US5Ge - Protected Outputs

ENABLING NEXT GENERATION CARRIER NETWORK SYNCHRONIZATION …

The Universal Sync 5G--US5G(e) is a full-featured Timing Signal Generator (TSG) intended to supply timing distribution to network elements for TDM and packet networks. It is designed to function as a Primary Reference Clock (PRC), Synchronization Supply Unit (SSU), Building Integrated Timing Supply (BITS) and IEEE 1588 PTP GrandMaster Clock for common clock distribution to all Network Elements (NE's) requiring external timing for synchronization.

The growth of data traffic keeps challenging Telecom Services Providers with the migration from traditional TDM-based backhaul solutions to packet-based networks. US5Ge units that incorporate IEEE 1588 PTP V2 GrandMaster Clock 1+1 protected blades and SyncE interfaces meet their frequency, phase and time synchronisation needs.

US5Ge units comply with all ITU-T recommendations, ETSI standards (US5Ge) and Telcordia Generic Requirement (GR) network synchronization equipment standards and with the Regional Bell Operating Company (RBOC) network operations common practices (US5G). These include but are not limited to: ITU-T G.812, ITU-T G.813, ITU-T G.823, ITU-T G.8265, ETSI 300 462-3/4/5, GR-1244-CORE, GR-378-CORE, GR-436-CORE, GR-474-CORE, GR-833-CORE, and GR-1093-CORE.

REMOTE MANAGEMENT

All software management interfaces are remotely accessible via TCP/IP LAN allowing full utilization of Centralized Network Operations Center for monitoring and management.

SYSTEM FEATURES

- Auto-provisioning of all modules during installation and initialization
- Upon insertion of a replacement module :
  - Automated Hardware and Software compatibility checks
  - Automated Software download of current module software when required
  - Provisioning from current database
- Inventory in software:
  - Input reference source
  - Output port assignment
- Inventory and Mfg Serial Number in software to help in field servicing and PCN administration
- TL-1 Command Line Interface
- SNMP protocol
- NTP client/server card (hardware assistance, 2 LAN ports): 1+1 redundant
- Protected Output cards :
  - E1 + 2.048 MHz card (20/40 ports)
  - DS1 + CC card (20/40 ports)
- IEEE 1588 PTP GrandMaster card : 1+1 redundant
- Optional Output card with Frequency Feedback (20 ports and 20 Frequency Feedback input ports)
- Internal GPS with or without "Antenna converter"

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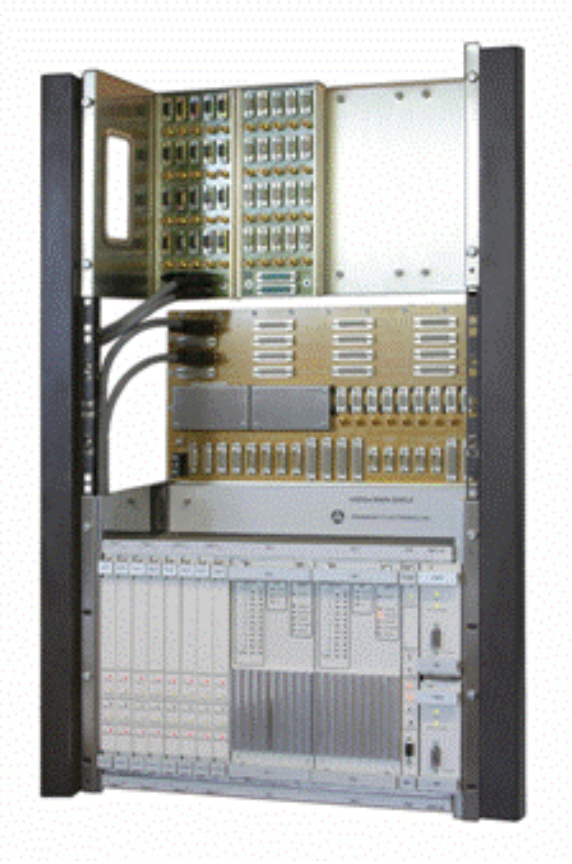
Modular Redundancy in Hardware

- Dual Power Inputs & Power Supplies
- Up to 10 References Inputs
- Inputs bridge to both IOP Modules
- Dual GPS Reference Receivers (Optional)
- Dual GPS Antenna Inputs
- Dual IOP's (ST-2 or ST-3E)
- Dual Redundant umbilicals directly connected to each expansion shelf



Microprocessor Control & Memory Features

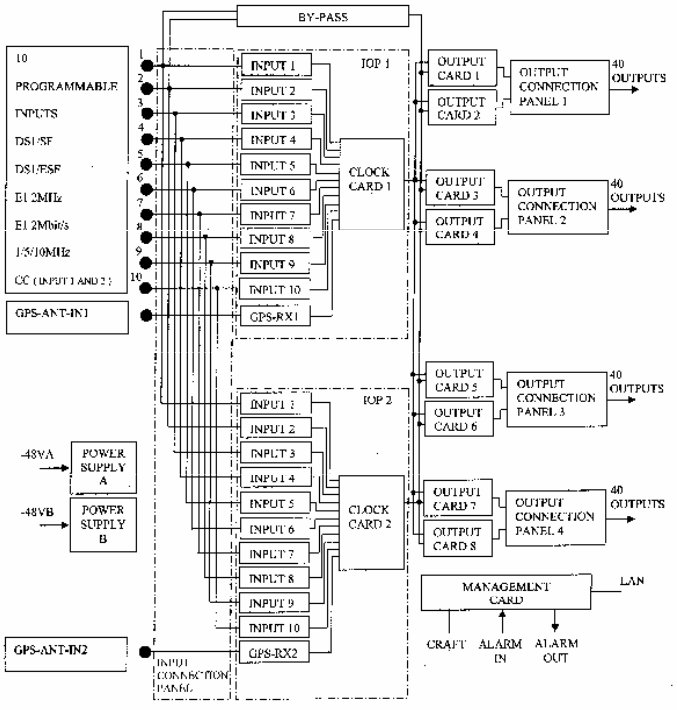
- Top level Intel™ microprocessors on COM and both IOP modules
- System Databases stored on the COM module are backed up on BOTH IOP's
- Output Module on-board microprocessors enable management to each output port

Oscillator Options

- Standard Quartz ST-3E & Rubidium ST-2
- Optional Stratum 2 High Precision Double Oven Quartz Oscillator (DOCXO) - ST-2 performance at lower cost

System Communications Interfaces

- 3 Local craft interfaces (1 at the front panel)
- TCP / IP Local Area Network interface via RJ-45



Integrated GPS Receiver

The US5Ge is designed to integrate two GPS receivers. This arrangement optimizes rack bay utilization by eliminating separately mounted GPS units. The GPS references are independent of other input capacity, meaning all other inputs are still available for selection or for monitor only operation.

Alarm Reporting Modes

- Module Status and Alarm LED's
- 6 Contact Closure Relays—Local & Remote
- TL-1 Autonomous Output Messages
- SNMP Traps
- 16 Discrete Alarm Input Relays
- Alarms reported for Expansion shelf umbilicals & BYPASS module faults

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US5Ge—Protected Outputs
PRODUCT SPECIFICATIONS

Architecture

Main shelf : 1 COM card, 2 power supplies, 2 IOP clocks with maximum 10 inputs each, 2 GPS, 8 output cards (max 160 1+1 output ports)
Optional: Bypass module (third clock for emergency situation)
Up to 4 expansion shelves: 2 power supplies, 16 output cards (max 320 1+1 output ports) per shelf
Fast interface bus for inter-cards communication
Local and remote management; software download for all active modules (IOP modules, COM card, Output Cards)
Safe Data Base management; duplication of Data base on COM card and on both clock modules

Power supply modules

Dual load sharing
Each receives power from dedicated back panel power input
Automatic redundancy in case of module failure
Front panel fuses and power status led's
Dual -35 to -72VDC

Communication Module (COM card)

System manager for all plugged in modules : provisioning, alarming, firmware upgrade, inventory, ...
Supports TL-1 and SNMP agents for equipment supervisory
Manages all system security processes
Manages all DB storage, access & synchronisation with IOP back up
Powerful CPU with real time kernel.
3 RS232: CRAFT 1,2,3
1 ETHERNET RJ45: 4x TELNET + 6x TCP/IP sessions
EVENT LOG (1000)
EVENT AO LOG (500)
SECU LOG (500)
DBCHG LOG (500)
SNTP & NTP stratus 1 on board (request GPS option)
Performance measurement : buffering, log and alarm for Clock module PM data

Clock modules (IOP modules)

Based on Rubidium or quartz oscillator, possibility of mixed configuration
Dual redundant clock modules
Clock performance : ITU-T G.812 type 1 & 2 or ANSI T1.101 type ST2 or ST3E
Universal input module : E1, DS1, 1-5-10 MHz, 1544 KHz, 2048 kHz, 64 kHz CC
Maximum 10 input modules per clock module (input impedance 75 and 120 Ohm)
Each input can be used as reference or measurement input
SSM: full compliant (ITU-T G.704, Telcordia GR-378), possibility of QL assignment for no SSM capable inputs
Full software manageable: diagnostic alarms, automates for clock state administration
Powerful CPU with real time kernel
Performance Measurement : TIE, MRTIE, TDEV, FFOFF for several time intervals (1s to 10000s)

GPS

Single or dual GPS modules
Dual Antennas inputs
GPS input with or without long distance cable interface (antenna converter)

Outputs

E1 + 2.048 MHz Protected card (20/40 ports)
DS1 + CC Protected card (20/40 ports)
NTP client/server card (hardware assistance, 2 LAN ports): 1+1 redundant
IEEE 1588 PTP GrandMaster card : 1+1 redundant
Output card with Frequency Feedback (20 ports and 20 Frequency Feedback input ports)

Environmental

Operating temperature: 0 to 50°c
Humidity: 5 to 95%
Dimensions: H=270mm; W=430mm; D=280mm
NEBS level 3
ROHS Compliant

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