BreadCrumb® ES1–2450IS

Portable Wireless Mesh Network Node

The Rajant ES1–2450IS is an outdoor rated Kinetic Mesh

network device intended for use in Hazardous Locations

(HazLoc) with the following regional classifications:

a. ATEX1 - European & IECEx classification: ATEX Zone 1 (gases).

b. C1D1 - North American classification: Class 1, Division 1 (gases).

BreadCrumb ES1–2450IS Features

- Combines Kinetic Mesh backhaul, Wi-Fi access and layer2 switching across interfaces in a single device

- Outdoor rated: -40°C to 60°C temperature range; IP66 and IP68; Stainless steel pole mounting kit and wall mounting kit available

- Rajant's patented[1] InstaMesh® networking software enables the network to quickly adapt to rapidly deployed and constantly moving network elements

- 2.4 GHz, 4.9 GHz, and 5 GHz radio frequencies supporting a wide variety of applications

- Lightweight, portable, and low power consumption

- Support for several strong cryptographic options used for data and MAC-address encryption and per-hop, per-packet authentication

- 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

Model	Description
ES1–2450IS	ES1 with (1) 2.4 GHz, 1x1 SISO, 150 Mbps and (1) 5 GHz, 2x2 MIMO, 300 Mbps transceivers. Available in aluminum enclosure (SWA) and stainless steel enclosure (SWS) versions.

Wireless	2.4 GHz	5 GHz
Antenna Connector	(1) Type N (female)	(2) Type N (female)
Frequency[2]	2402 – 2482 MHz	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	OFDM
Max. Physical Layer Data Rate	150 Mbps (throughput varies)	300 Mbps (throughput varies)
Max. RF Transmit Power[3]	14 dBm ± 2 dB	13 dBm ± 2 dB
Receive Sensitivity	Varying between -93 dBm ± 2 dB and -72 dBm ± 2 dB	

[1] U.S. Patent 8341289B2

[2] Channel, frequency and bandwidth options vary based upon regional and local regulations and certifications.

[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 Forwarding; Automatic Protocol Tunneling (APT).
Security	• Multiple cryptographic options, including NSA Suite B algorithms (implementation not certified). • 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, AES128GMAC, HMAC-SHA512, HMAC-SHA384, HMAC-SHA256, HMAC-SHA224, HMAC-SHA1, and Poly-1305-AES. • Supports IEEE 802.11i: AES-CCMP and TKIP encryption, WPA-Personal/Enterprise, WPA2-Personal/Enterprise, iPSK, 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	9 — 30 VDC, dedicated terminals or Passive PoE
Power Consumption	2.8 W (average, idle); 5 W (maximum, peak) @ 24 V

Input/Output	
Ethernet	(1) 10/100/1000 Mbps IEEE 802.3, RJ-45, auto MDI/MDIX
LED	Status LED
Switch	LED Configuration / Zeroize Keys and Restore Factory Defaults

Physical	
Construction	SWA: Aluminum enclosure SWS: Stainless steel enclosure
Dimensions	See drawings on page 3
Weight	With aluminum enclosure (SWA): 3.54 kg (7.8 lbs) With stainless steel enclosure (SWS): 5.7 kg (12.6 lbs)
Temperature	Ambient (operating): -40°C to 60°C (-40°F to 140°F)
Storage	-40°C to 70°C (-40°F to 158°F)
Enclosure[4]	IP66 and IP68
Certification	FCC (US) IC (Canada)
Compliance	• Electrostatic discharge (ESD) immunity testing compliant to EN 61000-4-2 • Electrical fast transient (EFT) / burst immunity testing compliant to EN 61000-4-4 • Surge immunity testing compliant to EN 61000-4-5
Warranty	1 Year

[4] To maintain the IP66 and IP68 rating for the enclosure, the ES1–2450IS must use an Ethernet and power cable gland of the same ingress protection rating. Excessive shock and vibration, temperature extremes or fluctuations may void the manufacturer's warranty.

Product Drawings

SWA: Aluminum Enclosure

SWS: Stainless Steel Enclosure

RAJANT

*If it's **moving,** it's Rajant.*
*Industrial Wireless Networks **Unleashed.***