

Commercial- and Industrial-Class Wireless Mesh Networking

The EN6424 Entuit Wi-Router Extends the Range of the Mesh Network to Accommodate Physical Distances, Overcome Physical Barriers, and Provide for Multiple Routing

Features at a Glance

- Operates on a license-free 2.4 GHz ISM radio band with 15 user-selectable channels
- Configures as part of an Entuit network that includes hundreds of wireless devices
- Supports mesh and star-mesh network topologies
- Wireless communication ranges available at least 750 feet between adjacent devices, clear line of sight
- Data rates up to 250 kbps
- Extensive (1000s of feet) mesh network coverage
- CE- and FCC-compliant hardware modules
- RoHS-compliant
- Compact size
- Available in NEMA enclosure for outdoor installation

Multi-Route Communications

A mesh network forms multiple paths in order to increase the robustness of the network and respond to dynamic radio environments that may obstruct radio transmission. In general, mesh network nodes are positioned at the point of sensing and control to eliminate or minimize wiring. The Wi-Router extends the range of mesh network nodes to accommodate distances, overcome physical barriers, and provide for multiple routing.

Ease of Installation

The Wi-Router installs in minutes with no need to run network wires. LED indicators allow for strategic positioning in areas with reliable network connectivity. The Wi-Router runs on a low voltage power supply (5 – 30 VDC) which is easily obtained from a power line or other sources.

Typical Applications

The Wi-Router enables wireless and bi-directional sensor data communication with mesh network devices. It provides a greater communication range and flexibility in the wireless mesh network.

Long Range

The Wi-Router transmits at a radio power of 60-mW, allowing for communication distances of at least 750 feet clear line of sight.

Entuit Networking

The Wi-Router uses the industrially-proven Entuit networking system, which employs patented Persistent Dynamic Routing™ (PDR) techniques to form a self-configuring wireless mesh network. PDR uses a node-initiated network formation to enable efficient topology discovery and facilitates network re-formation (required in ever-changing RF environments) by applying “best route” information. With Entuit, you can deploy industrial-class wireless mesh networks that are:

- **Self-administrating:** a self-forming and self-healing mesh network requires no administration
- **Robust:** a network that ensures multi-route, reliable data transmission over extensive distances
- **Responsive:** a network that quickly adapts to changes in topology and radio frequency (RF)
- **Power efficient:** very low power consumption
- **Scalable:** with the application, can scale to hundreds of wireless nodes with minimal overhead
- **Low latency:** very short network data delivery times



The Entuit Net Wi-Router (*indoor enclosure shown*) provides flexibility in establishing wireless sensor networks over greater distances and supplies additional communication routes, allowing for greater network robustness.

Remote Monitoring Software Features

The Entuit Wi-Router is designed to interface with any Modbus®- or Entuit-compatible Remote Monitoring and Control software application. Entuit's easy-to-use Wireless Energy Management System provides all the tools you need to report, trend, and analyze energy consumption.

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Parameter	Value	Unit	Notes
Power			
External DC supply	4.5 ~ 30	VDC	
Minimum supply voltage	3.1	VDC	
Radio			
Operating frequency range	2405 ~ 2475	MHz	ISM band
Available Communication Channels	15		IEEE 802.15.4 channels 11 ~ 25
Channel spacing	5	MHz	
Maximum RF transmit power	18 (63)	dBm (mW)	
Receiver sensitivity	-95	dBm	At 10 ⁻⁵ bit error rate
RF data transmission rate	250	Kbits/sec	
Channel agility	Yes		Automatically realigns RF channel when network (MeshGate) switches to a new channel.
Environmental & Mechanical			
Operating temperature range	-10 ~ +55	°C	Applied only to radio box; -34 ~ +110 °C (-29 ~ +230 °F) operating and measurement range for thermistor probes
	-14 ~ +131	°F	
Storage temperature range	-40 ~ +85	°C	
	-40 ~ +185	°F	
Dimension	118x69x25.4	mm	
	4.7 x 2.7 x 1	in	
Weight	3.3	oz	
	95	g	

Regulatory Compliance

FCC, IC & CE for unlicensed operation