

**Features:**

- **2.4 GHz Frequency Hopping Spread Spectrum Technology**
- **460 kb/s over the air data rate**
- **115 kb/s RS232 data rate**
- **230 kb/s USB data rate**
- **32 Hopping Patterns**
- **FCC Certified and CE marked**
- **Integral 6 dB patch antenna or external antenna options**
- **RS-232 asynchronous or USB serial interface**

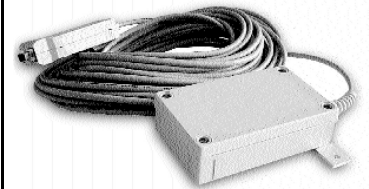
**Benefits:**

- **Exceptional immunity to multipath fading and jamming**
- **Supports high speed applications needing long range**
- **Co-location of multiple networks without interference**
- **License-free application worldwide**
- **Cost-effective, simple installation**
- **Connects to PC Serial or USB ports**

The HopNet 250 family of modems are versatile, low cost, multi-purpose 2.4 GHz frequency-hopping wireless data modems. Built around the RFM WIT2450 radio, the HN-250, HN-250U, HN-254 and HN254U have integral 6 dB patch antennas creating "single piece" modems. Also built around the WIT2450, the HN250X and HN250UX are equipped with RF connectors instead of patch antennas to allow the use of high gain and/or remote external antennas. Communication with the HN-250, HN250X and HN254 is through a standard RS-232 interface at up to 115.2 kb/s. Communication with the HN-250U, HN250UX and HN-254U is through a 230 kb/s USB interface. All HN series modems communicate over the air at 460 kb/s in both point-to-point and point-to-multipoint networks.

**HN-250  
HN-250U**

**2.4 GHz  
Frequency  
Hopping  
Wireless Data  
Modems**



**HN-250**

**Specifications**

|                     | <b>HN-250/HN-250U</b>  | <b>HN-250X/HN-250UX</b> | <b>HN-254/HN-254U</b> |
|---------------------|--|-------------------------|-----------------------|
| Frequency Band      | 2401 - 2475 MHz  |                         |                       |
| Licensing           | No license required under FCC Part 15, Canadian IC RSS-210 or ETSI 300.328 |                         |                       |
| Number of Channels  | 86   |                         |                       |
| Hopping Patterns    | User configurable, 32 patterns (networks) available                        |                         |                       |
| RS232 Data Rates    | Up to 115.2 kb/s Asynchronous  |                         |                       |
| USB Data Rate       | 230 kb/s   |                         |                       |
| RF Data Rate        | 460 kb/s   |                         |                       |
| Line-of-Site Range  | > 5 Miles  |                         |                       |
| RF Bandwidth        | 750 kHz  |                         |                       |
| Modulation Type     | GFSK   |                         |                       |
| Output Impedance    | 50 ohms  |                         |                       |
| Network Protocol    | Dynamically Assigned TDMA with ARQ   |                         |                       |
| Transmit Power      | +10, +18 dBm or +24 dBm  |                         |                       |
| Receive Sensitivity | -99 dBm for 10-5 BER   | -93 dBm for 10-5 BER    | -99 dBm for 10-5 BER  |
| Power Requirements  | 9 Vdc 160 mA typical, 750 mA peak  |                         |                       |

## Mechanical Specifications

|                        | HN-250/HN-250U                   | HN-250X/HN-250UX | HN-254/HN-254U      |
|------------------------|----------------------------------|------------------|---------------------|
| Antenna/Connector      | Integral 6 dB Patch              | n/a              | Integral 6 dB Patch |
| Case Materials         | Polycarbonate, NEMA 4X           |                  |                     |
| Dimensions (mm)        | 130 x 79 x 35 (excluding flange) |                  |                     |
| Weight Excluding Cable | 235 g                            |                  |                     |
| Antenna Connector      | n/a                              | Reverse TNC Male | n/a                 |
| Data Connector         | 9-Pin D or USB B                 |                  |                     |
| Power Connector        | 2-Pin DIN                        |                  |                     |

## Environmental Specifications

|                   |                                    |
|-------------------|------------------------------------|
| Temperature Range | -30 °C to +70 °C (radio enclosure) |
| Humidity          | 95% at +40 °C, Non-condensing      |



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## **Versatility**

The HopNet 250 family of modems are versatile, low cost, multi-purpose 2.4 GHz frequency-hopping wireless data modems. Built around the WIT2450 radio, the HN-250, HN-250U, HN-254 and HN254U have integral 6 dB patch antennas creating "single piece" modems. Also built around the WIT2450 radio, the HN250X and HN250UX are equipped with RF connectors instead of patch antennas to allow the use of high gain and/or remote external antennas. Communication with the HN-250, HN250X and HN254 is through a standard RS-232 interface at up to 115.2 kb/s. Communication with the HN-250U, HN250UX and HN-254U is through a 230 kb/s USB interface. All HN series modems communicate over the air at 460 kb/s in both point-to-point and point-to-multipoint networks.

## **Simplicity**

With a NEMA 4X weatherproof enclosure and aluminum mounting flange, the HN-250 and HN250U are simple to install on the side of a building or attached to a mast. With no antenna to connect, the HN-250 and HN-250U simply mount where the antenna would ordinarily be mounted. This removes the need for long antenna cable runs, expensive both in terms of cost and performance. The HN-250 and HN-250U include 50-foot cables that connect to indoor Serial Adapter Boxes (included) that provide either a standard RS-232 9-pin D connector, or USB type B connector. The HN-254 and HN-254U come with a 4-foot cables where long cable runs are not needed. The Serial Adapter Boxes also provide power to the HN modems through universal 110/220 50/60 wall-mount power supplies (also included).

The integral 6 dB patch antenna provides a line-of-site range of more than five miles, making the HN-250 and HN-250U ideal for a variety of "last mile" applications. For applications requiring more antenna gain, the HN-250X and HN250UX replace the built-in patch antennas with external TNC connectors. The HN modems are also ideal for use in SCADA applications as remote modems in multipoint configurations, and are extremely cost-effective solutions for point-to-point installations. Selectable transmit power levels of +10, +18 and +24 dBm allow HN modems to be used worldwide, even with the gain of the patch antenna.

## **Useability**

Based on the third generation RFM WIT2450 spread spectrum frequency-hopping radio, the HN modems have exceptional multipath fade rejection and immunity to jamming. The WIT2450 is a field proven performer that delivers robust, reliable real world performance. HN modems are both FCC and CE marked. Combined with its operation in the 2.4 GHz ISM band, these wireless modems can be deployed around the world without a license.