

Front End Processor for satellite control centers

Telemetry and command processing

Full CCSDS support

softFEP applications allow you to define and extend the softFEP-2000



SOFTFEP-2000

T&C Front End Processor

- **Frame Synchronization of Telemetry.** The softFEP-2000 receives serial (data/clock) or network telemetry streams. It performs the frame synchronization, error decoding, CCSDS processing, and time-tagging of the satellite's downlink data.
- **Formatting of the Command Uplink.** Commands are received by the softFEP-2000 over a network connection and formatted into the uplink data stream. The softFEP-2000 performs functions such as command spacing, CLTU formatting, and serialization. Ternary commanding and binary commanding formats are supported.
- **Checking of Command Echoes.** The softFEP-2000 receives a command echo and compares the returned data stream, notifying the T&C software if errors are detected.
- **COMSEC.** The softFEP-2000 natively supports the plain-text (unencrypted) traffic interfaces with various COMSEC devices, including the KS-252, MYK-16, MYK-17, KI-17, and KIV-7MS.
- **Recording of Telemetry Data Streams.** Telemetry data streams can be archived to disk storage on the server platform. The input channels to be recorded are configurable. The Playback of recorded data is also configurable, allowing all or only a subset of the recorded channels to be output from the softFEP-2000.
- **Test Data Stream Generation and Checking.** The softFEP-2000 generates simulated data streams from the network, stored files, or bit error rate generators. These test data streams support checkout prior to satellite passes.
- **Web-based User Interface.** The softFEP-2000 has a configurable graphical user interface (GUI) for standalone operations. The user interface runs in a web browser window enabling the softFEP-2000 to be controlled remotely. The customer can modify, change, and extend the user interface screens.
- **Software Application Programming Interface.** A software API allows customers to support the softFEP-2000 from their monitor and control application. The softFEP-2000 uses the Ground Equipment Monitor Standard (GEMS) for this interface.



Functional Specifications	
Telemetry Data Rates	1 Kbps to 20 Mbps
Telemetry Inputs/Outputs	Data/Clock, UDP, TCP
Telemetry Frame Synchronizer	Frame Length up to 64 Kbytes Sync Pattern 16-256 bits Programmable Sync Strategy CRC and Reed-Solomon
Downlink CCSDS Processing	AOS VCDUs Reed-Solomon Decoding Space Packets, MPDUs, BPDUs
Command/Echo Data Rates	100 bps to 5 Mbps
Command Formatter	Binary, Ternary Formats CLTU, Command Spacing
COMSEC Interfaces	KS-252, KIV-7MS, KI-17 MYK-5, -7, -12, -15, -16, -17
Simulated Telemetry Source	BER Patterns Stored Files Network Clients
Other Options	Data Recording Telemetry/Command Display
Time References	IRIG, NTP
Time Resolution	10 nanoseconds

Interface Specifications	
Telemetry Inputs	2, Expandable to 8
Telemetry Outputs	2, Expandable to 8
Command Outputs	1, Expandable to 4
Command Echo Inputs	1, Expandable to 4
Serial Electrical Interface	RS-422
Clock/Signal Polarity	Configurable
IRIG	IRIG-B, BNC
Ethernet Ports	2 1-GigE, Expandable to 6
Network Protocols	UDP, TCP/IP
Optional Connector Panel	DB-9, DB-25

Physical Specifications	
Dimensions	1.75"(H) x 20" (D) x 17.5" (W) 3.5"(H) x 30" (D) x 17.5" (W)
Power	120 VAC, 50/60 Hz, 350 Watts
Temperature	5-30°C Operating 0-35°C Non-Operating
Humidity	< 90% Non-Condensing