PMC-352-C

3-Phase Wireless (LoRa) DIN Rail Energy Meter

www.cet-global.com

3-Phase Wireless (LoRa)

Overview

PMC-352-C 3-Phase Wireless DIN Rail Energy Meter is CET's latest offer for the wireless IoT energy monitoring market using the LoRa technology for its wireless communication capability. Designed in a compact DIN form factor measuring 36x65x90mm, it is perfect for energy and condition monitoring applications in space-limited power distribution board. The PMC-352-C comes standard with 4xNTC Inputs for temperature monitoring and 3xDI for status monitoring. With standard RS-485 and optionally LoRa supporting the Modbus RTU protocol and IEC 62053-21 Class 1 compliance, the PMC-352-C becomes a vital component of an intelligent, distributed and wireless IoT based EMS or Condition Monitoring System.

Typical Applications

- Industrial, Commercial and Utility Substation Monitoring
- Sub-metering and Cost Allocation
- Wireless Energy & Condition Monitoring of Busbar or Machines
- Building, Factory and Process Automation
- Energy Management and Power Quality Monitoring
- Production Line Energy Management Refinement

Features Summary

Ease of use

- Easy installation with DIN Rail mounting, no tools required
- Simple commissioning and low-deployment cost with Split-Core CT and wireless IoT communication

Basic Measurements

- ULN, ULL and I per Phase and Average
- P, Q, S and PF per Phase and Total
- kWh, kvarh Import/Export/Net/Total and kVAh Total
- Frequency and Device Operating Time (Running Hours)

Enhanced Measurements

- U and I THD, TOHD, TEHD and Individual Harmonics up to 31st
- U and I Unbalance and Phase Angle
- Fundamental P and Displacement PF
- kvarh Q1-Q4
- Present Demands for kW/kvar/kVA Total and per Phase Current

Setpoints

- 10 user programmable Setpoints with extensive list of monitoring parameters including Voltage, Current, Power and THD, etc.
- Configurable thresholds, time delays and parameters

SOE Log

- 16 events time-stamped to ±1ms resolution
- Setup changes, Setpoint, DI Status changes, Clear actions, etc.

Standard I/O

- 3xDI for Status Monitoring or Utility Pulse Counting
- 4xNTC Inputs for Temperature Monitoring (sensor not included)

Diagnosis

- Frequency Out-of-Range, Loss of Voltage/Current
- kW Direction per phase and Total, Possible incorrect CT Polarity
- Incorrect U & I Phase Sequence

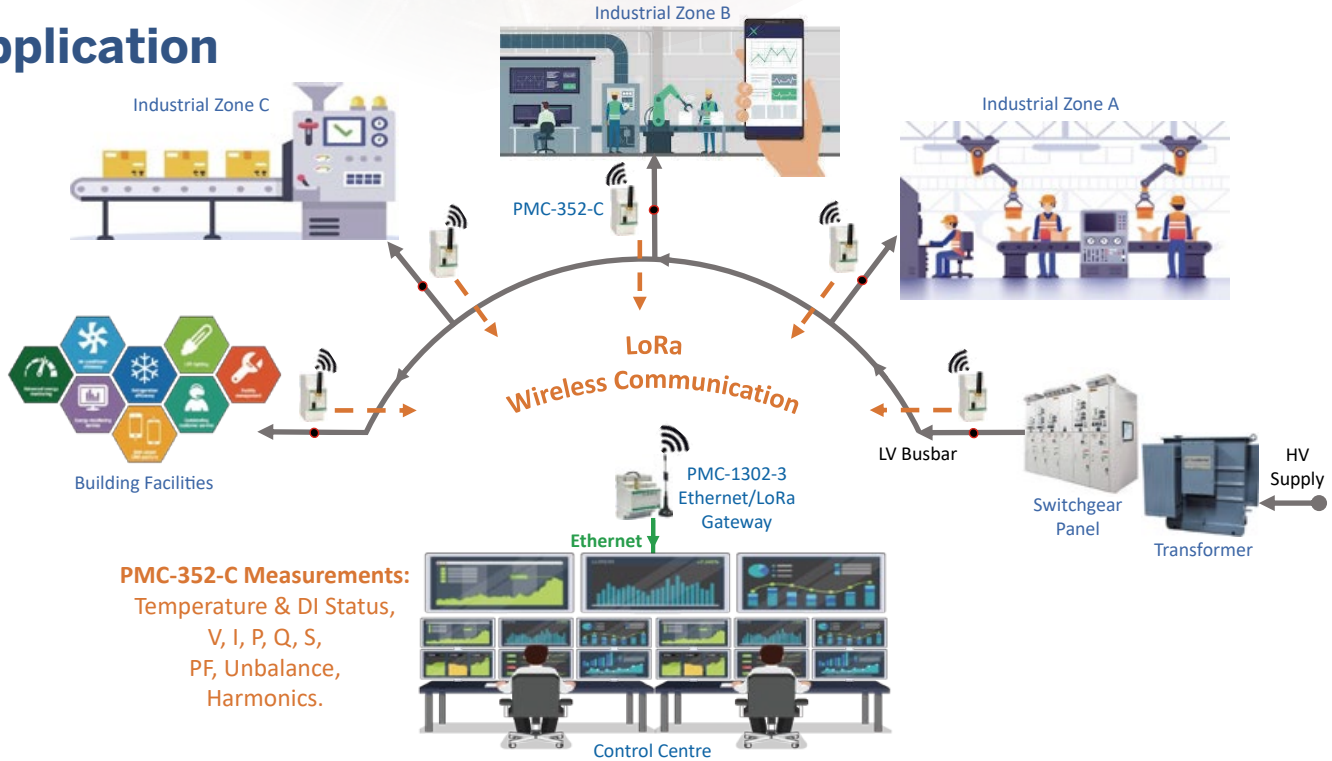
Communications

- Optically isolated RS-485 port at 1200 to 38,400 bps
- Built-in LoRa with configurable ISM Bands for EU863-870, RU864-870, IN865-867, US902-928, AU915-928, AS920-923 and AS923-925
- Modbus RTU protocol

System Integration

- Supported by our PecStar® iEMS and PMC Setup Software
- Easy integration into other Automation or SCADA systems via Modbus RTU protocol

Application



DIN Rail Energy Meter

Accuracy

Parameters	Accuracy	Resolution
Voltage	±0.5%	0.0001V
Current	±0.5%	0.0001A
kW, kvar, kVA	±1.0%	0.0001kW/kvar/kVA
kWh	IEC 62053-21 Class 1	0.01kWh
kvarh	IEC 62053-23 Class 2	0.01kvarh
PF	±1.0%	0.0001
Frequency	±0.02Hz	0.0001Hz
THD	IEC 61000-4-7 Class B	0.0001%
Temperature	±1°C	0.001°C

Technical Specifications

Voltage Inputs (V1, V2, V3, VN)	
Voltage (Un)	277ULN/480ULL
Range	40V to 1.2Un (88V to 550V for Self-Powered option)
Burden	<0.02VA/phase
Frequency	45-65Hz

Current Inputs (I11, I12, I21, I22, I31, I32)	SCCT Option	SCCTA Option
Current (In)	40mA	2mA
Range	0.15%-100% In	0.1%-120% In
Starting Current	0.15% In	0.2% In
External SCCTs	100A/40mA	5A/2mA
	200A/40mA	
	400A/40mA	
	800A/40mA	
	1600A/40mA	

Power Supply (L/+, N/-)	
Standard	60-264VAC/DC, ±10%, 47-440Hz
Optional	88V-550VAC, Self-Powered via Uca (U31)
Burden	<2W

Digital Inputs (DI1, DI2, DI3, DIC)	
Type	Dry contact, 12VDC internally wetted
Sampling	1000Hz
Hysteresis	1ms minimum

NTC Temperature Inputs (TC1, TC2, TC3, TC4)	
NTC Type	2-Wire Thermistors (sensor not included)
Measurement Range	-20°C to +140°C

Communications		
RS-485 (Standard)	Protocol	Modbus RTU
	Baud Rate	1200/2400/4800/9600/19200/38400 bps
LoRa	RF Range	860-935 MHz (Configurable)
	ISM Bands	EU863-870, RU864-870, IN865-867, US902-928, AU915-928, AS920-923, AS923-925
	RF Output Power	19 dBm (Maximum)
	Receiver Sensitivity	-137 dBm (Maximum)
	Output Watts	0.03 (Typical)
	FCC Part 15C	Certified by TCB

Environmental Conditions	
Operating Temperature	-25°C to +70°C
Storage Temperature	-40°C to +85°C
Humidity	5% to 95% non-condensing
Atmospheric pressure	70kPa to 106kPa
Pollution Degree	2

Mechanical Characteristics	
Unit Dimensions	36(W)x65(D)x90(H)mm
Mounting	DIN Rail
IP Rating	IP30

Standards of Compliance

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: 2018 (PMD)
Insulation AC Voltage: 2kV @ 1 minute Insulation resistance: >100MΩ Impulse Voltage: 6kV, 1.2/50µs	IEC 62052-11: 2003 IEC 62053-21: 2003

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: 2014+A1: 2017
Conducted Disturbances	EN 61000-4-6: 2014
Magnetic Fields	EN 61000-4-8: 2010
Voltage Dips and Interruptions	EN 61000-4-11: 2004+A1: 2017

Emission Tests	
Limits and Methods of Measurement of Electromagnetic Disturbance Characteristics of Industrial, Scientific and Medical (ISM) Radio-Frequency Equipment	EN 55011: 2016
Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment	EN 55032: 2015
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 Residential, Commercial and Light-Industrial Environments	EN 61000-6-4: 2007+A1: 2011

Mechanical Tests	
Spring Hammer Test	IEC 62052-11: 2003
Vibration Test	IEC 62052-11: 2003
Shock Test	IEC 62052-11: 2003

Ordering Information

Product Code										Description
PMC-352 3-Phase Wireless (LoRa) DIN Rail Energy Meter										
Basic Function		C								Multifunction Measurements, 1xRS-485
Input Current			A							40mA Input for use with 100A/40mA, 200A/40mA, 400A/40mA, 800A/40mA or 1600A/40mA SCCTs (SCCTs not included)
			B							2mA Input for use with 5A/2mA SCCT (SCCTs not included)
Input Voltage				3						277ULN/480ULL ±15%
Power Supply					2					60-264VAC/DC, 47-440Hz
					N*					88-550VAC, Self-Powered from Uca (or U31)ˆ
Frequency						5				45-65Hz
I/O							A			3×DI
Expansion Communication*								N		None
								7*		LoRa (860-935 MHz) configurable for EU863-870, RU864-870, IN865-867, US902-928, AU915-928, AS920-923, AS923-925
Language									E	English
PMC-352	-	C	A	3	2	5	A	N	E	PMC-352-CA325ANE (Standard Model)

* Additional charges apply.

ˆ The Self-Powered option is only supported for 3-phase power system. If the PMC-352-C is used in a single-phase application, Power Supply option 2 should be selected.

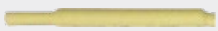
Accessories

External Split-Core CT for PMC-352-C

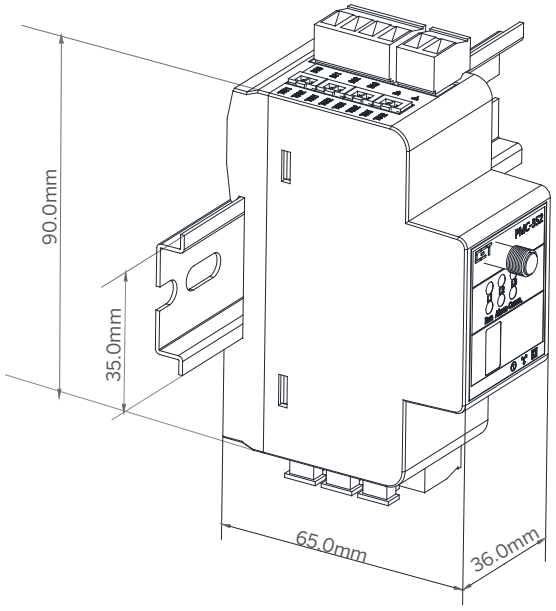
Part Number	Specification	Accuracy	Aperture	Cable Length	
PMC-SCCT-5A-2mA-16-A	5A/2mA, 1-phase Split-core CT with Pluggable Connector	1.0	Ø16mm	2m	
PMC-SCCT-100A-40mA-16-A	100A, 1-phase Split-Core CT with Pluggable Connector	0.5	Ø16mm	2m	
PMC-SCCT-200A-40mA-24-A	200A, 1-phase Split-Core CT with Pluggable Connector	0.5	Ø24mm	2m	
PMC-SCCT-400A-40mA-35-A	400A, 1-phase Split-Core CT with Pluggable Connector	0.5	Ø35mm	2m	
PMC-SCCT-800A-40mA-A	800A, 1-phase Split-Core CT	0.5	80x50mm	See Note 2	
PMC-SCCT-1600A-40mA-A	1600A, 1-phase Split-Core CT	0.5	130x55mm	See Note 2	

1) Please refer to Cable Length for details and contact the factory in advance for special requirements.
2) The PMC-SCCT-800A-40mA-A and PMC-SCCT-1600A-40mA-A come with PMC-BCC-350-2, which is a 2m cable with 2-Pin Black Pluggable Connector.
3) One PMC-352-C can be equipped with 3 pcs of SCCT.

NTC Thermistors

Part Number	Specification	
NTC-104	1xThermistor Sensor with a 0.3m Cable and 2-pin Connector	
NTC-1043	3xThermistor Sensor (Yellow, Green & Red) with 2m Cables and 2-pin Connectors	
NTC-1044	4xThermistor Sensor (Yellow, Green, Red & Black) with 2m Cables and 2-pin Connectors	
NTC-104M4	1xThermistor Sensor (Ø4mm Ring Connector) with a 2m Cable and 2-pin Connector	
NTC-104M10	1xThermistor Sensor (Ø10mm Ring Connector) with a 2m Cable and 2-pin Connector	

Dimensions



Email: sales@cet-global.com
Website: www.cet-global.com

Your Local Representative

V.00 11.03.2024