Power Meter

EPM 7100

Introduction

About Power Meter EPM 7100

EPM 7100 power meter is conceptualized as an intelligent and revolution the to the traditional single function power meters. This EPM 7100 is a new compact (96 x 48mm), electronically advanced and programmable rotating display metering device. It is the answer to future generation of electrical metering needs and methodology.

Environmental Impact & Cost Saving

The EPM7100 is able to replace many units of conventional analog or digital instruments. The parameters such as Amp, Volt, KVA, KW, PF, KWH, KVarH, Freq, etc. can be displaying rotated automatically; or change manually by keypad on meter head. This saves on the wiring material usage and reduces the cost on metering needs.

More Convenience

The EPM7100 is specifically designed to be compatible with DIN standard panel instruments (It fits the DIN 92 x 44 mm panel cut out holes).
The power meter EPM 7100 is greatly reduced cabling complexity and time. It is also a standardize hardware suitable for either 3 phase 3 wires or 3 phase 4 wires networks.

Improved Technical Superiority and Reliability

The EPM7100 is built-in with specialties such as overload capabilities, accuracy levels, long term stability, readout dependability etc. To overcome the critiques of traditional digital meters, the power meter EPM 7100 supports a LCD screen with "8" digitals readouts.

The display of parameters can be manually selected by EPM 7100 PCTool, or automatically prioritize the sequentially view within 20 parameters. To meet future metering environments, the power meter EPM 7100 is equipped with a serial port RS-485 which allows the connections to an open architecture computerized network, running on PC or data acquisition system and complying with Modbus® protocol. The PCTool provides a simple yet practical solution to energy management in factories and plant, small industries, building services, etc.

Parameters Conversion

The microprocessor-based power meter now provides compatibility with the modicon Modbut® system as a standard feature. Its LCD multi-display can be read V, A, VA, W, Var, WH, etc. within 20 power and energy parameters.

Features

- For factory and building automation
- Modbus® RTU protocol
- Maximum 580V
- True RMS conversion
- LCD display
- Field programmable PT / CT ratio
- Accuracy up to 0.2%
- Memory for all setup and energy data
- Comprehensive self test diagnostics
- Low input burden 0.2VA (5A/120V)
- Wide power supply range 80~260V AC / DC
- Compact physical configuration
- Compatible for DIN&ANSI cutout
- 2KV RMS input / power isolation

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Factory & Building Automation (FA & BA)

The EPM7100 is professionally developed for applications of factory and building automation (FA & BA); with this EPM 7100, more power and energy parameters can be apply widely to switchgeasr or industrial power distribution system for metering.

PLC Modbus® Compatible

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

Memory for all setup and energy data

With this EPM7100, all of the meter status setting and energy data are retaining in memory while power failure situation. The EPM 7100 records including the watt-hour that been measured, PT and CT ratio, the measured system configuration, displaying setting, and communication related parameters.

Programmability

The programmable EPM 7100 is able to set e.g. CT and PT ratio, Modbus® address, communication baud rte, 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..

*Communication converter needs to be order separately.

Accuracy up to 0.2%

With a well developed conversion, sampling and software compensation technology, EPM 7100 power meter successfully meets the accuracy requirement of modern metering. The accuracy of voltage and current is up to 0.2%; other energy and power parameters are up to 0.4%.

For more detail information or software backup please contact Hsiang Cheng Electric Corp. or representative sales department.

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Model & Ordering Number

Model : EPM 7100

Ordering : EPM 7100 — A — 5.0A — H — 1 — SA

Version

Current Input
1.0A
5.0A

Power
H : AC 80-260V, DC 80-330V
L : DC 20-60V

Accuracy
SA : Standard Accuracy
HA : High Accuracy

Communication Part
1 : RS-485
Y : Special ordering

Specification

Programmable measurements / Accuracy / Display readouts

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

- Accuracy : Corresponding to each auto-range scale
- L1-L2 / L2-L3 / L3-L1 : Line to line voltage
  L1 / L2 / L3 : Line to neutral voltage
- L1-cos θ / L2-cos θ / L3-cos θ :
  Related conversion elements
- LN (neutral current, only for 3 phase 4 wires)
- Accuracy performance range for WH / VarH / PF
  Cos θ : 1-0.5 for WH / PF
  Sin θ : 1-0.5 for VarH
  Voltage $\geqq$ 75V, Current $\geqq$ 5% of rating
- Phase rotation
  P : positive sequence
  n : negative sequence

Input

◎ Range

Voltage : 10-580V

Current : Suitable for CT secondary rating (option)

Maximum 6A for 5A rating

Maximum 1.2A for 1A rating

Frequency : 40-70 Hz

◎ Burden

Voltage < 0.5VA at 580V

Current < 0.2VA 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

◎ Suitable for 3 phase 4 wires / 3 phase 3 wires

◎ Select by input wiring & software configuration

Programmability

◎ 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 digits / auto scan

◎ Communication

Baud rate 1200 / 2400 / 4800 / 9600 / 19200

Address setting 1 - 254

◎ Memory : all of energy date and status setting

Communication port

RS485

Modbus® RTU protocol

Display

LCD 0.3" display, 1 rows of "8" digitals

Dielectric strength

IEC 255-5

2KV AC rms 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

IEC 255-5 1.2 x 50us (4KV) impulse test

Stability

Temperature range -10 to +55℃, maximum 100 ppm/℃

Long term stability 0.15% drift maximum per year

Operating condition

Temperature range -10 to +60℃, RH 20 - 95% non-condensed

Storage condition

Temperature range -25 to +70℃, RH 20 - 95% non-condensed

Power supply

AC 80 - 260V, 40 - 70 Hz, DC 80 - 330V

DC 20 - 60V

Dissipation maximum 2 VA for AC and 1 Watts for DC

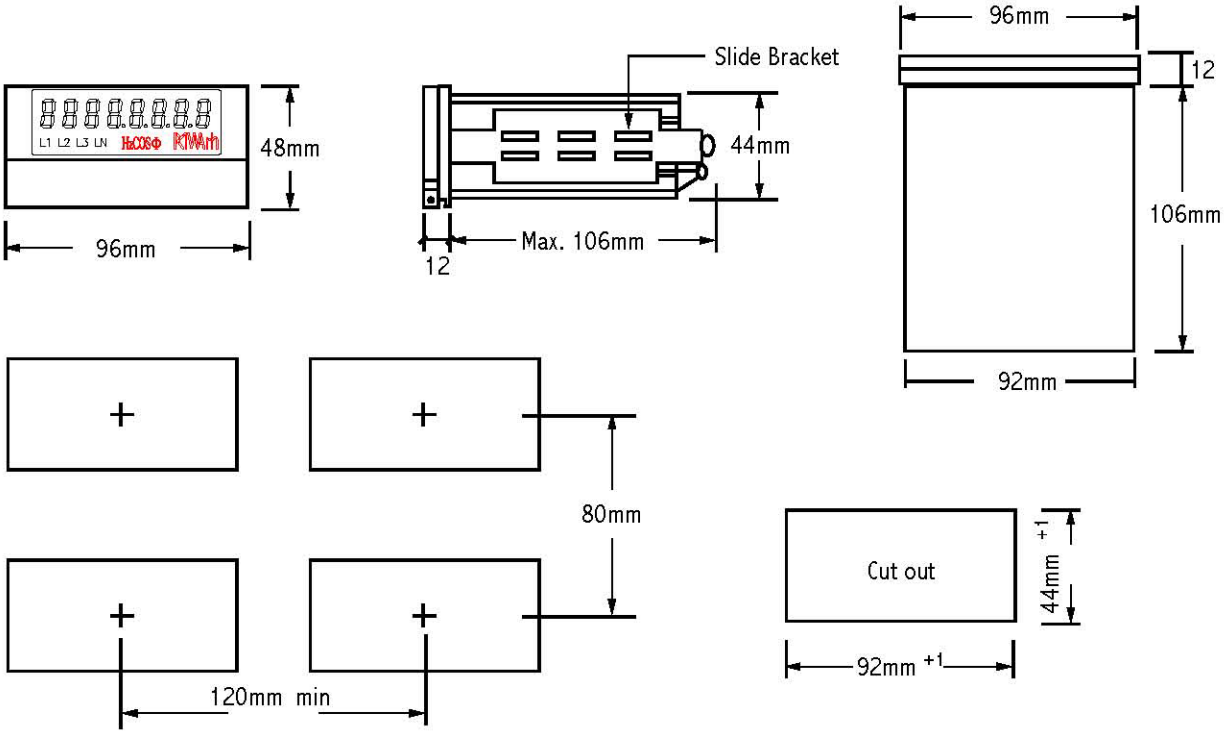
Mounting / Dimension

Panel type mounting

Size : 118 x 96 x 48 mm

Cut out : 92 x 44 mm

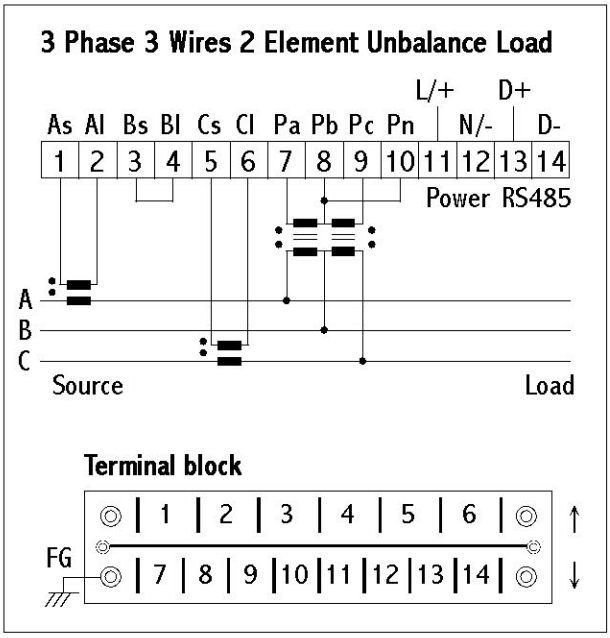
Dimension

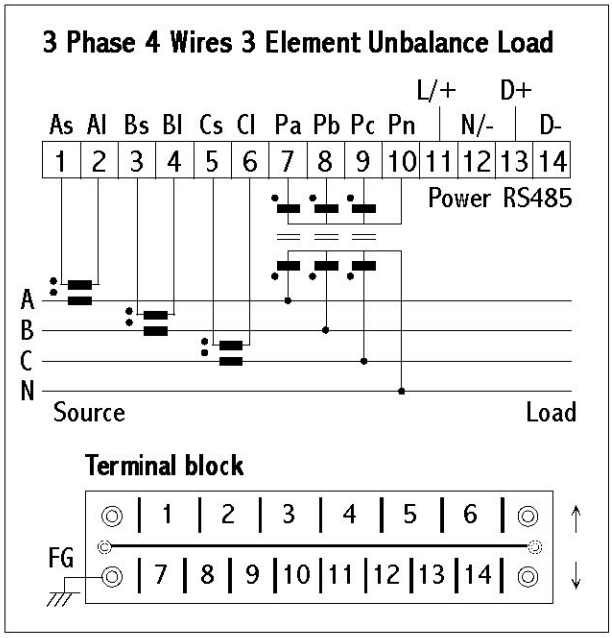


The minimum distance between meters

Cutout Layout

Wiring



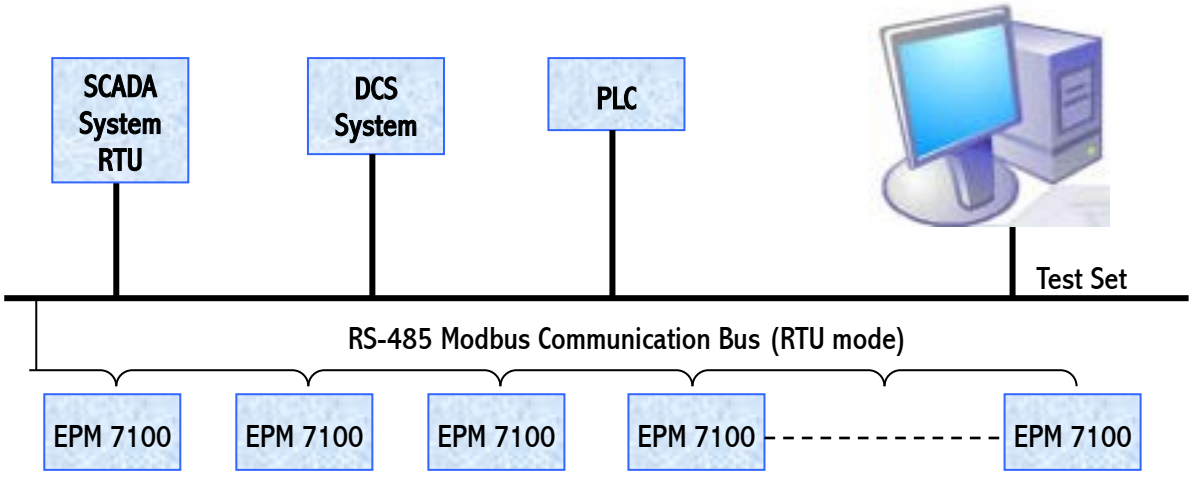


Applications

The EPM 7100 PC tool a utility program that can help user to connect to "EPM 7100 Power Meter" rapidly. The EPM 7100 PC Tool is provided along with every EPM 7100, which allows easy access to all meter setup information and actual values via a personal computer running Windows 95/98 and one of the PC's communication ports (COM1 or COM2). The PC Tool is able to do the function as bellows:

- ⊙ Program / Modify setup information
- ⊙ Load / save setup information files from / to disk
- ⊙ Read actual "Basic" value (current / voltage / power / frequency)

The EPM 7100 PC Tool can be used as stand-alone without a EPM 7100 to create or edit EPM 7100 setup information file.



Communication Wiring