

# Ground Systems

## FEATURES

- Full dual telemetry system on PCI short card
- Low L, upper L, S, and any satellite IF bands
- FM, FSK, PM, BPSK, xQPSK, SOQPSK, CPM demodulators in standard package, other available under request
- Trellis decoder for CPM, PCM/FM, and SOQPSK
- 30kHz to 50MHz user programmable bandwidth per IRIG106-07
- Data rate from 30kbps up to 40Mbps per receiver
- Bit and Frame synchronizers with Decommutator and IRIG time code reader
- Built in test signal simulators
- User friendly Windows XP GUI with a single auto setup button
- Last configuration stored in non-volatile memory



**communications**  
Telemetry & RF Products

*Excellence You Can Measure*



## DMTS-4001

**Dual Multi-band Integrated Telemetry Receiver,  
with Bit and Frame synchronizers on a single  
PCI short card**

The DMTS-4001 is a dual multi-band telemetry receiver with tracking capabilities and integrated Bit and Frame synchronizers on a single PCI short card.

Available form-factors/interfaces are: PCI interface, PCI express interface and stand-alone small box with USB and 100BT interfaces.

Capable of accepting RF input signals with high dynamic range; from 0 dBm down to noise floor, the DMTS-4001 will receive the RF signal, condition it, perform digital demodulation, synchronization, and process most telemetry formats.

Direct down conversion architecture with user activated channel equalizer (per IRIG 120-08) allows spurious free reception and simplifies RF architecture for high reliability and durability.

The Bandwidth is user programmable from 30 kHz to 50 MHz. The data rate is up to 40 Mbps for each receiver.

The AFC tracking feature allows compensate Doppler-shift effect and other transmitter abnormalities by centering input spectrum on a programmed center frequency.

Provides rapid synchronization and maintains lock at lower signal-to-noise ratios.

By using digital architecture, DSP based filters, digital Oscillators (MNCO) and DSP-based PLL (Phase-Locked Loops), the DMTS-4001 requires no calibration and tuning.

User-friendly man-machine interface (GUI) allows easy installation, calibration, configuration and monitoring of the product.

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## SPECIFICATIONS

### RF Section

- Input Frequency Range
  - Lower-Band: 1429-1545 MHz
  - Upper L-Band: 1700-1850 MHz
  - S-Band: 2185-2400 MHz
  - Satellite IF: 600-2400 MHz
- IF Bandwidth programmable: 30kHz to 50MHz
- Frequency Tuning Resolution 100 Hz steps
- Dynamic Range noise floor to -10 dBm
- Sensitivity @1Mbps (QPSK) better than -100dBm
- Maximum Safe Input +20 dBm
- Noise Figure 6 dB Typical, 8 dB, maximum
- Spurious Rejection 60 dB

### Demodulator Specifications

- Demodulation Modes  
FM/FSK/PM/BPSK/QPSK/OQPSK  
/SOQPSK/CPM
- Trellis decoder for PCM/FM, SOQPSK, and CPM
- Data Rates 30kps to 40 Mbps
- AFC Tracking  $\pm$  250 kHz
- AGC Controls Automatic, Manual, AGC Freeze and AGC zero, user programmable from 0.1 ms to 1s

### Diversity Combining

- Pre-D
- Post-D
- SE (SNR Enhancement): proprietary algorithm with maximum diversity gain, which optimizes the combined SNR

### Instrumentation

- Spectrum analyzer with programmable span
  - Within programmed BW
  - Any span within 600 to 2400 MHz
- Time domain analyzer
  - Digital scope
  - Eye diagram
- Modulation domain analyzer
  - Constellation
  - EVM
- BERT
- Arbitrary signal source

### Bit synchronizer

- Bit Rates: 30 kbps to 40 Mbps
- Process all PCM codes
- Bit Sync bandwidth: 0.001%, to 5%
- Differential Decoder: per IRIG 106-07
- Derandomizer: 15 bit per IRIG 106-07

### Frame synchronizer

- Input Data Rate: up to 40.0 Mbps
- Word Length: 4 to 64 bits, per IRIG106 class II
- Minor Frame Length: Up to 16384 words, programmable per IRIG106 class II
- Major Frame Length: Up to 256 minor frames per major frame, per IRIG106 class II
- Bit Order: MSB/LSB-first (word-by-word basis)
- Frame Sync Pattern: up to 64 bits per IRIG106 class II
- Sync Error Tolerance: 0 to 15 bits
- Sync Slip Window: 1 or 3 bits wide
- Subframe Sync: FCC ,SFID or URC

### External connection

- 2 SMA type connectors for RF inputs
- 2 SMB type connectors for Analog outputs
  - IF, baseband (I&Q), or tape recorder outputs
- 29 pin connector with software programmable I/O:
  - Data and clock outputs per channel
  - Signal Frame and Bit Synchronizer outputs
  - Simulator Data, Clock, Frame output
  - IRIG Time Code Reader input
  - AGC and AM outputs

### Channel Equalizer

- Per IRIG RCC Document 120-08, paragraph 3.2

### Error correction

- Reed-Solomon
- Viterbi decoder
- Turbo decoder
- 5 symbols Trellis decoder

### Simulator

- Output signals format: Outputs Data, 0° & 90° clocks & minor frame strobes
- Output Levels Single-ended TTL & RS-422
- RF modulated signal with carrier of 70MHz

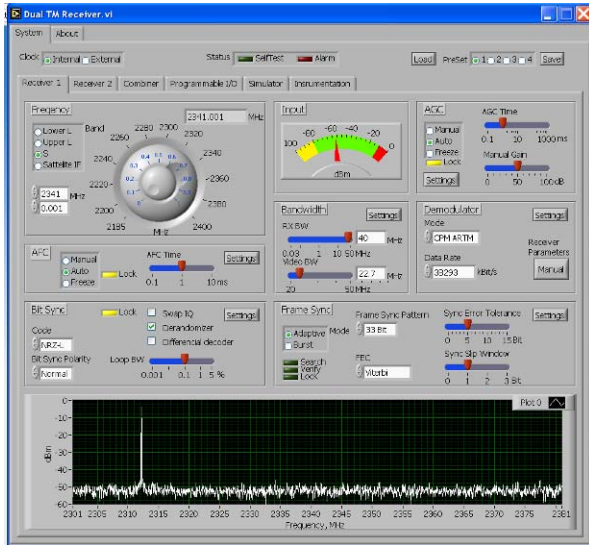
### IRIG time code reader

- Input Format: IRIG A or B,
- Modulation: Pulse width code; Manchester modulated
- Inputs: TIA/EIA 422

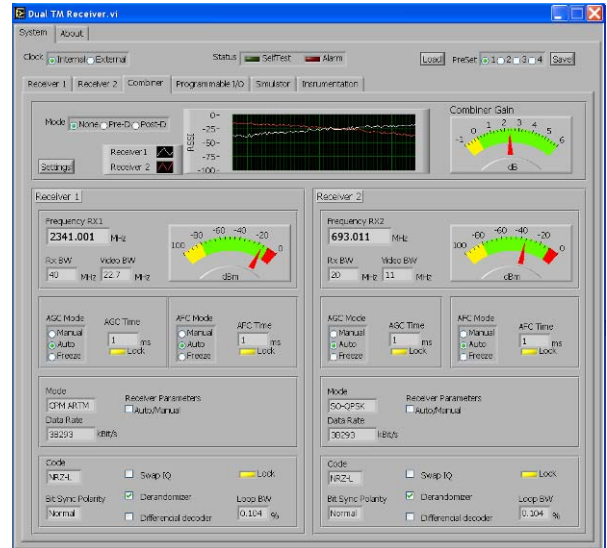
### Options

- Frequency coverage
  - Standard (LL, LU, S, Satellite IF)
  - Continuous coverage 1200 -2400MHz
  - Continuous coverage 600 -1200MHz
- Interface and form factors
  - PCI 32bit
  - PCI Express
  - Stand alone unit with USB/100BT

# Comprehensive GUI

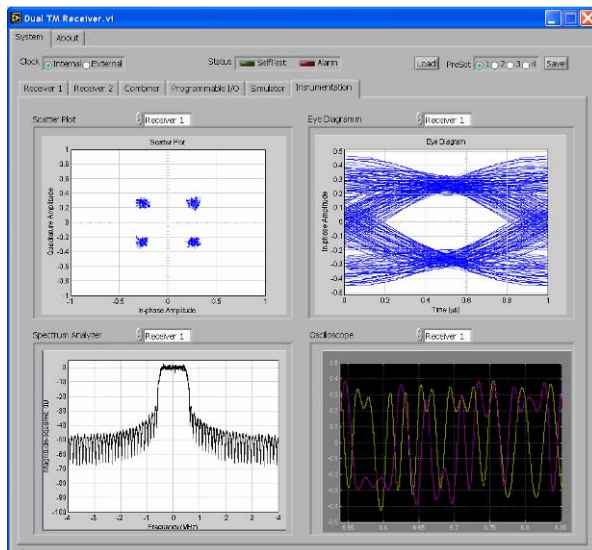


Multiple Programmable Options With Frequency Or Time Domain Monitoring



Dual Receiver With Combiner Shows The Combiner Gain

Auto Set-up of all parameters based on Modulation type and Data rate.



Built in instrumentations

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## Family of products

### 1. PCI-short based dual receiver system



### 2. xPCI based dual receiver system



The DMTS-4001 PCI card is a dual multi- band telemetry receiver with tracking capabilities and integrated Bit and Frame synchronizers on a single PCI-short card (DMTS-4001) or PCI-express Card (DMTS-4001x).

### 3. Dual integrated receiver in a small USB-box



The DMTS-4001U is a dual multi- band telemetry receiver with tracking capabilities and integrated Bit and Frame synchronizers in a compact box with USB 2.0 and 100 BaseT interfaces.

- Allows to use the Unit as a Remote Receiver
- Capable to work independently without PC
- Supports Telemetry over IP (TMoIP) per RCC 218-07.
- USB interface to PC supports up to 120 Mbps
- Less than 5 sec power up time (to the last saved configuration)
- Two additional Baseband or IF Ports (in addition to DMTS-4001 PCI card)

### 4. Quad receiver system in a box with USB 3.0 interface



The DMTS-4001 UQuad is a quad multi- band telemetry receiver with tracking capabilities and integrated Bit and Frame synchronizers in a small double-sized box with USB 3.0 (4.8 Gbit/s) and 100/1000 BaseT interfaces.

Available in Q1-2010



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