



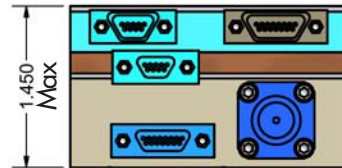
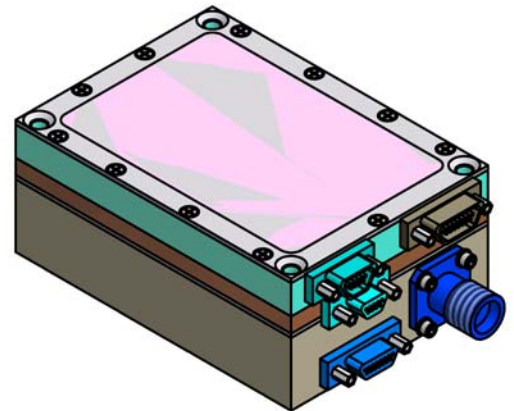
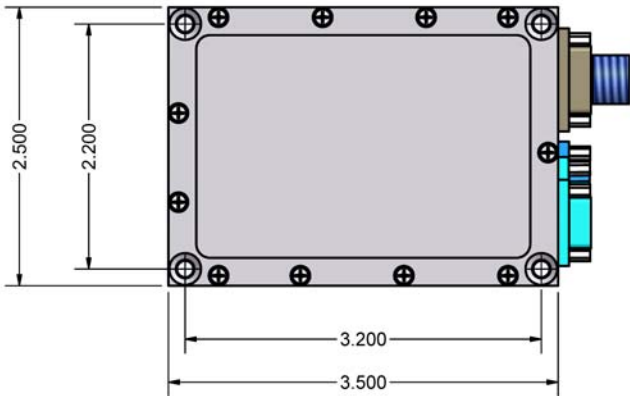
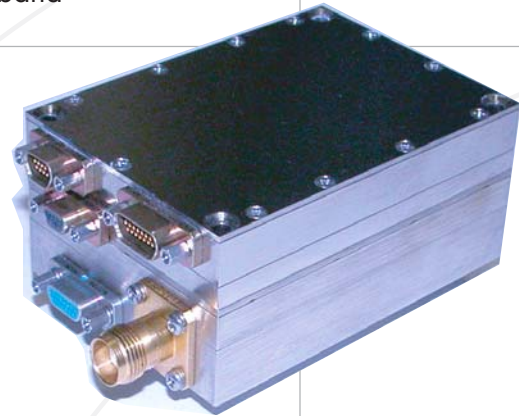
Hypermod™ MMT28-13 20-Watt Transmitter

2.5" x 3.5" x 1.45" Maximum Height
20 watt / 1 watt switchable
20 watt
Low power

Upper S-band
Lower S-band
Upper L-band
Lower L-band

Model: HM-MMT28-13

- ▼ Transmits multiple Advanced Range Telemetry (ARTM) waveforms:
ARTM Tier II (Multi-h CPM), Tier I (SQPSK), & Tier 0 (PCM/FM)
- ▼ 20 Watts of power for extended range requirements
- ▼ 3x data capacity versus legacy transmitters - up to 27.8 Mbps
- ▼ Spectral mask meets or exceeds IRIG 106 telemetry standards
- ▼ No external premodulation filter required



Parameter	Specifications
RF Output	
Carrier frequency	2200.5 to 2300.00 MHz (Upper S-band) , or 2300 to 2394.5 MHz (Lower S-band), 1750 to 1850 MHz (Upper L-band) or 1435.5 to 1534.5 MHz (Lower L-band) in 0.5 MHz steps
Carrier stability	Within +/- 20 PPM over operating temperature range
Output Power (Max)	20 W, incident, into VSWR <2:1, in any phase angle, TNC
Impedance	50 ohms (nominal)
Load VSWR	No damage, any load VSWR
Harmonic & spurious level	MIL-STD-461
Turn-on time	Full output within 500 ms
Spectral masks	PCM/FM: per IRIG 106 (deviation +/- 0.35 bit rate) SOQPSK: per IRIG 106 spectral mask (Tier 1), twice the spectral efficiency of PCM/FM Multi-h CPM: per ARTM (Tier 2)
Connector	TNC Jack
FEC Encoder	Adds 4-8 dB of link margin with Hypermod demodulators. Turbo Product Coding, block size [32, 26]; [64, 57]; and [128, 120] in future models
Data and Control	
Data & clock levels	Single-ended TTL (Differential RS-422 optional), (Clock-free option available for legacy installations)
Bit rate	PCM/FM: 50 kbps to 13.9 Mbps SOQPSK: 50 kbps to 27.8 Mbps Multi-h CPM: 50 kbps to 27.8 Mbps
Pre-mod filter	Internal premodulation filter, 6 pole bessell with 3 dB cutoff, automatically scales with bit rate
Input impedance	Data & Clock: Single-ended TTL: 50 ohms, Differential RS-422: 100 ohms Control: TTL: 10 kohm to +5 VDC
Connectors	Mode control and RS-232 control: MDM-9, sockets Parallel frequency select: MDM-15, sockets Clock and data: MDM-9, pins
Power	
Input voltage	MIL-STD-704F voltage range; reverse polarity protected
Input current	6.0 A (maximum), 4.75 A (typical)
Connector	MDM-15, Pins
Environmental	
Baseplate temperature	Operating: -40° C to +85° C; Storage: -55° C to +110° C
Vibration	Random operating: 10.0 Grms average any axis, (vertical 9.93; longitudinal 10.13; lateral 11.13)
Shock	Operating: 20 g, 6~9 msec, 3 axes; Storage: MIL-STD-810E, method 514.4
Altitude	Sea level to 80,000 feet MSL
Humidity	5% to 95% (non-condensing)
Mechanical	
Dimensions	2.50" x 3.50" x 1.45" maximum, exclusive of connectors
Weight	18 oz. (maximum)

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