

Integrated Telemetry System

Overview

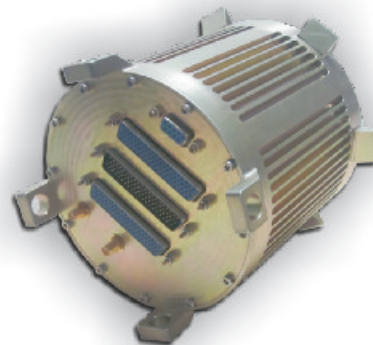
Telemetry is a remote sensing technique wherein parameters such as velocity, altitude, temperature, etc. are measured, and the results transmitted to a distant station where they are displayed, recorded and analyzed. The transmission media may be air, space, copper wire or fiber cable, depending on the application.

The Integrated Telemetry System from Mistral is developed for a power range of 1W to 2W telemetry application. The system houses signal conditioning and processing electronics for over 100 channels. The Integrated Telemetry System integrates multi-channel PCM encoder, 1W transmitter, Transmitter antenna and 30 sensors of different types.

Mistral has developed various rugged telemetry modules for flight/mission critical applications, along with various decoder software, for ground station data extractions.

Features

- ▶ Power: 15.5 V to 40 V
- ▶ Efficiency: 81 % (at full load)
- ▶ Filter: EMI/EMC, as per MIL-STD-461 D/E
- ▶ Sensor and Electrical channels
 - Supports 38 electrical channel signal conditioning
 - Houses electronics for 30 sensor input channels
 - Sensor types include strain, pressure, RTD, thermocouple, acceleration and vibration
 - Supports cold junction compensation for thermocouple channels
 - Supports 12-bit resolution for all sensor and electrical channels
 - Supports Digital filter for all sensor and electrical channels
 - Transient protection provided on all sensor and electrical channels
 - Programmable excitation current for RTD feature and strain gauge sensors
 - Fixed excitation for pressure, vibration and acceleration channels
- ▶ Asynchronous channels
 - Supports one 1553B channel operating in RT/MT mode and transformer coupled
- ▶ Discrete channels
 - Supports 32 optically isolated input channels
- ▶ High shock and vibration compatible: up to 250G



- ▶ PCM
 - IRIG-106 compliant
 - Full software programmable
 - Programmable bit rate up to 10Mbps
 - Up to 1024 words per minor frame
 - Up to 256 minor frame per major frame
 - 8 or 16 bits per word
 - Sync pattern up to 64 bits
 - Major frame ID support
 - Supports super, normal and sub commutation
 - Sixth order pre-modulation filter(Bessel)
 - Bi-phase amplitude is programmable to allow for FM transmitters deviation sensitivity
 - Digital implementation of pre-modulation filter

- ▶ Other features
 - One channel of RS232 interface for frame download
 - Supports dynamic format switching
 - Stores up to two formats
 - AES 128 encryption supported
 - Data out in Bi-Phase L (terminated on the backplane) & NRZL form
 - Programmable sensor input range
 - User programmable digital filter co-efficient update
- ▶ Mechanical
 - Mechanical Outline: outer dimensions, 154 mm (dia) x 156mm (height) with System mass of 2,500 gms.
 - Enclosure Material: Mil-Grade Aluminum - 6061, conductive chromatinized with Block Machined Fabrication
 - All PCBs have thermal plating/heat sinks for heat dissipation & rigidity
 - Unit is designed for friction fit mounting technique
- ▶ Operating Environment
 - Unit is designed to meet environmental condition as per MIL 810 D specifications
 - Random vibration (0.014g²/Hz), sinusoidal vibration, high temperature storage & operation (up to 85 degree Centigrade), Tropical heating, shock, Bump, Saline atmosphere, Fungus
 - EMI/EMC as per MIL 461E standards

Specifications

Transmitter Specifications:

- ▶ Carrier frequency: 2.2-2.3 GHz (S Band) with programmable step of every 0.1MHz
- ▶ Carrier frequency stability: +/-0.003% over the temperature range
- ▶ Modulation technique: FM
- ▶ Power: 1W - 2W

Antenna Specifications:

- ▶ Frequency: 2.2555 GHz
- ▶ Bandwidth: 35MHz (min)
- ▶ No. of antennas in array: 2
- ▶ Application: Transmitting

Performance:

The Integrated Telemetry module offers a performance of 1W to 2W power range based on the following design approach:

- ▶ Programmable digital filter for each 12-bit ADC
- ▶ Sampling of all parameters, independent of transmission
- ▶ Straightforward time correlation of sampled data with parameters sampled at the same rate and at exactly the same point in time
- ▶ Simultaneous sampling across the complete system
- ▶ Increased system reliability as the FPGA-based solution requires no software overhead
- ▶ Software control to meet the required modulation index

Software support:

- ▶ All programmable features configurable through user friendly front-end GUI software
- ▶ Simple UART interface for telemetry module interface to host for debug and download support
- ▶ Software for IRIG-106 auto frame generation
- ▶ User option for manual or auto PCM frame generation
- ▶ Read back option of frame & match with the generated frame file

Ordering

For ordering information please email us at sales@mistralsolutions.com or call +1-408-705-2240 for USA and +91-80-3091 2600 for rest of the world.

About Mistral

Mistral is a technology design and systems engineering company providing end-to-end solutions for product design and application deployment. Mistral is focused in two business domains: Product Engineering Services and Defense Solutions. Mistral provides total solutions for a given requirement, which may include hardware board design,

embedded software development, FPGA design, systems integration and customized turnkey solutions.

Mistral's strategic partnerships with leading technology companies help provide customers with a comprehensive package of end-to-end solutions.



Mistral Solutions Pvt. Ltd.,

No.60, 'Adarsh Regent',
100 Ft. Ring Road,
Domlur Extension, Bangalore - 560 071
Tel: +91-80-3091 2600
Fax: +91-80-2535 6440
E-mail: info@mistralsolutions.com

Mistral Solutions Inc.,

4633 Old Ironsides Drive,
Suite 410, Santa Clara, CA 95054
Tel: +1-408-705-2240
Cell: +1-925-548-2606
Fax: +1-408-987-9665
E-mail: usa@mistralsolutions.com

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