
EN-1000 Hardware Description and Specifications

This chapter provides information on the EN-1000™ chassis hardware and specifications.

Highlights of the EN-1000 include:

- Hardened cybersecurity appliance and router
- IP security (IPsec) VPNs with DES, 3DES, and AES (256-bit), to maintain private transmissions over a public network
- SSL/TLS encrypted link to the wide-area network (WAN)
- Connectivity over any IP or cellular wireless network
- Choice of WAN interface via cellular data Ethernet
- Cellular wireless connectivity

See the following:

- [Hardware Overview](#)
- [EN-1000 Technical Specifications](#)

1.1 Hardware Overview

The EN-1000 has expanded memory and a high-speed processor that allow it to handle multiple ports and high-speed network connections while converting protocols, routing packets, and applying firewall rules and other security measures.

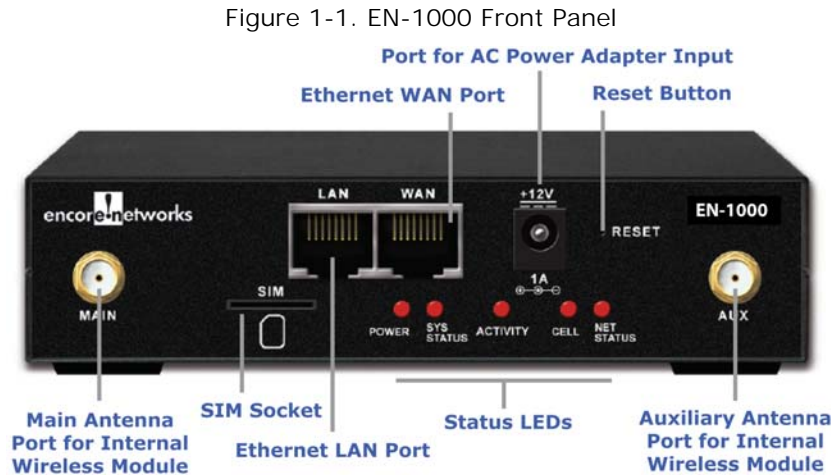
One 4G CAT-1 LTE cellular wireless module is standard. Two antennas assist communication with Verizon Wireless 4G CAT-1 LTE cellular services. CAT-1 speeds are limited to 10 Mbps for download and 5 Mbps for upload.

There is no cooling fan or other moving part. All models are built on the same hardware platform.

The EN-1000 requires minimal power. Typical configurations draw 4 watts maximum (typically 3 watts). The power source is an AC power supply unit, supplying 12 V DC to the EN-1000 chassis.

1.1.1 EN-1000 Front Panel

Figure 1-1 shows the front of the EN-1000.



The front of the EN-1000 chassis has:

- One LED for power status
- One LED for system status
- One LED for data activity on the LAN port or WAN port
- LEDs to indicate cellular wireless activity and network status
- Two RJ45 Ethernet ports (LAN and WAN)
- Two external antenna connectors for wireless modules
- One reset switch (for default software/configuration load)

1.1.2 EN-1000 Back Panel

The back of the EN-1000 chassis is blank (Figure 1-2).

Figure 1-2. EN-1000 Back Panel

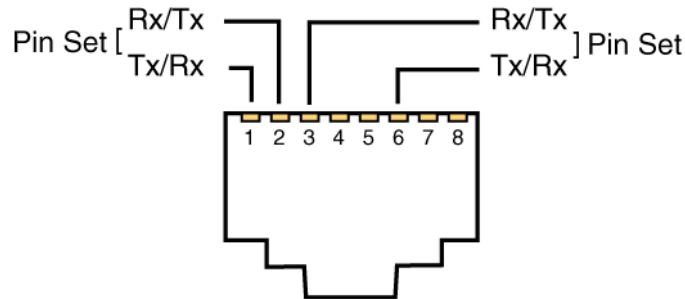


1.1.3 RJ45 10-Base-T/100-Base-T Ethernet Port

Figure 1-3 shows the pin locations on an RJ45 Ethernet port. Table 1-1 lists the pin configuration for the EN-1000's 10/100-Base-T Ethernet ports.

Note: The EN-1000 senses the pin configuration at the remote end of the connection and sets its own pin configuration to correspond to that remote configuration.

Figure 1-3. Pin Locations for Female RJ45 Ethernet Connector



Each pin set autosenses and adjusts to signals from the device at the remote end of the connection.

Table 1-1. 10-Base-T/100-Base-T Ethernet Port Pin Configuration

Pin Set ¹	Description ²
1 and 2	Tx or Rx
3 and 6	Rx or Tx

1. Unused pins are not listed.

2. The EN-1000 Ethernet connectors are autosensing and will adjust to the signals from the device at the remote end of the connection.

1.1.4 LEDs

See the *Quick Guide to EN-1000™ LED Codes* to interpret LED signals in the EN-1000 chassis.

1.2 EN-1000 Technical Specifications

This section lists specifications for the EN-1000.

1.2.1 General Features

- NERC CIP (003, 005, 007, 009) compliant firewall security
- Secure encrypted wireless connection over public or private cellular network
- Configuration servers to manage and update routers centrally
- Disaster recovery and loadsharing over WAN connections
- A hardened Linux operating system

- A graphical user interface (GUI) managed through any web browser
- QoS enforcement to prioritize critical traffic
- Protocol management and translation (spoofing) for dozens of protocols
- Generic Route Encapsulation (RFC 1701)

1.2.1.1 IP

- IP Version 4
- IP Routing (RIP v1/v2) or static routing
- DHCP client/server/BootP/Relay
- IP QoS and traffic prioritization
- IP fragmentation/reassembly
- IP routing over VPN; TCP and UDP
- 802.1q VLAN tagging
- Virtual Redundant Routing Protocol (VRRP) between two routers

1.2.2 Security Features

- Integrated router/firewall with encryption and VLAN tagging
- Network Address Translation
- IPsec (RFC 2401) VPN tunnels with DES, 3DES, and AES (256) encryption and Internet Key Exchange (IKE, RFC 2409)

1.2.3 EN-1000 Physical Specifications

1.2.3.1 Chassis Dimensions

[Table 1-2](#) lists the physical specifications for the EN-1000.

Table 1-2. Physical Specifications for the EN-1000 Chassis

Item	Measurement
Height ¹	1.5 in. (3.81 cm)
Width	6.0 in. (15.24 cm)
Depth	4.4 in. (11.18 cm)
Weight	Less than 1 lb. (Less than 0.45 kg)
Installation Type	Desktop

1. When the height of the chassis feet (0.03 in., or 0.07 cm) is included, the chassis stands 1.53 inches (3.88 cm) high.

1.2.3.2 Power Supply Options

The chassis draws less than 4 watts, AC 100V–240V, 50–60 Hz (with external adapter).

1.2.4 Environmental Specifications

Table 1-3 provides the environmental specifications for the EN-1000.

Table 1-3. EN-1000 Environmental Specifications

Measurement	Specification
Temperature	Operating Temperature: 0°C to 50°C (32°F to 122°F) Non-Operating (Storage) Temperature: -40°C to 85°C (-40°F to 185°F)
Humidity	5% to 95% non-condensing
Altitude	Up to 10,000 ft. (Up to 3,048 m)

1.2.5 Standards Compliance

The EN-1000 complies with the European Union's directive on restriction of hazardous substances (ROHS). This directive places strict controls on pollutants, including the elimination of lead in the manufacturing process.

Table 1-4 lists the EN-1000's compliance with agency standards.

Table 1-4. EN-1000 Standards Compliance

Compliance	Agency
Environmental	ROHS-compliant
Electromagnetic Compatibility (EMC)	FCC Part 15: 2013 IC ICES-003 Issue 5 EN 301 489-1 V1.9.2 (2011-09) EN 301 489-17 V2.2.1 (2012-09)

1.2.6 SIMs

Table 1-5 lists the recommended specifications for Subscriber Identity Modules (SIMs) used in the EN-1000.

Note: SIMs are not shipped with the EN-1000. Order SIMs from your Verizon Wireless carrier.

Table 1-5. Recommended Specifications for SIMs in the EN-1000

Item	Specification
ID	Type 1 Mini SIM
Form factor	2FF
Dimensions	25mm x 15mm
Operating Temperature	-25°C to 85°C