

T70/70XL

Satellite TT&C Ranging Modem

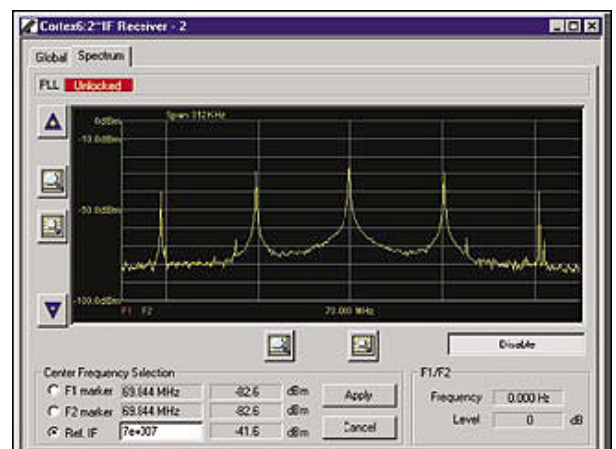
The T70/70XL is RT Logic's turnkey system for ground antennas and satellite test consoles. It integrates telemetry, command, and ranging functions (RF through baseband) in a compact 4U chassis. The T70/70XL employs Dynamic Digital Modules (DDMs) in its design to provide reconfigurable signal processing functions. The T70/70XL is the Telemetry, Tracking and Command (TT&C) solution for the Air Force Satellite Control Network (AFSCN).

Application

Telemetry applications include the 70 MHz IF Receiver function (PM, PSK, FM, FM/FM Demodulators), subcarrier demodulation (BPSK/QPSK), bit synchronization, decoding (Viterbi/Reed-Solomon), CCSDS processing, and frame synchronization. An FSK Signal Discriminator is also available. PCM simulation, data archiving, and data replay can be incorporated as well. The T70/70XL accepts command data inputs from network packets and discrete ternary or dibit/binary interfaces. The T70/70XL generates the appropriate tone frequencies for the command bits and performs command modulation (SGLS, USB, Tone) to baseband or 70 MHz. Range signal generation (PRN, multitone) and processing of the returned ranging signal is supported for SGLS, STDN-USB, and multitone ranging schemes.

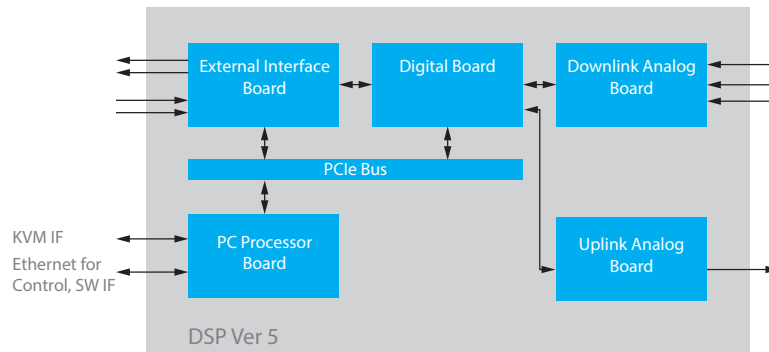
Features

- Reconfigurable and Customized Signal Processing
- Telemetry Processing (100 bps to 20 Mbps)
- 70 MHz IF Receiver (PM, FM, BPSK, QPSK, SQPSK, AQPSK, UAQPSK)
- Subcarrier Demodulation (BPSK, QPSK, PCM/FM)
- Spread Spectrum Demodulation (TDRSS, SQPN)
- Bit Synchronization, Decoding (PCM Code Processing, Re-Interleaving, Viterbi, Reed-Solomon), Auto Bit Rate Detection, QPSK/SQPSK Ambiguity Resolution, Derandomization
- Command and Echo Processing (100 bps to 2 Mbps) Via TCP/IP or External CLK/DATA
- SGLS Commanding (FSK/AM)
- USB Commanding
- LEO-T Commanding
- Non-SGLS Commanding
- 1 Symbol Command Delay Repeatability
- Range Processing for SGLS (PRN), STDN/USB (Tone), Multitone Applications
- Return Signal Processing
- Range Determination
- Doppler, Subcarrier Frequency, Power Level, and Integrated Phase Measurements
- UTDF Ranging MSG Format
- TLM Test Signal Generation
- Downlink 20 Mbps Carrier with up to Two TLM Subcarriers
- Spectral Display
- Up to Three Simultaneous IF Receiver Channels (2 TLM, 1 Ranging and Command Echo)
- Post Detect Diversity Combination



Modular, Digital Implementation

Firmware application personalities are downloadable to Field-Programmable Gate Array (FPGA)-based DDMs to support the full spectrum of IF/baseband processing, signal modulation, and digital front-end functions. Functional modularity of the Telemetry architecture permits the T70/70XL to be tailored to customer-specific requirements.



Standard T70/70XL Configurations

- T70/70XL-100: Full STDN/USB Telemetry, Command, and Tone Ranging Functions, 70 MHz Through Baseband
- T70/70XL-300: Full STDN/USB/SGLS Telemetry, Command, and Ranging Functions, 70 MHz Through Baseband; Includes AFSCN CCS (ADCCP) Interface Capability
- Integrated Tracking Receiver Option
- RT Logic's Telemetry products form reconfigurable systems for satellite ground and test/range applications. Client-software objects for standalone Graphical User Interfaces (GUIs) are included, as well as socket-level interfaces for integrating new applications. Custom plugins are also available.

