Symmetricom

DATA SHEET

TimeProvider® Expansion Platform

Key Features

- Expands TimeProvider 5000 PTP Grandmaster system capabilities
  - Simultaneous PTP and SyncE support
  - Aligned with developing ITU-T G.8275.1 standard for time and phase profile
  - E1/2.048MHz and 1PPS/TOD
- Rack and stack architecture
- Carrier grade design
  - Redundant shelf connections
  - High precision DTI interconnection
  - Dual power inputs
- Hardware-based packet processing
- SNMP and CLI management

Key Benefits

- Supports evolving network needs for frequency, phase, and TOD synchronization
- Add capabilities and capacity only if and when needed
- Supports both FDD (frequency division duplex) and TDD (time division duplex) at 4G/LTE mobile sites

Applications

- 2G, 3G, 4G/LTE mobile networks
- Carrier Ethernet networks
- Circuit Emulation Service (CES)
- Passive Optical Networks (PON)
- WiMax

With the rapid transition from traditional TDM networks to IP-based technologies, the IEEE 1588-2008 Precision Time Protocol (PTP) has been widely adopted for packet network synchronization. Network evolution, particularly in mobile backhaul applications, has driven new demands on the timing systems being deployed. The TimeProvider® Expansion platform dramatically expands the synchronization capabilities of Symmetricom's TimeProvider portfolio. Deployed in a "rack and stack" configuration with the TimeProvider 5000 IEEE 1588 Grandmaster, these products provide a flexible technology suite to match the needs of rapidly changing networks.

TimeProvider Expansion10 adds Ethernet ports that support SyncE as well as PTP, while TimeProvider Expansion30 adds E1 and 1PPS/time-of-day ports. Up to ten expansion units can be deployed in any combination with the TimeProvider 5000 Grandmaster. With two high-precision DTI ports for inter-shelf connections and redundant power connections, the expansion platform delivers the carrier grade protection needed to ensure service availability and network uptime.

TimeProvider Expansion10

Mobile operators have successfully deployed PTP through their backhaul networks for frequency synchronization. The stringent requirements for LTE and 4G networks add the need for precise time-of-day and phase to the synchronization suite. Time Provider Expansion10 provides time and phase synchronization, and is aligned with the ITU-T G.8275.1 profile that is in the definition stage. Each unit offers up to 16 Ethernet ports, with a total shelf capacity of 400,000 multicast PTP clients with the default profile message rate—the performance needed for carrier-class mobile networks.

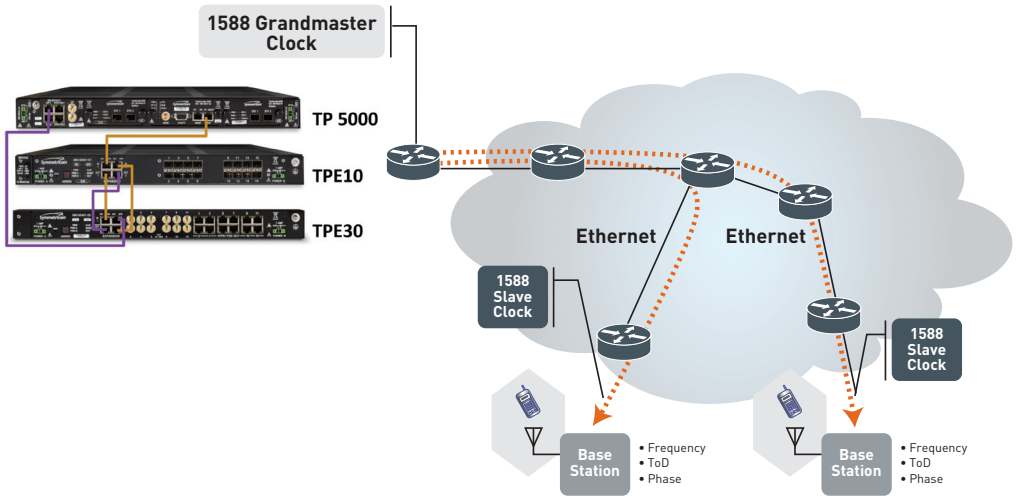
Synchronous Ethernet (SyncE) is a rapidly emerging technology that provides frequency synchronization in Ethernet networks. Time Provider Expansion10 Ethernet ports simultaneously support SyncE and PTP, allowing mobile operators, for example, to synchronize the backhaul network with SyncE while delivering PTP to base station end points.

TimeProvider Expansion30

Even as networks transition, the requirement remains to synchronize elements using the frequency and interfaces of the traditional TDM network. The TimeProvider Expansion30 has 12 1PPS/TOD output ports and 12 E1/2.048MHz output ports—allowing carriers to provide synchronization for all of their equipment from one TimeProvider stacked configuration.

TimeProvider Expansion units can be managed remotely and locally via CLI or by SNMP.

TimeProvider® Expansion Platform



TimeProvider Expansion Platform

Specifications

TPE10 Ethernet Expansion Shelf – PTP/SyncE

OUTPUTS

- 16xGigE output, SFP- Electrical or Optical

TPE30 E1 & PPS/TOD Expansion Shelf

OUTPUTS

- 12x1PPS+TOD, RJ45 connector
- 12xE1[2.048 Mbps and 2.048MHz], SMB connector

OUTPUTS

Up to ten TimeProvider E10 and Time Provider E30 shelves can be deployed in any combination with a TimeProvider 5000 Grandmaster

TimeProvider E10 PTP/SyncE Expansion Shelf

- 16 x GigE output
  - SFP electrical or optical
  - 8 ports standard, 16 ports with optional SW license

PTP Protocol

- Layer 2 (IEEE 1588-2008 Annex F) / Multicast
- Client capacity for shelf: 400,000 multicast clients with the default profile message rate

SyncE

- With ESMC message support
- SFP optical

TimeProvider E30 E1 & 1PPS/TOD Expansion Shelf

- 12 x 1PPS/TOD, RJ45 connector
- 12 x E1 [2.048 Mbps and 2.048MHz], SMB connector

FREQUENCY ACCURACY

While connected to the TimeProvider 5000 main shelf:

- Tracking to GPS: PRS/PRC quality
- Holdover (over constant temperature):
  - Rubidium [Type II] <1x10^{-11}/day
  - Quartz [Type I] <1x10^{-10}/day

TIME ACCURACY

While connected to the TimeProvider 5000 main shelf:

- Tracking to GPS : <100ns when locked to GPS
- Holdover (over constant temperature):
  - Rubidium [Type II]: 10 µsec over 5 days
  - Quartz [Type I]: 10 µsec over 1 day

PHYSICAL SPECIFICATION

- Dimensions: 44mm H x 483mm W x 236mm D [1.75" H x 19" W x 9.37" D]
- Weight: 8.4 lbs

POWER REQUIREMENT

- TimeProvider E10 Ethernet/SyncE
  - 38.4VDC to -75VDC @ 40 Watts, typical consumption
- Time Provider E30 E1 & 1PPS/TOD
  - 38.4VDC to -75VDC @ 20 Watts, typical consumption

ENVIRONMENTAL SPECIFICATIONS

- Operating temperature: -5°C to +55°C
- Storage temperature: -40°C to +70°C
- Humidity: 5% to 100% w/condensation

PROTOCOLS

- IEEE 1588-2008 [PTP]
- Synchronous Ethernet
- VLAN
- G.703, G.704 (E1, 2.048MHz)

MANAGEMENT

(Through TimeProvider 5000 main shelf)

- CLI – TELNET, SSH
- SNMP v2c, v3

CERTIFICATIONS

- CE certified
  - CISPR22
  - Safety – CB Scheme 60950-1 2nd edition
- EMC
  - FCC part 15 AS/NZS Class B, EN300 386, EN55022/24, CISPR22, KN55022/24
  - NEBS GR-1089 section 2 and 3
- ENVIRONMENTAL
  - ETSI (EN55022/EN55024) EN300019, Class T3.2
  - NEBS W/Exclusion of GR-63 4.2, 4.5
- Safety
  - UL/cUL 60950-1, IEC 60950-1/CB, EN60950-1 2nd edition
- RoHS
  - 6 of 6 RoHS

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