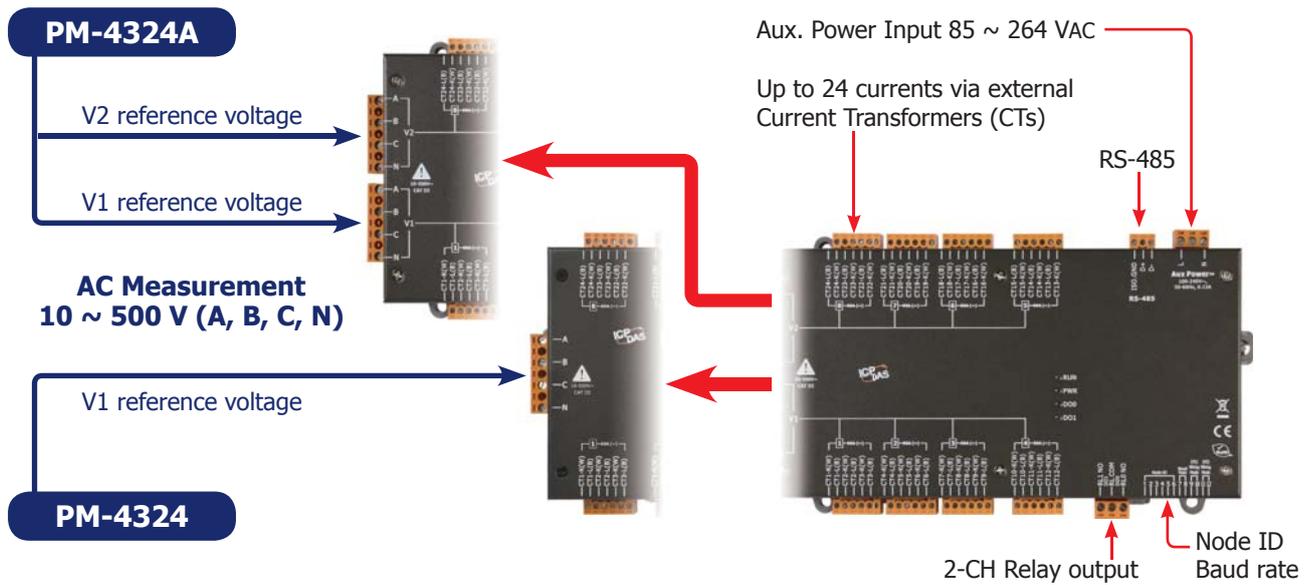
The **PM-4324 series** multi-circuit power meter monitors up to 8 three-phase circuits or 24 single-phase circuits, or any combination of single or three-phase circuits. The PM-4324 series can measure up to 24 currents via external Current Transformers (CTs). This flexibility makes the PM-4324 series perfect for multi-tenant facilities such as residential projects, office buildings and shopping malls. This compact instrument is designed to easily fit into existing panelboards or be flush mounted nearby, thus eliminating the need for expensive retrofit projects or for allocating extra space for the device.

The PM-4324A is the same model as the PM-4324, except for the AC Measurement. The PM-4324A has 2 separate main circuit inputs that can use in the different power system.

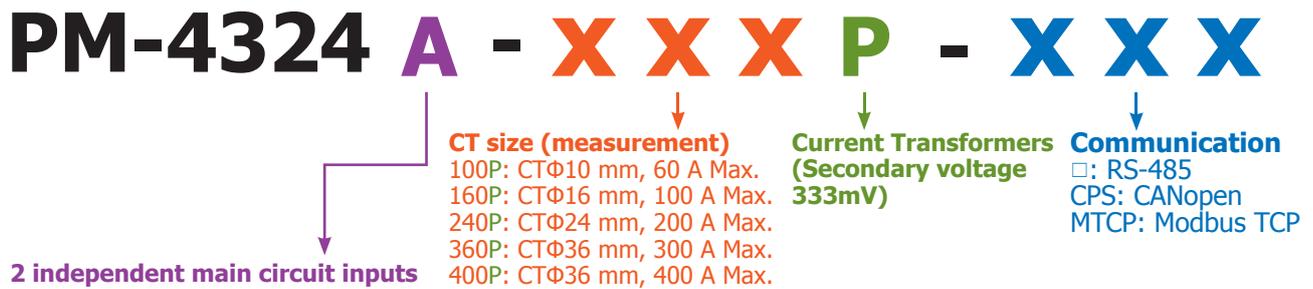
Specifications:

Models	PM-4324/PM-4324A	PM-4324-MTCP/ PM-4324A-MTCP	PM-4324-CPS/ PM-4324A-CPS
AC Power Measurement			
Wiring	3P4W-3CT, 3P3W-2CT, 3P3W-3CT, 1P2W-1CT, 1P3W-2CT		
Measurement Voltage	10 ~ 500 V		
Measurement Current	CTØ10 mm (60 A); CTØ16 mm (100 A); CTØ24 mm (200 A); CTØ36 mm (300 A); CTØ36 mm (400 A)		
Measurement Frequency	50/60 Hz		
W Accuracy	Better than 0.5% (PF=1)		
Power Parameter Measurement	True RMS voltage (V _{rms}), True RMS current (I _{rms}), Active Power (kW), Active Energy (kWh), Apparent Power (kVA), Apparent Energy (kVAh), Reactive Power (kVAR), Reactive Energy (kVARh), Power Factor (PF), Frequency		
Data Update Rate	1 Second		
Communication			
Interface	RS-485	Ethernet	CAN Bus
Protocol	Modbus-RTU	Modbus TCP	CANopen
Baud rate	9600,19200 (default), 38400, 115200; DIP Switch Selectable	-	125 k (default), 250 k, 500 k, 1 M; DIP Switch Selectable
Data format	N,8,1; N,8,2; E,8,1; E,8,2; O,8,1; O,8,2	-	-
Isolation	3000 VDC	-	3000 VDC
Alarm Output			
Power Relay	Form A (Normal Open) x 2; Relay Contact Voltage Range: 5 A @ 250 VAC (47 ~ 63 Hz), 5 A @ 30 VDC		
Power			
Input Range	+85 ~ +264 VAC		
Power Consumption	6 W		
Mechanical			
Dimensions / Casing	237 mm x 52 mm x 134 mm (W x L x H) / Plastic		
Module Installation	DIN-Rail Mounting; Wall mounting		
Environment			
Temperature	Operating Temperature: -20 ~ +70°C / Storage Temperature: -25 ~ +80°C		
Ambient Relative Humidity	10% ~ 90% RH, Non-condensing		

Appearance:



Selection Guide:



Ordering Information:

RS-485 Interface			
PM-4324P	Modbus RTU, Multi-Circuit Power Meter (Can be directly input from the secondary side of 333mV CT)		
PM-4324-100P	Modbus RTU, Multi-Circuit Power Meter (60 A)	PM-4324A-100P	Modbus RTU, Multi-Circuit Power Meter (60 A)
PM-4324-160P	Modbus RTU, Multi-Circuit Power Meter (100 A)	PM-4324A-160P	Modbus RTU, Multi-Circuit Power Meter (100 A)
PM-4324-240P	Modbus RTU, Multi-Circuit Power Meter (200 A)	PM-4324A-240P	Modbus RTU, Multi-Circuit Power Meter (200 A)
PM-4324-360P	Modbus RTU, Multi-Circuit Power Meter (300 A)	PM-4324A-360P	Modbus RTU, Multi-Circuit Power Meter (300 A)
PM-4324-400P	Modbus RTU, Multi-Circuit Power Meter (400 A)	PM-4324A-400P	Modbus RTU, Multi-Circuit Power Meter (400 A)

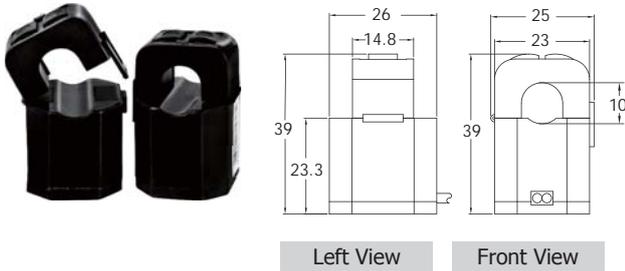
Ethernet Interface			
PM-4324-100P-MTCP	Modbus TCP, Multi-Circuit Power Meter (60 A)	PM-4324A-100P-MTCP	Modbus TCP, Multi-Circuit Power Meter (60 A)
PM-4324-160P-MTCP	Modbus TCP, Multi-Circuit Power Meter (100 A)	PM-4324A-160P-MTCP	Modbus TCP, Multi-Circuit Power Meter (100 A)
PM-4324-240P-MTCP	Modbus TCP, Multi-Circuit Power Meter (200 A)	PM-4324A-240P-MTCP	Modbus TCP, Multi-Circuit Power Meter (200 A)
PM-4324-360P-MTCP	Modbus TCP, Multi-Circuit Power Meter (300 A)	PM-4324A-360P-MTCP	Modbus TCP, Multi-Circuit Power Meter (300 A)
PM-4324-400P-MTCP	Modbus TCP, Multi-Circuit Power Meter (400 A)	PM-4324A-400P-MTCP	Modbus TCP, Multi-Circuit Power Meter (400 A)

CANopen Interface			
PM-4324-100P-CPS	CANOpen, Multi-Circuit Power Meter (60 A)	PM-4324A-100P-CPS	CANOpen, Multi-Circuit Power Meter (60 A)
PM-4324-160P-CPS	CANOpen, Multi-Circuit Power Meter (100 A)	PM-4324A-160P-CPS	CANOpen, Multi-Circuit Power Meter (100 A)
PM-4324-240P-CPS	CANOpen, Multi-Circuit Power Meter (200 A)	PM-4324A-240P-CPS	CANOpen, Multi-Circuit Power Meter (200 A)
PM-4324-360P-CPS	CANOpen, Multi-Circuit Power Meter (300 A)	PM-4324A-360P-CPS	CANOpen, Multi-Circuit Power Meter (300 A)
PM-4324-400P-CPS	CANOpen, Multi-Circuit Power Meter (400 A)	PM-4324A-400P-CPS	CANOpen, Multi-Circuit Power Meter (400 A)

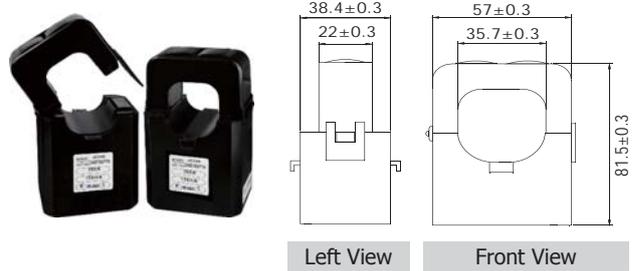
CT for Smart Power Meter

Dimensions (Units: mm):

100: CTΦ10mm (60 A Max.)



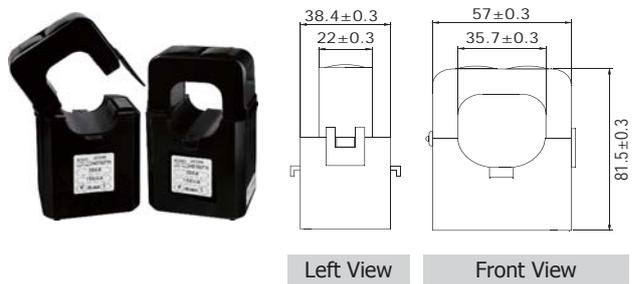
360P: CTΦ36mm (300 A Max.)



160: CTΦ16mm (100 A Max.)



400P: CTΦ36mm (400 A Max.)



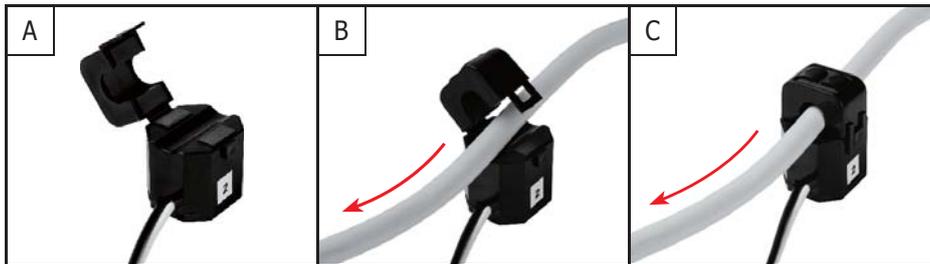
240: CTΦ24mm (200 A Max.)



RCT1000P: CTΦ800mm (1000 A Max.)



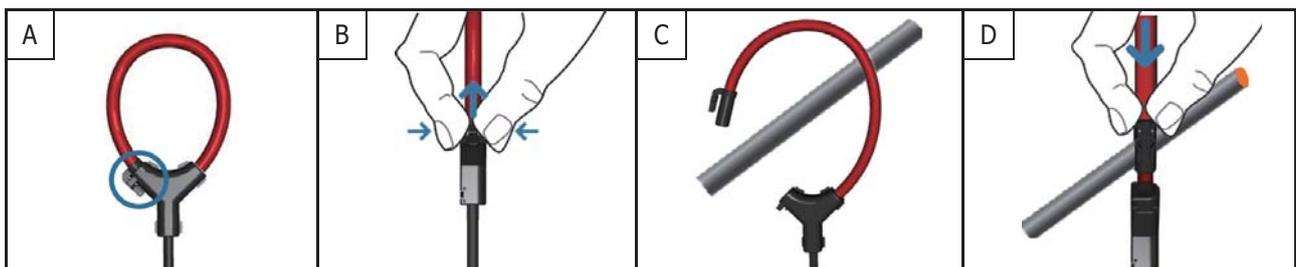
Installation



Clip-on CT Installation



DIN-Rail Mounting
(EX: PM-3133)



Rogowski coil Soft CT Installation

8-channel True RMS Input Module



M-7017RMS

Introduction:

The M-7017RMS is an 8-channel differential AC input module that is used to convert the AC input signals to their True RMS DC values. The RMS input range can be from +150 mVrms to +10 Vrms, and each channel can be configured individually. The M-7017RMS is a complete, high-accuracy, RMS-to-DC converter that computes the True RMS DC value of any complex waveform. It also features 4 kV ESD protection, 2500 VDC intra-module isolation and +/-35 VDC overvoltage protection.

System Specifications:

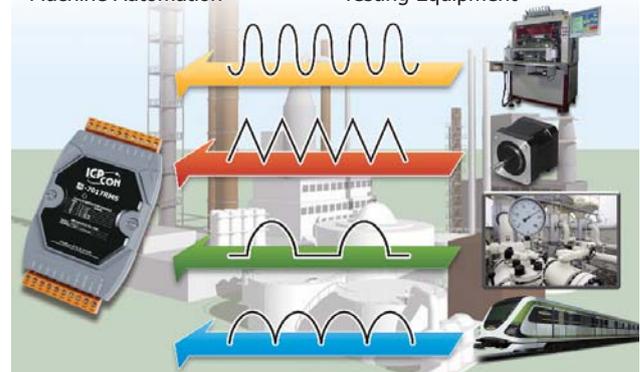
Communication	
Interface	RS-485
Bias Resistor	No (Usually supplied by the RS-485 Master. Or, add a tM-SG4 or SG-785.)
Baud Rate	1200 to 115200 bps
Protocol	Modbus RTU, DCON
Dual Watchdog	Yes, Module (1.6 Seconds), Communication (Programmable)
LED Indicators/Display	
System LED Indicator	1 as Power/Communication Indicator
Isolation	
Intra-module Isolation, Field-to-Logic	2500 VDC
EMS Protection	
ESD (IEC 61000-4-2)	±4 kV Contact for each Terminal ±8 kV Air for Random Point
EFT (IEC 61000-4-4)	±4 kV for Power Line
Surge (IEC 61000-4-5)	±0.5 kV for Power Line
Power	
Reverse Polarity Protection	Yes
Input	+10 ~ +30 VDC
Consumption	0.9 W
Mechanical	
Dimensions (L × W × H)	123 mm × 72 mm × 35 mm
Installation	DIN-Rail
Environment	
Operating Temperature	-25 to +75°C
Storage Temperature	-40 to +85°C
Humidity	10 to 95% RH, Non-condensing

Features:

- 8-channel True RMS Input
- ±0.15% Factory Calibrated Accuracy
- The RMS input range: +150 mVrms ~ +10 Vrms
- For Standard Operation with Frequencies: 45 Hz ~ 10 KHz
- Individual Channel Configurable

Applications:

- Building Automation
- Factory Automation
- Machine Automation
- Remote Maintenance
- Remote Diagnosis
- Testing Equipment



I/O Specifications:

Analog Input		
Channels	8	
Wiring	Differential	
Input Range	0 ~ +10 Vrms, 0 ~ +5 Vrms, 0 ~ +1 Vrms, 0 ~ +500 mVrms, 0 ~ +150 mVrms	
Resolution	16-bit	
Accuracy	Sinusoid	
	50/60 Hz	±0.15% of FSR
	45 Hz to 10 kHz	±0.5% of FSR
	Non-Sinusoid	
	Crest Factor = 1 to 2	±0.2% of FSR
	Crest Factor = 2 to 3	±0.35% of FSR
DC	0 ~ +10 Vrms/ 0 ~ +5 Vrms/ 0 ~ +1 Vrms,	±0.3% of FSR
	Other	±0.7% of FSR
	Sampling Rate	10 Hz (Total)
-3dB Bandwidth	15.7 Hz	
Zero Drift	±20 µV/°C	
Span Drift	±25 ppm/°C	
Common Mode Rejection	86 dB	
Normal Mode Rejection	100 dB	
Input Impedance	>2 MΩ	
Individual Channel Configuration	Yes	
Overvoltage Protection	±35 VDC	

DN-800 Series Voltage Attenuator and Current Transformer

Introduction:

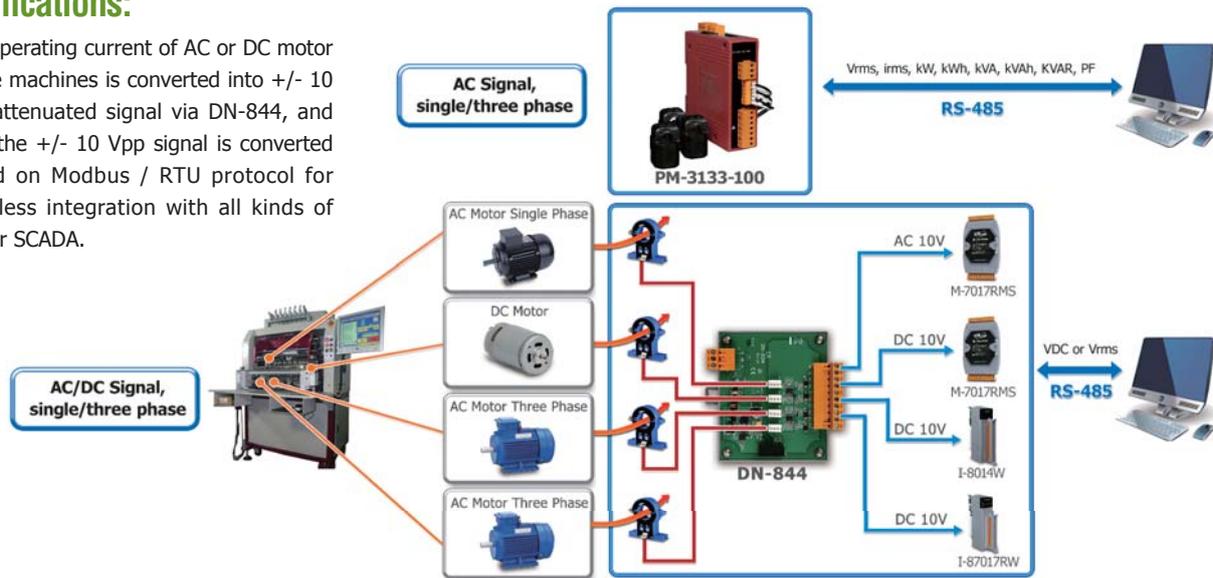
DN-800 series is a Voltage Attenuator and Current Transformer designed for used in high-voltage applications. The current can be converted into +/- 10 Vpp attenuated signal, so that a general electronic measuring device is able to read the signals. Compared to ICP DAS power meter products (PM-3033, PM-3133, PM-4324, etc.), in addition to AC signals, the DN-800 series can convert DC signals as well.

The users can use appropriate ICP DAS Remote I/O Modules such as: M-7017R, I-87017RW, or ET-7217 to measure the converted +/- 10 VDC signal via DN-800 series. And use M-7017RMS or I-87017W-RMS, etc. to measure the AC signals.

sBy using DN-800 series, the power data of all kinds of machines and AC/DC motors can be easily measured and retrieved, and then the analyzed data can be used to develop a model to build a failure warning system.

Applications:

The operating current of AC or DC motor of the machines is converted into +/- 10 Vpp attenuated signal via DN-844, and then the +/- 10 Vpp signal is converted based on Modbus / RTU protocol for seamless integration with all kinds of PLC or SCADA.



Appearance and Specifications:



DN-831I-100V-50A
DN-831I-100V-200A
DN-831I-100V-500A



DN-843VI-600V



DN-848VI-10V
DN-848VI-80V
DN-848VI-150V



DN-843I-CT-1
DN-843I-CT-10
DN-843I-CT-20
DN-843I-CT-50



DN-844-50A
DN-844-200A
DN-844-500A

Model	Input Channel	Input Type	Input Range	CT Type	Cable	Output
DN-831I-100V-50A DN-831I-100V-200A DN-831I-100V-500A	1 × Voltage, 1 × Current	AC/DC	±100 Vpp, ±50 A ±100 Vpp, ±200 A ±100 Vpp, ±500 A	Clip-on	1.5 m/3 m	±10 Vpp
DN-843VI-600V	3 × Voltage	AC/DC	±600 Vpp	N/A	N/A	±10 Vpp
DN-848VI-10V DN-848VI-80V DN-848VI-150V	8 × Voltage	AC/DC	±10 Vpp, ±80 Vpp, ±150 Vpp	N/A	N/A	±10 Vpp
DN-843I-CT-1 DN-843I-CT-10 DN-843I-CT-20 DN-843I-CT-50	3 × Current	AC/DC	±1 A, ±10 A, ±20 A, ±50 A	Solid Core (closed)	N/A	±1.6 Vpp, ±10 Vpp, ±10 Vpp, ±4 Vpp
DN-844-50A DN-844-200A DN-844-500A	4 × Current	AC/DC	±50 A, ±200 A, ±500 A	Clip-on	1.5 m/3 m	±10 Vpp

Industrial Multi-power-meter Display



TPD-433-PM



TPD-703-PM



VPD-143N-PM



VPD-173-PM

4.3" Series

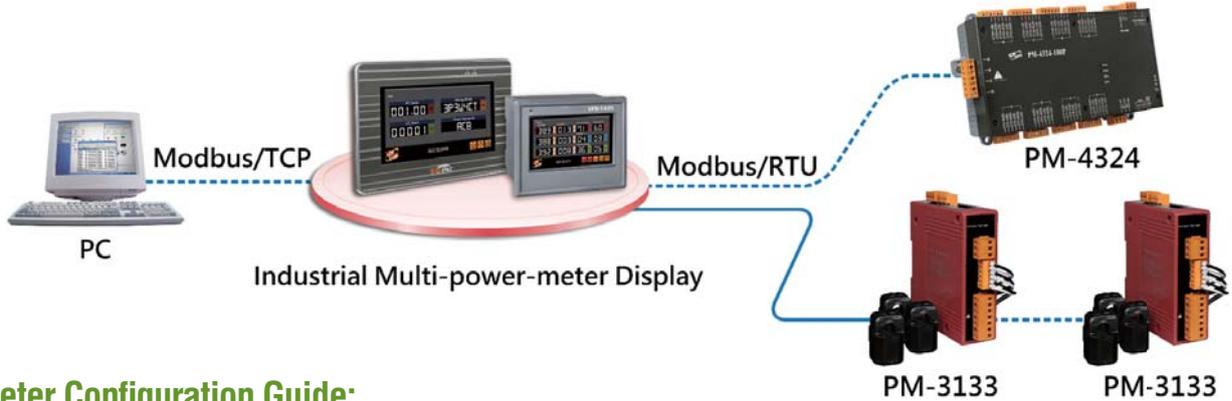
7" Series

Features:

- Built-in HMI for Information Display of Power Meters
- 4.3"/7" Colorful Display with Touch Panel
- IP40/IP60 Ingress Protection for Front Panel
- Built-in Real Time Clock
- Support Modbus TCP/RTU Protocols
- Support Max. of 8 Single-phase/3-phase Power Meters (PM-3xxx series) or One PM-4324
- Support Max. of 4 Modbus/TCP Connections for SCADA Software
- Support Phase Sequence Detection
- Support Fine Tune of Voltage and Current Ratio

Introduction:

The Industrial Multi-power-meter Display features 4.3"/7" high-resolution high-color TFT touch screen and IP40/IP65 waterproof. The built-in HMI screen pages for the information display of power meter, via the communication mechanism, can automatically display the meter information without additional programming. The multi-power-meter & multi-circuit device information can be shown in one display device, customers can now provide the display solution to the local end. Furthermore, the data can be integrated into the background SCADA control system, not only to get the power information, but also to facilitate the integration and configuration.



Meter Configuration Guide:



Setting Method:
Keep clicking on the text or number until it reaches the required value and then press the "Set" button.

Ordering Information:

Model No.	Description
TPD-433-PM CR	4.3" Industrial Multi-meter TouchPAD, IP40 Waterproof (RoHS)
VPD-143N-PM CR	4.3" Industrial Multi-meter TouchPAD, IP65 Waterproof (RoHS)
TPD-703-PM CR	7" Industrial Multi-meter TouchPAD, IP40 Waterproof (RoHS)
VPD-173-PM CR	7" Industrial Multi-meter TouchPAD, IP65 Waterproof (RoHS)