

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



➤ CO₂ (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

Real time metering	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 *	
Power quality analysis	Unbalance	U_unbl *, I_unbl *
	Harmonic (31 st)	THDu, THDi, TOHDu, TOHDi, TEHDu, TEHDi, HRU *, RHI *
	Harmonic RMS (0-31 st)	Harmonic RMS-U *, Harmonic RMS-I *, Harmonic RMS-P *
	Harmonic energy (1 st -13 th)	
	Voltage crest factor, current K factor, Load rate, Voltage deviation, Frequency deviation Running time record for power-on period and qualified voltage & current *	
Setpoint alarm	Over/ under limit alarm	
3DI +2 DO	3 status input + 2 relay output	
RS485	Modbus-RTU protocol	
Record function	SOE (event log), Real-time clock (yyyy-mm-dd hh:mm:ss) *	
	Voltage/ frequency deviation, Voltage unbalance record	

Optional Module (Only for PMAC770)

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

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

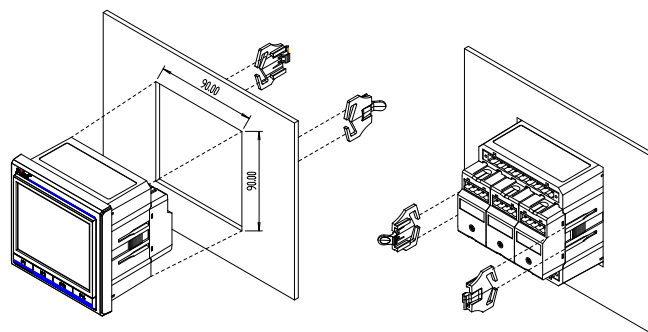
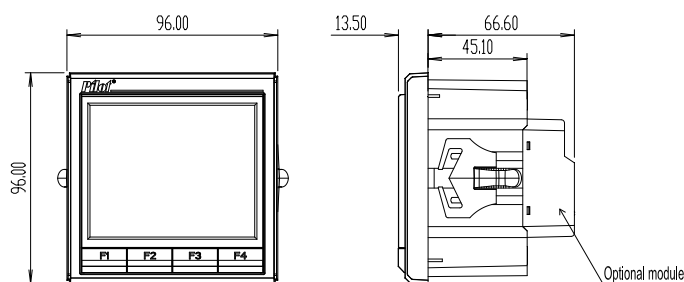
Standard (EMC)

Electrostatic discharge immunity test	IEC 61000-4-2,Level 4	Surge immunity test (1, 2/50 μ s ~8/20 μ s)	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

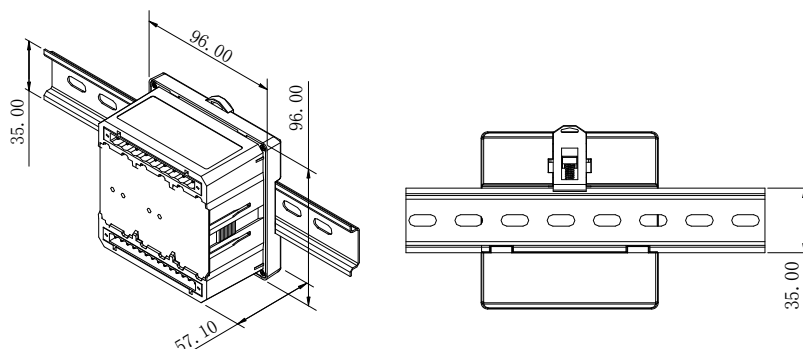
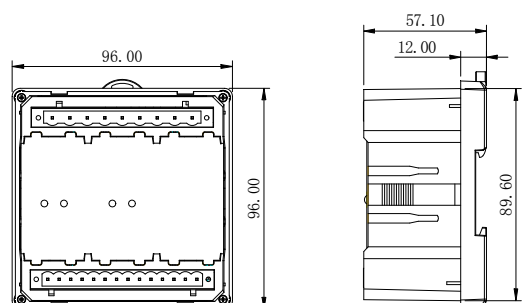
Dimension & Installation

PMAC770 : Panel Mount

Unit: mm



PMAC770-DR : DIN Rail Mount



Order Information

PMAC770-E--		①--②--③--④	
Optional Module			
Rated input volt/ amp			
Rated frequency			
Power supply			
SW	DI Module: 4 Status Input (wet contact)		
SD	DI Module: 4 Status Input (Wet contact)		
R	DO Module: 2 Relay Output		
C	RS485 Module: The 2nd RS485 comm		
LAN	64M bits memory + Ethernet TCP/IP		
AO	AO Module: 2 Analog output (4~20mA)		
AI	AI Module: 2 Analog input (4~20mA)		
Ep	PO Module: 2 Pulse Output		
BA	BACnet Module: BACnet protocol		
V1	57.7/ 100V (via PT), 5A		
V2	57.7/ 100V (via PT), 1A		
V3	220/ 380V (direct), 5A		
V4	220/ 380V (direct), 1A		
V5	120/ 208V (direct), 5A		
V6	240/ 415V (direct), 5A		
V7	277/ 480V (direct), 5A		
V8	63.5/ 110V (via PT), 5A		
V9	120/ 208V (direct), 1A		
V10	240/ 415V (direct), 1A		
V11	277/ 480V (direct), 1A		
V12	63.5/ 110V (via PT), 1A		
V13	398/690V (direct), 5A		
F1	50Hz		
F2	60Hz		
P1	85~265Vac, or 85 ~ 265Vdc, 45-65Hz		
P2	100 ~ 420Vac , or 100 ~ 400Vdc, 45~60Hz		

- 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

PMAC770-DR--E--		①--②--③	
Rated input volt/ amp			
Rated frequency			
Power supply			
V1	57.7/ 100V (via PT), 5A		
V2	57.7/ 100V (via PT), 1A		
V3	220/ 380V (direct), 5A		
V4	220/ 380V (direct), 1A		
V5	120/ 208V (direct), 5A		
V6	240/ 415V (direct), 5A		
V7	277/ 480V (direct), 5A		
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