



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
- Overheat
- Overload
- Under power
- Process interlock
- tE inverse time

Electrical Fault Protection

- Short-circuit
- Ground fault
- Residual current
- Loss of phase
- Over-voltage
- Under-voltage
- Imbalance
- Phase reversal



Basic Measurements

- VLL and Current per phase
- Total kW, kvar
- kWh, kvarh Import/Export
- Frequency
- Optional Neutral (In) & Residual Current (Ir)

Uab	=	402.324V
Ubc	=	402.359V
Uca	=	402.853V
f	=	49.98Hz

P	=	826.19kW
Q	=	64.74kvar
S	=	828kVA
PF	=	0.973

PQ and Harmonic Monitoring

- Current Unbalance and Phase Angles
- Displacement PF

Ia	=	1223.804A	346°
Ib	=	1221.791A	226°
Ic	=	1222.709A	107°
3I0	=	0.126A	

Residual I	=	500mA
Insulated R	=	1000.000kΩ

SOE Log

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

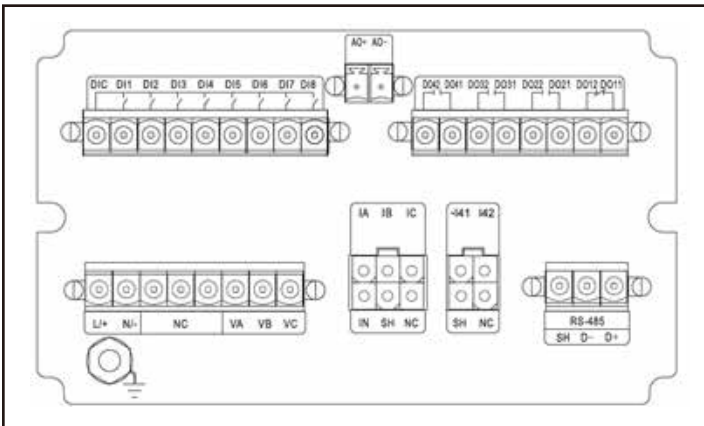
01. Jam trip		
I	=	154.365A
09/12/30 23:59:59:999		

01. Overheat trip		
I	=	154.365A
09/12/30 23:59:59:999		

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

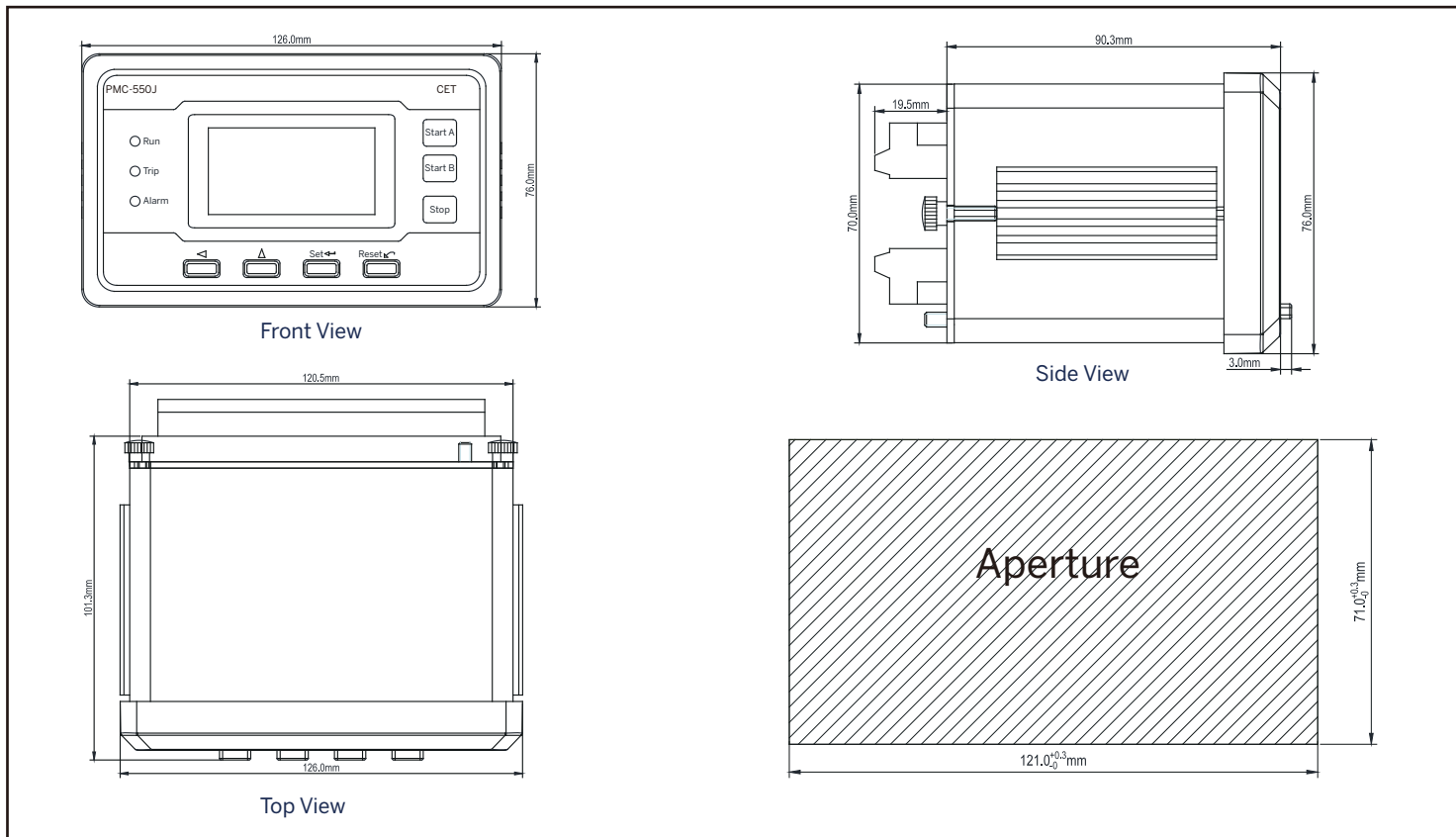
Terminal Diagrams



Communication

- 1xRS-485, Modbus Protocol

Dimensions



Optional Current Transducers



PMC-MTA

MTA Model	Rated kW	Rated Current	Hole Ø
PMC-MTA-1A	< 0.4kW	0.2A - 1.0A	10 mm
PMC-MTA-5A	0.4 - 2.2kW	1.0A - 5.0A	10 mm
PMC-MTA-25A	2.2-12.5kW	5.0A - 25.0A	20 mm
PMC-MTA-100A	12.5 - 50.0kW	25.0A - 100.0A	30 mm
PMC-MTA-300A	50.0 - 150kW	100.0A - 300.0A	30 mm
PMC-MTA-400A-T	120 - 200kW	240.0A - 400.0A	55 mm
PMC-MTA-800A-T	160 - 400kW	320.0A - 800.0A	75 mm

Technical Specifications

Power Supply

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

Voltage Inputs

Standard (Vn)	400VLN/690VLL
Range	10V to 828V for 690VLL
Overload	1.2x Vn continuous, 1.4x Vn 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	2x Ie continuous, 10x Ie for 10s, 40x Ie for 1s	

DI & DO

DI1 - DI8	Voltage Free, Dry Contact, 24VDC Internally Wetted
DO1	Normally Closed, 8A @ 250VAC or 30VDC
DO2	Normally Open/Closed, 5A @ 250VAC or 30VDC
DO3 - DO5	Normally Open, 5A @ 250VAC or 30VDC

Insulation Compatibility

Dielectric Test	2kV @ 1 minute, IEC 60255-5
Insulation Resistance	>100MΩ
Impulse Voltage	5kV, 1.2/50µs

Mechanical Tests

Vibration Test (Response/Endurance)	IEC 255-21-1:1988 Level I
Shock Test (Response/Endurance)	IEC 255-21-2 Level I
Bump Test (Response/Endurance)	IEC 255-21-2 Level I

Electromagnetic Compatibility

Burst Immunity	IEC 60255-22-1 Level III
Electrostatic Discharge	IEC 60255-22-2 Level IV
Radiated Fields	IEC 60255-22-2 Level IV
Fast Transients	IEC 60255-22-4 Level A
Surges	IEC 60255-22-5 Level IV
Conducted Disturbances	IEC 60255-22-6 Level III
Magnetic Fields	IEC 60255-22-7 Level A
Electromagnetic Emission	IEC 60255-25

Ordering Information

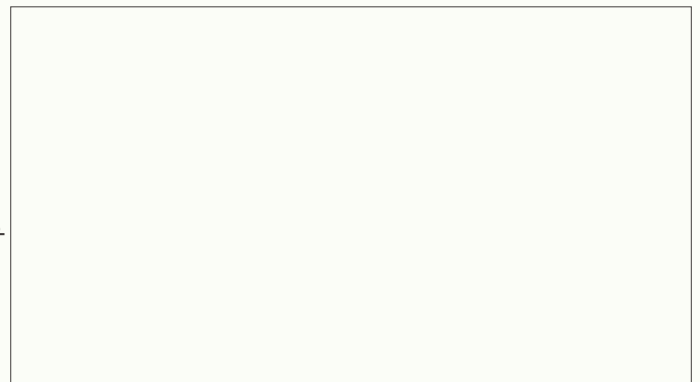
Product Code	Description
PMC-550J	LV Motor Protection and Control
Language	E English C Chinese
Input Voltage	6 400VLN/690VLL
Power Supply	2 95-250V AC/DC A* 95-250V AC/DC with 30 seconds of ride through for supply interruption
System Frequency	5 50Hz 6 60Hz
I/O	A 8xDI+5xDO B* 8xDI+4xDO+1xAO (AO with Internal 24VDC Power Supply) C* 6xDI+5xDO+1xAO (AO with Internal 24VDC Power Supply)
Comm.	A 1x RS-485 Port C* 1x PROFIBUS-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

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