

Airborne Telemetry

FEATURES

- **Integral Isolated Switching Power Supply Design** resulting in Ultra High Efficiency
 - 10 watt – 1.6 A, typical
 - 5 watt – 1.3 A, typical
 - 2 watt – 0.9 A, typical
- **SOQPSK and PCM/FM in One Product Platform**
- **RF Output Power Programmability** available
- **Lower Heat Dissipation**
 - Significantly reduces Heat Sink requirements
- **Full S Band coverage (2200 to 2400 MHz)**
- **Programmable Center Frequency and Deviation Sensitivity** via serial communications port (RS232 or RS422). Non-volatile memory retains settings when power is off
- **Fully Configurable Isolated Ground**
 - DC Input Power Isolated From Chassis
 - Fully Isolated Control Interface
 - Modulation Input Isolated from Chassis/DC Return
 - All without the use of an Isolation Plate
- **Meets latest IRIG-106 requirements**
- **Remote power on/off control**
- **Built In Status Capability, including –**
 - Temperature
 - Forward Power Monitor
 - DC Current Monitor
 - Internal Power Supply Voltages
 - Internal Fault Signals



communications
Telemetry & RF Products

Excellence You Can Measure

ST-4000 TIGER SHARK SOQPSK, PCM/FM Telemetry Transmitter



DESCRIPTION

The ST-4000 Telemetry Transmitter is designed for operation in Aerospace environments where size, weight and power efficiencies are critical. This evolutionary Transmitter extends battery life while incorporating Ultra High Power Efficiency, Full Isolation, Serial Loaded Programmability and PCM/FM and SOQPSK capabilities in one product platform. All this with the performance, quality and reliability you've come to expect of L-3 Telemetry East Transmitter products. The ST-4000 continues the legacy of the extremely successful ST-800 series of Telemetry Transmitters.

The ST-4000 is available in 2, 5, 10 Watt models, and can also be provided in an "Adjustable RF" version. Additionally, two versions are available in order to suit every Frequency and Modulation requirement needed. These include either a Serial Load version where programmable Center Frequency, Modulation type and RF Output Power features can be set using a serial communications port through a basic PC (personal computer,) or for those applications where a static configuration is desired, the ST-4000 can be factory set for your specific mission/application requirements. Both versions offer field adjustable Deviation Sensitivity.

The ST-4000 internal modules (Modulator, Power Supply, and Power Amplifier) are housed in separate machined enclosures to maximize RF isolation, while providing a rigid and robust mechanical design able to withstand the harsh environments expected of missile, weapon and aircraft mission applications. All ST-4000 Transmitters are subjected to these types of rigorous environmental testing requirements to ensure reliable operation under extreme mission conditions every time.

ELECTRICAL SPECIFICATIONS

Frequency Range E/S-Band 2200 to 2300 MHz
 E/S-Band 2300 to 2400 MHz
 Option 2200-2400 MHz
 Note: 0.5 MHz Step Size
 Standard; Others Optional

Date Rate Range

SOQPSK 1Mbps to 20 Mbps
 PCM/FM 0.5Mbps to 10Mbps

Frequency Selection

Serial Loaded: Via serial communications port
 RS232 standard,
 RS422 optional
 9600 Baud
 10 bits, no parity, 1 start, 1 stop
 "F" XXXX.XX

Frequency Stability: $\pm 0.002\%$

Power Output: 10, 5, and 2 Watts minimum (1.5:1
 VSWR)
 Programmable Power Available

Antenna Compatibility

Output Impedance: 50 ohms nominal
 VSWR (load): up to infinite to one
 Open/Short
 Protection: Yes, Internal Isolation

Modulation

Type: PCM/FM, SOQPSK
 Input Serial Clock and Data, TTL

Input Power

Voltage: 28 ± 6 Vdc
 Current: 10 watt 2.0 A max at 28V
 5 watt 1.5 A max at 28V
 2 watt 1.0 A max at 28V

Reverse Polarity

Protection: Yes, 40V, 180 seconds
 Power Return: Power return common to case
 Over Voltage
 Protection: Yes, 40V, 180 seconds

ENVIRONMENTAL SPECIFICATIONS

Temperature: -20°C to +70°C
 (-40°C to +85°C available)
 Vibration: Sine 20g from 20 to 2000 Hz, 3 axis
 Random 14g from 20 to 2000 Hz, 3 axis
 Shock: 100g, 1/2 sine, 11 msec
 Acceleration: 100g
 Altitude: Unlimited

MECHANICAL SPECIFICATIONS

Dimensions: 2" x 3" x 1.13"
 Excluding connectors*

Weight: 8.4 ounces max

Volume: 6.78 cu. inches

Mounting: 6-32 screws, 4 corners

Connectors & Pin Functions

(Standard; other types are available, consult factory.)

J1 PWR PIN CONNECTIONS	
PIN	MDM-9S
1	+28 VDC
2	+28 VDC
3	NC
4	NC
5	NC
6	+28 VDC RTN
7	+28 VDC RTN
8	NC
9	NC

J2 RF OUT PIN CONNECTIONS	
PIN	MDM-9S
1	RF OUT

J3 Data/Communications PIN CONNECTIONS	
PIN	MDM-9P
1	TX COMM
2	NC
3	COMM RTN
4	Data
5	Clock
6	Data/clock RTN
7	RX COMM
8	RF ON/OFF
9	NC

Connectors	Serial Loaded Version	Other Versions
J1 – PWR	MDM9S	TBD
J2 – RF Out	SMA	TBD
J3 – Data/Communications	MDM9P	TBD

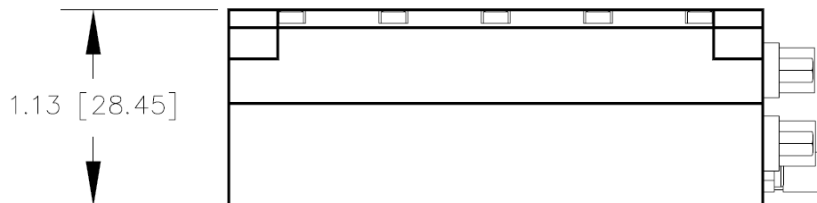
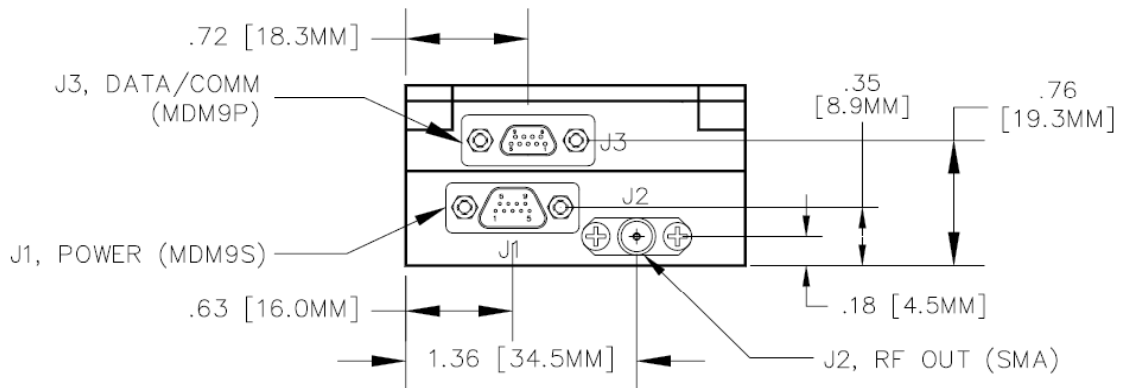
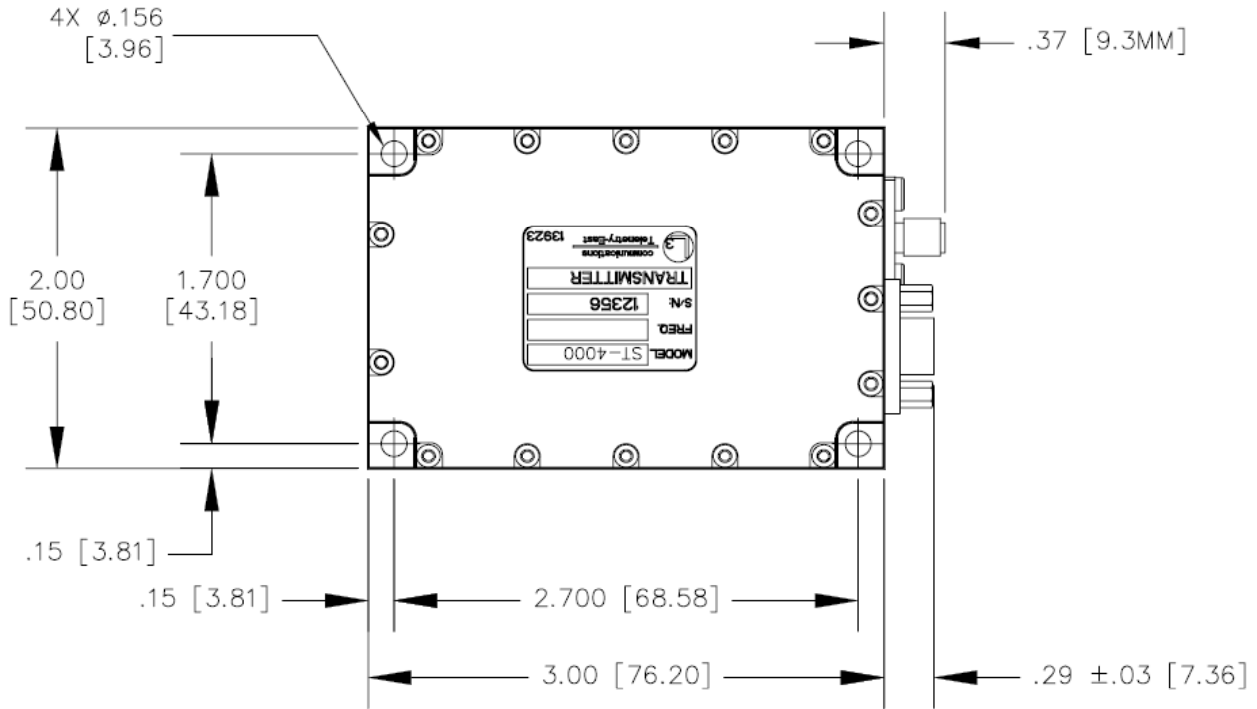
PROGRAMMING FEATURES

- Center Frequency
- Normal, Adjustable, reduced, or off RF power modes

Built-In-Status Features Include -

- Temperature ($\pm 3^\circ$ C)
- Forward Power Monitor (± 0.5 db)
- Power control
 - Normal (10, 5, or 2 watts minimum)
 - Reduced (-3 db)
 - Continuously Adjustable
 - RF Off

OUTLINE DRAWING



OPTIONS

- High Shock Version
- Extended Operating Range (-40° C to +85° C)
- Separate Modulation Input Connector
- Other DC and RF Connectors are available
- Common Ground/Return isolation
- Full 200 MHz Bandwidth at S Band
- Incremental Frequency step sizes down to 50 KHz per step
- PCM data input
- Internal Randomizer
- FEC

QUALITY CONTROL and PRODUCT ASSURANCE

The ST-4000 Transmitter is manufactured in accordance with the requirements of IPC-A-610C Class 3 and ANSI-J-STD-001. Every manufactured unit is fully tested to a comprehensive ATP (Acceptance Test Procedure), which includes full performance testing at thermal extremes. The L-3 Communications Telemetry-East Quality System is certified to meet the requirements of ISO 9001: 2000 and AS9100 through KEMA-Registered Quality Inc.

ORDERING INFORMATION

When ordering, please specify the input impedance required and any other options desired. For additional information or special applications, please contact the L-3 Communications Telemetry-East Business Development Team or the L-3 Telemetry and RF Products Sales Representative in your area.



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