CETS

CET

PMC-53A

Intelligent

Multifunction Meter



Cost Effective PMC-53A High Performance

PMC-53A Intelligent Multifunction Meter features quality construction, multifunction measurements and a large, backlit, Dot-Matrix LCD that is user friendly and easy to navigate. Housed in a standard DIN form factor measuring 96x96x88mm, it is perfectly suited for industrial, commercial and utility applications. Compliance with the IEC 62053-22 Class 0.5S Standard, it is a cost effective replacement for analog instrumentation and is capable of displaying 4 measurements at once. It optionally provides I4 input for Neutral Current measurement, a second RS-485 port, four Digital Inputs for status monitoring, two Relay Outputs for control and alarm applications as well as other I/O options for different applications.

Typical Applications

- Industrial, Commercial and Utility Substation Metering
- Building, Factory and Process Automation
- Sub-metering and Cost Allocation
- Energy Management and Power Quality Monitoring

Features Summary

Basic Measurements

- VLN, VLL per phase and Average
- Current per phase and Average with calculated Neutral
- kW, kvar, kVA, P.F. per phase and Total
- kWh, kvarh Import/Export/Net/Total, kVAh Total & kvarh Q1-Q4
- Frequency
- Optional I4 measurement

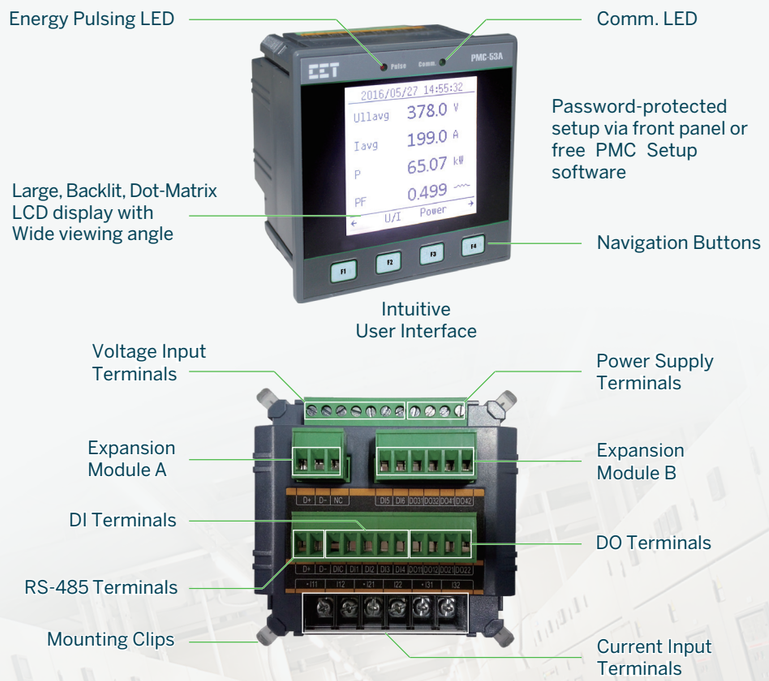
PQ Measurements

- THD, TOHD, TEHD and Individual Harmonics up to 31st
- TDD, K-Factor, Crest Factor and Displacement P.F.
- U and I Unbalance and Phase Angles

TOU, Energy and Demand Recording

- Two TOU schedules, each providing
  - 12 Seasons
  - 20 Daily Profiles, each with 12 Periods in 15-minute interval
  - 90 Holidays or Alternate Days
  - 8 Tariffs for Energy and Max. Demands recording
- 12 monthly recording of kWh/kvarh Import/Export/Total/Net, kVAh, kvarh Q1-Q4 as well as kWh/kvarh Import/Export and kVAh per Tariff
- Demands, Predicted Demands and Max. Demands for kW Total, kvar Total, kVA Total and per phase Current with Timestamp

At-A-Glance





Setpoint Features

Supports comprehensive monitoring and control based on the condition of the measured parameters and provides trigger output for different actions such as SOE Logging, Data Recording or DO Triggering for Alarm or Control Actions.

- 9 user-programmable setpoints
- Configurable thresholds, time delays and DO triggers

Data and Event Recorders

PMC-53A supports the logging of SOE, Peak Demand Log, Monthly Energy Log, Daily/Monthly Freeze Log and Max/Min of real-time measurements as well as optional Data Recording with 4MB non-volatile memory.

SOE Log

- 100 events time-stamped to ±1ms resolution
- Recording Events for Setup changes, Setpoint and DI status changes as well as DO operations

Peak Demand Log

- Peak Demand Log with timestamps for Ia, Ib, Ic, kW, kvar, kVA for the month and kW, kvar, kVA for TOU Tariffs 1 to 8
- Configurable through the front panel as well as communications for This Month/Last Month or Before/Since Last Reset

Monthly Energy Log

- Energy Log with timestamps for kWh, kvarh Import/Export/Net/Total, kWh, kvarh Import/Export for TOU Tariffs 1 to 8, kVAh Total & kvarh Q1-Q4
- Configurable through communications for present and the last 12 months

Daily/Monthly Freeze Log

- Daily/Monthly Log with timestamps for kWh, kvarh, kVAh Total & Peak Demand kW, kvar, kVA Total
- Configurable through communications for 60 daily freeze records (2 months) and 36 monthly freeze records (3 years)

Max/Min Log

- Max/Min Log with timestamps for parameters such as Voltage, Current, In, I4, Freq., kW, kvar, kVA, P.F., Unbalance, K-factor, Crest Factor and THD
- Configurable for This Month/Last Month or Before/Since Last Reset

Data Recorder Log (Optional)

- 5 Data Recorders of 16 parameters each for real-time measurements, harmonics, energy, demand, TOU, Pulse Counters, ... etc.
- Recording interval from 1 minute to 40 days
- Configurable capacity up to a max. of 100 days at 15-minute interval

Optional Inputs and Outputs

PMC-53A provides various I/O options to suit different monitoring, control and alarming applications. Extra I/O channels can be extended via optional Expansion Modules. These signals can easily be integrated into 3rd party systems for building, factory and process automation.

Digital Inputs

- Up to 6 channels, volts free dry contact, 24VDC internally wetted
- 1000Hz sampling for status monitoring with programmable debounce
- Pulse counting with programmable weight for each channel for collecting WAGES (Water, Air, Gas, Electricity, Steam) information

Relay Outputs

- Up to 4 Form A mechanical relays for alarming and general purpose control

Pulse Outputs

- 2 solid state relays for energy pulsing applications

Analogue I/O

- 1xAI and 1xAO (0/4-20mA)
- 2xAO (0/4-20mA)

Temperature Monitoring

- 2xRTD Input (PT100 sensor not included)

Communications

- Optically isolated RS-485 port at max. 38,400 bps
- Optional 2nd RS-485 port
- Standard Modbus RTU and DNP 3.0

System Integration

- Supported by CET's PecStar® iEMS and iEEM
- Easy integration into 3rd-party Energy Management, Automation or SCADA systems via Modbus RTU and DNP 3.0

Accuracy

Parameters	Accuracy	Resolution
Voltage (U)	±0.2% Reading + 0.05% F.S.	0.1V
Current (I)	±0.2% Reading + 0.05% F.S.	0.001A
I4 (Measurement)	±0.2%	0.001A
kW, kVA	±0.5% Reading + 0.05% F.S.	0.001kX
kWh, kVAh	IEC 62053-22 Class 0.5S @ 5A IEC 62053-22 Class 1 @ 1A	0.1kXh
kvar	±0.5% Reading + 0.05% F.S.	0.001kvar
kvarh	IEC 62053-23 Class 2	0.1kvarh
P.F.	±0.5%	0.001
Frequency	±0.02Hz	0.01Hz
THD	IEC 61000-4-7 Class B	0.001%
K-Factor	IEC 61000-4-7 Class B	0.001
Phase Angles	±1°	0.1°

Technical Specifications

Voltage Inputs (U1, U2, U3, UN)	
Un	400VLN/690VLL
Range	10V to 1.2xUn
Overload	1.2xUn continuous, 2xUn for 1s
Burden	<0.02VA/phase
Measurement Category	CAT III 600V
Frequency	45-65Hz

Current Inputs (I11, I12, I21, I22, I31, I32)	
In	5A (5A/1A Auto-Scale)
Range	0.1% to 200% In
Starting Current	0.1% In
Overload	2xIn continuous, 20xIn for 1s
Measurement Category	CAT III 600V
Burden	<0.15VA/phase

Power Supply (L+, N-, GND)	
Standard	95-250VAC/DC, ±10%, 47-440Hz
Burden	<2W
Overvoltage Category	CAT III 300V

Digital Inputs	
Type	Dry Contact, 24VDC Internally Wetted
Sampling	1000Hz
Hysteresis	40ms minimum

Digital Outputs	
Type	Form A Mechanical Relay
Loading	5A @ 250VAC or 30VDC

Pulse Outputs (kWh, kvarh)	
Type	Form A Solid State Relay
Isolation	Optical
Max. Load Voltage	80V
Max. Forward Current	50mA

Environmental and Mechanical Specifications

Environmental Conditions	
Operating Temp.	-25°C to 70°C
Storage Temp.	-40°C to 85°C
Humidity	5% to 95% non-condensing
Atmospheric Pressure	70kPa to 106kPa

Mechanical Characteristics	
Panel Cutout	92x92mm (3.62"x3.62")
Unit Dimensions	96x96x88mm
IP Rating	IP54 (Front), IP30 (Body)

Mechanical Tests		
Vibration Test	Response	IEC 62052-11: 2003 Level I
	Endurance	IEC 62052-11: 2003 Level I
Shock Test	Response	IEC 62052-11: 2003 Level I
	Endurance	IEC 62052-11: 2003 Level I
Bump Test		IEC 62052-11: 2003 Level I

Safety Standards

Safety Requirements		
CE LVD 2014 / 35 / EU		EN 61010-1: 2010, EN 61010-2-030: 2010
Electrical safety in low voltage distribution systems up to 1000Vac and 1500 Vdc		IEC 61557-12: 2008
Insulation	Dielectric test: 2kV @ 1 minute Insulation resistance: >100MΩ Impulse voltage: 6kV, 1.2/50μs	IEC 60255-5: 2000

EMC Compatibility

CE EMC Directive 2014/30/EU (EN 61326: 2013)

Immunity Tests	
Electrostatic Discharge	EN 61000-4-2: 2009
Radiated Fields	EN 61000-4-3: 2006+A1: 2008+A2: 2010
Fast Transients	EN 61000-4-4: 2012
Surges	EN 61000-4-5: 2006
Conducted Disturbances	EN 61000-4-6: 2009
Magnetic Fields	EN 61000-4-8: 2010
Oscillatory Waves	EN 61000-4-12: 2006

Emission Tests	
Limits and methods of measurement of electromagnetic disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment	EN 55011: 2009+A1: 2010 (CISPR 11)
Limits and methods of measurement of radio disturbance characteristics of information technology equipment	EN 55022: 2010+AC: 2011 (CISPR 22)
Limits for harmonic current emissions for equipment with rated current ⩽16 A	EN 61000-3-2: 2014
Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current ⩽16 A	EN 61000-3-3: 2013
Emission standard for industrial environments	EN 61000-6-4: 2007+A1: 2011
Testing and measurement techniques - Ring wave immunity test	EN 61000-4-12: 2006

Ordering Information

Product Code	Description
PMC-53A	Intelligent Multifunction Meter
Basic Function: 1	Dot-Matrix LCD, 1xRS-485 with Modbus RTU
Basic Function: 2*	Dot-Matrix LCD, 1xRS-485 with Modbus RTU, Data Recording Log
Basic Function: A*	Dot-Matrix LCD, 4xDI+2xRO (Relay Output), 1xRS-485 with Modbus RTU
Basic Function: B*	Dot-Matrix LCD, 4xDI+2xRO (Relay Output), 1xRS-485 with Modbus RTU, Data Recording Log
Input Current: 5	5A/1A Auto-Scale
Input Voltage: 9	400VLN/690VLL
Power Supply: 2	95-250VAC/VDC, 47-440Hz
Frequency: 5	45Hz-65Hz
Language: E	English
Expansion A*: A1	1xRS-485
Expansion A*: A2	I4 (5A/1A Auto-Scale)
Expansion B*: B1	2xDI + 2xRO (Relay Output)
Expansion B*: B2	2xRTD (PT100 sensors not included)
Expansion B*: B3	1xAI + 1xAO (0/4-20mA)
Expansion B*: B4	2xDI + 2xSS Pulse Output
Expansion B*: B5	2xAO (0/4-20mA)
PMC-53A 1 5 9 2 5 E - -	PMC-53A-15925E (Standard Model)#

* Additional charges apply
# Model No. with only one Expansion can be written as PMC-53A-15925E-Ax or PMC-53A-15925E-Bx
Model No. with both Expansions can be written as PMC-53A-15925E-Ax-Bx

Contact us

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