

Multi-function Power Meter

F-MPM200 Technical Specification

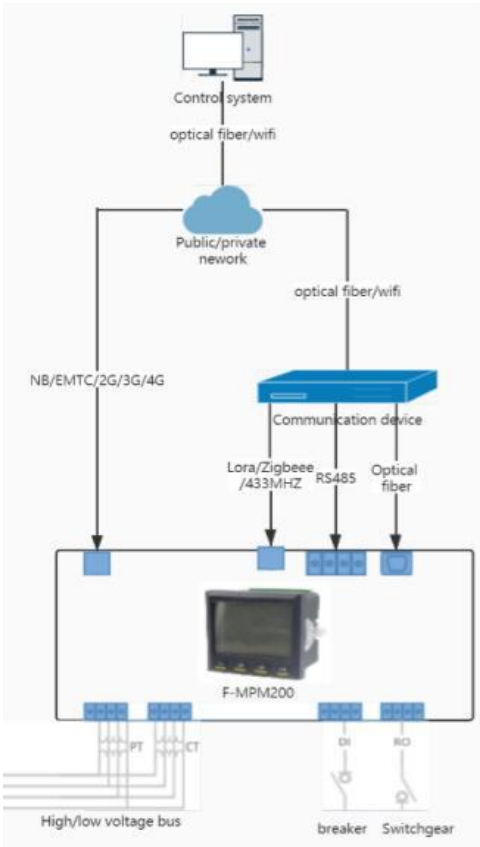
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F-MPM200 multi-function power meter is a product designed for the needs of power systems, industrial and mining enterprises, public facilities, and power intelligent monitoring. It can measure all conventional power parameters, integrates measurement, metering, and communication functions, supports both serial communication and cellular network communication.

The active energy measurement accuracy of this product meets the requirements in GB/T17215.322-2008 (static active energy meter 0.5S); the reactive energy measurement accuracy meets GB/T17215.323-2008 (static reactive energy meter level 2) Regulations in; communication conforms to Modbus protocol.

Topology



Product Features

Industrial grade application design

- ◆ Using high-performance industrial-grade 32-bit processor
- ◆ Built-in real-time clock (RTC)
- ◆ Wide power input (85 ~ 265VAC/VDC, 45 ~ 65HZ)
- ◆ Both internal power supply and communication power supply adopt isolated power supply

Standard design

- ◆ Some ports adopt industrial plug-able terminal interface, which is especially suitable for industrial applications
- ◆ Provide a standard RS485 interface, which can be directly connected to serial devices
- ◆ Intelligent data terminal, can auto enter data transmission state after power on
- ◆ Convenient system configuration and maintenance interface
- ◆ The function is easy to expand, the expansion method is simple and diverse

Stable and reliable

- ◆ WDT watchdog design to ensure system stability
- ◆ RS485 interface built-in 15KV ESD protection
- ◆ Built-in reverse protection and over-voltage protection in the power interface
- ◆ Built-in micro UPS, save important data immediately after power failure.
- ◆ Accuracy in compliance with national standards

Powerful

- ◆ Complete electrical parameter measurement function
- ◆ Multi-type energy data measurement function
- ◆ With power quality analysis function
- ◆ It has a clock circuit with temperature supplement
- ◆ With the most value statistics function, demand statistics function
- ◆ With customized over-limit function
- ◆ Multiple data storage functions, comprehensive event recording functions
- ◆ Digital input (DI), digital output (DO)
- ◆ Analog input (AI), analog output (AO)
- ◆ Active and reactive power 2 pulse output
- ◆ With ModBus communication, cellular network communication

Certification

- ◆ Insulation performance, vibration performance, anti-interference performance are all in line with Q-GDW615-2011

- ◆ Electrostatic discharge immunity test: can withstand the test of level 4 specified in GB/T 17626.2-2006
- ◆ Radio frequency electromagnetic field radiation immunity test: can withstand the test of level 4 specified in GB/T 17626.3-2006
- ◆ Electrical fast transient pulse group immunity test: can withstand the test of level 4 specified in GB/T 17626.4-2008
- ◆ Surge (impact) immunity test: can withstand the test of level 4 specified in GB/T 17626.5-2008
- ◆ Damped oscillating wave immunity test: can withstand the test level specified in Table 2 of GB/T 17626.12 as level 4 damping

Function

- ◆ Power distribution monitoring: real-time monitoring and statistics of energy consumption
- ◆ Energy consumption monitoring: collect user energy data
- ◆ Power quality management: monitoring smart capacitors, three-phase imbalance monitoring and power quality data monitoring
- ◆ Load management: remote control, voltage monitoring, etc.

Technical index

Measurement and functions

Function item	Standard	Auxiliary module
Three phase voltage & average phase voltage	●	
Three line voltage & average line voltage	●	
Three phase current & average phase current	●	
Three phase active Power& total active Power	●	
Three phase reactive Power& total reactive Power	●	
Three phase apparent Power& total apparent Power	●	
Three phase power factor & total power factor	●	
Three phase input/output Active Energy & total input/output Active Energy	●	
Three phase input/output reactive Energy & total input/output reactive Energy	●	
Frequency	●	
Demand	●	
Multi-tariff Energy	●	
Power Quality		
Total voltage/current Harmonics Distortion	●	
Total voltage/current odd Harmonics Distortion	●	

Total voltage/current even Harmonics Distortion	●	
voltage/current Harmonic Ratio (2 nd ~31 st)	●	
Voltage crest factor & current K factor	●	
Voltage Unbalance Rate	●	
Recording		
100 pcs SOE log	●	
Voltage/frequency deviation record	●	
Voltage unbalance rate record	●	
Voltage unbalance rate record	●	
Maximum demand record	●	
Real-time maximum value record	●	
Historical multi-tariff energy record	●	
Input & Output		
DI	3	3*
DO	2	2*
AI		2*
AO		2*
Pulse Output		2*
Communication		
First way ModBus	●	
Second way ModBus		1*
ETH		1*
Cellular network	●	

- ◆ The wireless communication function is provided on the body, which can directly communicate with the communication management machine, and can directly connect to the serial port RS485 device.
- ◆ One standard RS485 MODBUS communication on the main body, the expansion module provides an additional one MODBUS communication.
- ◆ The body provides 3 DI's and 2 DO's, and the expansion module can provide up to 3 DI's or 2 DO's.
- ◆ The main body does not provide AI and AO functions, and the expansion module provides 2-channel AI and 2-channel AO functions.
- ◆ The pulse output function is not provided on the main body. The expansion module provides 1 active pulse output and 1 reactive pulse output.
- ◆ The main body does not provide Ethernet communication function. The expansion module provides 1 Ethernet interface for remote access and configuration.

Auxiliary module

Module name	Function	Show	Communication	Max Auxiliary module
SW	3 ways Digital input	status	Status and control	1
R	2 Ways relay output	status	Status and control	1
AO	2 Ways analog output	no	no	1
AI	2 Ways analog input	value	value	1

C	1 way ModBus communicate	no	no	1
EP	2 ways pulse output	no	no	1
LAN	1 way 10/100M ETH	no	no	1

Product specifications

Measuring voltage and current

Item	content
Measuring voltage	3*57.7/100V, 3*220V/380V rated measurement voltage The high voltage line is connected with the meter by PT, and the PT primary value is not less than the rated voltage value Resolution: 0.01V, accuracy: +/-0.2%
Measuring current	Rated current input is required to be 5A, CT connection must be used between the line and the instrument, and the CT primary value is not less than the rated current value, and the maximum support is 9999A Resolution: 0.0001A, accuracy $\pm 0.2\%$

Working power

Item	Content
Standard power	220VAC 50Hz
Supply range	85~265VAC/VDC
Frequency	45~65Hz
Power consumption	Less than 5W

Interface type

Item	Content
Human-computer interaction	LCD The customized segment code screen can display voltage, current, power and other data, rich in content and beautiful
	Button 4 buttons, follow the menu interface to achieve corresponding functions
	Three phase voltage input 4 contacts : VA、VB、VC、VN VA : A phase voltage VB : B phase voltage VC : C phase voltage VN : Neutral line (voltage neutral line)
	Three phase current input 6 contacts: IA+, IA-, IB+, IB-, IC+, IC- IA+:Phase A current incoming line, IA-: Phase A current outgoing line IB+: Phase B current incoming line, IB-: Phase B current outgoing line IC+: Phase C current incoming line, IC-: Phase C current outgoing line
	Power interface 2 contacts: N/-, L/+ N/-: AC power supply 220V neutral line or DC 220V negative L/+: AC power 220V live wire or DC 220V positive Use special power supply for power meters, overcurrent protection $\geq 120\%$ and overvoltage protection, recoverable
communication	RS485 1 RS485 interface, serial port parameters are as follows:

		Data bits: 8 bits, stop bits: 1, 2 bits Parity: no parity, even parity, odd parity Serial port rate: 1200~38400bits/s, default: 9600bits/s
Note: There may be differences in accessories and interfaces of different models, and the actual product shall prevail.		

Physical characteristics	
Item	Content
shell	ABS flame-retardant material, the shell and the system are safely isolated
size	96*96*65.5mm (not including antenna, installation parts, and expansion modules)
weight	0.55kg (Including installation parts and packaging)

Cellular parameters (optional)	
Item	Content
Frequency	Support LTE FDD 2600/2100/1800/900/800MHz, optional 700/1700/2100MHz Support DC-HSPA+/HSPA+/HSDPA/HSUPA/UMTS 850/900/2100MHz tri-band, optional 800/850/1900/2100MHz quad-band Support EDGE/GPRS/GSM 850/900/1800/1900MHz quad frequency Support GPRS CLASS 10 Support EDGE CLASS 12
Theoretical bandwidth	LTE FDD: Downlink rate 100Mbps, uplink rate 50Mbps DC-HSPA+: Downlink rate is 42Mbps, uplink rate is 5.76 Mbps HSPA+: Downlink rate 21Mbps, uplink rate 5.76 Mbps HSDPA: Downlink rate 7.2Mbps, HSUPA: Uplink rate 5.76Mbps UMTS: 384Kbps
Transmit power	<23dBm
Receiving sensitivity	>-97dBm

Other parameters	
Item	Content
Work temperature	-10~+55°C

Storage temperature	-40~+70°C
Relative humidity	5%~95% (No condensation)