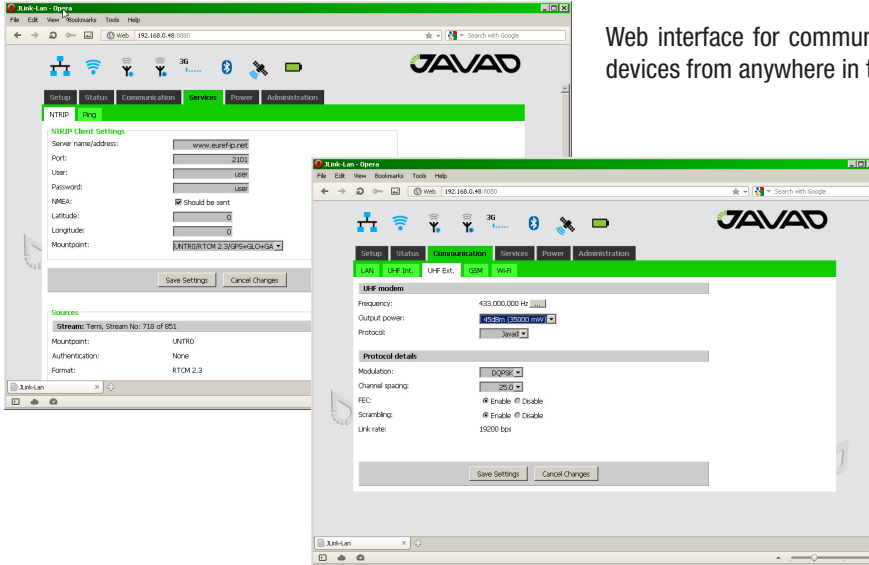# JAVAD

HPT404BT JL

HPT404BT JL is the up-to-date unsurpassed 4 W UHF radio transceiver with USB, Ethernet and Wi-Fi/Bluetooth® capacity. The unmatched features of HPT404BT include:

- 406 – 470 MHz UHF frequency range
- Data speed via UHF channel up to 38400 bps
- Programmable UHF Output Power up to 4 W
- Advanced Forward Error Correction
- High speed USB 2.0 device port
- 100 Mb Ethernet port

- Wi-Fi Interface
- Bluetooth® Interface
- 3.5G Cellular module (optional)
- GPS L1 receiver (optional)
- WEB interface for remote access and control
- Serial port configurable as RS-232 or RS-422, or RS-485

The HPT404BT JL radio transceiver provides a high-speed point-to-point and point-to-multipoint wireless data transfer at up to 38.4 kbps. HPT404BT JL firmware supports user selectable modulation techniques (GMSK, 4FSK, DBPSK, DQPSK, D8PSK, or D16QAM), which allows the user to achieve the highest data speed for a given range (up to 16 miles/26 km). It also includes a selectable error correction, which improves the functioning of the radio modem under interference. The sophisticated features of HPT404BT JL include data scrambling, frequency hopping, user selectable transmit output power level, low power consumption sleep modes, autoscanning for base and plug-and-play installation for remote terminals.

HPT404BT JL could be a part of local/global network connected to Internet via WiFi, Ethernet, Bluetooth, or 3.5G cellular module (optional). HPT404BT JL provides a robust solution linking the field GNSS equipment to RTN, where no cell phone cover is available. HPT404BT JL can be configured and supported using web-interface through Internet, and this makes the setup mechanism simple and accessible from anywhere in the world.

HPT404BT JL

Web interface for communication, monitoring and setup HPT404BT JL devices from anywhere in the world.

UHF Radio

Parameter	Specification
Operating Frequency Range	406 - 470 MHz (EU) 406.1 - 470 MHz (USA) 406.1 - 430; 450 - 470 MHz (Canada)
Channel Bandwidth	25/12.5/6.25 kHz (USA for 406-420 MHz) 12.5/6.25 kHz (USA for 421 -470 MHz) 25/12.5/6.25 kHz (Canada) 25/20/12.5 kHz (EU)
Data Rate (25/20/12.5/6.25 kHz Channel Bandwidth)	9600/7500/4800/2400 bps – DBPSK/GMSK 19200/15000/9600/4800 bps – DQPSK/4FSK 28800/22500/14400/7200 bps – D8PSK 38400/30000/19200/9600 bps – D16QAM
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	16 miles / 26 km

Transmitter Specification

Parameter	Specification
Output Power USA, Canada EU	15 dBm to 36 dBm in 1 dB steps (32mW to 4W) 15 dBm to 33 dBm in 1 dB steps (32mW to 2W)
Output Power Control Accuracy	±1.5dB (at normal test conditions) +2.0dB and -3.0dB (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 25/12.5/6.25 kHz CB 25/20/12.5 kHz CB	Part §90.210 (C, D, E) (USA, Canada) 60 dBc (EU)
Spurious Emission (Conducted)	-36 dBm (9 kHz – 1GHz) -30 dBm (1GHz – 4 GHz)
Spurious Emission (Radiated)	-36 dBm (9 kHz to 1 GHz) -30 dBm (1 GHz to 4 GHz)

3.5G Cellular Module (optional)

Parameter	Specification
Supported frequencies	GSM/GPRS/EDGE: 850, 900, 1800, 1900 MHz UMTS/HSPA: 800/850, 900, AWS1700, 1900, 2100 MHz
Data	HSPA category 6 in uplink and up to category 14 in downlink: - Uplink up to 5.76 Mbps; Downlink up to 21.0 Mbps UMTS: Uplink/Downlink up to 384 kbps EDGE : Uplink up to 236.8 kbps; Downlink up to 296 kbps GPRS; CSD
SIM card slot	One microSIM card can be used; user accessible, fully sealed

GPS Receiver (optional)

Parameter	Specification
Tracking Channels	GPS L1
Signals Tracked	C/A Code
Cold / Warm Start	42 / 30 seconds
Sensitivity for Reacquisition	- 161dBm

Receiver Specification

Parameter		Specification
Noise Figure		4 dB
Receiver Sensitivity	DBPSK	-116 dBm 25kHz / -117 dBm 12.5kHz
(BER 1x10^{-4}, 25 kHz CS)	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 Bandwith -8 dB for 20 kHz Channel Bandwith -12 dB for 12.5 kHz Channel Bandwith -16 dB for 6.25 kHz Channel Bandwith
Adjacent Channel Selectivity		70 dB for 25 kHz Channel Bandwith 70 dB for 20 kHz Channel Bandwith 60 dB for 12.5 kHz Channel Bandwith 50 dB for 6.25 kHz Channel Bandwith

HPT404BT JL

Variant 1: 4 W UHF Transceiver, Bluetooth, WiFi, Ethernet, USB and Serial port.
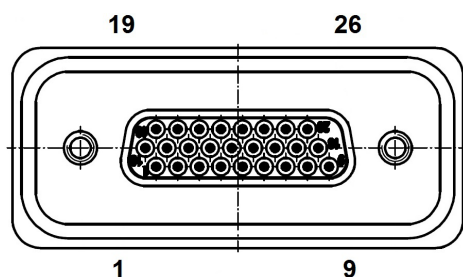

Variant 2: 4 W UHF Transceiver, 3.5G cellular data module, GPS receiver, Bluetooth, WiFi, Ethernet, USB and Serial port.

Communication ports

Wi-Fi (IEEE 802.11 b, g, n, d, e, i)
Full-duplex 10BASE-T/100BASE-TX Ethernet port
Bluetooth V2.0+EDR Class 2
High Speed USB 2.0 configurable as Device or Host port
MicroSD card slot (fully sealed)
Serial port configurable as RS232/RS422/RS485

Environmental

Parameter	Specification
Temperature	Operating −40º C to +70º C Storage −40º C to +85º C
Environmental	IP 67
Dimensions (H x W x D)	5.75 x 2.95 x1.73 inches (146 x75 x44 mm)
Weight	1.07 lbs (488 g)
Power Supply Voltage	+9 to +36 VDC nominal
Power Consumption (Average)	18W / 2W / 0.01W −Transmit / Receive / Sleep
Housing/Color	Aluminum / Two-tone Green / Gray
Antenna Connector	TNC, 50Ω

Pinout of HPT404BT JL power and communication port

1	TX+/RTS_OUT	O	Transmit Data positive line (RS-422) /Request to Send (RS-232)
2	RX+/CTS_IN	I	Receive Data positive line (RS-422) /Clear to Send (RS-232)
3	DTR_OUT	O	Data Terminal Ready (RS-232)
4	USB0_DP	I/O	Data Positive line (USB)
5	USB0_DM	I/O	Data Negative line (USB)
6	ELED+	O	LED line (LAN)
7	ETD+	O	Transmit Data positive line (LAN)
8	ERD+	I	Receive Data positive line (LAN)
9	PWR_IN	PWR	+5.5 to +36 VDC Power Input
10	TX-/TX_OUT	O	Transmit Data negative line (RS-422) / Transmit Data (RS-232)
11	RX-/RX_IN	I	Receive Data negative line (RS-422) /Receive Data (RS-232)
12	DSR_IN	I	Data Set Ready (RS-232)
13	DCD_OUT	O	Data Carrier Detect (RS-232)
14	USB0_VBUS	PWR	Power line (USB)
15	USB0_ID	I	USB0 ID line
16	ETD-	O	Transmit Data negative line (LAN)
17	ERD-	I	Receive Data negative line (LAN)
18	PWR_IN	PWR	+5.5 to +36 VDC Power Input
19	GND	PWR	Power Ground
20	GND	PWR	Power Ground
21	GND	PWR	Power Ground
22	RESERVE	-	Not used. Reserve
23	RESERVE	-	Not used. Reserve
24	RESERVE	-	Not used. Reserve
25	RESERVE	-	Not used. Reserve
26	PWR_IN	PWR	+5.5 to +36 VDC Power Input

Specifications are subject to change without notice

JAVAD GNSS
www.javad.com
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