



RADIO MODEM

HPT435BT



HPT435BT is 35 W UHF radio transceiver with built-in wireless link monitoring and management Tools, USB and Bluetooth® capacity.

The HPT435BT radio transceiver provides a high-speed Point-to-Point and Point-to-Multipoint wireless data transfer at up to 38.4 kbps. HPT435BT 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 48 miles /77 km). It also includes a selectable error correction, which improves the functioning of the radio modem under interference.

[DATA SHEET](#)

VERSION 2.2 JULY 8, 2021

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The unmatched features of HPT435BT include:

- 48 miles/77 km Maximum Distance Range
- Data Speed over the air 38400 bps at 25 kHz and 9200 bps at 12.5 kHz
- Bluetooth® Interface
- Programmable Output Power (320 mW to 35 W)
- Advanced Forward Error Correction (FEC)
- Serial port configurable as RS-232 and RS-422, or RS-485
- Data speed over the serial port 9600 to 115200 bps
- Testing, monitoring, and control of the unit over the air
- Automatic search and select for best frequency/channel

The sophisticated features of HPT435BT include data scrambling, frequency hopping, user-selectable transmit output power level, low power consumption sleep modes, autoscanning for the base, and plug-and-play installation for remote terminals.

The built-in software tools provide the wireless link testing, unit's status, error statistics monitoring, and unit's settings change over the air. The firmware of the HPT435BT radio transceiver resides in flash memory. The updating of the radio modem programs is entirely software-based. The flash memory is re-programmable through an RS232 interface, USB, Bluetooth, or over the air.

Main Characteristics

GENERAL RADIO SPECIFICATIONS

- 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
- System Gain for DBPSK modulation (Antenna gain is not included):
 - 161 dB (for 25 kHz Channel Bandwidth)
 - 163 dB (for 12.5 kHz Channel Bandwidth)
 - 164 dB (for 6.25 kHz Channel Bandwidth)
- 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: 48 miles / 77 km
- Serial port:
 - Serial (RS-232) up to 115200 bps.
 - Serial port configurable as RS-232 and RS-422, or RS-485
- Built-in USB to RS232 FTDI converter.12Mbps USB 2.0 Full-Speed
- Bluetooth V2.0 Class 2 supporting SPP Slave and Master Profiles
- Bluetooth Antenna: Internal

TRANSMITTER SPECIFICATIONS

- Output Power:
 - USA, Canada: 25 dBm to 45.44 dB m in 1 dB step (320 mW to 35W)
 - EU: 25 dBm to 41.76 dBm in 1 dB step (320 mW to 15W)
- Output Power Control Accuracy: ± 1.5 dB (at normal 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)

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Adjacent Channel Power (Conducted):

25/12.5/6.25 kHz CS (USA, Canada) Part 90.210 (C, D, E)

25/20/12.5 kHz CS (EU) Clause 4.2.4 EN 300 113-2 (60 dBc)

- 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)

RECEIVER SPECIFICATIONS

- Noise Figure: 3 dB
- Receiver Sensitivity BER 1×10^{-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 Bandwidth
 - 12 dB for 12.5 kHz Channel Bandwidth
 - 16 dB for 6.25 kHz Channel Bandwidth

- Adjacent Channel Selectivity:
 - 70 dB for 25 kHz Channel Bandwidth
 - 60 dB for 12.5 kHz Channel Bandwidth
 - 50 dB for 6.25 kHz Channel Bandwidth

ENVIRONMENTAL SPECIFICATIONS

- Temperature:
 - Operating: -40 °F to 140 °F (-40 °C to +60 °C)
 - Storage: -40 °F to 185 °F (-40 °C to +85 °C)
- Enclosure: Aluminum, IP 67
- Dimensions:
 - 5.98 x 3.3 x 2.83 inches (152 x 84 x 72 mm)
- Weight: 1.98 lbs (900 g)
- Power Supply Voltage: +9 to +16 VDC nominal
- Power Consumption (Average): Continuous Transmit/Transmit with 30% duty cycle / Sleep
 - 120W/38W/300mW (USA, Canada)
 - 60/20/300mW (EU)
- Housing Color: Two-tone Green/ Gray
- Antenna Connector: TNC, 50Ω

COMPLIANCE

- FCC Part 90
- Industry Canada RSS-119
- R&TTE:
 - ETSI EN 300 113-2
 - ETSI EN 301 489-5
 - EN 60950-1:2006

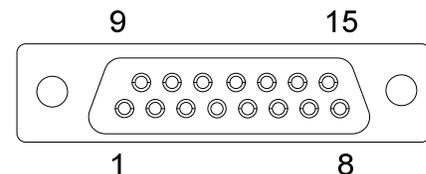
DB15 Connector

DB15 CONNECTOR PINOUT

Pin #	Signal Name	I/O	Description
1	DCD_OUT	O	Data Carrier Detect (RS-232)
2	DTR_OUT	O	Data Terminal Ready (RS-232)
3	RX+/CTS_IN	I	Receive Data positive line (RS-422)/Clear to Send (RS-232)
4	RX-/RX_IN	I	Receive Data negative line (RS-422)/Receive Data (RS-232)
5	not used	-	-
6	USB_PWR	I	Power Input line (USB)
7	Ground	-	Power Ground
8	not used	-	-
9	DSR_IN	I	Data Set Ready (RS-232)
10	TX+/RTS_OUT	O	Transmit Data positive line (RS-422) / Request to Send (RS-232)
11	TX-/TX_OUT	O	Transmit Data negative line (RS-422) / Transmit Data (RS-232)
12	Ground	-	Power Ground
13	USB_D+	I/O	Positive line (USB)
14	USB_D-	I/O	Negative line (USB)
15	Ground	-	Power Ground

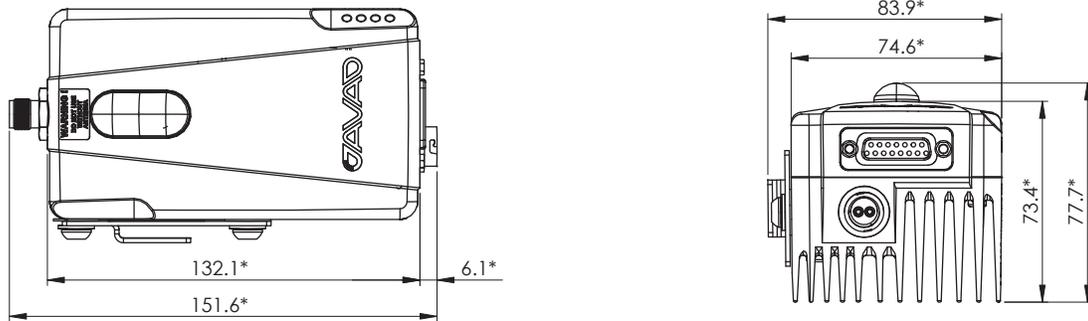
This connector provides DB15 connectivity for the HPT435BT with DTE.

About using and configuration RS-485 please contact JAVAD GNSS support

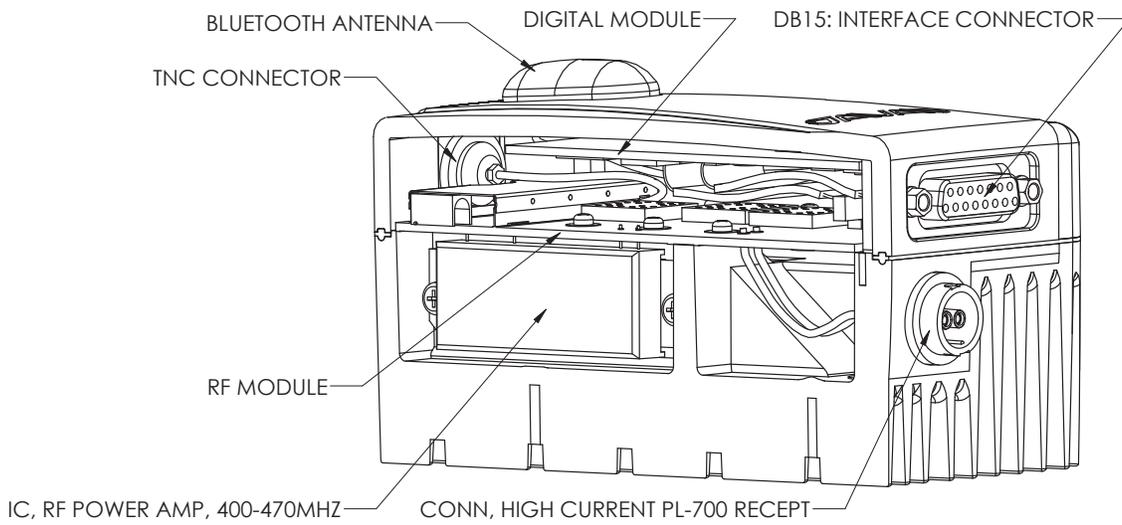


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Dimensions



All dimensions are in mm



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