US5G PRODUCT SPECIFICATIONS

US5G SHELF MODULES

Power Supply Modules
- Dual load sharing
- Each receives power from a dedicated back panel power input
- Automatic redundancy in case of module failure
- Front Panel fuses & power status LED's

Communications Module
- US5G System CPU
- System Communications Controller—BOTH external and internal com processes
- Provides system TL-1 Agent
- Manages all system security processes
- Manages all DB storage, access, & synchronization with IOP back up

Input/Oscillator/Processor Module
- Dual Clock Modules
- Dual Input Modules—up to 10 inputs
- Dual GPS Receiver Modules (Optional)
- Dual System Data Base Back Up to the COM module

Output Module
- Paired in adjacent slots for 1 to 1 output protection
- Each output is software assignable for DS-1/CC
- Inventory Port Assignments in Software
- Alarm visibility to the port level

US5G INPUTS
- Termination—Wire Wrap on Back Panel
- Bridged—Each input to both IOP modules
- Variable Impedance Setting Adjacent to WW terminals
- Inputs are Software assignable CC, DS-1 (SF/ESF), E-1, 1, 5, or 10 MHz
- Up to 10 Inputs each IOP module
- Selectable SSM activation—Gen 1 or Gen 2

GPS RECEIVER
- Dual Redundant Mounted in IOP Module (Optional)
- Dual Antenna inputs
- Internal Signal termination to IOP Module for PRS reference

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PERFORMANCE MONITORING
- Simultaneous Data Collection on all Inputs
- Data Metrics—Frequency Offset, TIE, MRTIE, TDEV, LMRTIE
- Averaging periods—from 10 to 100,000 seconds
- Threshold crossing Actions—Switch, Alarm, Report, Ignore
- User Selectable Priority Options—Priority 1 to 10 or Monitor only

OUTPUT CAPACITY

US5G OUTPUTS
- 40 Outputs per Module, Paired for 1to1 Protection
- Main shelf capacity--**160 Outputs**
- Expansion Capacity—4 Expansion Shelves, 8 card-pairs each
- Total System Capacity—1440 Protected Outputs

COMMUNICATION AND MANAGEMENT

Craft/Local Ports
- 1 on front (COM Module), 2 on Rear Panel

Remote Management
- 1 RJ-45 Ethernet
- 1 X .25
- All 3 Serial ports can be provisioned for modem interface to PSTN
- 5 DB-9 ports for Pass-Through interface with non-networked elements
- 16 2-pin terminations for discrete input alarms
- 3-pin terminations for output alarms—3 Major, 3 Minor (NC/NO)

Software Interface
- Standards compliant TL-1 agent
- GUI interface

PHYSICAL/ENVIRONMENTAL

Operating Temp.
- 0° C to 50°C

Humidity
- 5% to 95%

Dimensions
- 10.5" H x 17" W x 11" D

Standards Compliance
- NEBS Level III—testing and evaluation by Telcordia Labs
- All relevant Telcordia GR standards covering TSG's, oscillators and network equipment—validated by Telcordia lab evaluation

UniSync 5G

ENABLING NEXT GENERATION CARRIER NETWORK SYNCHRONIZATION...

FEI, with a 40-year legacy in precision oscillator technologies and more than 15 years of experience designing and manufacturing SSU's for major international carriers, has created an SSU of unprecedented

- reliability
- durability
- survivability
- adaptability
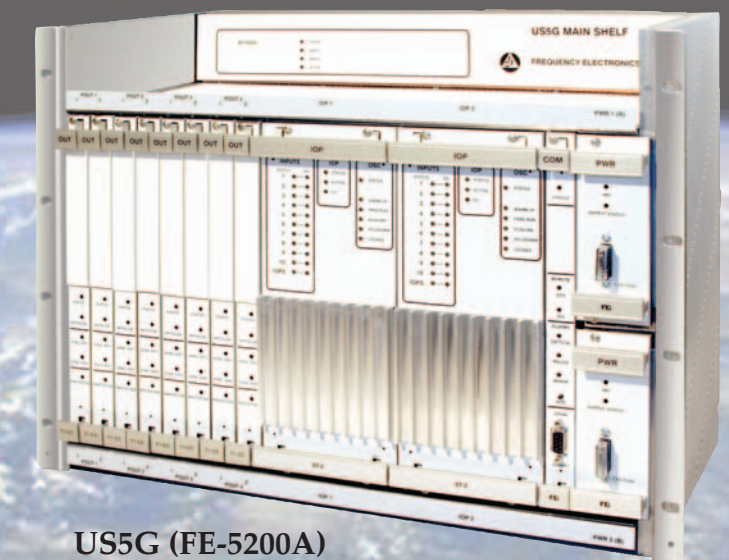- cost efficiency

TOTAL SOFTWARE MANAGEMENT
For the first time NO dedicated hardware assemblies, jumpers, or switches are used to configure common telecom signal formats in the UniSync 5G (US5G)—inbound or outbound.

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

KEY FEATURES
- 160 Main Shelf Outputs
- 1440 Total Outputs
- DS-1/CC Combo O/P Modules
- 10 Input Capacity
- Input Performance Monitoring
- Internal GPS (Option)
- Fast, Easy System Installation & Provisioning

US5G (FE-5200A)

US5G—The New BITS

Modular Redundancy in Hardware

- Dual Power Inputs & Power Supplies
- Up to 10 Reference Inputs
- Inputs bridge to both IOP Modules
- Dual GPS Reference Receivers (Optional)
- Dual GPS Antenna Inputs
- Dual IOP's (ST-2 or ST-3E)
- Paired Output Modules for 1 to1 Protection
- 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

System Software Control Features

- Standards compliant TL-1 Command Line Interface
- 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
  - Auto-provisioning from current provisioning database
- Inventory in software:
  - input reference source
  - output port assignment
- Inventory CLEI and Mfg Serial Number in software to aid in field servicing and PCN administration

System Survivability—Clock BYPASS

In the event both IOP modules are lost or removed simultaneously, the input reference is routed via the BYPASS module directly to the outputs. The BYPASS sub-assembly is modular, alarmed, and service accessible

US5G Rubidium IOP Module

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

Sub-Tending/Remote Clock Operation

- Subtending clock configurations are provisioned in software
- The subtending clock is connected directly to EMS
- SSM's are received and relayed through the subtending clock
- BYPASS redundancy is fully functional on the subtending configuration

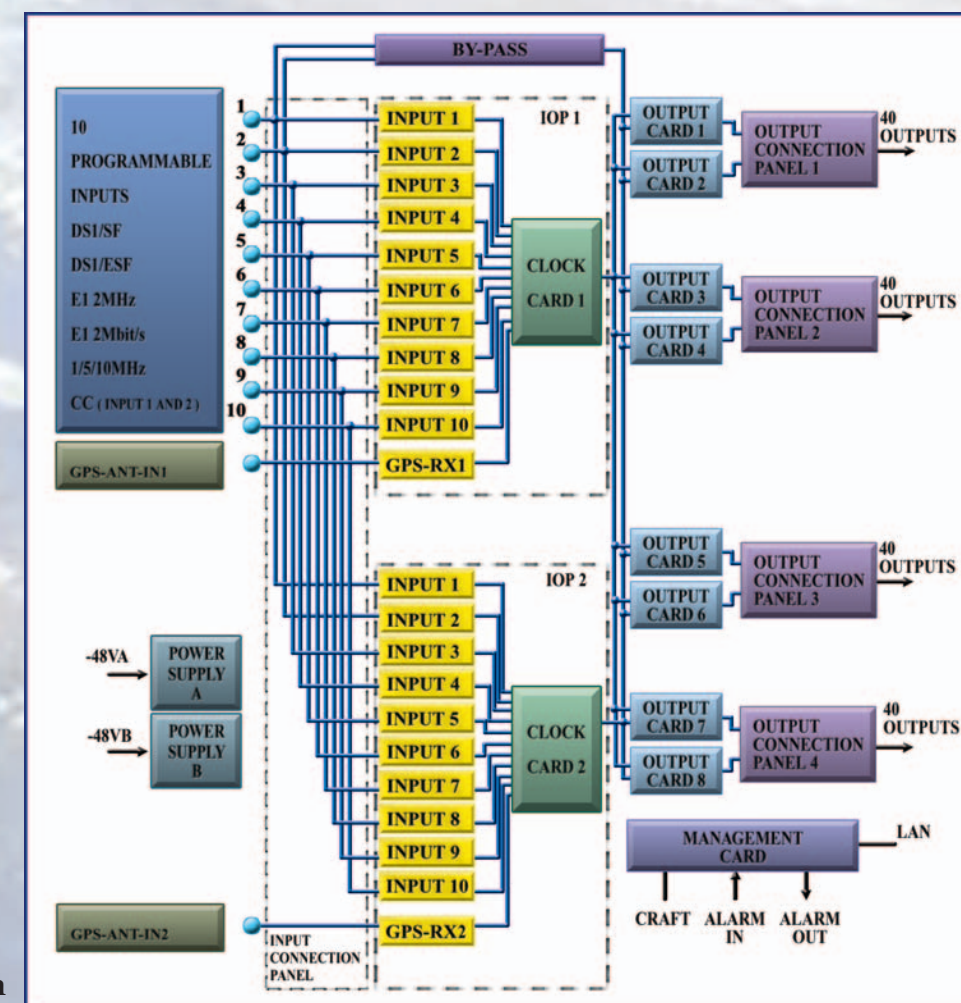### System Communications Interfaces

- Local craft interfaces—3 (1 front panel)
- TCP/IP Local Area Network interface via RJ-45
- X.25 terminal interface

Integrated GPS Receiver – (Factory Option)

The IOP modules are designed to integrate a GPS receiver. The GPS reference is internally terminated. 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. Internal GPS allows the system to provide Time of Day (TOD) outputs—SNTP and NTP.

Alarm Reporting Modes

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

US5G Block Diagram