

# HumDT™ Series Frequency Agile Digital Data Transceiver Module



At below \$10 in volume, the Hummingbird platform is the lowest cost complete wideband transceiver with microcontroller module on the market today. The HumDT™ is built on this platform and is designed for simple data transfer. It includes a Frequency Agile protocol and supports versions at 868 and 900MHz with a common footprint and pin out.

**Low Cost:** Linx designed the Hummingbird platform with cost in mind from the start to appeal to OEMs who have a limited budget to incorporate RF. It uses advanced system on chip (SoC) technology to minimize the footprint and the number of components. The module is designed for high volume production, leading to a price that is nearly half that of similar modules, and making it cost competitive with discrete designs.

**Ease of Implementation:** The HumDT™ offers a robust frequency agile (900MHz) or multi-channel (868MHz) protocol that supports a star network with one Access Point that controls the network and up to 50 end nodes including up to 4 range extenders. The module is configured through a standard UART interface. The simple configuration and command set significantly reduces firmware development. It also allows factory-customized firmware for specialized applications.

**Agility:** The frequency agile protocol transmits the same data packet on 1 to 4 channels. The user can select how many channels are used and which of the four available channels are active. This method provides some of the noise immunity offered by frequency hopping systems, but without the overhead and latency required by the hopping algorithm.

**GPIOs:** 8 GPIO lines can be digital inputs or outputs or analog inputs. These are monitored and controlled through the UART and are suitable for simple on/off operations or for connection to sensors.

**Small Size:** Like its namesake, Hummingbird modules are tiny. At 11.5mm by 14.0mm, it is less than one quarter the size of similar competitive modules.

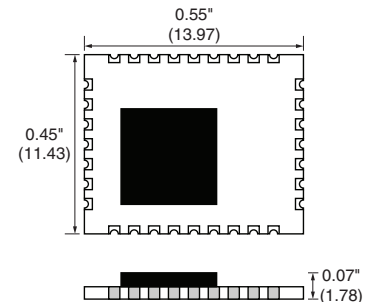
**Low Power:** Linx designed the Hummingbird platform for battery powered applications. It operates as low as 2.0 volts and has low transmit current of 28 to 38mA, receive current of 22mA and standby current of under 1µA.

**Ample Range:** The HumDT™ module outputs up to 10dBm, resulting in a line-of-sight range of up to 1,600m (1.0 miles), depending on the antenna implementation.

**External Amplifiers:** The module has control lines that allow it to work with an external PA and LNA for applications that need more system range.

**Certification:** The HumDT™ Series is available in a non-certified version and in pre-certified versions with an RF connector or antenna.

**Custom Modules:** In high volume applications, Linx can provide custom firmware to meet the needs of a specific application, removing the firmware design burden.



Specifications	
Operating Voltage	2.0 to 3.6VDC
TX Supply Current	
@ 10dBm	38mA
RX Supply Current	22mA
Power down Current	0.3µA
RX Sensitivity	
900MHz max rate	-92dBm
900MHz min rate	-101dBm
Operating Temperature Range	-40 to +85°C

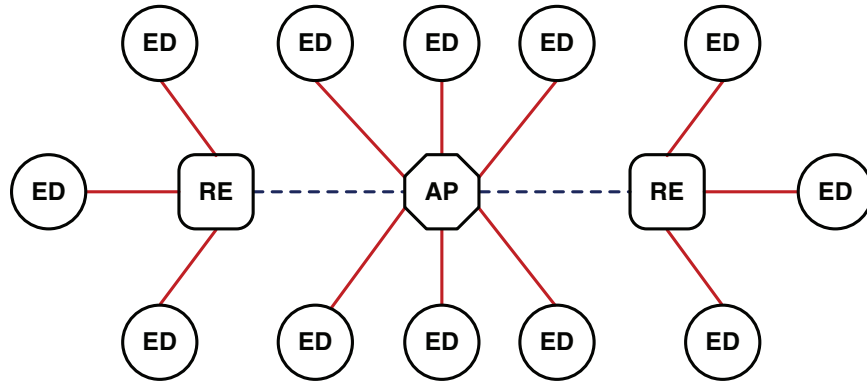
## Applications

- Remote data transfer
- Internet of Things (IoT)
- Machine to Machine (M2M)
- Consumer wireless
- Wireless sensor networks
- Home automation
- Remote status monitoring
- Industrial automation
- Robotics
- Data acquisition

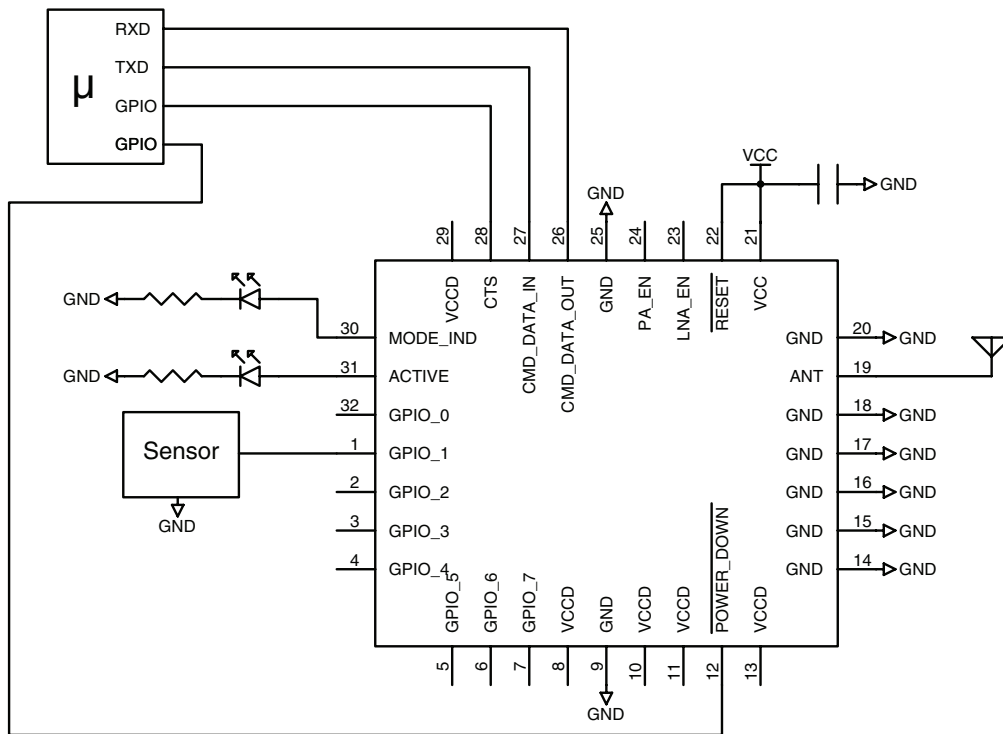
The HumDT™ Series wireless UART module is a completely integrated RF transceiver and processor designed to transmit digital data across a wireless link. It has a built-in frequency agile over-the-air protocol that manages all of the transmission and reception functions. It takes data in on its UART and supplies the data out of a UART on the remote module.

### Networking

The modules can be used to set up a star network with one module acting as the central hub or access point and up to 50 other modules associated with the hub. The module supports one-hop routing so that the end nodes can communicate with each other through the access point. The network can also support up to four range extenders that can boost the physical size of the network.



### Typical Application Circuit



Ordering Information	
Part Number	Description
HUM-***-DT	HumDT™ Series Transceiver
EVM-***-DT	HumDT™ Series Carrier Board
MDEV-***-DT	HumDT™ Series Master Development System

\*\*\* = Frequency; 868, 900MHz