POLYNET
Perfect Timing

PolyNet PTPGM4009
Grandmaster Clock

Precision Time Protocol Grandmaster Clock, compliant with IEEE1588-2008 Standard

PTPGM4009 is a PTP/NTP over PRP clock that allows for multiple configurations to provide the most precise and secure timing for data centers, power utilities, stock exchange, broadcast, IoT, or traffic control. It has been designed to meet the various needs of the different industrial applications. It simplifies the migration to PTP without abandoning investments in NTP, IRIG-B or BITS, this way facilitating the integration, interaction, and translation of all types of signals, profiles, and protocols. It offers a dependable and fault-tolerant solution to loss of reference, network outages and power failures to enable networks to run with high precision, reliability, and efficiency.

Benefits

- Modular and configurable

- Designed to integrate heterogenous networks

- Provides accurate and secure timing even in case of power, network or sync failures

- Efficient power consumption

- Facilitates the coexistence of legacy and new protocols

Key Features

- PTP /NTP over PRP clock for mission critical applications

- PRP native (DAN-P clock) no Red box required

- Supports and translates PTP Telecom and Power profiles

- 512 unicast clients

- OCXO / Rubidium are available for internal oscillator

- Multiple in/out signals PTP, NTP, SyncE, 1PPS, E1, T1, MHz, Mb/s

- PTP-to-all, NTP-to-PTP, IRIG-B-to-PTP protocol translation

PolyNet PTPGM4009 Technical Data

PTP roles

- Grandmaster, Slave, Boundary
- Up to 256 unicast clients at 128 packets/sec per port, 512 clients in total

PTP profiles

- Default Profiles (IEEE 1588-2008 Annex J)
- Telecom Profiles (ITU-T G.8265.1, ITU-T G.8275.1)
- PTS / APTS Profile (ITU-T G.8275.2)
- Utility Profile (IEC 61850-9-3)
- Power Profile (IEC C37.238)

NTP function

- Port A: NTP server (500 000 transactions per second in total)
- NTPv3 (RFC 1305) and NTPv4 (RFC 5905) server and client
- SNTPv3 (RFC 1769) server

GNSS

- GPS, GLONASS, BeiDou, Galileo, Navic support / Single and Multiple constellation
- Single-band and Multi-band support
- Cable delay compensation
- Jamming and Spoofing detection and mitigation

Platform time protocols

- Frequency: 1544 kHz, 2048 kHz, 5 MHz, 10 MHz, 1544 kb/s (T1), 2048 kb/s (E1), SyncE
- Phase: User programmable PPS
- Time: PTP, NTP, ToD (ITU-T G.8271, China Mobile, NMEA), IRIG-B (B00X, B12X, B13X, B14X, B15X, B22X), DFC77 Clock

Performance

- Rubidium better than ±1.0 e-12
- OCXO better than ±0.1 ppm
- Internal time reference better than ±2.0 ppm
- Rubidium holdover: 100 ns @ 10h, 500 ns @ 24h, 1μs @ 48 h
- OCXO holdover: 500 ns @ 2h, 1μs @ 4 h, 10μs @ 24 h

PRP Resilience

- PRP extension for IEEE 1588 / IEC 61588
- Link Redundancy Entity (LRE) / IEC 62439-3

Ports

- Timing: 2 x SFP, 2 x RJ-45, 1 x SMA: unbalanced 50 Ω, 3 x SMB: unbalanced 50 Ω, 3 x RJ-48: balanced (RS-422) 100 Ω
- Control: 2 x RJ45 (Console and Management), USB (Storage)

Operation

- ETSI 1U rack mountable: Dimensions 44 mm x 228 mm x 435 mm (equivalent to 1U in 19" rack), weight: 1.9 kg / 4.2 lb
- Fanless operation, Temperature / Humidity range: -40 ~ +70°C temp. / 0 ~ 95% RH (non-condensing)
- Redundant power supply (AC, DC, AC+AC, AC+DC, DC+DC)
- Power: 10W with OCXO, 14W with Rubidium

Front/Back Panel

- Display and keyboard. LEDs: Platform (PSU1, PSU2, System), Application (alarm, GNSS, locked), Port (link, activity)
- Network and Time interfaces. Management Interfaces. USB software and firmware upgrade

Management

- Graphical User Interface for configuration and monitoring based on web server
- Local console by CLI (RJ-45)
- SSH through management interface (RJ-45, 10/100BASE-T)
- RFC 3164 Syslog event reporting (device role)

Modules

RIC 50:	• 5 x BNC or ST: IRIG-B, PPS, MHz
	• 4 x BNC: IRIG-B, PPS, MHz + 1 x BNC: DCF77, IRIG-B
RIC 52:	• 4 x RJ48: ToD, IRIG-B, ASCII
	• 5 x BNC: IRIG-B, PPS, DCF77, MHz
RIC 54:	• 4 x BNC: IRIG-B, PPS / 1 x BNC: MHz
	• TB-12: IRIG-B, PPS, ASCII, Alarm, Relay
RIC 82:	• 5 x BNC or ST: IRIG-B, PPS
	• TB-12: IRIG-B, PPS, ASCII, Alarm, Relay
RIC 84:	• 5 x BNC or ST: IRIG-B, PPS
	• TB-12: IRIG-B, PPS, ASCII, 2 x Alarm, Relay