Linx
TECHNOLOGIES

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®.

Wireless made simple®

Linx RF Module Parameters

Parameter	LC	LR	LT	ES	NT	EUR/DTS	25	250	HumDT™	HumPRO™	HumRC™ (RC)	TT (2.4)	TT (900)	KH3
Type	Transparent (Radio only, no built-in protocol or software configuration)				Packetized Wireless Data (Serial UART interface with built-in protocol for data transfer)						Remote Control & Sensor (Built-in encoder/decoder/transcoder)			
Series	LC	LR	LT	ES	NT	EUR/DTS	25	250	HumDT™	HumPRO™	HumRC™ (RC)	TT	TT	KH3
Function	Transmitter	Separate transmitter & receiver	Transceiver	Separate transmitter & receiver	Transceiver	Transceiver	Transceiver	Transceiver	Transceiver	Transceiver	Transceiver	Transceiver	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	Spread spectrum for data with integrated MCU				Lowest cost spread spectrum data with integrated MCU		Plug & play for remote control with integrated MCU and FHSS protocol			Plug & play, integrated encoder / decoder
	Lowest cost transmitter	More robust transmitter	Two way link, acknowledgement	Analog / audio option	Long range, serial data option	Medium range, robust	Medium range, robust	Longest range, robust	Medium range	Medium range	Medium range	Short range, worldwide acceptance	Long range, robust	
Size (mm) – TX	9.14 x 12.70	9.14 x 12.70	15.72 x 16.00	16.00 x 12.95	16.00 x 29.21	20.32 x 23.75	20.32 x 23.75	30.48 x 30.48	11.43 x 13.97	11.43 x 13.97	11.43 x 13.97	11.43 x 13.97	16.00 x 29.21	16.00 x 30.99
Size (mm) – RX	–	16.00 x 20.62	15.72 x 16.00	16.00 x 20.62	16.00 x 29.21									16.00 x 36.32
Frequencies	315, 418, 433MHz	315, 418, 433MHz	315, 418, 433MHz	869, 916MHz	863–870MHz 902–928MHz	868–870MHz 902–928MHz	902–928MHz	902–928MHz	418, 433MHz 863–870MHz 902–928MHz	902–928MHz	418, 433MHz 863–870MHz 902–928MHz	2.40–2.48GHz	902–928MHz	315, 418, 433MHz
Modulation	OOK	OOK	OOK	FM / FSK	FSK	FSK	FSK	FSK	FSK	FSK	FSK	MSK	FSK	OOK
Max TX Power	4dBm	7.5dBm	9.2dBm	1dBm	12.5dBm	12dBm	13dBm	23.5dBm	9.5dBm	9.5dBm	9.5dBm	1dBm	12.5dBm	4dBm
TX Current – 0dBm	2.0mA	5.4mA	7.6mA	6.2mA	16mA	38mA	30mA	54mA	20.5mA	22mA	22mA	28mA	16mA	1.0mA
TX Current – Max. Power	5.2mA	8.5mA	12mA	7mA	36mA	67mA	65mA	190mA	38mA	40.5mA	36mA	28mA	36mA	1.5mA
RX Current	–	5.2mA	6.1mA	6.0mA	19mA	20mA	20mA	25mA	22mA	23.5mA	25.5mA	25.5mA	19mA	5.2mA
Power Down Current – TX	<1µA	<1µA	11.5µA	90µA	<1µA	35µA	3µA	3µA	<0.3µA	<0.7µA	<0.5µA	<0.5µA	<1µA	<1µA
Power Down Current – RX	–	28µA	11.5µA	50µA	<1µA	35µA	3µA	3µA	<0.3µA	<0.7µA	<0.5µA	<0.5µA	<1µA	28µA
Sleep Current	–	–	–	–	1.4mA	0.85mA	1.4mA	1.5mA	4.5mA	–	–	–	–	0.2mA
Operating Voltage Range – TX	2.7–5.2VDC	2.1–3.6VDC	2.1–3.6VDC	2.1–4.0VDC	2.5–5.5VDC	2.7–3.6VDC	3.0–3.6VDC	2.7–3.6VDC	2.0–3.6VDC	2.0–3.6VDC	2.0–3.6VDC	2.0–3.6VDC	2.7–5.5VDC	2.7–5.2VDC
Operating Voltage Range – RX	–	2.7–3.6VDC	2.1–3.6VDC	4.5–5.5VDC	2.5–5.5VDC	2.7–3.6VDC	3.0–3.6VDC	2.7–3.6VDC	2.0–3.6VDC	2.0–3.6VDC	2.0–3.6VDC	2.0–3.6VDC	2.7–5.5VDC	2.7–3.6VDC
Data Rate	0.1–5kbps	0.1–10kbps	0.065–10kbps	0.2–56kbps	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	–	–112dBm	–112dBm	–96dBm	–113dBm	–106/–105dBm	–105dBm	–105dBm	–101dBm	–101dBm	–98dBm	–99dBm	–111dBm	–112dBm
RX Sensitivity – Max. Rate	–	–112dBm	–112dBm	–96dBm	–102dBm	–102/–100dBm	–100dBm	–100dBm	–92dBm	–94dBm	–98dBm	–99dBm	–111dBm	–112dBm
Line-of-Sight Range[1]	2,500m	2,500m	6,000m	300m	5,000m	2,000m	2,000m	7,000m	1,500m	1,500m	1,600m	100m	3,500m	2,500m
	1.5 miles	1.5 miles	3.2 miles	1,000ft	3.1 miles	1.2 miles	1.2 miles	4.3 miles	1.0 miles	1.0 miles	1.0 miles	300ft	2.2 miles	1.5 miles
Operating Temp Range – TX	–30 to 70°C	–40 to +85°C	–40 to +85°C	0 to +70°C	–40 to +85°C	–40 to +85°C	–40 to +85°C	–40 to +85°C	–40 to +85°C	–40 to +85°C	–40 to +85°C	–40 to +85°C	–40 to +85°C	–30 to +40°C
Operating Temp Range – RX	–	–40 to +70°C	–40 to +85°C	0 to +70°C	–40 to +85°C	–40 to +85°C	–40 to +85°C	–40 to +85°C	–40 to +85°C	–40 to +85°C	–40 to +85°C	–40 to +85°C	–40 to +85°C	–40 to +70°C
Interface	Transparent Serial	Transparent Serial	Transparent Serial	Transparent Serial	Transparent Serial or UART	UART	UART	UART	UART	UART	Parallel	Parallel	Parallel	Parallel
Channels/Spread Spectrum	1	1	1	1	68 / 101	32 or 84 DTS	32 FHSS	32 FHSS	4	25 / 50 FHSS	25 FHSS	25 FHSS	25 FHSS	1
Protocol	None	None	None	None	None or Serial	DTS	FHSS	FHSS	Frequency Agility, Extended Star	FHSS	RC FHSS	RC FHSS	RC FHSS	RC
Certifications	None	None	None	None	None	EVM module: FCC, ANATEL	EVM module: FCC	EVM module: FCC, IC, COFETEL / IFETEL	CE	FCC, IC	FCC, IC (900MHz)	None	FCC, IC	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						Remote control, keyless entry, sporting, consumer, home and industrial automation, signage, lighting			
				Consumer, home, sporting	Medium range telemetry, robust applications			Long range, telemetry, robust applications	Consumer, home, sporting, cost sensitive applications, Internet of Things, sensors		Digital and analog sensor input, acknowledgement, robust, Internet of Things	Analog sensor, robust, acknowledgement		Compatible with Linx DS Series

1. Based on maximum broadcast power, 0dBm antenna and 20dBm link margin.

RF Module Part Numbering System

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

TTT - FFF - SSS

└─ Series
└─ Frequency
└─ Product type

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)	
TRM 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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