

eK Power Meter

Specification Sheet



產品簡介 (Product Introduction)

eK Power Meter 是一款專為電力監測與管理設計的高精度智慧電表。它採用先進的電流感測技術，能夠同時精確量測複數設備電氣參數，為工業、商業及住宅應用提供可靠的電力數據採集解決方案。本產品具備體積小巧、安裝便捷的優勢，並提供多重保護設計，確保設備穩定可靠運行。

產品特色 (Key Features)

- **高精度量測：** 功率精確度高達 $>99\%$ ，電流線性度優異 (積和非線性 $< 8\text{ppm}$)，確保數據可靠性。
- **多參數監測：** 可量測電流 (A)、功率因數 (PF)、波峰因數 (CF)、視在功率 (VA)、有效功率 (W)、頻率 (Hz) 等多種電氣參數。
- **緊湊輕巧設計：** 體積小巧、重量輕，方便攜帶與安裝，特別適用於空間受限的環境。
- **便捷安裝：** 支援標準工業導軌安裝，大幅簡化施工流程，節省設置成本。
- **高密度監測能力：** 相較於傳統電表，能以更少的設備監測更多迴路。
- **抗干擾能力：** 具備抗諧波干擾，確保數據穩定性。
- **多重保護：** 提供類比輸入 ESD 保護、極性錯誤保護及突波保護，確保設備安全。
- **即時通訊：** 採用 Web Socket 通訊協議，反應時間小於 1 秒，實現即時數據傳輸。

功能說明 (Functional Description)

- **多迴路電力監測：** 支援多路電流互感器 (CT) 輸入，可同時監測多個單相或三相電力迴路。
- **即時數據採集：** 高速採集電壓、電流、功率、頻率、功率因數等即時數據。
- **數據分析與顯示：** 搭配網頁提供直觀的數據顯示介面，方便用戶監控電力使用情況。
- **遠端通訊：** 透過 Ethernet 介面和 WebSocket 協議，實現遠端數據傳輸與系統整合。
- **抗干擾處理：** 內建抗諧波干擾及防無線干涉機制，確保在複雜電磁環境下的量測準確性。

技術規格 (Technical Specifications)

通用規格 (GENERAL)	
模型名稱 (Model Name)	eK Power Meter
尺寸 (Dimensions)	160 x 90 x 58 mm
重量 (Weight)	270 g
操作溫度 (Op. Temp.)	-20°C 至 +65°C , R.H. < 90% (非凝結)
指示燈 (Indicators)	LED 指示燈號
電源供應 (Power Supply)	DC 9-24V / 250 mA , 漣波 < 150 mV
感測方式 (Sensing Method)	電流: 扣環式、電壓: 接線式
架設方式 (Installation)	導軌式

通訊規格 (COMMUNICATION)	
通訊介面 (Interface)	IEEE 802.3 Ethernet
頻寬 (Bandwidth)	100 Mbps
通訊協議 (Protocol)	Web Socket , 反應時間 < 1 秒

技術規格 (Technical Specifications)

量測能力 (MEASUREMENT CAPABILITIES)	
適用電壓 (Voltage Range)	AC 90 ~ 600V
電流範圍 (Current Range)	0.1A ~ 600A (標準)、600A ~ 3000A (特規)
電流頻率 (Current Freq.)	50/60 Hz
頻率解析度 (Freq. Resolution)	0.01Hz
量測頻率 (Sampling Rate)	7812.5 Hz
電流線性度 (Current Linearity)	積和非線性 (Integral Nonlinearity) < 8ppm
CT 二次電流 & 電壓 (CT Secondary)	<= 500mV
功率因數 (Power Factor)	-1.000 ~ +1.000
功率因數解析度 (PF Resolution)	0.001
瓦時範圍 (kWh Range)	0 ~ 232-1kWh
瓦時解析度 (kWh Resolution)	0.0001 kWh
準確率 (Accuracy)	>99% (電流 I, 電壓 V, 有效功率 kW)
量測項目 (Measured Items)	A, PF, CF, VA, W, kW, V, Hz

技術規格 (Technical Specifications)

保護及標準 (PROTECTION & COMPLIANCE)	
類比輸入 ESD(Analog input Electrostatic Discharge)	1.5kV
其他保護 (Other Protection)	極性錯誤保護, 突波保護

Product Introduction

The eK Power Meter is a high-precision smart meter designed for power monitoring and management. Leveraging advanced current sensing technology, it can simultaneously and accurately measure multiple electrical parameters across different devices. It provides a reliable solution for data acquisition in industrial, commercial, and residential applications. With its compact size, easy installation, and multi-layer protection mechanisms, the product ensures stable and dependable operation.

Key Features

- **High Measurement Accuracy** : Power accuracy greater than 99 percent, with excellent current linearity (integral and differential nonlinearity less than 8 ppm), ensuring data reliability.
- **Multi-parameter Monitoring** : Measures a wide range of parameters including current (A), power factor (PF), crest factor (CF), apparent power (VA), active power (W), and frequency (Hz).
- **Compact and Lightweight Design** : Small footprint and lightweight structure for portability and easy installation, ideal for space-constrained environments.
- **Easy Installation** : Supports standard industrial DIN-rail mounting, simplifying the installation process and reducing setup costs.
- **High-density Monitoring Capability** : Compared to traditional meters, it can monitor more circuits with fewer devices.
- **Strong Anti-interference Performance** : Enhanced harmonic immunity ensures stable and accurate data.
- **Comprehensive Protection** : Equipped with analog input ESD protection, reverse polarity protection, and surge protection to guarantee equipment safety.
- **Real-time Communication** : WebSocket protocol with response time under one second, enabling real-time data transmission.

Functional Description

- **Multi-circuit Power Monitoring** : Supports multiple current transformer (CT) inputs, enabling the simultaneous monitoring of multiple single-phase or three-phase circuits.
- **Real-time Data Acquisition** : High-speed acquisition of voltage, current, power, frequency, power factor, and other real-time parameters.
- **Data Analysis and Display** : Integrated with a web interface that provides intuitive data visualization, allowing users to monitor power usage conveniently.
- **Remote Communication** : Enables remote data transmission and system integration via Ethernet interface and WebSocket protocol.
- **Anti-interference Processing** : Built-in harmonic suppression and wireless interference prevention mechanisms ensure measurement accuracy in complex electromagnetic environments.

Technical Specifications

GENERAL	
Model Name	ek Power Meter
Dimensions	160 x 90 x 58 mm
Weight	270 g
Op. Temp.	-20°C to+65°C , R.H. < 90% (non-condensing)
Indicators	LED status indicators
Power Supply	DC 9–24 V / 250 mA, ripple < 150 mV
Sensing Method	Current: Clamp Type Voltage: Terminal Connection
Installation	DIN-Rail Mounting

COMMUNICATION	
Interface	IEEE 802.3 Ethernet
Bandwidth	100 Mbps
Protocol	WebSocket, response time < 1 second

Technical Specifications

MEASUREMENT CAPABILITIES	
Voltage Range	AC 90 ~ 600V
Current Range	0.1 A ~ 600 A (standard), 600 A ~ 3000 A (custom)
Current Freq.	50/60 Hz
Freq. Resolution	0.01Hz
Sampling Rate	7812.5 Hz
Current Linearity	Integral Nonlinearity < 8ppm
CT Secondary	<= 500mV
Power Factor	-1.000 ~ +1.000
PF Resolution	0.001
kWh Range	0 ~ 232-1kWh
kWh Resolution	0.0001 kWh
Accuracy	99% for current (I), voltage (V), and active power (kW)
Measured Items	A, PF, CF, VA, W, kW, V, Hz

Technical Specifications

PROTECTION & COMPLIANCE	
Analog input Electrostatic Discharge	1.5kV
Other Protection	Reverse polarity protection, surge protection