

PMC-284xM

Advanced IIoT Power Meter Concentrator

Features

- No extra software tool is required, using browsers to perform system operations
- Support at most 48 modules (Include ICP DAS Modbus Power Meters and Modbus I/O modules)
  * COM3 and COM4 can connect to Max. 16 Modbus RTU modules individually.
  * LAN can connect to Max. 16 Modbus TCP modules.
  * Support at most 4 ICP DAS PM-4324 series Power Meters
- Display real-time or historical power data; Provide power data statistics report
- Power data logger and data files send back function supported.
- Built-in IF-THEN-ELSE logic engine for power demand management
- Support LINE, Telegram, WeChat, SMS and Email message notification
- Support Modbus TCP/RTU, SNMP, MQTT, FTP and CGI protocols.
- Support connection with IoT Cloud Platform (Microsoft Azure,IBM Bluemix, Amazon Web Services) and IoTstar Cloud Management Software
- Support 4G wireless data communication
- Complete information security protection mechanism - HTTPS, VPN, SNMP v3,SFTP, FTPS, and Blacklist/Whitelist.

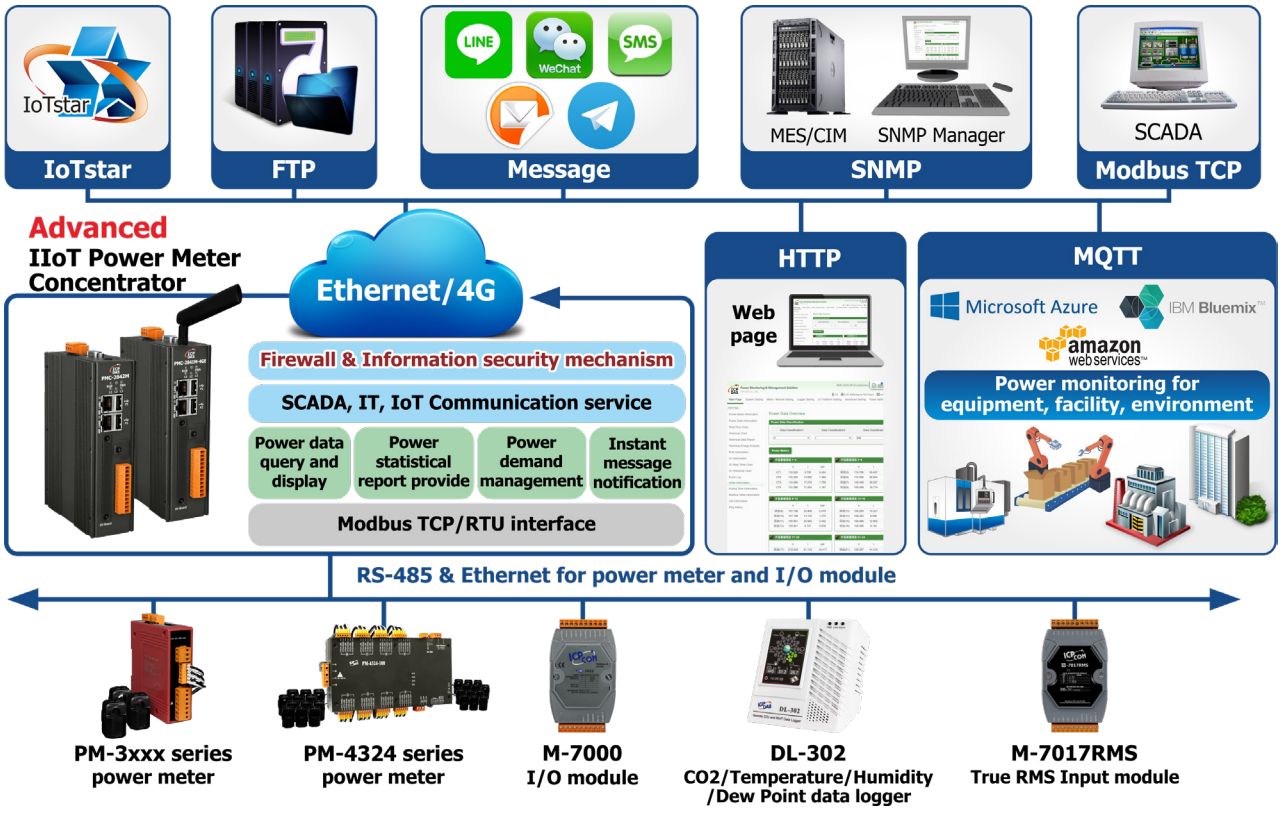
Introduction

PMC-284xM is an Advanced IIoT Power Meter Concentrator designed by ICP DAS for applications in the era of IoT and cloud computing. It allows flexible integration with ICP DAS power meters via RS-485 or Ethernet, and supports functions including power data collection, energy usage analysis, data logging, power demand management, and remote alarm notification. With a user-friendly and intuitive web-based interface, users can complete system setup and monitoring in just a few clicks—no programming required.

PMC-284xM can work in conjunction with ICP DAS smart power meters and uses IF-THEN-ELSE logic rules and alarm notifications, allowing it to perform advanced power demand management and load shedding operations when needed.

To ensure data integrity and system protection, PMC-284xM supports multiple security mechanisms including VPN Client, SNMP v3, SFTP, FTPS, and HTTPS. These encrypted communication protocols help meet the high standards of information security required in IoT-based cloud power monitoring systems.

System Architecture



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To meet increasing security requirements in Industrial IoT systems, ICP DAS has launched the Advanced IIoT Power Meter Concentrator: PMC-284xM series as an advanced upgrade of the PMC-5231x/224x. In addition to inheriting the core features of the previous generation, PMC-284xM enhances its protection capabilities by offering a wide range of security mechanisms and encrypted protocols as listed below:

Network Security

The PMC-284xM series features VPN communication capabilities (supports 4 VPN protocols: PPTP, L2TP, OpenVPN, and SoftEther), allowing users to establish a secure communication tunnel between the PMC controller and external networks. By operating within a protected VPN environment, PMC-284xM and its connected power meters are effectively shielded from unauthorized access and external cyber security threats.



System Security

As the web interface serves as the main entry point for configuring the system and monitoring connected power meters, its protection is critical. PMC-284xM supports the HTTPS encrypted communication protocol to ensure that all data exchanged between the browser and the controller is secure, preventing sensitive settings and operational commands from being intercepted or tampered with. In addition, it implements SNMP v3 for secure communication and includes a user authentication mechanism to safeguard connections between the PMC-284xM and IT systems, reinforcing access control and system integrity.

Data Security

To support secure data handling, PMC-284xM is equipped with a microSD card that enables both periodic and event-driven data logging for connected power meters. Logged data can be automatically transmitted to the back-office via FTPS, or manually retrieved by users through SFTP, FTPS, or a standard web interface. All data transfers are safeguarded using TLS encryption, ensuring the log files remain protected from interception or tampering during transmission.



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Identity Authentication Security

To further enhance access security, PMC-284xM implements password authentication for each communication interface. Only administrators who enter the correct credentials can configure and operate the device. Additionally, PMC-284xM supports both blacklist and whitelist settings, allowing users to control which domains or IPs are permitted or denied access. A dynamic blacklist mechanism is also available, which automatically blocks IP addresses that exceed a predefined number of failed login attempts—providing effective defense against brute-force password attacks.



Cloud Backup Mechanism

Despite the robust security mechanisms in place, the possibility of a breach can never be completely eliminated. Therefore, system recovery plays a crucial role in ensuring operational resilience. PMC-284xM supports automatic backup and recovery by connecting to ICP DAS's IoTstar Cloud Management Software. In addition to collecting power meter data and uploading it to a database, IoTstar can also perform automatic backups of the system settings for all connected PMC controllers. If a device is compromised or damaged due to a cyberattack, the original system configuration can be quickly restored to a replacement PMC controller. This minimizes downtime and ensures that system operations can return to normal with minimal disruption or data loss.



The Advanced IIoT Edge Controller - PMC-284xM inherits the features of the original PMC series controllers: perform system setting, power information monitoring by browser, powerful IF-THEN-ELSE logic operation capability for power demand management, connect a variety of power meters, and provide instant messaging notification operation. Now it also features greatly improved information security mechanism. The PMC-284xM is perfect to serve as the operational core of the industrial IoT power monitoring system.

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Hardware Specifications

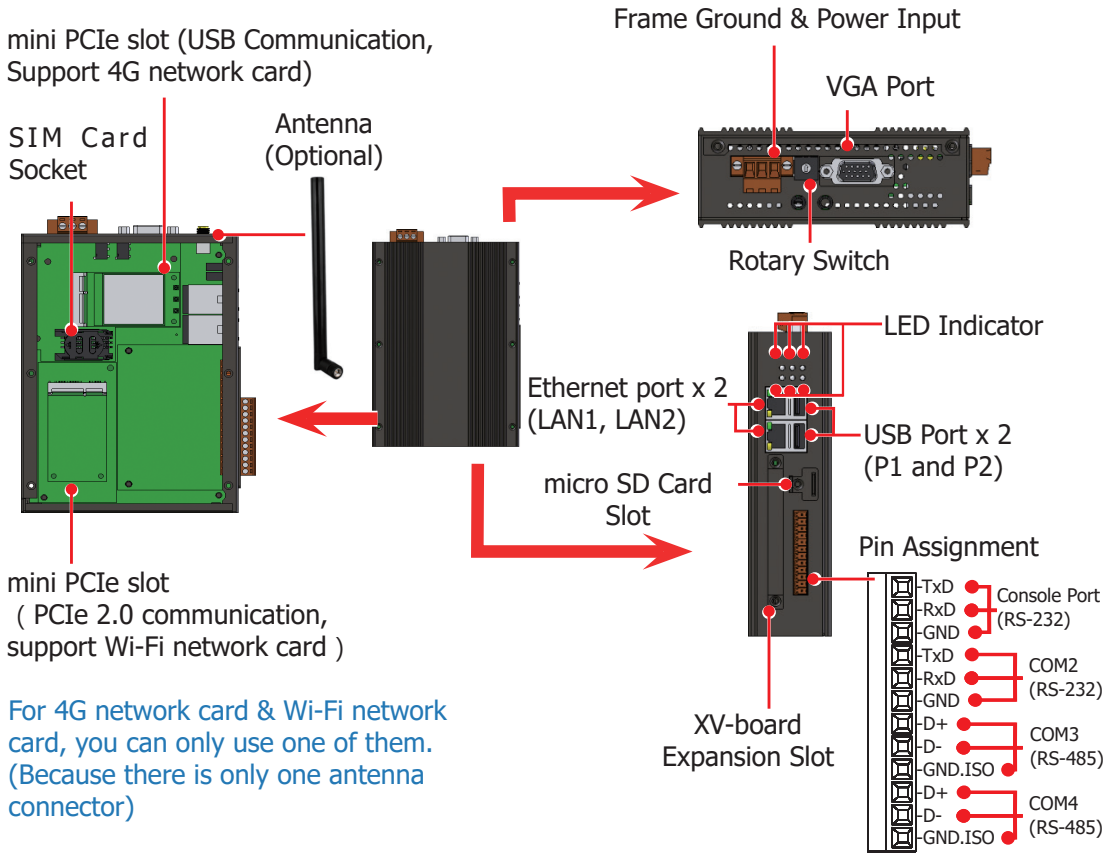
Model	PM-284xM
System	
CPU	Quad-core ARM CPU, 1.6 GHz/Core
VGA port	Yes (Only for system diagnostic and recovery operations)
SDRAM/Flash	DDR3 2 GB / 8 GB
microSD	Built-in one 4 GB microSD card (support up to 32 GB microSDHC card or 2 TB microSDXC card)
Communication Interface	
Ethernet	RJ-45 x 2, 10/100/1000 Base-TX (Auto-negotiating, Auto MDI/MDI-X)
COM 2	RS-232 (TxD, RxD, GND), non-isolated, Speed: 115200 bps max
COM 3/COM 4	RS-485 (Data+, Data-), Speed: 115200 bps max. Support 2500 VDC isolation.
Module Support	
Local Side	Support ICP DAS XV-board
Remote Side	• Support at most 48 modules (Include ICP DAS Modbus Power Meters and Modbus I/O modules) * COM3 and COM4 can connect to Max. 16 Modbus RTU modules individually. * LAN can connect to Max. 16 Modbus TCP modules. * Support at most 4 ICP DAS PM-4324 series Power Meters
Mechanical	
Casing	Metal
Dimensions (W x L x H; mm)	42 x 164 x 129
Installation	Wall Mounting Installation or DIN-Rail Installation (Optional)
Environmental	
Temperature/ Humidity	Operating Temperature: -25 °C to +75 °C; Storage Temperature: -40 °C to +80 °C; 10 to 90% RH, Non-condensing
Power Requirements	
Input Range/ Consumption	12 to 48 VDC Ethernet version: 10 W; -4GE/4GC/3GWA version: 15 W
Mobile Network Communication	
PMC-284xM-4GE	3G：WCDMA 850/900/2100 MHz 4G：FDD LTE: B1/B3/B5/B7/B8/B20 bands (Frequency Band for EMEA, Korea, Thailand, India and Taiwan)
PMC-284xM-4GC	3G：WCDMA: 900/2100 MHz, TD-SCDMA 1900/2100 MHz, CDMA2000 (BC0) 800 MHz 4G：FDD LTE: B1/B3/B8 bands (Frequency Band for China); TDD LTE: B38/B39/B40/B41 bands (Frequency Band for China)

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Software Specifications

Function	Description
Operation Interface	• Web Page
Power data collection	• Power data collection; Real-time and Historical power data displayed • Power data logging and historical power data statistics report provided • PUE information provided and displayed
Power demand management	• Built-in IF-THEN-ELSE logic engine for thought-out power demand management • Adjust equipment operation by its power status via Modbus I/O modules • Provide Schedule function to manage the equipment's operation(via the Modbus TCP/RTU protocol) • Provide message notifcation function via Email, LINE, Telegram and WeChat (4G version PMC provides SMS message notification function)
Integrate with SCADA/ IT/IoT/ System	• Support Modbus TCP/RTU, MQTT, SNMP(v2c, v3) & CGI protocols to transmit real-time power data • Power data logging and power data file auto send-back (by FTP protocol) & recovery when network is resumed after disconnection • Support DDNS (Dynamic DNS) system • Support Microsoft Azure, IBM Bluemix and Amazon Web Service • Support ICP DAS IoTstar Cloud software
Information Security Mechanism	• Support HTTPS encryption protocol for Web interface operation • Support VPN Client function (PPTP, L2TP, OpenVPN and SoftEther protocols) • Support SNMP v3 encryption protocol to ensure the security of the connection with IT system • Support SFTP & FTPS mechanisms to ensure that file transfers are encrypted through TLS • Support Blacklist and Whitelist setting to filter and exclude the accessible domains

Appearance



Ordering Information

PMC-2841M CR	Advanced IIoT Power Meter Concentrator (Metal casing)
PMC-2841M-4GE CR	Advanced IIoT Power Meter Concentrator (Metal casing; Built-in 4G Wireless module; Frequency Band for EMEA, Korea, Thailand, India and Taiwan; **Asia only**)
PMC-2841M-4GC CR	Advanced IIoT Power Meter Concentrator (Metal casing; Built-in 4G Wireless module; Frequency Band for China; **Asia only**)

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