



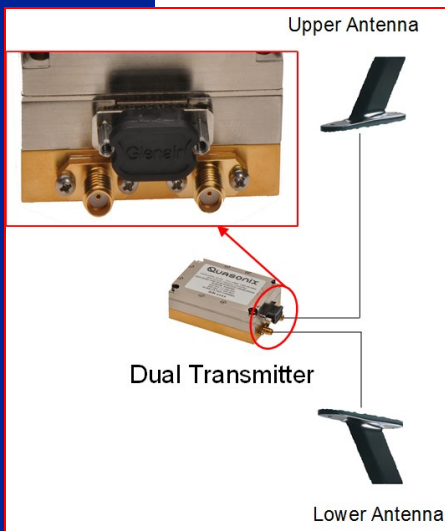
MULTI-MODE DUAL TELEMETRY TRANSMITTER



DUAL TIMTER™



SIDE BY SIDE DUAL TIMTER™



- **Industry Leader in Transmitter Technology**
Proven quality and performance with over 5500 transmitters shipped; TIMTER™ transmitters combine compact designs with outstanding size to power ratios, plus seamless integration and flexibility
- **Dual Output TIMTER™**
Compact design with the flexibility of two transmitters in one 7.2 in³ package; at 1.2 inches tall, the Dual TIMTER™ can serve as a drop-in replacement for common 2.0 inch x 3.0 inch transmitters
- **Two Independent RF Outputs**
Dual RF outputs, up to 10 watts each with a single Micro-D input, can be configured with a single or dual data input
- **Improves EIRP (Effective Isotropic Radiated Power)**
Direct connection to dual antenna platforms via dual outputs eliminates losses due to unnecessary RF power splitters or couplers; connecting to each antenna results in streamlined, robust installation
- **Direct Support for Frequency Diversity**
Supports F1/F2 operation that can significantly reduce self interference between antennas and allows frequency diversity combining at the ground receiver for improved performance
- **Space-Time Coding Capable**
Eliminates link outages caused by the “two antenna problem”; solves problem with negligible bandwidth expansion; adopted by the Range Commander’s Council, IRIG 106-17, Appendix 2-E
- **Low Density Parity Check (LDPC) Option Available**
Add forward error correction mode and improve link margin, nearly tripling the operating distance of your telemetry link; adopted by the Range Commander’s Council, IRIG 106-17, Appendix 2-D; extended LCPC encoding provides all six implemented codes
- **Variable Power Option**
Optional variable power operation allows each output to be set to 64 discrete power levels, approximately 0.5 dB apart. Achieve any power split that you need!
- **Troubleshooting Simplified!**
Independent outputs allow direct verification of each signal path without changing the hardware configuration; typical systems with one transmitter output split between antennas cannot independently test each path

DUAL TIMTER™ TRANSMITTER SPECIFICATIONS

Characteristic	Specification																																																																																																																																																																																																						
Main Section																																																																																																																																																																																																							
Modulation type	PCM/FM (ARTM Tier 0), SOQPSK-TG (ARTM Tier I), Multi-h CPM (ARTM Tier II), BPSK, QPSK, OQPSK, UQPSK, STC																																																																																																																																																																																																						
Carrier frequency tuning range All frequency bands may be tuned 0.5 MHz above or below the stated frequency. (For specific frequency bands, contact Quasonix.) *Custom frequency ranges are available. Contact Quasonix for details.	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Band ID Code</th> <th>Lower L band 1435.5-1534.5 MHz</th> <th>Upper L band 1750.0-1855.0 MHz</th> <th>Lower S band 2200.5-2300.5 MHz</th> <th>Upper S band 2300.5-2394.5 MHz</th> <th>C band 4400.0-4950.0 MHz</th> <th>Mid C band 5091.0-5150.0 MHz</th> <th>Euro Mid C band 5150.0 - 5250.0 MHz</th> <th>Max Power per Channel</th> </tr> </thead> <tbody> <tr><td>A</td><td></td><td></td><td>x</td><td></td><td></td><td></td><td></td><td>10 W</td></tr> <tr><td>B</td><td></td><td></td><td></td><td></td><td></td><td>x</td><td>x</td><td>10 W</td></tr> <tr><td>C</td><td></td><td></td><td></td><td></td><td>x</td><td></td><td></td><td>10 W</td></tr> <tr><td>D</td><td></td><td></td><td></td><td></td><td>x</td><td>x</td><td></td><td>10 W</td></tr> <tr><td>E</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>10 W</td></tr> <tr><td>F</td><td></td><td></td><td>x</td><td>x</td><td>x</td><td></td><td></td><td>10 W</td></tr> <tr><td>G</td><td></td><td></td><td></td><td></td><td></td><td></td><td>x</td><td>10 W</td></tr> <tr><td>H</td><td>x</td><td></td><td></td><td></td><td>x</td><td></td><td></td><td>10 W</td></tr> <tr><td>J</td><td></td><td></td><td></td><td></td><td>x</td><td>x</td><td>x</td><td>10 W</td></tr> <tr><td>K</td><td></td><td></td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>10 W</td></tr> <tr><td>L</td><td>x</td><td></td><td></td><td></td><td></td><td></td><td></td><td>10 W</td></tr> <tr><td>M</td><td>x</td><td>x</td><td>x</td><td>x</td><td></td><td></td><td></td><td>10 W</td></tr> <tr><td>N</td><td></td><td></td><td></td><td>x</td><td></td><td></td><td></td><td>10 W</td></tr> <tr><td>Q</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td>x</td><td></td><td>10 W</td></tr> <tr><td>S</td><td></td><td></td><td>x</td><td>x</td><td></td><td></td><td></td><td>10 W</td></tr> <tr><td>T</td><td>x</td><td></td><td></td><td></td><td>x</td><td>x</td><td></td><td>10 W</td></tr> <tr><td>V</td><td></td><td></td><td>x</td><td>x</td><td>x</td><td>x</td><td></td><td>10 W</td></tr> <tr><td>W</td><td></td><td></td><td>x</td><td>x</td><td></td><td>x</td><td>x</td><td>10 W</td></tr> <tr><td>X</td><td></td><td></td><td></td><td></td><td></td><td>x</td><td></td><td>10 W</td></tr> <tr><td>Y</td><td>x</td><td>x</td><td></td><td></td><td>x</td><td>x</td><td></td><td>10 W</td></tr> <tr><td>Z</td><td>x</td><td></td><td></td><td></td><td></td><td></td><td>x</td><td>10 W</td></tr> </tbody> </table>	Band ID Code	Lower L band 1435.5-1534.5 MHz	Upper L band 1750.0-1855.0 MHz	Lower S band 2200.5-2300.5 MHz	Upper S band 2300.5-2394.5 MHz	C band 4400.0-4950.0 MHz	Mid C band 5091.0-5150.0 MHz	Euro Mid C band 5150.0 - 5250.0 MHz	Max Power per Channel	A			x					10 W	B						x	x	10 W	C					x			10 W	D					x	x		10 W	E	x	x	x	x	x	x	x	10 W	F			x	x	x			10 W	G							x	10 W	H	x				x			10 W	J					x	x	x	10 W	K			x	x	x	x	x	10 W	L	x							10 W	M	x	x	x	x				10 W	N				x				10 W	Q	x	x	x	x	x	x		10 W	S			x	x				10 W	T	x				x	x		10 W	V			x	x	x	x		10 W	W			x	x		x	x	10 W	X						x		10 W	Y	x	x			x	x		10 W	Z	x						x	10 W
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RF output power	TIMTER L, S, or C band: 5 W per Output, or 10 W per Output TIMTER L/C or S/C band: 5 W per Output, or 10 W per Output TIMTER L/S band or L/S/C band: 5 W per Output, or 10 W per Output *For higher max power requirements, call Quasonix. Option DP: 64 pwr settings approx. 0.5 dB apart, select between any two via baseband connector pin Option VP: 64 pwr settings approx. 0.5 dB apart, selecting any level via serial command																																																																																																																																																																																																						
Data (bit) rate, automatic rate adaptation	TIMTER: 0.1-28 Mbps (0.05-14 Mbps for PCM/FM) TIMTER option HR: Extends upper limit to max of 46 Mbps/SOQPSK, ARTM CPM (23 Mbps for PCM/FM) TIMTER option LR: Extends lower limit to min of 50 kbps/SOQPSK, ARTM CPM (25 kbps for PCM/FM)																																																																																																																																																																																																						

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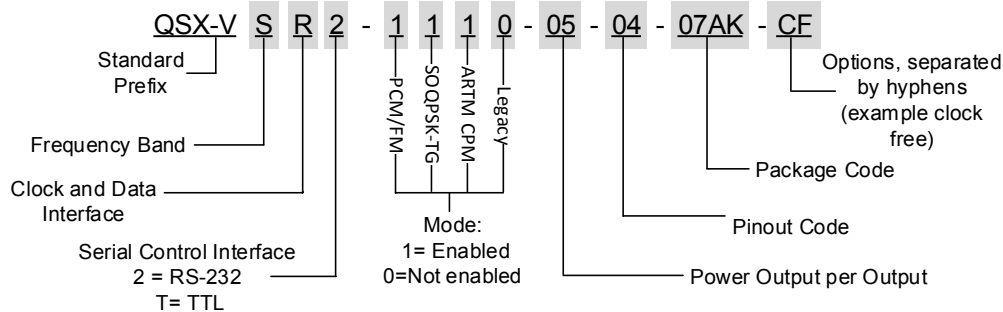
Characteristic	Specification																											
Clock Free Data (bit) rate	TIMTER: 0.1-35 Mbps With BR x command: Allows user to enter a fixed bit rate With BR A command: Automatically detects bit rate																											
Input current @ +28 VDC (both channels transmitting)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td>TIMTER L or S band, 5 Watt</td> <td style="text-align: center;">1.6 A max.</td> <td style="text-align: center;">1.3 A typical</td> </tr> <tr> <td>TIMTER L or S band, 10 Watt</td> <td style="text-align: center;">2.8 A max.</td> <td style="text-align: center;">2.5 A typical</td> </tr> <tr> <td>TIMTER L/S band, 5 Watt</td> <td style="text-align: center;">2.4 A max.</td> <td style="text-align: center;">1.9 A typical</td> </tr> <tr> <td>TIMTER L/S band, 10 Watt</td> <td style="text-align: center;">4.1 A max.</td> <td style="text-align: center;">3.5 A typical</td> </tr> <tr> <td>TIMTER C band, 5 Watt</td> <td style="text-align: center;">2.6 A max.</td> <td style="text-align: center;">2.1 A typical</td> </tr> <tr> <td>TIMTER C band, 10 Watt</td> <td style="text-align: center;">3.3 A max.</td> <td style="text-align: center;">2.9 A typical</td> </tr> <tr> <td>TIMTER L/C band or S/C band, 5 Watt</td> <td style="text-align: center;">4.0 A max.</td> <td style="text-align: center;">3.4 A typical</td> </tr> <tr> <td>TIMTER L/C band or S/C band, 10 Watt</td> <td style="text-align: center;">4.5 A max.</td> <td style="text-align: center;">3.9 A typical</td> </tr> <tr> <td>TIMTER L/S/C band, 10 Watt</td> <td style="text-align: center;">4.5 A max.</td> <td style="text-align: center;">3.9 A typical</td> </tr> </tbody> </table>	TIMTER L or S band, 5 Watt	1.6 A max.	1.3 A typical	TIMTER L or S band, 10 Watt	2.8 A max.	2.5 A typical	TIMTER L/S band, 5 Watt	2.4 A max.	1.9 A typical	TIMTER L/S band, 10 Watt	4.1 A max.	3.5 A typical	TIMTER C band, 5 Watt	2.6 A max.	2.1 A typical	TIMTER C band, 10 Watt	3.3 A max.	2.9 A typical	TIMTER L/C band or S/C band, 5 Watt	4.0 A max.	3.4 A typical	TIMTER L/C band or S/C band, 10 Watt	4.5 A max.	3.9 A typical	TIMTER L/S/C band, 10 Watt	4.5 A max.	3.9 A typical
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Input voltage	Standard: +28 ± 4 VDC With optional wide voltage (WV option): +21 to +34 VDC																											
Power reversal	Reverse voltage protection																											
Serial Control interface	1 - LVTTTL serial control interface: 57,600 baud rate 2 - RS-232 serial control interface: 57,600 baud rate T - TTL serial control interface: 57,600 baud rate 4 - RS-422 serial control interface: 57,600 baud rate																											
Clock and Data signal interfaces (Serial data with separate synchronous clock) (Input impedances are only specified when unit is powered On, unless explicitly stated as being valid in the Off state.)	H - TTL (10K ohms to ground) T - TTL (75 ohms to ground) A - TTL selectable between 75 ohms to GND and 10k ohms to GND R - TIA/EIA-422 (RS-422) - 120 ohms differential B - TIA/EIA-422 (RS-422) - 120 ohms differential, even when unit powered off M - Dual mode selectable (TTL terminated 10k ohms to GND, RS-422 term 120 ohms diff.) D - Dual mode selectable (TTL terminated 75 ohms to GND, RS-422 term 120 ohms diff.) S - Tri-mode selectable (TTL term 75 ohms to GND, TTL term 10k ohms to GND, and RS-422 term 120 ohms differential) L - LVDS (Low Voltage Differential Signal)																											

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Carrier frequency tuning increment	0.5 MHz																														
Carrier frequency accuracy	± 1.0 ppm over temperature ± 6.0 ppm, all causes, including aging over 5 years																														
Randomizer	15-stage LFSR, per IRIG 106. Selectable for bypass or enable																														
Environmental Section																															
Operating temperature	<table border="1" style="margin: auto;"> <thead> <tr> <th style="color: blue;">RF Output</th> <th style="color: blue;">Min. Temp.</th> <th style="color: blue;">Max. Temp.</th> </tr> </thead> <tbody> <tr> <td>5 Watts per Output</td> <td style="text-align: center;">-40°C</td> <td style="text-align: center;">+85°C</td> </tr> <tr> <td>10 Watts per Output</td> <td style="text-align: center;">-40°C</td> <td style="text-align: center;">+70°C</td> </tr> </tbody> </table>	RF Output	Min. Temp.	Max. Temp.	5 Watts per Output	-40°C	+85°C	10 Watts per Output	-40°C	+70°C																					
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	5 Watts per Output	-40°C	+85°C																												
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Non-operating temperature	-55°C to +100°C (all models)																														
Operating humidity	0 to 95% (non-condensing)																														
Altitude	Up to 100,000 ft.																														
Physical Section																															
Dimensions	<table border="1" style="margin: auto;"> <thead> <tr> <th style="color: blue;">Band</th> <th style="color: blue;">TIMTER™ Package</th> <th style="color: blue;">Volume</th> <th style="color: blue;">Width</th> <th style="color: blue;">Length</th> <th style="color: blue;">Height</th> </tr> </thead> <tbody> <tr> <td>L or S</td> <td>07AH, 07AN</td> <td>7.200 in³</td> <td>2.000"</td> <td>3.000"</td> <td>1.200"</td> </tr> <tr> <td>C</td> <td>09AK, 09AM</td> <td>9.450 in³</td> <td>2.000"</td> <td>3.000"</td> <td>1.575"</td> </tr> <tr> <td>L/S (10 W)</td> <td>18xx</td> <td>18.420 in³</td> <td>4.000"</td> <td>3.000"</td> <td>1.535"</td> </tr> <tr> <td>L/C, S/C, L/S/C</td> <td>24xx</td> <td>22.200 in³</td> <td>4.000"</td> <td>3.000"</td> <td>2.000"</td> </tr> </tbody> </table>	Band	TIMTER™ Package	Volume	Width	Length	Height	L or S	07AH, 07AN	7.200 in ³	2.000"	3.000"	1.200"	C	09AK, 09AM	9.450 in ³	2.000"	3.000"	1.575"	L/S (10 W)	18xx	18.420 in ³	4.000"	3.000"	1.535"	L/C, S/C, L/S/C	24xx	22.200 in ³	4.000"	3.000"	2.000"
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L/C, S/C, L/S/C	24xx	22.200 in ³	4.000"	3.000"	2.000"																										
Vibration	19.6 G (RMS) random, 20 Hz to 2,000 Hz, 3 axes																														
Shock	60 G (PK), 1/2 sine, 5 ms duration, 3 axes																														
Acceleration	100 G, 3 axes																														
Connector - RF	All TIMTER: SMA female																														
Connector – Baseband / Primary	TIMTER: MDM-15 (male or female)																														

Dual Transmitter Part Numbering Example



Popular Options Include:

CF - Clock-free Baseband Interface

Clock-free is an optional mode that transmits user data, but uses an internal bit sync to take the place of the normal external clock.

LD6 - Low Density Parity Check

Extended LDPC encoding provides all six implemented LDPC codes—all combinations of two different information block sizes ($k=4096$ bits and $k=1024$ bits) and three different code rates ($r=1/2$, $r=2/3$, and $r=4/5$)

STC - Space-Time Coding

STC is a waveform coding technique that uses transmit diversity to avoid destructive interference in two-antenna systems.