RAJANT

SPEC SHEET

BreadCrumb® LX5

Portable Wireless Mesh Network Node

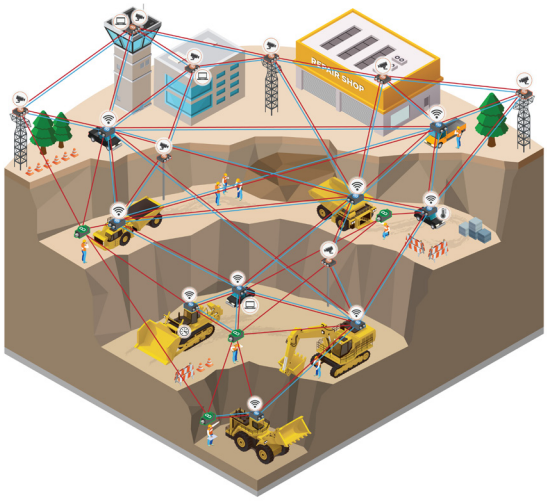
The Rajant BreadCrumb LX5 is a rugged, wireless device that forms a mesh network when used in conjunction with other BreadCrumb systems. The LX5 contains up to four transceivers and six external antenna ports. It provides Ethernet and Wi-Fi Access Point interfaces to enable data, voice, and video applications. This solution can operate in extreme environmental conditions and has several mounting options.

BreadCrumb LX5 Key Features

- Rajant's patented InstaMesh® networking software, enabling the network to quickly adapt to rapidly-deployed and quickly- or constantly-moving network elements
- Multiple transceiver configurations for high levels of network reliability, redundancy and diversity, and fewer problems due to interference, congestion, and equipment outages
- Multiple radio frequencies – 900 MHz, 2.4 GHz, 5 GHz as well as military, licensed, public service, and other proprietary radio frequencies
- Multiple antenna-port configurations with 2x2 MIMO (multiple-input, multiple-output), substantially increasing the capacity of transceivers
- Support for several strong cryptographic options used for data and MAC-address encryption and per-hop, per-packet authentication (list of options on page 3)
- Rugged and environmentally sealed enclosures
- High bandwidth for data, voice, and video applications
- Scalability to hundreds of mobile, high-bandwidth nodes
- Integrated Wi-Fi Access Point service for compatibility with millions of commercial off-the-shelf (COTS) client devices such as laptops, tablets, smart phones, IP cameras, sensors, and other IP devices
- Self-configuring operation for fast and easy deployments
- Reliable and fast off-loading to Ethernet via multiple, simultaneous bridge-mode links through the Automatic Protocol Tunneling (APT) feature
- Mesh Clustering to designate per-BreadCrumb sub-meshes that will only mesh with a user-specified series of nodes, useful applications include:
  - Enabling two BreadCrumbs to operate in a point-to-point (PTP) capacity on the same channel as other mesh nodes, eliminating the need to purchase a third-party PTP link for backhaul
  - Isolating one or more groups of BreadCrumbs to mesh with each other and not with other nodes outside the user-defined mesh cluster

Utilizing LX5 BreadCrumbs to Your Advantage

The LX5 is our premier BreadCrumb solution and is recommended for building and expanding your core mesh infrastructure. With the most transceivers and antenna ports, this system is engineered to form a rock-solid foundation that allows your mesh network to provide continuous communications between people and assets. With LX5 BreadCrumbs, you can construct a reliable, resilient, MIMO-based, private wireless network that will support a wide range of connectivity requirements and integrate with your existing network infrastructure. LX5 systems deliver the unsurpassed availability, flexibility, and performance you require for critical applications and always-on connectivity.

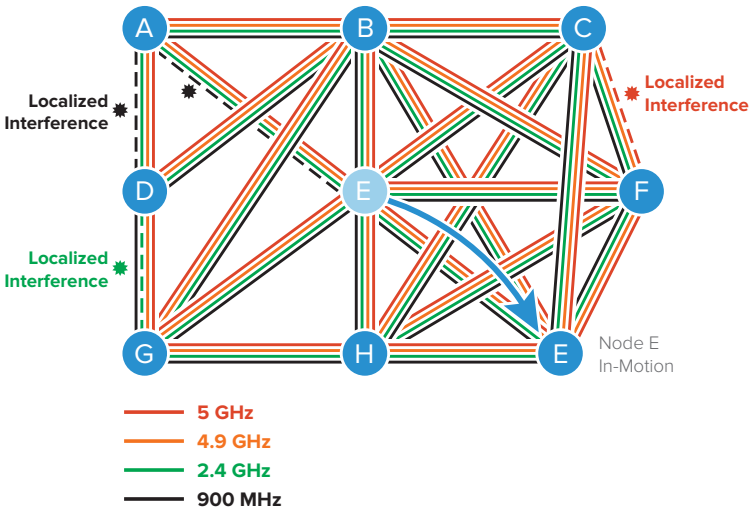


LX5 BreadCrumbs are designed to perform flawlessly in a variety of industrial environments, such as Mining, and integrate seamlessly with our ME4 and JR3 models to form a complete meshing solution.

InstaMesh®

InstaMesh is the advanced, patented[1] protocol developed by Rajant that directs the continuous and instantaneous forwarding of wireless and wired connections. It enables complete network mobility, robust fault tolerance, high throughput, and low latency with very low maintenance and administrative requirements. Because InstaMesh operates at Layer 2 and does not use a root node or LAN Controller, mobility and bandwidth are maximized. No matter how you configure your network, InstaMesh networking software always determines the most efficient pathway between any two points, even when those points are in motion.

The diagram shows how your Rajant mesh network can adapt to the changes caused by the movement of Node E. New links are established in real-time keeping the network available, intact and secure.



[1] U.S. Patent 9,001,645

Model	900 MHz		2.4 GHz		5 GHz	
	Transceivers	Antenna Ports per Transceiver	Transceivers	Antenna Ports per Transceiver	Transceivers	Antenna Ports per Transceiver
LX5–2255A	–	–	2	2	2	1
LX5–2255B	–	–	2	1	2	2
LX5–2255C	–	–	1 1	2 1	1 1	2 1
LX5–2295C	1	1	1 1	2 1	1	2
LX5–2455D	–	–	1	2	2	2
LX5–2955C	1	1	1	2	1 1	2 1

- Custom transceiver configurations are available upon request. May include a mix of licensed, military or unlicensed frequencies.
- The 900 MHz transceiver utilizes one antenna port. The 2.4 GHz and 5 GHz transceivers may utilize one or two antenna ports depending on the LX5 model.
- The 2.4 GHz and 5 GHz transceivers need two antenna ports to utilize 2x2 MIMO (multiple-input and multiple-output) capability.
- For 2x2 MIMO capable transceivers, the Max. RF Transmit Power specification is for the combined power output of the two antenna ports.

Transceiver	900 MHz	2.4 GHz	5 GHz
Antenna Connector	(1) Type N Female	(Up to 2) Type N Female	(Up to 2) Type N Female
Frequency[2]	902 — 928 MHz	2.402 — 2.472 GHz	U-NII-1: 5150-5250 MHz U-NII-2A: 5250-5350 MHz U-NII-2C: 5470-5725 MHz U-NII-3: 5725-5850 MHz
Modulation	DSSS, CCK, OFDM	DSSS, CCK, OFDM	OFDM
Max. Physical Layer Data Rate	54/65 Mbps (throughput varies)	300 Mbps (throughput varies)	300 Mbps (throughput varies)
Max. RF Transmit Power[3]	30 dBm ± 1 dB	29 dBm ± 2 dB	28 dBm ± 2 dB
Receive Sensitivity	Varying between -97 dBM ± 1 dB and -74 dBm ± 2 dB		

[2] Channel, frequency and bandwidth options will vary based upon regional and local regulations.
[3] RF transmit power is governed by local regulations and varies by frequency.

Network & Security	
Network Functionality	VLAN and QoS support; Access Point; Bridge; Gateway; DHCP; NAT and Port Fowarding; Automatic Protocol Tunneling (APT).
Security	• Multiple cryptographic options, including NSA Suite B algorithms (implementation not certified). For information on models with full Suite B certification, contact Rajant or your authorized Rajant partner. • Separately configurable data and MAC address *encryption* via AES256-GCM, AES192-GCM, AES128-GCM, AES256-CTR, AES192-CTR, AES128-CTR, XSalsa20, XSalsa20/12, and XSalsa20/8. • Configurable per-hop, per-packet *authentication* between BreadCrumbs via AES256-GMAC, AES192-GMAC, AES128-GMAC, HMAC-SHA512, HMAC-SHA384, HMAC-SHA256, HMAC-SHA224, and HMAC-SHA1. • Supports IEEE 802.11i: AES-CCMP and TKIP encryption, WPA-Personal/Enterprise, WPA2-Personal/Enterprise, 802.1x; 64/128-bit WEP; Access Control Lists; Compatible with Layer-2 and Layer-3 client/server and peer-to-peer security solutions; Compatible with Harris SecNet 54® encryption.

Power	
Input Voltage	18 — 48 VDC
Power Consumption[4]	3 transceivers: 7 W (average, idle); 26 W (maximum, peak) @ 24 V 4 transceivers; 8 W (average, idle); 33 W (maximum, peak) @ 24 V

[4] Power consumption depends on transceiver configuration.

Input / Output	
Ethernet	(Up to 2) 10/100/1000 Mbps, IEEE 802.3, RJ-45, auto MDI/MDIX
USB	(Up to 2) USB host ports for firmware upgrade, and for GPS device add-on
LED	Status LED
Switch 1	LED Configuration / Zeroize Keys and Restore Factory Defaults Switch
Switch 2	Power On/Off

Physical		
Dimensions	197 mm x 220 mm x 29 mm (7.750” x 8.665” x 1.125”)	
Weight	1850 g ± 150 g (4 lbs. 1.3 oz ± 5.3 oz) (weight depends on transceiver configuration)	
Temperature	Models with 900MHz or 2.4 GHz radios, NO heater: Startup: 0 °C to 80 °C (32 °F to 176 °F) Operating: -20 °C to 80 °C (-4 °F to 176 °F) Storage: -40 °C to 80 °C (-40 °F to 176 °F) Models with 900 MHz or 2.4 GHz radios, with heater option: Startup: -40 °C to 80 °C (-40 °F to 176 °F) Operating: -40 °C to 80 °C (-40 °F to 176 °F) Storage: -40 °C to 80 °C (-40 °F to 176 °F)	All Other Models: Startup: -40 °C to 80 °C (-40 °F to 176 °F) Operating: -40 °C to 80 °C (-40 °F to 176 °F) Storage: -40 °C to 80 °C (-40 °F to 176 °F)
Humidity	95% (non-condensing)	
Enclosure	Designed for IP67 (6: Dust-tight, 7: Waterproof)	
Certification	FCC Part 15 (USA): LX5–2295C, LX5–2255A, LX5–2255B, LX5–2255C, LX5–2955C, LX5–2455D ICES-003 and RSS-210 (Canada): LX5–2295C, LX5–2255A, LX5–2255B, LX5–2255C, LX5–2955C, LX5–2455D CE mark (European Economic Area, Switzerland and Turkey): LX5-2255A, LX5-2255B, LX5-2255C, LX5-2455D ANATEL (Brazil): LX5-2295C, LX5-2455D ARTEC (Madagascar): LX5-2255C AS/NZS 4268 (Australia and New Zealand): LX5–2255A, LX5–2255B, LX5–2255C, LX5–2455D, LX5–2295C, LX5–2955C	CRC (Columbia): LX5-2255C ICASA (South Africa): LX5–2255A, LX5–2255B, LX5–2255C, LX5-2455D IFT / NOM (Mexico): LX5-2255C, LX5–2295C IMDA (Singapore): LX5-2255C Peru: LX5-2255C Subtel (Chile): LX5-2255C, LX5-2455D TRA (United Arab Emirates): LX5–2455D Kenya: LX5–2255C
Warranty	1 Year	

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*If it’s **moving,** it’s Rajant.*
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