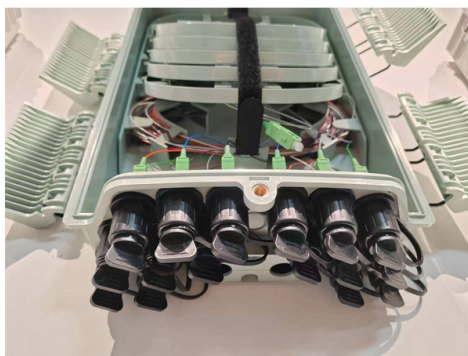


What is the function of the metering module



Overview

Detailed Explanation Of Smart Meter Metering FunctionsThe single phase smart meter metering module uses high-precision voltage and current sensors to captu.

Key Takeaways

A metering module is the core measurement subsystem inside a utility or smart energy meter that converts voltage and current signals into accurate, billable energy data, often with time-stamping and tamper-detection features.Overview

A metering module (sometimes called a utility metering module or power metering module) is the internal hardware block responsible for measuring electrical parameters and producing trustworthy consumption data. It is used in electricity meters, smart meters, and submetering systems.

Key Functions

- Voltage & current sensing: Captures polyphase or single-phase electrical signals.
- Analog-to-digital conversion (ADC): Converts analog waveforms into digital samples at high frequency for precision.
- Digital signal processing (DSP): Computes real power, energy (Wh), RMS voltage, and other metrics.
- Real-time clock (RTC): Provides trusted timestamps for time-of-use (TOU) billing and event logs.

- Tamper detection: Generates structured evidence of tampering attempts.
- Secure data handling: Some modules include encryption, authentication, and secure storage.
- Communication interface: Exposes measurement data via SPI, UART, I²C, Wi-Fi, cellular, or Modbus.

Types of Metering Modules

- Power metering modules: Focus on measurement accuracy for single-phase or three-phase systems.
- Embedded security modules (ESAM): Add encryption, authentication, and secure data storage.
- Communication modules: Wi-Fi, cellular, or wired interfaces for remote data transmission.

How They Work

- Signal sampling using CTs, shunts, or resistor dividers.
- ADC digitization at high sampling rates (often >4 kHz).
- DSP algorithms compute energy and correct errors (gain, phase, temperature drift).
- Event logging & timestamping ensure traceability.
- Data output to the host controller or cloud system.

Where They Are Used

- Smart electricity meters
- Industrial energy monitoring
- Residential submetering systems
- Multi-tenant billing setups

Metering modules form the measurement backbone of modern smart meters, ensuring accuracy, security, and reliable data transmission.

Article Content

Detailed Explanation Of Smart Meter Metering Functions

The single phase smart meter metering module uses high-precision voltage and current sensors to capture current

Electricity Meter Module_Baiduwiki

The metering unit is the core of the module, responsible for the acquisition and calculation of electrical energy signals. It usually

Design of an Electric Energy Metering Module Combining Software

In order to meet the requirements of the construction of new power system for the metering accuracy, operation reliability and

RMU CT/VT Metering Modules: What You Need for Accurate Billing

RMU CT/VT Metering Modules: What You Need for Accurate Billing When an RMU includes a metering module, CT

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