

Letechnic PLATO 200

GPS DISCIPLINED CLOCK GENERATOR



- Primary reference for E1 or T1 public or private telephone networks
- Frequency reference for broadcasting and transmission
- Frequency and time reference for laboratories
- Stratum I time keeping for computer networks

Specifications

Physical	
Size	1 RU rack mount – 150mm deep
Weight	1.6 Kg
Environmental	
Operational	-10°C to +55°C
Storage	-30 to +80°C
Humidity	Non-condensing
EMC Compliance	EN55022 ¹ , EN55024 ¹
Power Requirements	
Type	Dual supply, independently monitored
Voltage (standard)	48VDC nom (20 to 75 volts operating)
Voltage (optional)	24VDC nom (11 to 36 volts operating)
Power requirements	<14 Watts max during warm-up <7 Watts during normal operation with all outputs loaded and Ethernet operational.
Protection	Both inputs protected by transient suppressors and fuse.
GPS Receiver	
Parallel channels	12
Band	Level 1
Mode	Over-determined timing mode One satellite timing mode TRAIM algorithm
Dependability	
PPS Accuracy (no SA)	<5ns (one sigma)
TTFF (Cold, No almanac)	<50 sec, 90% probability
Local Area Network	
Type	10/100 base-T Ethernet
Network Time Protocol	
NTP version	SNTP version 4
Stratum	Stratum 1
Server Accuracy	<3µs to UTC, 95% probability with no other LAN traffic.
Standard Internal Oscillator	
Accuracy (with GPS fix)	1x10 ⁻¹²
Stability (with GPS fix)	1x10 ⁹ 1 second 1x10 ⁻¹² 24 hours 1x10 ⁹ over full temp range
Stability (holdover)	1x10 ⁹ over full temp range
Optional High Stability Internal Oscillator	
Accuracy (with GPS fix)	1x10 ⁻¹²
Stability (with GPS fix)	1x10 ⁹ 1 second 1x10 ⁻¹² 24 hours 1x10 ⁻¹⁰ over full temp range
Stability (holdover)	1x10 ⁻¹⁰ over full temp range
E1/T1 Signal Outputs	
E1 Outputs	2x 100/120Ω Balanced 2x 75Ω unbalanced either E1 or T1 2048KHz or Framed AMI/HDB3 FAS and MFAS, CRC-4 1544KHz or DS1 AMI/B8ZS, D4 or ESF
T1 Outputs	
Sine Wave Output	
Frequencies	200KHz to 10MHz in 100KHz steps (others frequencies available)
Output impedance	50Ω
Output level	-30dBm to +15dBm adjustable in 1dB steps
Harmonics	< -20dB relative to fundamental
PPS Outputs	
Outputs	2 Independent outputs. Outputs can be combined into one differential output
Frequency	0.5 pulse/µsec to 1 pulse/hour
Duty cycle	Fully programmable
Impedance	50Ω or 75Ω individual, 100Ω or 150Ω differential.
Level	approx.2.5V into 50Ω/75Ω, 5V unloaded
Accuracy to UTC	< 25ns with GPS lock
Alarm Relays	
Number	2, independently programmable
Contact type	Single pole, change over
Contact rating	2A, 220VDC, 240VAC
Protection	1.25A fused

1) Currently undergoing formal testing for these standards

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**BAD TIMING
DEGRADES THE
QUALITY OF
SERVICE FOR
YOUR NETWORK
CUSTOMERS**



A CAESIUM CLOCK



**OR THE MODERN
ALTERNATIVE!**

When Real Time Matters

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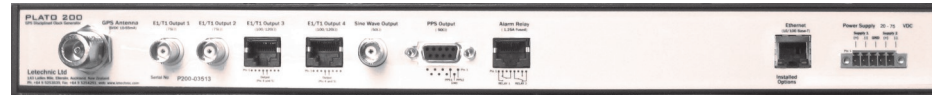
When Real Time Matters

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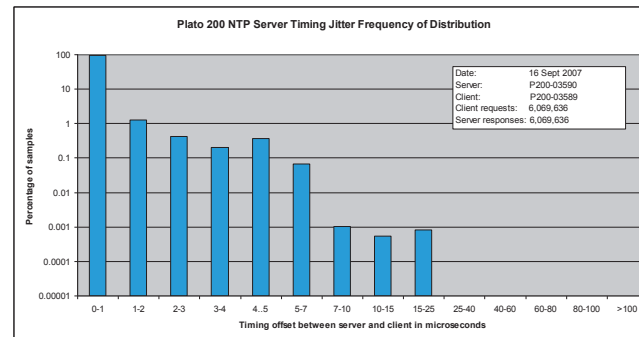
The Plato 200 is a highly accurate frequency and time source that is suitable for use as a frequency and/or time reference for a variety of applications. Signals from GPS satellites are used to correct or discipline a local oven controlled crystal oscillator which results in a low cost frequency or time reference that is comparable to that of a Caesium clock.

Even though the Plato 200 compares very favorably in cost to its competitors, unlike most competing units numerous features and functions are supplied as standard. An expansion slot is available for special applications.

The standard unit is shipped with a 10ppb oven controlled crystal oscillator. To improve the holdover performance in critical applications a 0.1ppb oven controlled crystal oscillator is available.



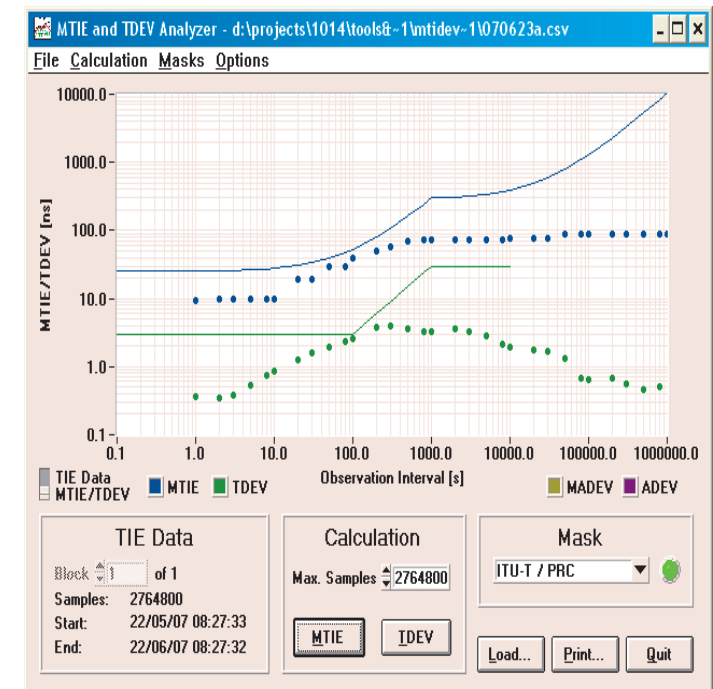
The rear panel showing the outputs that are standard on every unit. The blank area allows for the addition of custom inputs and outputs for specific requirements.



This graph shows the frequency of distribution of the timing error of the NTP server with no other LAN traffic. *Note that the vertical axis is logarithmic.*

Standard features of the Plato 200:

- Dual power supply inputs
- Two 100/120Ω balanced EI / TI ports (ITU G703)
- Two 75Ω unbalanced EI/ TI ports (ITU G703)
- One 200kHz to 10MHz 50Ω sine wave output
- RS232 configuration port
- Two alarm relay outputs
- Two PPS outputs - 0.5 pulse/µsec to 1 pulse/hour
- 10/100 base-T Ethernet port
- 19 inch rack mount, 1RU high
- Stratum I NTP server



Plato 200 – MTIE and TIE over a one month period. The solid lines are the acceptance masks for an ITU Primary Reference Clock.