F-PIC800 Technical Specification

Document Version	Confidential
V1.0.0	

F-PIC800 multichannel power meter is a kind of 10kV distribution high voltage metering device which is based on voltage/current transformer and electromagnetic transformer. It is an important part of the line loss management system of 10KV distribution line, providing a solution for high-voltage energy measurement and real-time monitoring of equipment nodes such as segment point, branch point, switch devices on the column, ring main unit and so on. It integrates the functions of measurement, metering and communication, and supports RS232 or RS485 communication.

The active power measurement accuracy of the product conforms to the specification in GB/ T17215.322-2008 (Static active power meter: 0.5s); the passive power measurement accuracy of the product conforms to the specification in GB/ T17215.322-2008 (Static passive power meter : class 2) ; the communication complies with the DLT634.5101-2002.

Product Features

Design for Industrial Application

- High-powered industrial 32 bits CPU
- Embedded Real-Time Clock (RTC)
- Power range: DC 18~72V
- The internal power supply and the communication power supply all adopt the isolated power supply

Stability and Reliability

- Support WDT design, keep the system stable
- RS232/RS485 ports:15KV ESD protection
- Power port: reverse-voltage and over voltage protection.
- Outage detection and low voltage detection
- Built-in mini UPS can save important data in case of outage
- Conforms to the detection accuracy of the national standard

Standard and Convenience

- Some of the ports adopt industrial pluggable terminal interface, which is especially suitable for industrial field application
- Support standard RS232/RS485 ports that can connect to serial devices directly
- Support intellectual mode, enter into communication state automatically when power is on
- Convenient configuration and maintenance interface

High-performance

- Complete electrical parameter measurement function
- Measurement function of multi-type electrical energy data
- It can detect 2-ways voltage and 8-ways current at most
- A clock circuit with a temperature complement is provided
- Support automatic switching calendar, timing and leap year
- Support multiple measurement data freezing function
- Support multiple data storage
- Support SOE
- Support RS485/RS232 communication
- Embed with the standard 101 protocol stack, support data transmission transparently

Standards Compliance

- Q/GDW-11-143 Communication protocol of power information acquisition and management system
- Q/GDW 514 Power distribution automation terminal/substation function specification
- DL/T 634.5101-2002 Statute implementation rules
- Q-GDW615-2011 Insulation performance, vibration performance, anti-interference performance are all complied
- Immunity test of electrostatic discharge : Able to withstand class 4 test of GB/T 17626.2-2006
- Radio frequency electromagnetic radiation immunity test: Able to withstand class 4 test of GB/T 17626.3-2006
- Immunity test of fast transient pulse group disturbance : Able to withstand class 4 test of GB/T 17626.4-2008
- Surge (impact) immunity test: Able to withstand class 4 test of GB/T 17626.5-2008
- Damping oscillation wave immunity test: Able to withstand class 4 test of GB/T 17626.12

Product specification

F-PIC800 power meter technical specification

Item		Specifications
Analog signal access way		Electromagnetic transformer
Voltage	Rated voltage	3X57.7/100V; 3X220V
	Measurement range	0.05UN~1.3UN
	Accuracy	RMS 1%
	Resolution	0.001V
Current	Ratio	In:1A; 5A
	Measurement range	0.005In~Imax
	Accuracy	RMS 1%
	Resolution	0.00001A
Power（Active power、reactive power、apparent power）	Accuracy	1%
	Resolution	0.001W/kVar/kVA
Frequency	Measurement range	45~55Hz
	Accuracy	1%
	Resolution	0.001Hz
Factor	Measurement range	0~1.000
	Accuracy	1%
	Resolution	0.001
Active power	Accuracy class	0.5S
	Resolution	0.001kWh
Reactive power	Accuracy class	2
	Resolution	0.001kWh
Working voltage	Rated voltage	DC48V/24V
	Range	Support DC18V~72V , ripple wave less than 5%
Consumption	Range	<3W

F-PIC800 power meter constant standard

Voltage(V)	Maximum current	Recommend constant imp/kWh 、imp/kvarh
3X57.5V/100	1.2	100000
3X57.5V/100	6	20000
3X100	1.2	100000
3X100	6	20000
3X220	1.2	30000
3X220	6	6400

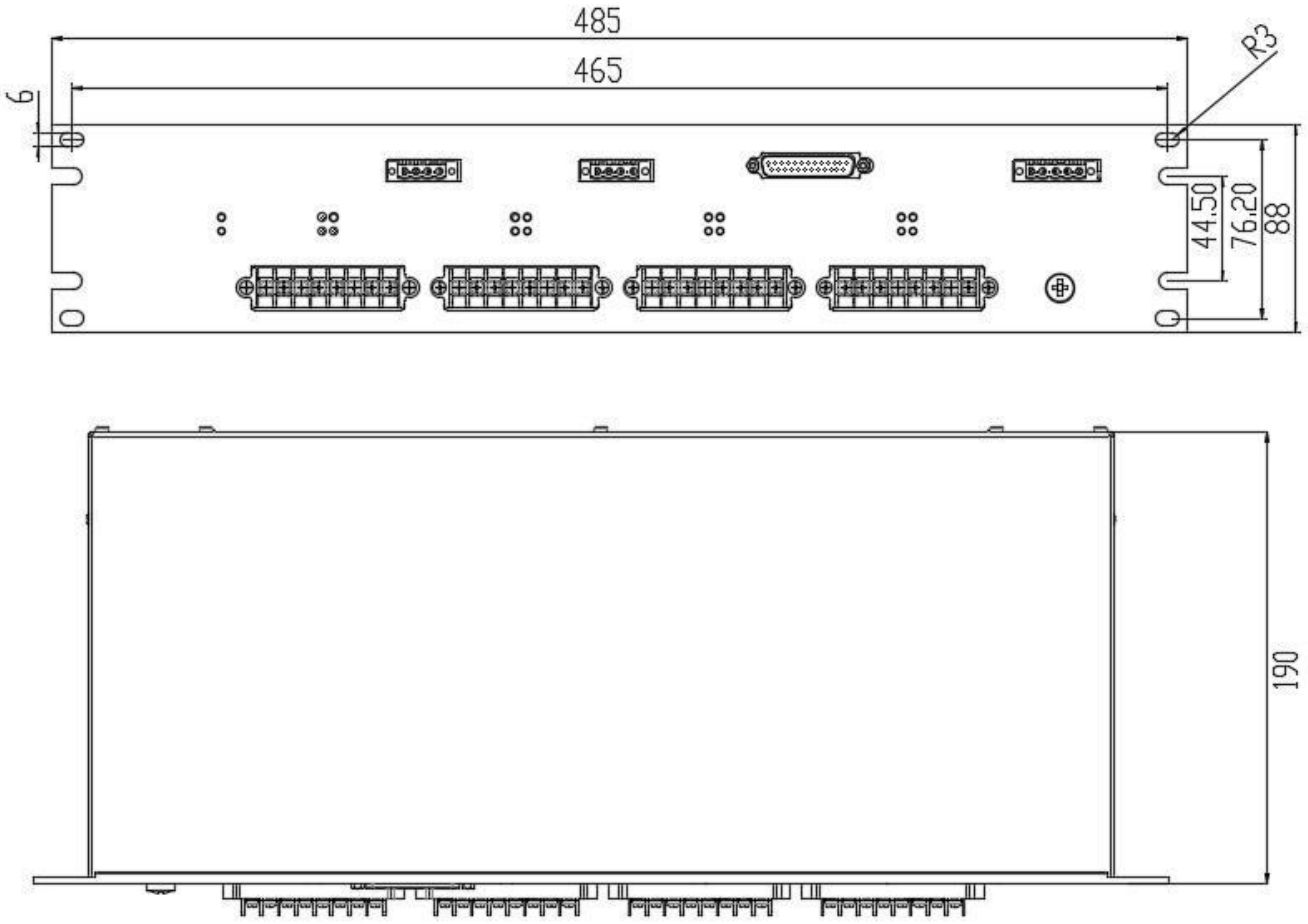
Appendix A

A.1 Structure

A.1.1 Appearance and installation dimension

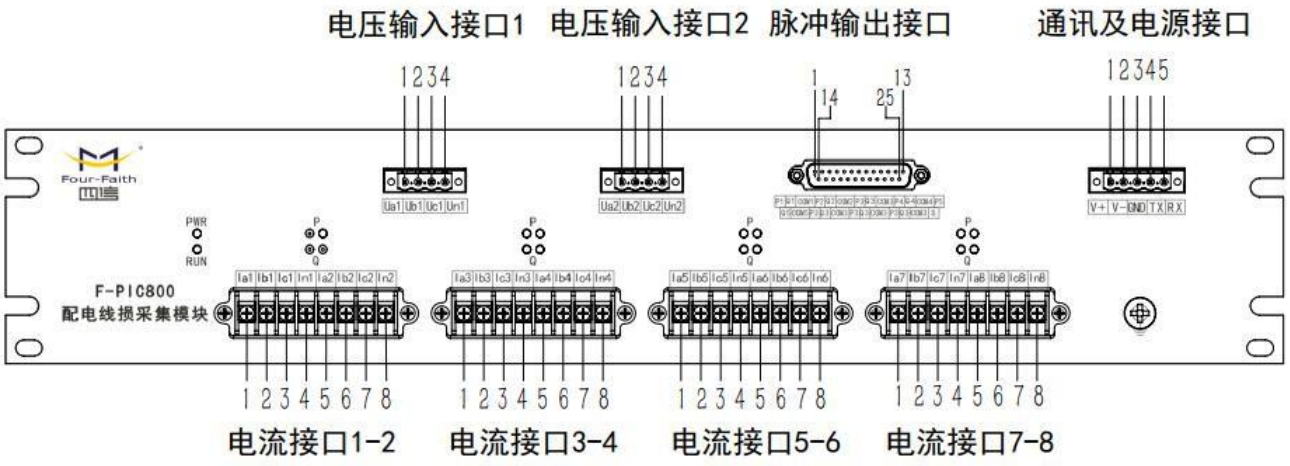
Housing size：

This series of products adopts 2U standard housing, installation size is showed below:（Unit: mm）



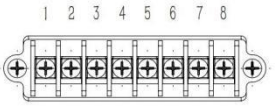
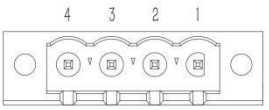
A.2 Terminal blocks

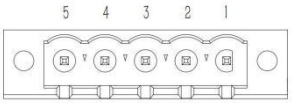
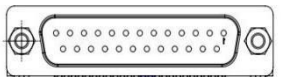
The current interface adopts JP12 type terminal of high current through the wall（8 core terminal with lock）; voltage interface adopts 5.08 spacing plug type terminal（4 core terminal with lock; communication and power supply interface adopts 5.08 spacing plug type wiring terminal（5P terminal with lock）; pulse interface adopts DB25 interface, the detailed interface definition is shown in the following figure:



F-PIC800 Terminal wiring diagram

F-PIC800 power meter interface definition

Pin definition and wiring requirements of current input interface					
Line 1~2					
Pin No.	Mark	Description	Cable specification	Remarks	Diagram
1	Ia1	Phase current of Line 1A	RVVP2.5mm²		
2	Ib1	Phase current of Line 1B	RVVP2.5mm²		
3	Ic1	Phase current of Line 1C	RVVP2.5mm²		
4	In1	Common terminal of Line 1	RVVP2.5mm²		
5	Ia2	Phase current of Line 2A	RVVP2.5mm²		
6	Ib2	Phase current of Line 2B	RVVP2.5mm²		
7	Ic1	Phase current of Line 2C	RVVP2.5mm²		
8	In2	Common terminal of Line 2	RVVP2.5mm²		
Line 3~4; Line 5~6; Line 7~8 the same with 1~2					
Pin definition and wiring requirements of voltage input interface					
Pin No.	Mark	Description	Cable specification	Remarks	Diagram
1	Ua	Phase A voltage	RVVP1.0mm²		
2	Ub	Phase B voltage【1】	RVVP1.0mm²		
3	Uc	Phase C voltage	RVVP1.0mm²		
4	Un	Common terminal【2】	RVVP1.0mm²		

Pin definition and wiring requirements of communication and power supply					
Pin No.	Mark	Description	Cable specification	Remarks	Diagram
1	V+	DC24V/DC48V (Positive)	RVVP1.0mm²		
2	V-	DC24V/DC48V (Ground)	RVVP1.0mm²		
3	GND	RS232GND	RVVP1.0mm²		
4	TX/A	RS232 send /485A	RVVP1.0mm²		
5	RX/B	RS232 receive/485B	RVVP1.0mm²		
Pin definition and wiring requirements of pulse output					
Pin No.	Mark	Description	Cable specification	Remarks	Diagram
1	YG1	Active output pulse 1	RVVP0.2mm²		
2	WG1	Reactive output pulse 1	RVVP0.2mm²		
3	COM1	Common terminal 1	RVVP0.2mm²		
4	YG2	Active output pulse2	RVVP0.2mm²		
5	WG2	Reactive output pulse 2	RVVP0.2mm²		
6	COM2	Common terminal 2	RVVP0.2mm²		
7	YG3	Active output pulse 3	RVVP0.2mm²		
8	WG3	Reactive output pulse 3	RVVP0.2mm²		
9	COM3	Common terminal 3	RVVP0.2mm²		
10	YG4	Active output pulse 4	RVVP0.2mm²		
11	WG4	Reactive output pulse 4	RVVP0.2mm²		
12	COM4	Common terminal 4	RVVP0.2mm²		
13	YG5	Active output pulse 5	RVVP0.2mm²		
14	WG5	Reactive output pulse 5	RVVP0.2mm²		
15	COM5	Common terminal 5	RVVP0.2mm²		
16	YG6	Active output pulse 6	RVVP0.2mm²		

17	WG6	Reactive output pulse 6	RVVP0.2mm²	
18	COM6	Common terminal 6	RVVP0.2mm²	
19	YG7	Active output pulse 7	RVVP0.2mm²	
20	WG7	Reactive output pulse 7	RVVP0.2mm²	
21	COM7	Common terminal 7	RVVP0.2mm²	
22	YG8	Active output pulse 8	RVVP0.2mm²	
23	WG8	Reactive output pulse 8	RVVP0.2mm²	
24	COM8	Common terminal 8	RVVP0.2mm²	
25	S	Second pulse output	RVVP0.2mm²	

Note【1】： When connection way is three-phase three-wire mode, the secondary terminal can not be connected to phase-B, phase-B is connected to the Un terminal; If the phase-B is connected to the Ub terminal, the Ub terminal needs to be short-circuitedwith the Un terminal.

Note【2】： When connection way is three-phase three-wire mode, this terminal is connected to the phase-B; if the phase-B is connected to the Ub terminal, the Ub terminal needs to be short-circuited with it .

Note【3】： Current input of F-PIC800 power meter need to be serial connected after DTU,showing as below: