
EN-2000 Hardware Description and Specifications

This chapter provides information on the EN-2000™ chassis hardware and specifications.

Highlights of the EN-2000 include:

- Industrial-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-2000 Technical Specifications](#)

1.1 Hardware Overview

The EN-2000 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 3G/4G/LTE cellular wireless module is standard. Two antennas assist communication with 3G/4G/LTE cellular services.

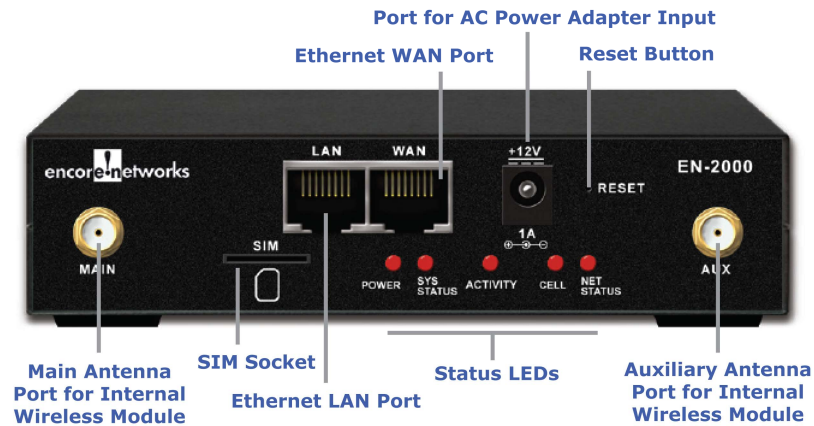
There is no cooling fan or other moving part. All models are built on the same hardware platform.

The EN-2000 requires minimal power. Typical configurations draw less than 13 watts (usually about 11 watts). The power source is an AC power supply unit, supplying 12 V DC to the EN-2000 chassis.

1.1.1 EN-2000 Front Panel

Figure 1-1 shows the front of the EN-2000.

Figure 1-1. EN-2000 Front Panel



The front of the EN-2000 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-2000 Back Panel

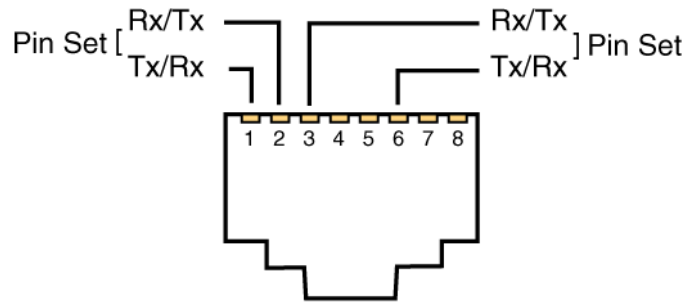
If the EN-2000 can support a 5 GHz 802.11 wireless card, there are two ports for antennas on the back of the EN-2000 chassis. Otherwise, the back of the chassis is blank.

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

Figure 1-2 shows the pin locations on an RJ45 Ethernet port. Table 1-1 lists the pin configuration for the EN-2000's 10/100-Base-T Ethernet ports.

Note: The EN-2000 senses the pin configuration at the remote end of the connection and sets its own pin configuration to correspond to that remote configuration.

Figure 1-2. 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-2000 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-2000™ LED Codes* to interpret LED signals in the EN-2000 chassis.

1.2 EN-2000 Technical Specifications

This section lists specifications for the EN-2000.

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
- SNMP manageability for configuration and monitoring
- 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 Transport Protocols

1.2.3.1 WAN and LAN

- IP over Ethernet
- Frame Relay (RFC 1490, IP over FR)
- Asynchronous PPP
- Synchronous PPP
- X.25
- MLPPP
- PPPoE

1.2.4 EN-2000 Physical Specifications

1.2.4.1 Chassis Dimensions

[Table 1-2](#) lists the physical specifications for the EN-2000.

Table 1-2. Physical Specifications for the EN-2000 Chassis (Sheet 1 of 2)

| Item | Measurement |
|---------------------|--------------------|
| Height ¹ | 1.5 in. (3.81 cm) |
| Width | 6.0 in. (15.24 cm) |
| Depth | 4.4 in. (11.18 cm) |

Table 1-2. Physical Specifications for the EN-2000 Chassis (Sheet 2 of 2)

| Item | Measurement |
|-------------------|-------------------------------------|
| 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.

1.2.4.2 Power Supply Options

The chassis draws less than 13 watts, AC 100V–240V, 50–60 Hz (with external adapter).

1.2.5 Environmental Specifications

Table 1-3 provides the environmental specifications for the EN-2000.

Table 1-3. EN-2000 Environmental Specifications

| Measurement | Specification |
|-------------|--|
| Temperature | Operating Temperature: -40°C to 85°C (-40°F to 185°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) |

1.2.6 Standards Compliance

The EN-2000 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-2000's compliance with agency standards.

Table 1-4. EN-2000 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) |

