

PMC-TS1

High-Accuracy Time Server

Overview

PMC-TS1 receives various Global Navigation Satellite System (GNSS) signals and distributes high-accuracy time via IRIG-B, PPS and SNTP protocols. It is ideal for accurate time synchronization requirements in Electric Power System applications, such as fault detection, sequence of event timestamping, data acquisition and so on.

Features

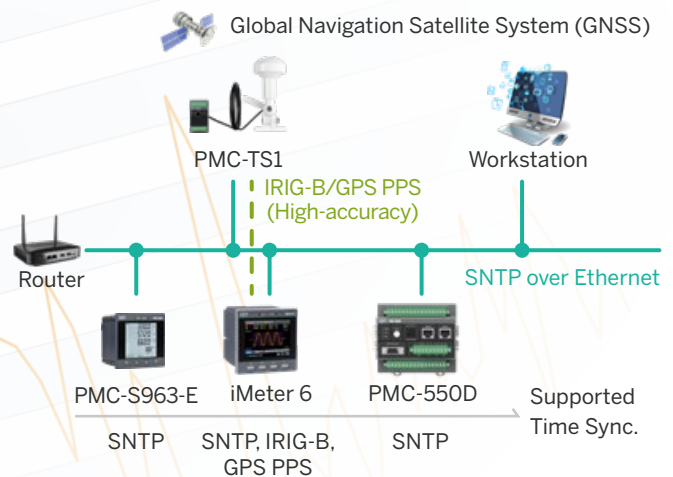
- Selectable GNSS (Global Navigation Satellite System) time sources including GPS/Galileo/QZSS
- 2xIRIG-B DC Level Shift signal output with accuracy of <math><150\text{ns}</math> (1σ)
- Optionally GPS PPS (pulse per second) signal output with accuracy of <math><150\text{ns}</math> (1σ)
- 1xRS-485 and 1x10/100BaseT Ethernet port for communications
- 1xForm C Mechanical Relay for power outage alarm
- Supporting SNTPv2 via Ethernet network, servicing 400 SNTP requests per second
- Maintaining accuracy of 55us after 1 hour at constant temperature with standard Temperature Compensated Crystal Oscillator (TCXO) holdover
- Supporting multi-constellation to allow accurate navigation in harsh environments

Typical Applications

Various applications where time synchronization is essential for:

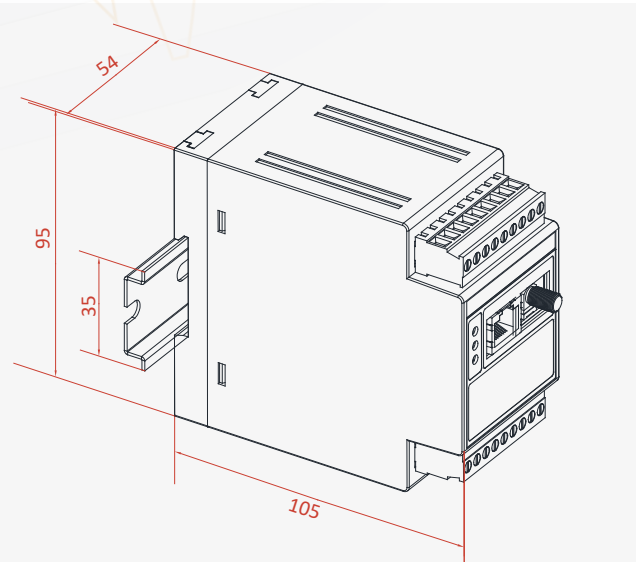
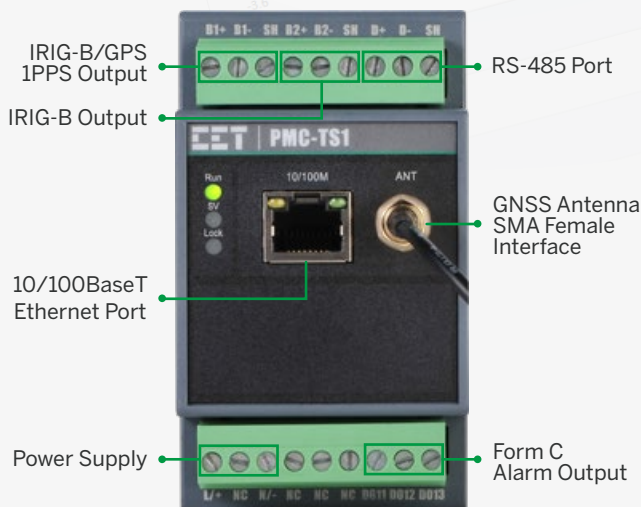
- Real-time Data Acquisition
- Real-time Control Process
- Fault Analysis and Location
- Tariff Billing

Applicable to EMS, PQMS, SCADA, Real-time monitoring and control system, security and surveillance system



Device View and Dimensions

Unit: mm



Technical Specifications

Power Supply (L/+, N/-)	
Standard	95-250VAC/DC ±10%, 47-440Hz
Burden	<4W

IRIG-B Output 1/2 (B1+, B1-, B2+, B2-)	
Accuracy (to UTC)	<150ns (1σ)
Signal Type	IRIG-B000DC (Level Shift, Unmodulated)
Protocol	IRIG 200-04

Optional GPS 1PPS Output (B1+, B1-)	
Accuracy	<150ns (1σ) to UTC

TCXO	
Time-keeping Accuracy (at constant temperature)	55us in 1 hour and 1ms in 24 hours after disconnecting from Satellite
Reception Capability	GPS L1C/A, Galileo E1 C/A, QZSS L1 C/A
Concurrent Reception	Max. 33 tracking channels

Sensitivity	Acquisition Period	>-147dBm
	Reacquisition Period	>-154dBm
	Tracking Period	>-162dBm
Acquisition Time	Cold Start (first-connect)	5 minutes
	Warm Start (reconnect)	2 minutes (with saved ephemeris data)

GNSS Antenna (SMA Male Connector)	
IP Protection	IP67
Polarization	RHCP (Right Hand Circular Polarization)
Antenna Gain	> 4dBi (at 90° elev. angle) > -2dBi (at 10° elev. angle)
Output Impedance	50Ω
Preamp Gain	28±3dB (Magnetic Antenna) 35±2dB (Ceramics Antenna)
Preamp Noise Figure	≤1.5dB
VSWR	≤2.0
Supply Voltage	3.5VDC
Power Consumption	20mA max.

SNTP	
Accuracy (to UTC)	0.5-2 ms
Version	SNTP v2

Alarm Output (DO11, DO12, DO13)	
Type	Form C Mechanical Relay
Loading	5A @ 250VAC or 24VDC

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	
Main Unit Dimensions	54x97.2x111.8 mm
Shipping Weight	TBD
Shipping Dimensions	TBD
Main Unit Mounting	35mm DIN-Rail Mount
IP Rating	IP51

Standards of Compliance

Safety Requirements	
CE LVD 2014/35/EU	EN 61010-1: 2010 +A1: 2019 EN 61010-2-030: 2010
Electrical Safety in Low Voltage Distribution Systems up to 1000Vac and 1500 Vdc	IEC 61557-12: 2018 (PMD)
Insulation	IEC 62052-31: 2015
AC Voltage Impulse Voltage	3kV @1 min 6kV, 1.2 /50μs

EMC Compatibility

EMC 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
Ring Waves	EN 61000-4-12: 2017
Mechanical Tests	
Spring Hammer Test	IEC 62052-31: 2015
Vibration Test	IEC 62052-11: 2020
Shock Test	IEC 62052-11: 2020

Ordering Information

Product Code	Description
PMC-TS1	Time Server
Signal Output	2 2xIRIG-B Output (DCLS) or 1xIRIG-B (DCLS) +1xGPS PPS Output
Power Supply	2 95V-250VAC/DC ±10%, 47-440Hz
System Frequency	5 50Hz/60Hz
Communications	E 1xRS-485 +1x10/100BaseT Ethernet Port
Time Keeping Accuracy	A < 55us in 1 hour after disconnecting from Satellite
PMC-TS1	- 2 2 5 E A PMC-TS1-225EA (Standard Model)

* It is highly recommended to select a Multi-GNSS Antenna from the "Antenna" table to match the PMC-TS1 for a better performance. The selectable Antennas can receive signals from GPS/Galileo/QZSS constellation with a high gain at over 28dB. If the user plans to use other GNSS Antennas, please contact CET for detailed Antenna Requirements.

Accessories

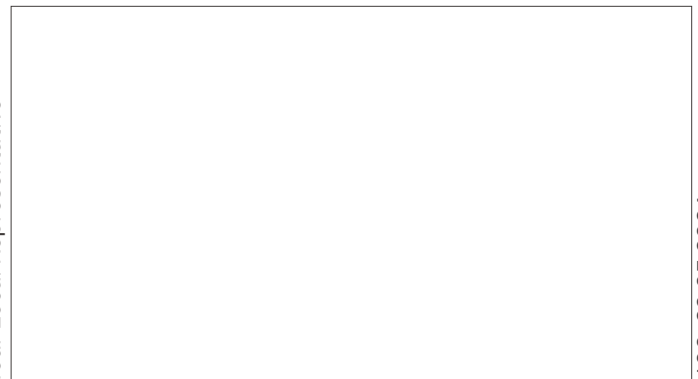
Model #	Specification/Description	
STA-67301	SMA Male Connector and Mounting Bracket	Ceramics Antenna with 2m Cable
STA-67302		Ceramics Antenna with 10m Cable
STA-67303		Ceramics Antenna with 20m Cable
STA-67304		Ceramics Antenna with 50m Cable
STA-67305		Ceramics Antenna with 80m Cable
STA-67306		Ceramics Antenna with 100m Cable
DD100005996	Magnetic Antenna with 3m Cable	SMA Male Connector and 3M Sticker
DD6002357	Magnetic Antenna with 10m Cable	SMA Male Connector and 3M Sticker

Email: sales@cet-global.com

Website: www.cet-global.com

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