TimeProvider 1000/1100

Network Access Synchronization

TimeProvider 1000

TimeProvider 1100

Key Features

- Best in class clock performance with BesTime and SmartClock technologies
- PRS with Type II/Stratum 2E and Type I/Stratum 3E holdover
- Universal input and output cards
- E1, 2.048MHz, T1, 1.544MHz, CC
- NTP server/client with MD5 authentication
- E1 and T1 span line retiming
- SNMP management

Key Benefits

- Small footprint suitable for small or medium sized central offices
- Flexible configuration: functions as a stand alone PRS with redundant rubidium and quartz clocks or as an SSU/BITS shelf
- Fully redundant and protected
  – Up to 64 1:1 protected and configurable outputs per system

The proliferation of high-speed data, broadband multimedia and circuit-to-packet convergence is rapidly driving the need for high quality synchronization outside the network core into metro and access. However, the synchronization economics and functional requirements of access nodes differ significantly from traditional core nodes. A reduced number of outputs, smaller footprint and lower cost points, while maintaining the PRS accuracy and SSU/BITS performance of a core office synchronization system, are still critical requirements for a small office synchronization solution. The Microsemi TimeProvider® 1000 and TimeProvider 1100 are ideally suited to meet this need.

The TimeProvider's innovative architecture combines the tasks of tracking incoming timing references, qualifying the signals, filtering and distributing precise synchronization onto a single universal Input, Output and Clock card (IOC). Available in rubidium and quartz versions, a second IOC card can be added to provide full input, clock redundancy and output protection. Local and remote provisioning and management of the TimeProvider 1000 and TimeProvider 1100 is performed through the Information Management Card (IMC).

The TimeProvider System

Main Shelf

The TimeProvider 1000 and TimeProvider 1100 main shelves house the IMC, the IOCs, and the input and output connector modules. The main shelf provides up to 32 outputs or provide a mix of E1/T1 retimed spans up to a maximum of 8 retimer circuits per system.

The optional expansion panel provides up to 32 additional outputs, allowing a maximum of 64 protected configurable outputs.

Standalone PRS

An integrated GPS option allows the TimeProvider 1000 and TimeProvider 1100 to be a standalone Primary Reference Source that meets GR 2830/G.811 requirements. Utilizing Microsemi's BesTime® technology, system outputs are constructed from the optimum characteristics of all synchronization sources.

The antenna can be installed up to 1,000 feet from the main shelf, without amplifiers and using traditional coaxial cables.

Network NTP

Applications today demand accurate timing and time-stamps in order to deliver better QoS and improve network performance.

The TimeProvider 1000 and TimeProvider 1100 NTP solutions provide Stratum 1 traceability to operate as a Network Time Server or can be a client to retrieve time from peers. The NTP protocol supports the MD5 authentication for more secure communication.

Input, Output And Clock Function

Innovative design employs the latest technologies to combine the input, output and clock functions in one compact card. This unique architecture enables two IOCs to provide redundancy and protection simultaneously.

TimeProvider 1000/1100

The IOC Card provides:

- Input performance monitoring, qualification and selection
- Holdover based on rubidium or quartz with SmartClock™ technology
- Filtering and distribution of precise synchronization
- Retiming of E1/T1 circuits

Management Function

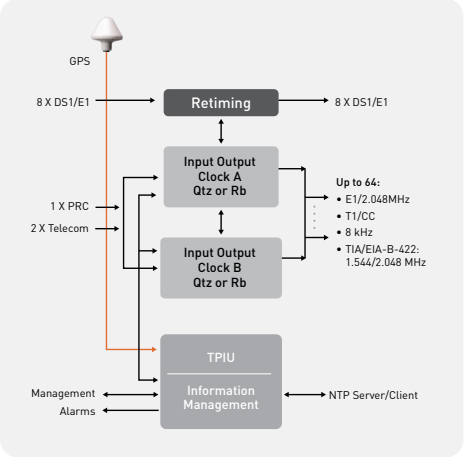
The communication gateway of the TimeProvider 1000 and TimeProvider 1100 is the Information Management Card (IMC), which allows provisioning and management, collecting status information from the IOC cards and processing signal alarms. This information is provided to the network management system and/or craft provisioning software.

BesTime Technology

The BesTime technology is based on a Multiple Input Frequency Lock Loop (MIFLL) architecture, designed to continuously analyze the relative stability of each source. During tracking and holdover modes, BesTime determines the optimum correction data and adaptively ensembles the input references to generate enhanced system performance.

SmartClock Technology

Microsemi's SmartClock technology improves the performance and accuracy of the oscillators. Using smart firmware algorithms, SmartClock "learns" the effects of aging on the clock while it is locked to a reference signal and stores this information. When the incoming reference signals are lost or disqualified, SmartClock applies the stored data to compensate for frequency changes, keeping a continuous distribution of highly stable synchronization signals.



Specifications

General

• Specifications:	GR-2830, GR-1244, T1.101, G.811, G.812,G.823 and G.703
• Holdover	
Rubidium IOC:	Type II or Stratum 2E
Quartz IOC:	Type I or Stratum 3E
• SSM:	GR-378-CORE and ITU-T G.704
• Communications:	RS-232 Serial (DB9), Ethernet (RJ45)
• NTP:	Version 3 (RFC 1305) MD5 Authentication (RFC 1321)
• Management:	TimeScan or TimePictra
• Provisioning:	TimeCraft
• Power:	-36 to -72Vdc
• Operating temp.:	0°C to 50°C

Antenna

• Type:	Active antenna
• Cable type:	RG-58 with TNC connector
• Impedance:	50 or 75 Ω
• Cable length:	Up to 1000 feet without amplifier
• Operating temperature:	-35°C to +75°C

Inputs

• Number of inputs:	1 x 2.048, 5 or 10 MHz, 1.544 or 6.312 MHz 2x E1, 2.048 MHzT1, 1.544MHz, 6.312MHz, CC, JCC, JCC4 (subtended mode)
• Connectors:	Wire wrap, BNC, Siemens, DB-9, SMB/Type 43

Outputs

• Number of outputs:	64 per IOC Up to 32 output connections on main shelf Up to 32 additional output connections on expansion panel
• Types:	T1, E1, 2.048 MHz, 8 kHz, CC, 1.544 MHz, 6.312 MHz, JCC and JCC4, TIA/EIA-B-422: 1.544 and 2.048 MHz
• Connectors:	Wirewrap, BNC, Siemens SMB/Type 43 DB-9 (4 or 8 connector versions)
• Retimer:	Maximum 8 E1/T1 circuits per main shelf Each retimer module retimes 2 E1/T1 circuits
• Connector type	
E1:	BNC
T1:	Wire-wrap

NTP Protocol

• Server mode:	< 10 ms response time
• Server mode with MD5 authentication:	< 50 ms response time
• Communication:	10BaseT, supporting 100 requests per second (RPS) on average
• Client time accuracy:	< 10 ms between the internal NTP clocks of two machines on the same 10 Mb/sec Ethernet LAN with an unloaded network

Mechanical

• Front access ETSI shelf:	7 in x 19 in x 10 in (176 mm x 484 mm x 258 mm)
• Rear access ANSI shelf:	5 in x19 in x 10 in (132 mm x 434 mm x 258 mm)
• Expansion panel:	3.5 in x 19 in x 10 in (89 mm x 434 mm x 130 mm)

Management

- TimePictra
- TimeScan
- TimeCraft
- TL-1
- SNMP v2/v3

Microsemi Power Matters.™

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