Multi-Function
Power Meter

EPM 7000 Series

HSIANG CHENG
Hsiang Cheng Electric Corp.

Power Meter
EPM 7000 / 7100

Model & Ordering

Model : EPM 7000 / 7100

Ordering: EPM 7000 / 7100 - A - 5.0A - H - 1 - SA

Version

Current Input
1.0A
5.0A

Power
H : AC 80-260V, DC 80-330V
L : DC20-60V

Communication port
1 : RS-485
2 : RS-232 (for EPM 7000 only)
Y : Special ordering

Accuracy (for EPM 7100 only)
SA : standard accuracy(0.5%fs)
HA : high accuracy(0.2%fs)

Introduction & Features

About EPM 7000 Series Power Meter
EPM 7000 series power meters are conceptualized and intelligent to revolutionize to traditional power metering industrial. Each power meter is a compact, electronically advanced and programmable multi-display metering device (MDMD). It is the answer to future electrical generation and solution.

PLC Modbus® Compatible
The Modbus® communications protocol allows information and data to be efficiently transferred between EPM 7000 / 7100 and Modicon programmable logic controller (PLC) or other third party Modbus® compatible monitoring and control system. The EPM 7000 / 7100 can also establish a monitoring system by just simply adopt an IPC-based centralized master display software. The RTU mode Modbus® protocol with default baud rate 9600 bps, 8 data bit.

Increase Productivity & Efficiency
The power meters are specifically designed to be compatible with the world's 2 most widely used DIN standard panel as DIN 92 × 92 mm and EPM 7100 with DIN 92 × 44 mm panel cutout holes. It is also a standardize hardware suitable for either 1 phase 2 wires, 1 phase 3 wires, 3 phase 3 wires or 3 phase 4 wires networks.

Improved Technical Superiority and Reliability
The power meters are endowed with technical specifications (overload capabilities, accuracy levels, long term stability, readout dependability etc.) far exceeding conventional instruments. The software provides a simple yet practical solution to energy management in factories and plant, small industries, building services, etc.

Factory & Building Automation (FA & BA)
EPM 7000 / 7100 was developed for factory and building automation (FA & BA) applications. EPM 7000 / 7100 allows more power and energy parameters to easily apply to wide range of AC switch-gear or power distribution system for metering.

Field Programmability
The field programmable power meter is able to set e.g. CT and PT ration, Modbus® address, communication baud rate, meter's display, etc. either through rear RS-485 communication port or a maintain port on the front panel with a communication module RX-024 made by HCE.

Comprehensive System Integration
With PLC compatible RS-485 / RS-232 (Option) Modbus® communication protocol, the EPM 7000 series allows information and data to be efficiently transferred between power meter EPM 7000 / 7100, RTU, Power SCADA system, DCS system.

Specification

- Accuracy : Corresponding to each auto - range scale
- Line to line voltage
  For EPM 7000 : VAB / VBC / VCA
  For EPM 7100 : L1-L2 / L2-L3 / L3-L1
  Line to neutral voltage
  For EPM 7000 : VAN / VBN / VCN
  For EPM 7100 : L1 / L2 / L3
- Related conversion elements
  For EPM 7000 : PF1 / PF2 / PF3
  For EPM 7100 : L1 - cos θ / L2 - cos θ / L3 - cos θ
- Neutral current, only for 3 phase 4 wires
  For EPM 7000 : AO
  For EPM 7100 : LN
- Accuracy performance range for WH / VarH / PF
  Cos θ : 1-0.5 for WH / PF
  Sin θ : 1-0.5 for VarH
  Voltage ≥ 75V
  For EPM 7000 : Current ≥ 10% of rate
  For EPM 7100 : Current ≥ 5% of rating
- Phase rotation
  Positive sequence
  For EPM 7000 : SEQ POST
  For EPM 7100 : P
  Negative sequence
  For EPM 7000 : SEQ NEG
  For EPM 7100 : N

Input
- Range
  Voltage
  For EPM 7000 : 10 - 600V
  For EPM 7100 : 10 - 580V
  Current : Suitable for CT secondary rating (option)
  Maximum 6A for 5A rating
  Maximum 1.2A for 1A rating
  Frequency : 40 - 70Hz
- Burden
  For EPM 7000 : Voltage < 0.4VA at 600V
  < 0.04VA at 150V
  Current < 0.1VA at rating
  For EPM 7100 : Voltage < 0.5VA at 580V
  Current < 0.2A at rating
- Overload rating

Current	Voltage
2 x rated continuous	750V continuous
10 x rated 30 seconds	1000V 10 seconds
25 x rated 2 seconds	1200V 3 seconds
50 x rated 1 second	

Measured system
- For EPM 7000 : suitable for 3 phase 4 wires / 3 phase 3 wires, single phase 2 & 3 wires / 3 phase balance
- Select by input wiring & software configuration
- For EPM 7100 : suitable for 3 phase 4 wires / 3 phase 3 wires

Programmability
- For EPM 7000 : software accessible / password lock
  System selection : 3 phase 4 wires / 3 phase 3 wires / Single phase 2 & 3 wires / 3 phase balance
  PT : 1 - 5000.0; CT : 1 - 5000.0
  Readout display control
  4 digitals / auto scan or manual selection / scanning time
- For EPM 7100 : communication accessible / password lock (for communication)
  System selection : 3 phase 4 wires / 3 phase 3 wires
  PT : 1 - 5000.0; CT : 1 - 5000.0
  Readout display control 4 digitals / auto scan
- Communication
  Baud rate 1200 / 2400 / 4800 / 9600 / 19200
  Address setting 1 - 254
- Memory : all of energy date and status setting
- Calibration : For EPM 7000 software with password lock

Communication port
For EPM 7000 : RS-485 (standard); RS-232 (Option), Modbus® RTU protocol
For EPM 7100 : RS-485, Modbus® RTU protocol

Display
For EPM 7000 : LCD 0.4" display, 3 rows of 8 alphanumeric
For EPM 7100 : LCD 0.3" display, 1 rows of "8" digits

Dielectric strength
For EPM 7000 : IEC255 - 5, 2KV ACrms 1 minute between input / output / power
For EPM 7100 : IEC255 - 5, 2KV ACrms 1 minute between input / power

Impulse and surge test
ANSI / IEEE C37.90.1 - 1989 (3KV) SWC test
IEC 255-22-1 class III SWC test
IEC 255-22-4 class IV (IEC 801-4) SWC test
For EPM 7000 : IEC255 - 5 1.2 x 50us (5KV) impulse test
For EPM 7100 : IEC255 - 5 1.2 x 50us (4KV) impulse test

Stability
For EPM 7000 : Temperature range -25 to +55°C, maximum 100 ppm / °C
Long term stability 0.15% drift maximum per year
For EPM 7100 : Temperature range -10 to +55°C, maximum 100 ppm / °C
Long term stability 0.15% drift maximum per year

Operating condition
For EPM 7000 : Temperature range -25 to +60°C, RH 20 - 95% non-condensed

For EPM 7100 : Temperature range -10 to +60°C, RH 20 - 95% non-condensed

Storage condition
Temperature range -25 to +70°C
RH 20 - 95% non-condensed

Power supply
AC80 - 260V, 40 - 70Hz, DC80 - 330V, DC20 - 60V
Dissipation maximum
For EPM 7000 : 12 VA for AC and 6 Watts for DC
For EPM 7100 : 2 VA for AC and 1 Watts for DC

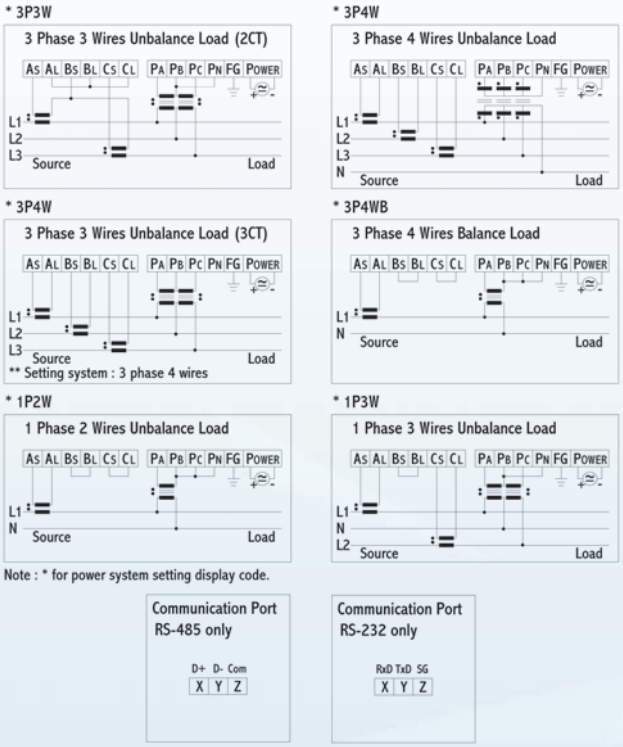
Mounting / Dimension
Panel type mounting

- Size / Weight / per unit
  For EPM 7000 : 120 x 120 x 130.5 mm / 1Kg
  For EPM 7100 : 118 x 98 x 48 mm / 0.4Kg
- Cut out
  For EPM 7000 : 92 x 92 mm
  For EPM 7100 : 92 x 44 mm

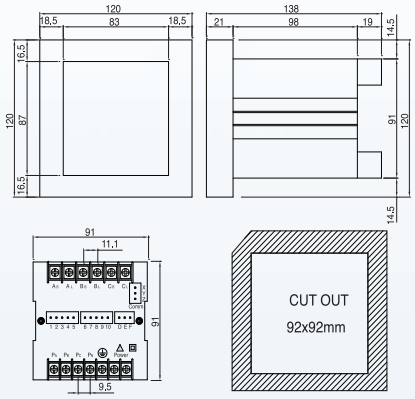
Parameter	Digits	Display (maximum)	Accuracy			Phase 1 (EPM 7000) L1 (EPM 7100)	Phase 2 (EPM 7000) L2 (EPM 7100)	Phase 3 (EPM 7000) L3 (EPM 7100)	Total	Average
			EPM 7000 0.2%	EPM 7100 0.2%	EPM 7100 0.5%					
V x 3	4	9.9.9.9. V / KV	0.2%fs	0.2%fs	0.5%fs	V1	V2	V3		VE
A x 3	4	9.9.9.9. A / KA	0.2%fs	0.2%fs	0.5%fs	A1	A2	A3		AE
Watts	4	9.9.9.9. W / KW / MW / GW	0.25%fs	0.4%fs	1%fs	W1	W2	W3	W	
Vars	4	9.9.9.9. Var / KVar / MVar / Gvar	0.25%fs	0.4%fs	1%fs	Var1	Var2	Var3	Var	
VA	4	9.9.9.9. VA / KVA / MVA / GVA	0.25%fs	0.4%fs	1%fs	VA1	VA2	VA3	VAE	
PF	3	0.999	0.25%fs	0.4%fs	1%fs	PF1	PF2	PF3	PF	
WH	8	9.9.9.9.9.9.9.9. WH / KWH / MWH	0.8%rd	0.5%rd	1%rd				WH	
VarH	8	9.9.9.9.9.9.9.9 VarH / KVarH / MVarH	1%rd	0.5%rd	1%rd				VarH	
AO / LN	4	9.9.9.9. A / KA	0.5%fs	0.5%fs	1%fs					
Hz	4	70.00	0.03%rd	0.05%rd	0.05%rd					

EPM 7000 Dimension / Terminal Connection

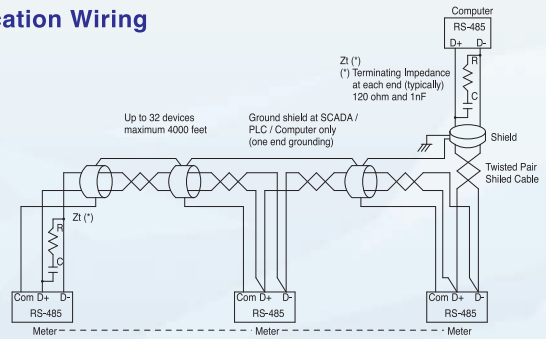
Wiring



Dimension

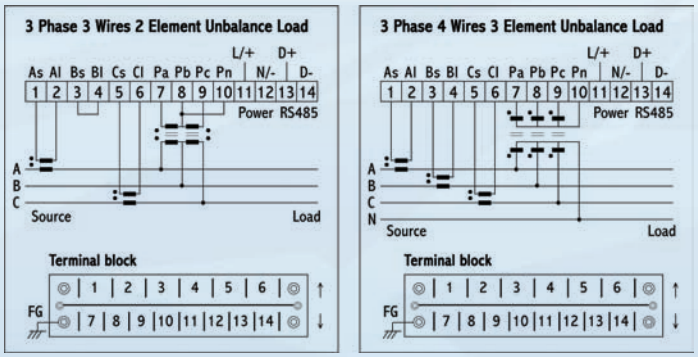


Communication Wiring

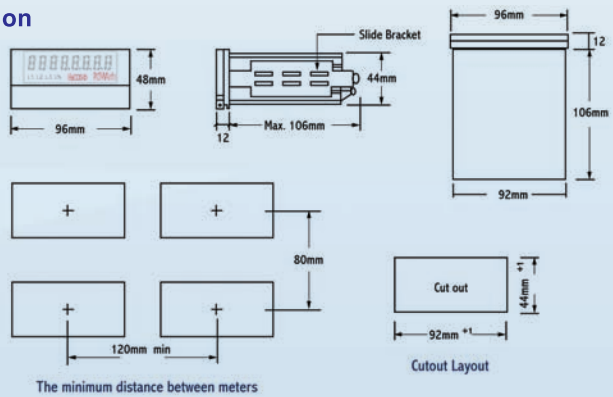


EPM 7100 Dimension / Terminal Connection

Wiring



Dimension



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