



TSC FEC

Expansion for Fiberoptic Time and Frequency Signals

KEY BENEFITS

- Cost-effective Upgrade Path
- Ability to Expand System Outputs as Needed (Add Outputs One At a Time)
- Capacity At the High End is Extensive
- Dual Redundant Power Supplies Can Be Hot-swapped to Maintain Continuous Operation

The Universal Time & Frequency System (UTFS) distributes precise time and frequency signals via optical fiber to local and remote locations. At the front end of the UTFS is the Universal Time Code Generator (UTC), a state-of-the-art multiplexer that links to frequency, 1PPS and IRIG-B references. In turn, the UTC simultaneously outputs all timing signals—RF signals, serial time codes and pulsed outputs—on a single fiber to as many as four Time Code Translators (TCTs) at remote locations.

The Fiberoptic Expansion Chassis (FEC) provides a means to expand beyond the four fiberoptic outputs from the UTC. Customers starting out with a minimal configuration system can readily add functionality—in the form of additional Time Code Translators with accompanying output modules—as organizational needs and budgets increase.

EXPANSIVE CAPABILITY

For example, a Fiberoptic Expansion Chassis with one input module and 10 output modules can multiply one UTCG output to 10. In this scenario, the customer can add 40 fiberoptic outputs to the system by adding four expansion chassis. By adding one more expansion chassis level, the number of fiberoptic outputs and potential TCTs in the system can increase to at least 400. And upgrading is as easy as adding hardware. No configuration is necessary. The Fiberoptic Expansion Chassis and power supplies are identical to the UTCG, greatly simplifying logistics.

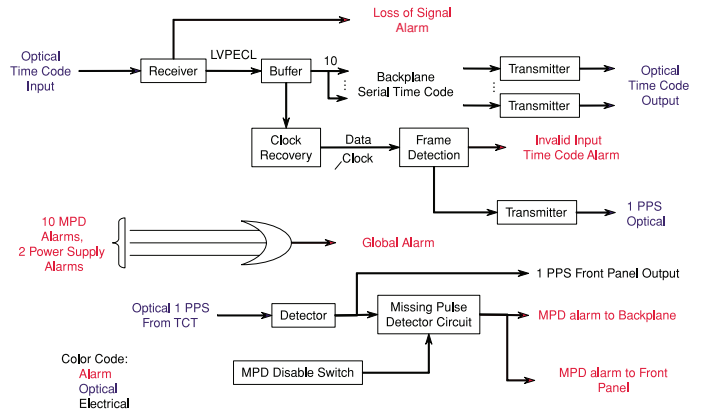


TSC FEC Fiberoptic Expansion Chassis

OPERATION

The Fiberoptic Expansion Chassis receives a single optical input and transmits from 2 to 10 identical optical outputs. The input module performs an optical-to-electrical conversion and puts the electrical serial time code on the chassis backplane. Each output module performs an electrical-to-optical conversion and forwards the time code without modification. All modules, including the redundant power supplies, are hot swappable.

The input module also decodes the input signal and validates the serial time code. The output module receives the optical 1PPS, which is optionally returned from each TCT, and produces an alarm when the 1PPS is missing. Missing 1PPS alarms are provided with enable/disable switches. These alarms, along with power supply alarms, are aggregated with the CRC and loss-of-signal alarms by the input module, and then transmitted via suppressed optical 1PPS to the upstream device, such as the UTCG.



FEC Block Diagram

TSC FEC SPECIFICATIONS

GENERAL SPECIFICATIONS

- Input module
 - Fiberoptic input and output
 - Connectors: LC
 - Optical fiber
 - Multi-mode: up to 2 km
 - Single-mode: up to 30 km
 - Alarm output on SMA connector for monitoring chassis alarm
 - LEDs
 - Loss of signal
 - CRC
 - Chassis
- Output module
 - Quantity: 2-10 per chassis
 - Connectors
 - Fiberoptic: LC
 - 1PPS monitor: SMA
 - Optical fiber
 - Multi-mode: up to 2 km
 - Single-mode: up to 30 km

PHYSICAL & ENVIRONMENTAL SPECIFICATIONS

- Temperature range: 0°C – 50°C (operating)
- Humidity: 0 – 90% Non-condensing (operating)
- Input power
 - Voltage range: 90-240 V~
 - Frequency: 45-65 Hz
 - Current (max): 0.20 A (90 V)
- Size: 19-inch EIA rack-mount chassis, 4U high x 9" (22.9 cm) deep
- Weight: 31.5 lbs with all modules installed



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