







RF MODULE OVERVIEW GUIDE

Linx strives to make every engineer a hero in record time™ by minimizing the risk, delays and technical challenges for design engineers to implement wireless functionality and connectivity to the Internet. Unlike other module producers, every aspect of our product and design experience is specifically crafted to achieve Wireless Made Simple®.




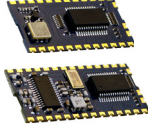
Linx RF Module Parameters

| Type | | Transparent (Radio only, no built-in protocol or software configuration) | | | |
|----------------------------------|------------|--|---|--|--|
| | |  |  |  |  |
| Series | | LC | LR | LT | ES |
| Function | | Transmitter | Separate transmitter & receiver | Transceiver | Separate transmitter & receiver |
| Product Positioning | | Lowest power, easy to implement, flexibility of protocol for remote control and non-periodic data | | | Transparent data module, user protocol on external MCU |
| | | Lowest cost transmitter | More robust transmitter | Two way link, acknowledgement | Analog / audio option |
| Size (mm) | TX | 9.14 x 12.70 | 9.14 x 12.70 | 15.72 x 16.00 | 16.00 x 12.95 |
| | RX | - | 16.00 x 20.62 | | 16.00 x 20.62 |
| Frequencies | | 315, 418, 433MHz | 315, 418, 433MHz | 315, 418, 433MHz | 869, 916MHz |
| Modulation | | OOK | OOK | OOK | FM / FSK |
| Max TX Power | | 4dBm | 7.5dBm | 9.2dBm | 1dBm |
| TX Current | OdBm | 2.0mA | 5.4mA | 7.6mA | 6.2mA |
| | Max. Power | 5.2mA | 8.5mA | 12mA | 7mA |
| RX Current | | - | 5.2mA | 6.1mA | 6.0mA |
| Power Down Current | TX | <1µA | <1µA | 11.5µA | 90µA |
| | TX | - | 28µA | | 50µA |
| Sleep Current | | - | - | - | - |
| Operating Voltage Range | TX | 2.7-5.2VDC | 2.1-3.6VDC | 2.1-3.6VDC | 2.1-4.0VDC |
| | TX | - | 2.7-3.6VDC | | 4.5-5.5VDC |
| Data Rate | | 0.1-5kbps | 0.1-10kbps | 0.065-10kbps | 0.2-56kbps |
| RX Sensitivity | Min. Rate | - | -112dBm | -112dBm | -96dBm |
| | Max. Rate | - | -112dBm | -112dBm | -96dBm |
| Line-of-Sight Range ¹ | | 2,500m | 2,500m | 6,000m | 300m |
| | | 1.5 miles | 1.5 miles | 3.2 miles | 1,000ft |
| Operating Temp Range | TX | -30 to 70°C | -40 to +85°C | -40 to +85°C | 0 to +70°C |
| | RX | - | -40 to +70°C | | |
| Interface | | Transparent Serial | Transparent Serial | Transparent Serial | Transparent Serial |
| Channels/Spread Spectrum | | 1 | 1 | 1 | 1 |
| Protocol | | None | None | None | None |
| Certifications | | None | None | None | None |
| Applications | | Remote control, keyless entry, sporting, lighting, irrigation, consumer, security/safety, proximity sensing, home and industrial automation, signage, sensors, telemetry | | | Data transfer, sensors/telemetry, home and industrial automation, M2M, lighting, irrigation, security/safety, proximity sensing, healthcare, signage, automotive aftermarket |
| | | | | | Consumer, home, sporting |

Linix RF Module Parameters

| Type | | Transparent (Radio only, no built-in protocol or software configuration) | | | | | |
|----------------------------------|------------|--|---|---|---|---|---|
| | |  |  |  |  |  |  |
| Series | | NT | EUR/DTS | 25 | 250 | HumDTTM | HumPROTM |
| Function | | Transceiver | Transceiver | Transceiver | Transceiver | Transceiver | Transceiver |
| Product Positioning | | Transparent data module, user protocol on external MCU | Spread spectrum for data with integrated MCU | | | Lowest cost spread spectrum data with integrated MCU | |
| | | Long range, serial data option | Medium range, robust | | Longest range, robust | Medium range | |
| Size (mm) | TX | 16.00 x 29.21 | 20.32 x 23.75 | 20.32 x 23.75 | 30.48 x 30.48 | 11.43 x 13.97r | 11.43 x 13.97 |
| | RX | | | | | | |
| Frequencies | | 863-870MHz 902-928MHz | 868-870MHz 902-928MHz | 902-928MHz | 902-928MHz | 418, 433MHz 863-870MHz 902-928MHz | 1902-928MHz |
| Modulation | | FSK | FSK | FSK | FSK | FSK | FSK |
| Max TX Power | | 12.5dBm | 12dBm | 13dBm | 23.5dBm | 9.5dBm | 9.5dBm |
| TX Current | OdBm | 16mA | 38mA | 30mA | 54mA | 20.5mA | 22mA |
| | Max. Power | 36mA | 67mA | 65mA | 190mA | 38mA | 40.5mA |
| RX Current | | 19mA | 20mA | 20mA | 25mA | 22mA | 23.5mA |
| Power Down Current | TX | <1µA | 35µA | 3µA | 3µA | <0.3µA | <0.7µA |
| | RX | | | | | | |
| Sleep Current | | 1.4mA | 0.85mA | 1.4mA | 1.5mA | 4.5mA | - |
| Operating Voltage Range | TX | 2.5-5.5VDC | 2.7-3.6VDC | 3.0-3.6VDC | 2.7-3.6VDC | 2.0-3.6VDC | 2.0-3.6VDC |
| | RX | | | | | | |
| Data Rate | | 1-300kbps | 2.4-115.2kbps | 2.4-115.2kbps | 2.4-115.2kbps | 1.2-115.2kbps | 1.2-115.2kbps |
| RX Sensitivity | Min. Rate | -113dBm | -106/-105dBm | -105dBm | -105dBm | -101dBm | -101dBm |
| | Max. Rate | -102dBm | -102/-100dBm | -100dBm | -100dBm | -92dBm | -94dBm |
| Line-of-Sight Range ¹ | | 5,000m | 2,000m | 2,000m | 7,000m | 1,500m | |
| | | 3.1 miles | 1.2 miles | 1.2 miles | 4.3 miles | 1.0 miles | |
| Operating Temp Range | TX | -40 to +85°C | -40 to +85°C | -40 to +85°C | -40 to +85°C | -40 to +85°C | -40 to +85°C |
| | RX | | | | | | |
| Interface | | Transparent Serial or UART | UART | UART | UART | UART | UART |
| Channels/Spread Spectrum | | 68 / 101 | 32 or 84 DTS | 32 FHSS | 32 FHSS | 4 | 25 / 50 FHSS |
| Protocol | | None or Serial | DTS | FHSS | FHSS | Frequency Agility, Extended Star | FHSS |
| Certifications | | None | EVM module: FCC, ANATEL | EVM module: FCC | VM module: FCC, IC, COFETEL / IFETEL | CE | FCC, IC |
| Applications | | Data transfer, sensors/telemetry, home and industrial automation, M2M, lighting, irrigation, security/safety, proximity sensing, healthcare, signage, automotive aftermarket | | | | | |
| | | Medium range telemetry, robust applications | | | Long range, telemetry, robust applications | Consumer, home, sporting, cost sensitive applications, Internet of Things, sensors | |

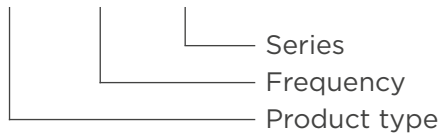
Linx RF Module Parameters

| Type | | Remote Control & Sensor (Built-in encoder/decoder/transcoder) | | | |
|----------------------------------|------------|--|---|--|---|
| | |  |  |  |  |
| Series | | HumRCTM (RC) | | TT | KH3 |
| Function | | Transceiver | | Transceiver | Separate transmitter & receiver |
| Product Positioning | | Plug & play for remote control with integrated MCU and FHSS protocol | | | Plug & play, integrated encoder / decoder |
| | | Medium range | Short range, worldwide acceptance | Long range, robust | |
| Size (mm) | TX | 11.43 x 13.97 | 11.43 x 13.97 | 16.00 x 29.21 | 16.00 x 30.99 |
| | RX | | | | 16.00 x 36.32 |
| Frequencies | | 418, 433MHz 863-870MHz 902-928MHz | 2.40-2.48GHz | 902-928MHz | 315, 418, 433MHz |
| Modulation | | FSK | MSK | FSK | OOK |
| Max TX Power | | 9.5dBm | 1dBm | 12.5dBm | 4dBm |
| TX Current | OdBm | 22mA | 28mA | 16mA | 1.0mA |
| | Max. Power | 36mA | | 36mA | 1.5mA |
| RX Current | | 25.5mA | 25.5mA | 19mA | 5.2mA |
| Power Down Current | TX | <0.5µA | <0.5µA | <1µA | <1µA |
| | RX | | | | 28µA |
| Sleep Current | | - | - | 0.2mA | - |
| Operating Voltage Range | TX | 2.0-3.6VDC | 2.0-3.6VDC | 2.7-5.5VDC | 2.7-5.2VDC |
| | RX | | | | 2.7-3.6VDC |
| Data Rate | | - | - | - | - |
| RX Sensitivity | Min. Rate | -98dBm | -99dBm | -111dBm | -112dBm |
| | Max. Rate | | | | |
| Line-of-Sight Range ¹ | | 1,600m | 100m | 3,500m | 2,500m |
| | | 1.0 miles | 300ft | 2.2 miles | 1.5 miles |
| Operating Temp Range | TX | -40 to +85°C | -40 to +85°C | -40 to +85°C | -30 to +40°C |
| | RX | | | | -40 to +70°C |
| Interface | | Parallel | Parallel | Parallel | Parallel |
| Channels/Spread Spectrum | | 25 FHSS | 25 FHSS | 25 FHSS | 1 |
| Protocol | | RC FHSS | RC FHSS | RC FHSS | RC |
| Certifications | | FCC, IC (900MHz) | None | FCC, IC | None |
| Applications | | Remote control, keyless entry, sporting, consumer, home and industrial automation, signage, lighting | | | |
| | | Digital and analog sensor input, acknowledgement, robust, Internet of Things | Analog sensor, robust, acknowledgement | Compatible with Linx DS Series | |

RF Module Part Numbering System

Our part numbers are structured as follows: product type, frequency and series

TTT - FFF - SSS



RF Module Part Numbering System Descriptions

| Product Type Options | Frequency | Series |
|-------------------------------|---|---|
| RXM (Receiver module) | 315, 418, 433, 868, 900, 916 (Frequency in MHz) | LC, LR, LT, ES, NT, DTS, EUR, 25, 250, DT, RC, PRO, TT, KH3 |
| TXM (Transmitter module) | 2.4 (Frequency in GHz) | |
| M or HUM (Transceiver module) | | |

Basic Evaluation Kits and Master Development Systems

The evaluation and development kits are not an afterthought to us at Linx. They are key to how we make Wireless Made Simple®. We do not consider a designer who purchases our kit to be a customer yet; they are potential customers who must be won over by our development experience and the support we provide. Linx kits are different in that they are:

- 1. Intuitive** - We took inspiration from modern consumer products and usability best practices to design our kits to be extremely intuitive. Open the box and begin preliminary testing without reading the manual.
- 2. Everything you need** - Contains everything a designer needs to make their product wireless including printed documentation, various Antenna Factor™ antennas, RF connectors and preloaded and configured firmware. There are no additional software licenses to buy. Master Development Kits include PC software to customize the module and troubleshoot the development.
- 3. Ergonomic to develop** - Linx is unique in providing a hardware development area with easy to access lines and clips tied directly to output the RF module. The developer can easily switch between the benchmark provided in the kit and the prototype development to troubleshoot.
- 4. Affordable** - The goal of Linx is to make it as easy as possible to try out our products, not to make a profit on the kit. We price most development and evaluation kits at \$99 and our master development kits at \$149 to \$199.



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