PMC-550J

Motor Protection and Control

A Total Solution for LV Motors

PMC-550J is CET's latest offer to integrate Motor Protection, Control and Monitoring solution in one metal box. It is an ideal choice for intelligent MCC (Motor Control Center) and is widely used in manufacturing industries such as Petrochemical, Coal, Paper, Steel and Metallurgy industry.

- ✓ To enhance motor performance
- ✓ To protect your assets
- ✓ To shorten restoration time
- ✓ To improve productive

Feature Highlights

- Advanced motor control and protection schemes
- Enhanced power supply with 30s Ride-Through Capability for Voltage Dips
- High Accuracy Power/Energy measurements
- 64 events time-stamped to 1ms resolution
- 8xDI, 5xDO and optional AO (4-20mA) for monitoring and control
- RS-485 Port, Modbus-RTU Protocol
- Metal housing for improved heat dissipation and EMC performance
- Dot-Matrix LCD display

Protection and Control

PMC-550J realizes different protection and control applications for LV motors via its high precision circuitry, advanced protection & control schemes, configurable DI and DO functions as well as its network communication features to ensure operation reliability.

Motor Start

PMC-550J offers the generic motor control functions, such as Direct-on-line, forward-reverse and two-speed start control. It also offers advanced motor starting schemes to reduce high starting and surge currents to prevent troublesome voltage dips on the mains supply and transient torque effects in mechanical systems. PMC-550J supports the most well-known Star-delta start and facilitates motor ON/OFF sequence control.

- Direct-on-line start
- Forward-reverse start
- Two-speed start
- Star-delta starter
- Motor ON/OFF sequence

Motor Control

PMC-550J is a microprocessor-based device, which allows user to program and configure its operation through its front panel to determine the actions to be done in accordance with the situations.

- **Under-Voltage Restart:** This control mode is designed to restart a motor accordingly after a voltage dip (minor voltage fluctuation). It may be either a quick restart, delay restart or stop, depending on the characteristic of the voltage dip.
- **Auto-Start Function:** This function is to determine the actions to be done after a machine stoppage due to voltage fluctuation. It may be either a "restart" or "recover to the state before stoppage".
- **Local/Remote Control**: PMC-550J allows the Motor control to be done through local panel or remote control.

PMC-550J offers an enhanced power supply option to maintain normal operation under power interruption for 30 seconds.

Motor Protection

Electric motor has Electrical and Mechanical operation limits. Exceeding these limits may cause power loss, mechanical vibration, stoppage, thermal damage and eventually destroy the motor.

Electrical Incidents

- Power surges, voltage dips, unbalance and phase losses causing variation and jittering
- Short circuits where the current can reach levels that can destroy the motor

Mechanical Incidents

- Rotor stalling, momentary or prolonged overloads increasing the motor current and dangerously heating its windings

These incidents may lead to raw material loss, equipment damage, non-quality production and production loss. These may also have direct or indirect impact on human safety.

PMC-550J is not just designed to overcome these incidents and prevent their impacts from causing damage to equipment; PMC-550J is also designed to enhance the motor performance, hence to improve the entire system reliability and productivity.

Protection Schemes

Mechanical Protection

- Jam Protection
- Start Overtime
- Thermal Overload
- Overload
- Under Power
- Process Interlock
- tE Inverse Time
- Contactor Failure
- Block When Start

Electrical Fault Protection

- Short-Circuit
- Ground Fault
- Residual Current
- Loss of Phase
- Negative Phase Seq.
- Current Transducer (MTA) Failure
- Over-Voltage
- Under-Voltage
- Imbalance
- Phase Reversal

Basic Measurements

- ULL and Current per Phase
- Total kW, kvar
- kWh, kvarh Import/Export
- Frequency
- Optional Neutral (IN) & Residual Current (IR)

PQ and Harmonic Monitoring

- Current Unbalance and Phase Angle
- Displacement PF
- U and I THD, TOHD, TEHD and Individual Harmonics up to 31st

SOE Log

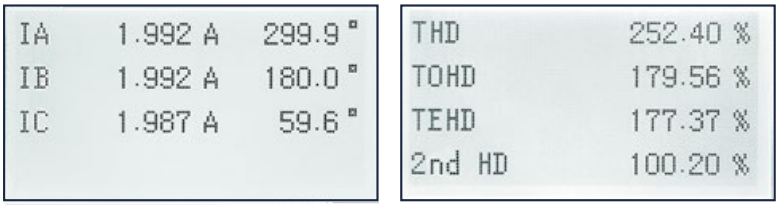
- 64 events time-stamped to 1ms
- DI status changes, DO operations
- Control events & action times

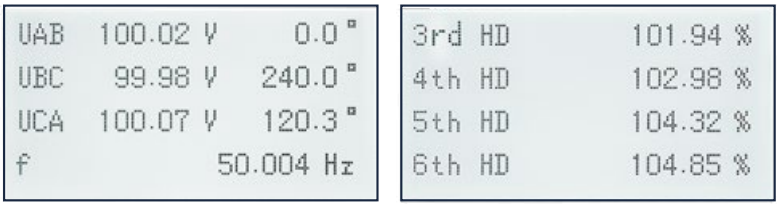
Input & Output Channels

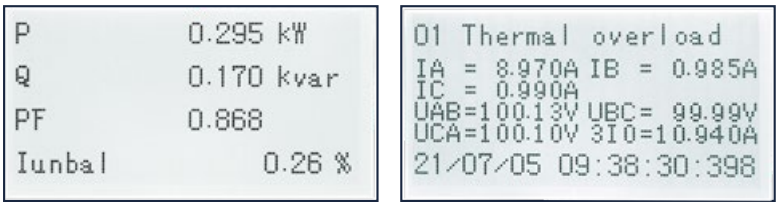
- 8xDigital Inputs
- 5xDigital Outputs
  Contact Rating:
  DO1 - 250V AC/30V DC, 8A
  DO2 to DO5 - 250V AC/30V DC, 5A
- 1xAnalogue Output (Optional)
  Output range: (4-20)mA

Communication

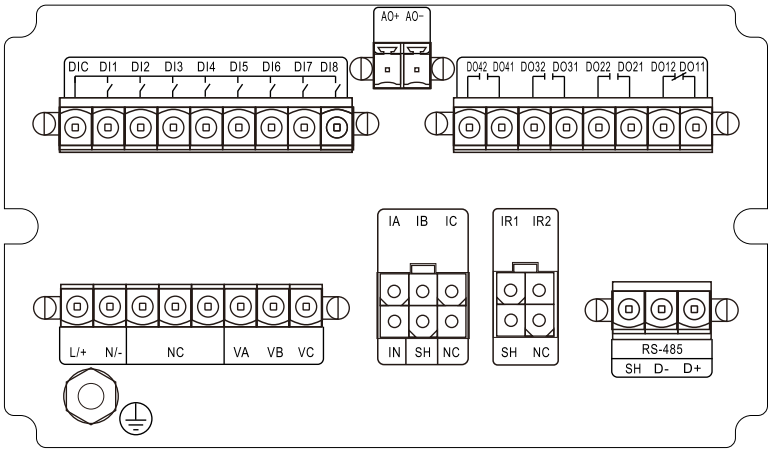
- 1xRS-485, Modbus Protocol
- 1xType-C USB Port, Modbus Protocol
- Optional 1xPROFIBUS-DP Port





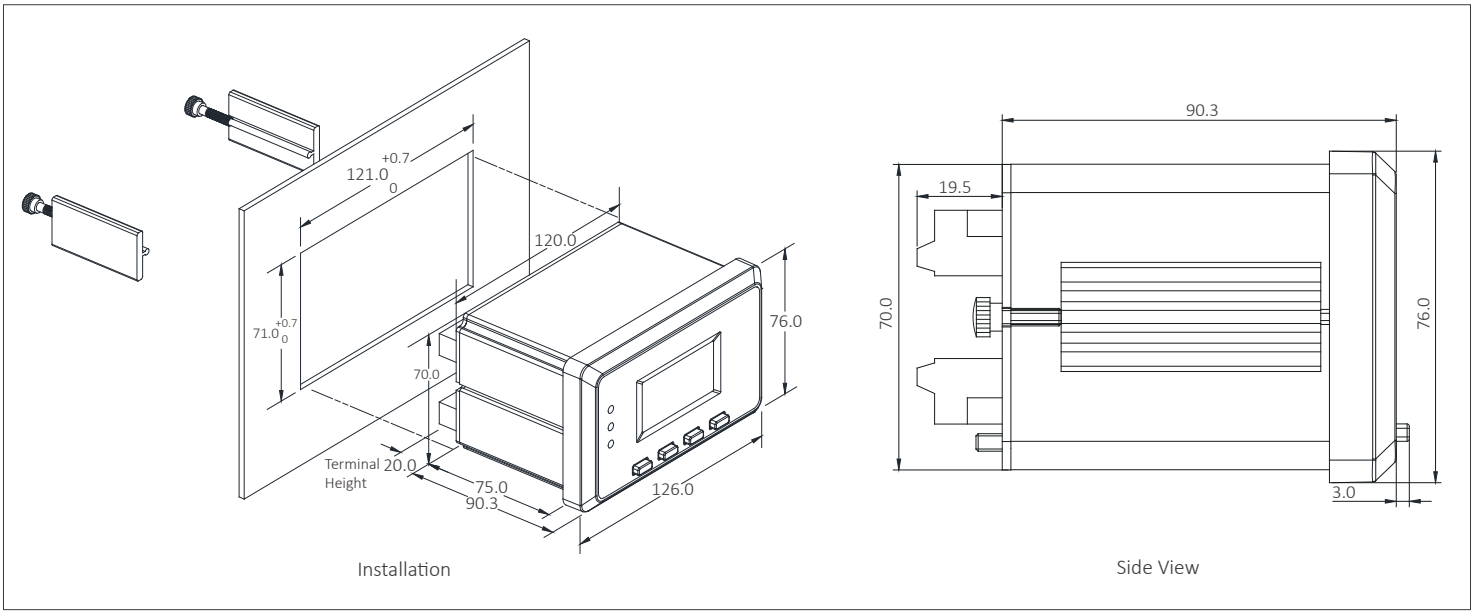


Terminal Diagrams



Dimensions

Unit: mm



Technical Specifications

Power Supply	
Standard	95-250V AC/DC
Optional	Enhanced Power Supply (Ride-Through Capability)
Burden	<5W

Voltage Inputs	
Standard (Vn)	400ULN/690ULL
Range	10V to 828V for 690ULL
Overload	1.2xVn continuous, 1.4xVn for 10s
Burden	<0.75VA per phase
Frequency	50/60Hz

Current Inputs		
Standard (Ie)	Plug-in Current Sensor: PMC-MTA	800A/400A/300A/ 100A/25A/5A/1A
Range	0.05 to 1.2Ie	
Overload	2xIe continuous, 10xIe for 10s, 40xIe for 1s	

DI & DO	
DI1 - DI8	Voltage Free, Dry Contact, 24V DC Internally Wetted
DO1	Normally Closed, 8A @ 250V AC or 30V DC
DO2	Normally Open/Closed, 5A @ 250V AC or 30V DC
DO3 - DO5	Normally Open, 5A @ 250V AC or 30V DC

Insulation Compatibility	
Dielectric Test	2kV @ 1 minute, IEC60255-5
Insulation Resistance	>100MΩ
Impulse Voltage	5kV, 1.2/50μs

Mechanical Tests	
Vibration Test (Response/Endurance)	IEC255-21-1: 1988 Level I
Shock Test (Response/Endurance)	IEC255-21-2 Level I
Bump Test (Response/Endurance)	IEC255-21-2 Level I

Electromagnetic Compatibility	
Burst Immunity	IEC60255-22-1 Level III
Electrostatic Discharge	IEC60255-22-2 Level IV
Radiated Fields	IEC60255-22-2 Level IV
Fast Transients	IEC60255-22-4 Level A
Surges	IEC60255-22-5 Level IV
Conducted Disturbances	IEC60255-22-6 Level III
Magnetic Fields	IEC60255-22-7 Level A
Electromagnetic Emission	IEC60255-25

Ordering Information

Product Code										Description
PMC-550J										LV Motor Protection and Control
Language	E									English
	C									Chinese
Input Voltage			6							400ULN/690ULL
Power Supply				2						95-250V AC/DC
				A*						95-250V AC/DC with 30 seconds of Ride-Through for supply interruption
System Frequency					5					50Hz
					6					60Hz
I/O						A				8xDI+5xDO
						B*				8xDI+4xDO+1xAO (AO with Internal 24V DC Power Supply)
						C*				6xDI+5xDO+1xAO (AO with Internal 24V DC Power Supply)
Comm.							A			1xRS-485 Port
							C*			1xPROFIBUS-DP Port (with Auxiliary Option X only)
Auxiliary Function								A		I Residual Protection (with Comm. Option A only)
								B		Zero-Sequence Current Protection (with Comm. Option A only)
								X		None (Comm. Option C only)
DO2 Type									A	Normally Open
									B	Normally Closed
PMC-550J	E	XW	6	A	5	A	A	B	A	PMC-550J-EXW6A5AABA (Standard Model)

* Additional charges apply

Optional Current Transducers

Motor Current Transducers (MTA)

MTA Model	Rated kW	Rated Current	Hole Ø
PMC-MTA-1A	< 0.4kW	0.2A - 1A	10mm
PMC-MTA-5A	0.4 - 2.2kW	1A - 5A	10mm
PMC-MTA-25A	2.2 - 12.5kW	5A - 25A	20mm
PMC-MTA-100A	12.5 - 50kW	25A - 100A	30mm
PMC-MTA-300A	50 - 150kW	100A - 300A	30mm
PMC-MTA-400A-T	120 - 200kW	240A - 400A	55mm
PMC-MTA-800A-T	160 - 400kW	320A - 800A	75mm

Residual Current Transducers (MIR)

Cable Type (1)

MIR Model	Rated kW (380V system)	Rated Current	Hole Ø
PMC-MIR-35	0.55 - 7.5kW	0 - 63A	35mm
PMC-MIR-50	7.5 - 22kW	63 - 125A	50mm
PMC-MIR-75	22 - 150kW	125 - 250A	75mm
PMC-MIR-120	>150kW	250 - 1000A	120mm

Busbar Type (1)(2)

MIR Model	Inner Dimension	External Dimension
PMC-MIR-265*103	265(W)×103(H)mm	308(W)×227(H)×63(D)mm

Remark:
(1) The standard cable length for both 'Cable' and 'Busbar' type is 4m.
(2) The cable for PMC-MIR-265*103 should be ordered separately with model number RVVP2*1.0.

Zero Sequence Current Transducers (MIN)

MIR Model	Rated kW	Rated Current	Hole Ø
PMC-MIN-1A	All	1A	35mm
PMC-MIN-5A	All	5A	35mm

Remark:
The primary rating of MIN is either 5A or 1A with the secondary output = 1V.
The PMC-MIN is designed to work with standard Zero Sequence CT with ratings such as 200A/5A or 200A/1A.
The secondary output of standard Zero Sequence CT should be fed through the PMC-MIN to produce the desired voltage output for the PMC-550J.

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Your Local Representative

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