



# PMAC770/PMAC770-DR Multifunction Power Meter



## Different Installation Method

### ➤ PMAC770 : Panel Mount



### ➤ PMAC770-DR: 35mm DIN Rail Mount



## Feature

### ➤ Suit for LV/ HV voltage system

For low voltage system, direct connect up to 690 V (L-L) AC

For high voltage system, support connect up to 65kV

### ➤ True-RMS measuring parameter

True-RMS measuring parameters includes:

U, I, P, Q, S, PF, F, kWh, kvarh, kVAh



### ➤ Demand calculation

2 kinds of demand modes: fixed block and rolling block

### ➤ Power quality analysis

31st Harmonic analysis, K factor, unbalance etc.



### ➤ \* TOU (Multi-tariff billing), historical data of

31 days and 12 months

TOU, 4 tariffs, 8 time period in 24 hours



### ➤ Max./ Min. Record (U, I, P, Q\*)

### ➤ Under/ over limit alarm



### ➤ 64M bit Memory, Build-in Web

Real-time data inquiry by Web

Save monitoring data (Time interval settable 1min, 5 min, 10min,15min, 30min)

Support FTP for download memory data



### ➤ CO<sub>2</sub> (carbon dioxide) calculation for kWh



### ➤ Multiple Communication

BACnet MS/TP Protocol (RS485 port)

MODBUS-RTU Protocol (RS485 Port)

MODBUS-TCP/IP Protocol (Ethernet port )



### ➤ DI / DO

### ➤ High accuracy

Active energy: according to IEC62053-22, class 0.5s

Reactive energy: according to IEC62053-23, class 2

## Basic Function

<b>Real time metering</b>	Voltage	Ua, Ub, Uc, Uab, Ubc, Uca, UL-L avg, UL-N avg
	Current	Ia, Ib, Ic, In, Iavg
	Power	Pa, Pb, Pc, $\sum P$ , Qa, Qb, Qc, $\sum Q$ , Sa, Sb, Sc, $\sum S$
	Power factor	PFa, PFb, PFc, $\sum PF$
	Energy	kWh, kvarh, kVAh *
	CO2 (Carbon dioxide)	
	Frequency	F
	Demand & Max. demand	Dmd_I, Dmd_P, Dmd_Q, Dmd_S
	Max./ min. value	Max./ min. (U, I, P, Q*, S*)
	Multi-tariff energy *	
Phase angle *		
<b>Power quality analysis</b>	Unbalance	U_unbl *, I_unbl *
	Harmonic (31 <sup>st</sup> )	THDu, THDi, TOHDu, TOHDi, TEHDu, TEHDi, HRU *, RHI *
	Harmonic RMS (0-31 <sup>st</sup> )	Harmonic RMS-U *, Harmonic RMS-I *, Harmonic RMS-P *
	Harmonic energy (1 <sup>st</sup> -13 <sup>th</sup> )	
	Voltage crest factor, current K factor, Load rate, Voltage deviation, Frequency deviation Running time record for power-on period and qualified voltage & current *	
<b>Setpoint alarm</b>	Over/ under limit alarm	
<b>3DI +2 DO</b>	3 status input + 2 relay output	
<b>RS485</b>	Modbus-RTU protocol	
<b>Record function</b>	SOE (event log), Real-time clock ( yyyy-mm-dd hh:mm:ss) *	
	Voltage/ frequency deviation, Voltage unbalance record	

## Optional Module (Only for PMAC770)



<b>SW</b>	4 status input (wet contact)	<b>LAN</b>	64M bit memory + Ethernet TCP/IP
<b>SD</b>	4 status input (dry contact)	<b>AI</b>	2 analog input (4-20mA)
<b>C *</b>	The 2 <sup>nd</sup> RS485	<b>AO</b>	2 analog output (4-20mA)
<b>Ep *</b>	2 pulse output	<b>BA</b>	BACnet MS/TP protocol
<b>R</b>	2 relay output		

\* means some of function can't be read through BACnet communication port

Parameter	Accuracy	Resolution	Measuring Range
Voltage	0.2%	0.01V	Direct: 690Vph-ph PT primary: 0.001kV~65kV (settable) PT secondary: 1~398V (settable)
Current	0.2%	0.001A	CT primary: 1~9,999A (settable) CT secondary: 1 A or 5A
Power	0.5%	0.1W/var/ VA	each phase: 0~649.9MW/ Mvar/ MVA Total: 0~1949.8MW/ Mvar/ MVA
Power factor	0.5%	0.001	-1.000~+1.000
Frequency	0.01	0.01Hz	45~ 65 Hz
Active energy	0.5%	0.1kWh	0~ 99,999,999.9 kWh
Reactive energy	2.0%	0.1kvarh	0~ 99,999,999.9 kvarh
Apparent energy	1.0%	0.1kVAh	0~ 99,999,999.9 kVAh
THD	1.0%	0.001	0~100.0%
Individual harmonic	1.0%	0.001	0~100.0%
Un-balance	1.0%	0.001	0~100.0%

## Technical Specification

<b>Connection mode</b>	3-phase 3-wire, 3-phase 4-wire, 1-phase 2-wire	<b>Communication</b>	Modbus-RTU Protocol	RS485 serial Baud rate: 2400, 4800, 9600, 19200, 38400bps Address: 1~247
<b>Metering</b>	True RMS, 1 sec refresh time		Modbus-TCP/ IP	Ethernet communication port Support connect 10M/100M ethernet, Modbus TCP/IP, Web, FTP
<b>Input</b>	Rate current: 1A or 5A Rate voltage: Direct 120, 220V, 240V, 277V, 398Vph-N (optional) PT secondary: 1~398V (settable) Frequency: 50/ 60Hz		BACnet MS/TP protocol	RS485 serial Baud rate: 2400, 4800, 9600, 19200, 38400, 57600, 76800bps Address: 1...127, excluding 99
<b>Overload</b>	120% of rated, continuously Instantaneous current: 10 times/ sec Instantaneous voltage: 2 times/ sec		<b>PMAC770:</b> Panel: 96 x 96 x 13.5 mm Cut-out: 90 x 90 x 58.6 mm (basic) 90 x 90 x 80.1 mm (optional module)	
<b>Status input</b>	Wet contact, external power supply	<b>PMAC770-DR:</b> Panel: 96 x 96 x 12 mm Cut-out: 90 x 90 x 58.6 mm (basic)		
<b>Relay output</b>	Node capacity: 250VAC/5A	<b>Dimension (L x W x H)</b>		
<b>Pulse output</b>	Pulse constant: 1000~9999 programmable Pulse width: 60~100ms programmable Formula: 1 pulse = (1+ pulse constant × PT × CT) kWh	<b>Weight</b>	Basic unit: approx 550gr. Optional module: 50gr.	
<b>Power supply</b>	85 ~265VAC, 85~265VDC (When select P1) 100~420VAC, 100~400VDC (When select P2)	<b>Environment</b>	Main Module & other Modules	Operating temperature: -10°C~ +55 °C Storage temperature: -40°C~ +70 °C Humidity: 5%~95% non-condensing
<b>Power loss</b>	<5VA		BACnet Module	Operating temperature: 0°C~ +50 °C Storage temperature: -5°C~ +75 °C Humidity: 10%~95% non-condensing
<b>IP index</b>	IP52 (front panel) and IP30 (case)			
<b>Power frequency withstand voltage</b>	AC 2KV/minute			
<b>Insulation resistance</b>	≥50MΩ			
<b>Impulse withstand voltage</b>	4kV (peak), 1.2/50μS			

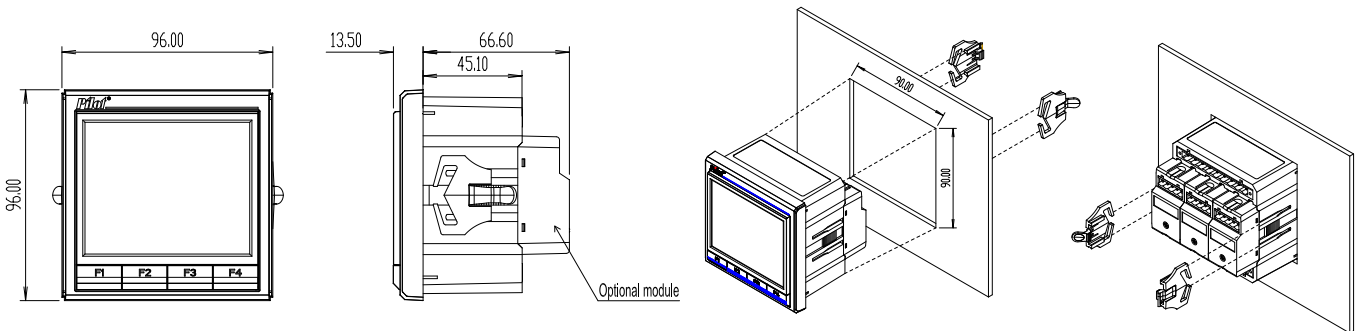
### Standard (EMC)

Electrostatic discharge immunity test	IEC 61000-4-2,Level 4	Surge immunity test (1, 2/50 μs~8/20 μs)	IEC 61000-4-5,Level 3
Radiated immunity test	IEC 61000-4-3,Level 3	Conducted emissions	EN 55022,Class B
Electrical fast transient/burst immunity test	IEC 61000-4-4,Level 4	Radiated emissions	EN 55022,Class B

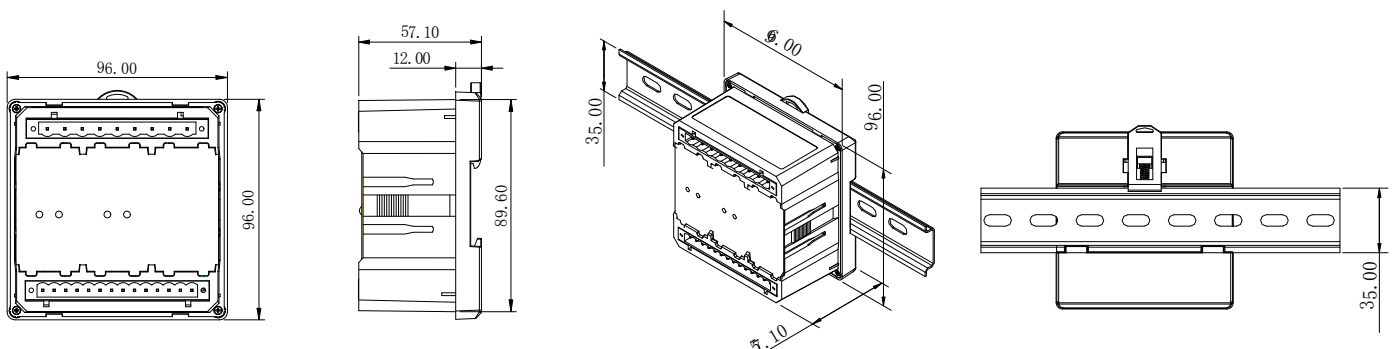
## Dimension & Installation

**PMAC770** : Panel Mount

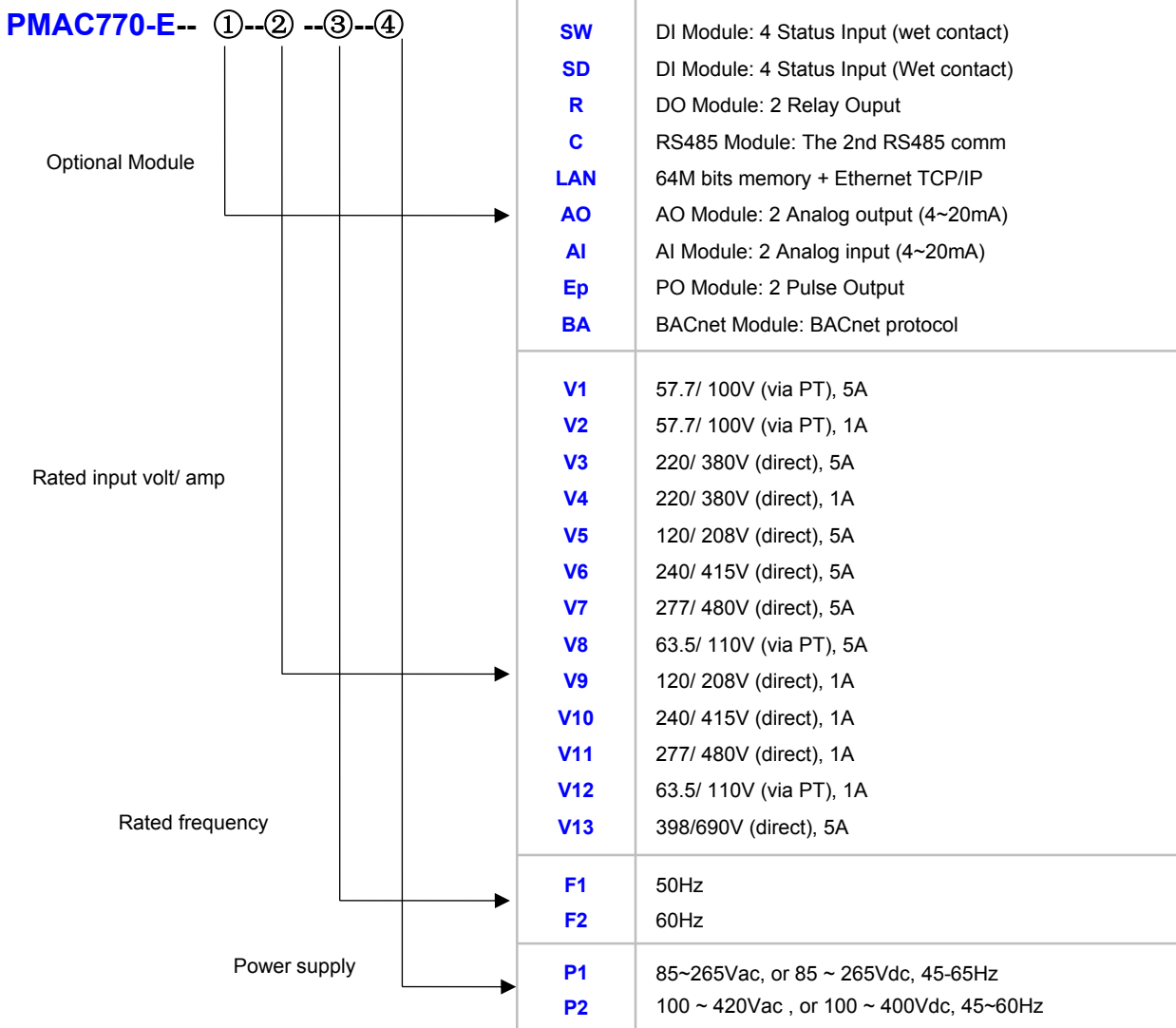
Unit: mm



**PMAC770-DR** : DIN Rail Mount



## Order Information



- Note:**
1. PMAC770 supports Max. 3 optional module
  2. PMAC770 supports Max. 2 **S** optional module, others optional function can only be chosen once.
  3. **AI** & **AO** module can only be selected once
  4. **64M** bit memory data can only be read by MODBUS TCP/IP
  5. **BA** & **LAN** module can not be selected together

