



HPT402

External extra rugged digital high power UHF radio transceiver programmable in frequency ranges from 406 to 470 MHz. It has GMSK, DBPSK, DQPSK, 4FSK, D8PSK, and D16QAM modulations with advanced forward error correction and data scrambling. The output power is up to 2 Watts.

It takes incoming data from a JAVAD GNSS receiver through the standard asynchronous serial port, modulates it with GMSK, FSK, PSK or most spectrum efficient QAM modulation and transmits it at RF power output levels from 15 dBm up to 33 dBm operating in UHF frequency band (406 to 470 MHz).

The UHF transceiver is also capable of receiving RF signals through a 50 Ohm impedance external antenna port. These signals are demodulated and output to the JAVAD GNSS receiver.

HPT402 delivers a reliable radio link at up to 38.4 kbps over the air for the 25 kHz channel spacing, 30 kbps for 20 kHz, 19.2 kbps for 12.5 kHz, and 9.6 kbps for 6.25 kHz.

The unmatched features of HPT402 include data scrambling, frequency hopping, user selectable transmit output power level, low power consumption sleep modes, autoscanning for base.

The unit's user settings can be changed through the built-in Command Line interface (CLI), Tracy Software or through ModemVU.

HPT402

General Radio Specifications

Parameter	Specification
Operating Frequency Range	406 - 470 MHz
Channel Spacing	25/20/12.5/6.25 kHz
Data Rate (25kHz Channel Spacing)	9600 bps – DBPSK/GMSK 19200 bps – DQPSK/4FSK 28800 bps – D8PSK 38400 bps – D16QAM
Data Rate (20kHz Channel Spacing)	7500 bps – DBPSK/GMSK 15000 bps – DQPSK/4FSK 22500 bps – D8PSK 30000 bps – D16QAM
Data Rate (12.5kHz Channel Spacing)	4800 bps – DBPSK/GMSK 9600 bps – DQPSK/4FSK 14400 bps – D8PSK 19200 bps – D16QAM
Data Rate (6.25 kHz Channel Spacing)	2400 bps – DBPSK 4800 bps – DQPSK 7200 bps – D8PSK 9600 bps – D16QAM
System Gain for DBPSK modulation (Antenna gain is not included)	149 dB (for 25 kHz Channel Spacing) 149 dB (for 20 kHz Channel Spacing) 151 dB (for 12.5 kHz Channel Spacing) 152 dB (for 6.25 kHz Channel Spacing)
Roaming Speed for DBPSK modulation	75 mph / 120 km/h
Modulation	GMSK/4FSK/DBPSK/DQPSK/D8PSK/D16QAM
Nominal Impedance	50 Ohms
End to End delay	60 ms
Communication Mode	Time Division Duplex (TDD) Time Division Multiple Access (TDMA)
Maximum Distance Range	11 miles / 18 km
Input/Output	Serial (RS232) up to 115200 bps

Environmental Specifications

Parameter	Specification
Temperature	Operating -40°C to +70°C Storage -40°C to +85°C
Environmental	IP 66
Dimensions (H x W x D)	146 mm x75 mm x44 mm
Weight	488 g
Power Supply Voltage	+9 to +16 VDC nominal
Power Consumption (Average)	6W / 2W / 0.05W –Transmit / Receive / Sleep
Housing/Color	Aluminum / Two-tone JAVAD GNSS Green / Gray
Antenna Connector	BNC, 50Ω

Compliance

Parameter	Specification
FCC	Part 90
Industry Canada	RSS-119
R&TTE	ETSI EN 300 113-2 ETSI EN 301 489-5

Transmitter Specifications

Parameter	Specification
Output Power	DBPSK/GMSK 15 dBm to 33 dBm in 1 dB steps (32 mW to 2 W) DQPSK/4FSK 15 dBm to 33 dBm in 1 dB steps (32 mW to 2 W) D8PSK 15 dBm to 33 dBm in 1 dB steps (32 mW to 2 W) D16QAM 15 dBm to 33 dBm in 1 dB steps (32 mW to 2 W)
Output Power Control Accuracy	±1.5 dB (at normal test conditions) +2.0 dB and -3.0 dB (under extreme test conditions)
Carrier Frequency Stability	±1.5 ppm initial stability over temp with ±3.0 ppm aging/year
Max. Frequency Error	±1.0 kHz (at normal test conditions) ±1.5 kHz (under extreme test conditions)
Adjacent Channel Power (Conducted) 25/12.5/6.25 kHz CS 25/20/12.5 kHz CS	Part §90.210 (C, D, E) for USA and Canada 60 dBc for Europe
Spurious Emission (Conducted)	-36 dBm (9 kHz – 1 GHz) -30 dBm (1 GHz – 4 GHz)
Spurious Emission (Radiated)	-36 dBm (9 kHz to 1 GHz) -30 dBm (1 GHz to 4 GHz)

Receiver Specifications

Parameter	Specification
Noise Figure	4 dB
Receiver Sensitivity (BER 1x10 ⁻⁴ , 25 kHz CS)	DBPSK -116 dBm 25kHz / -117 dBm 12.5kHz DQPSK -115 dBm 25kHz / -116 dBm 12.5kHz D8PSK -110 dBm 25kHz / -111 dBm 12.5kHz D16QAM -106 dBm 25kHz / -107 dBm 12.5kHz GMSK -113 dBm 25kHz / -114 dBm 12.5kHz
Dynamic Range	-115 to -15 dBm
Max. Input Signal Level	-10 dBm
Co-channel Rejection	-8 dB for 25 kHz Channel Spacing -8 dB for 20 kHz Channel Spacing -12 dB for 12.5 kHz Channel Spacing -16 dB for 6.25 kHz Channel Spacing
Adjacent Channel Selectivity	70 dB for 25 kHz Channel Spacing 70 dB for 20 kHz Channel Spacing 60 dB for 12.5 kHz Channel Spacing 50 dB for 6.25 kHz Channel Spacing

Specifications are subject to change without notice.



JAVAD GNSS
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