



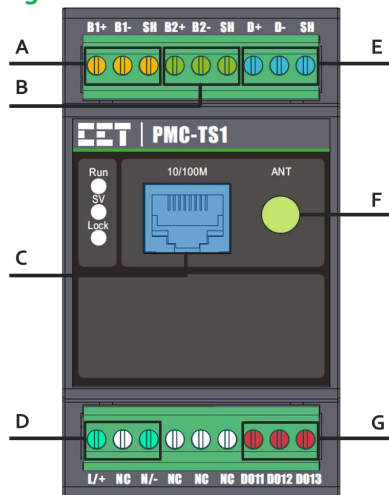
Overview

The PMC-TS1 receives various Global Navigation Satellite System (GNSS) signals and distributes high-accuracy time via IRIG-B, PPS and NTP/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 <150ns (1 σ)
- Optionally GPS PPS (pulse per second) signal output with accuracy of <150ns (1 σ)
- 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

Terminals Diagram

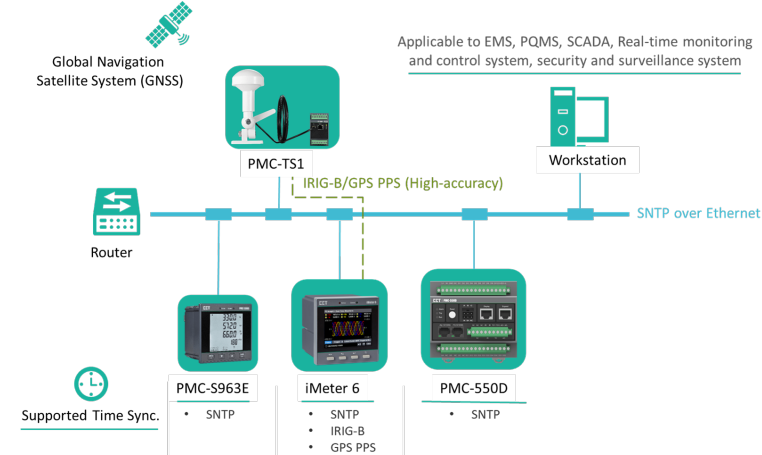


A	IRIG-B Output	E	RS-485 Port
B	IRIG-B/GPS PPS Output	F	GNSS Antenna SMA Female Interface
C	10/100BaseT Ethernet Port	G	Form C Alarm Output
D	Power Supply		

Typical Applications

Various applications where time synchronization is essential for:

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



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 1500Vdc	IEC 61557-12: 2018 (PMD)
Insulation	IEC 62052-31: 2015
AC Voltage: 3kV @1 min Impulse Voltage: 6kV, 1.2 /50 μ s	
Electromagnetic Compatibility EMC 2014/30/EU (EN 61326: 2013)	
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

Technical Specifications

Power Supply (L/+, N/-)	
Standard Burden	95-250VAC/DC \pm 10%, 47-440Hz <4W
IRIG-B Output 1/2 (B1+, B1-, B2+, B2-)	
Accuracy (to UTC)	<150ns (1 σ)
Signal Type	DC Level Shift, Unmodulated
Protocol	IEEE 1344

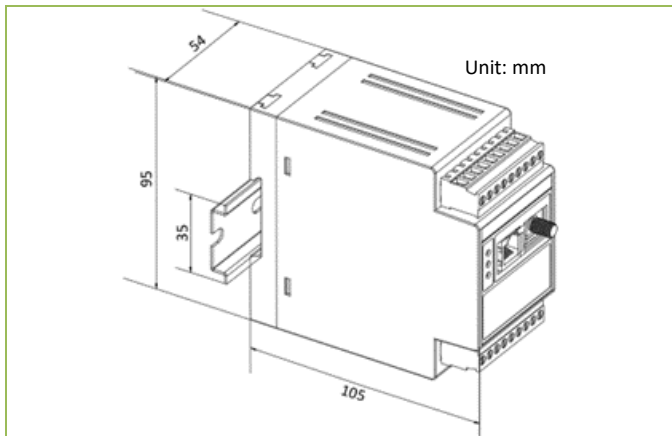
Designed For Reliability

Manufactured To Last



Optional GPS PPS Output (B2+, B2-)	
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
Sensitivity	
Acquisition Period	>-147dBm
Reacquisition Period	>-154dBm
Tracking Period	>-162dBm
Concurrent Reception	Max. 33 tracking channels
Acquisition Time	
Cold Start (First request)	5 minutes
Warm Start (Reconnection)	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 Temp.	-25°C to +70°C
Storage Temp.	-40°C to +85°C
Humidity	5% to 95% non-condensing
Atmospheric pressure	70kPa to 106kPa
Pollution Degree	2
Mechanical Characteristics	
Unit Dimensions	54x97.2x111.8 mm
Shipping Weight	TBD
Shipping Dimensions	TBD
Mounting	DIN-Rail Mounting
IP Rating	IP51

Dimensions and Installations



Ordering Guide

Product Code		Description
PMC-TS1 Time Server		
Signal Output		
2	2	2xIRIG-B Output (DCLS) or 1xIRIG-B (DCLS) + 1xGPS PPS Output
Power Supply		
2	2	95-250VAC/DC ± 10%, 47-440Hz
System Frequency		
5	5	50Hz/60Hz
Communications		
E	E	1xRS-485 + 1x10/100BaseT Ethernet Port
Time Keeping Accuracy		
A	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.

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

Antennas' Appearance
Ceramics Antenna
(with Mounting Bracket)



Magnetic Antenna
(with 10m Cable, SMA Male Connector and 3M Sticker)



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