

# AER1600 Series Spec Sheet



Cradlepoint AER1600 Series branch routers are sold as part of an all-inclusive branch networking solution in a NetCloud Solution Package.

**NetCloud Solution Packages for branch routers include:**

- LTE routers, purpose built for branch applications
- Award-winning remote cloud management and network intelligence with **NetCloud Manager**
- Secure IoT networking with **NetCloud Perimeter** for perimeter-secured overlay networks
- **24x7 support and limited lifetime warranty**

## WHAT TO BUY

Description	Part Numbers
<b>North America (U.S., Canada)</b>	
+ NetCloud Essentials for Branch Routers (Prime) with AER1600LP6	BAx-1600LP6I-NNN
+ NetCloud Essentials for Branch Routers (Prime) with AER1600LP4	BAx-1600LP4-NNN
+ NetCloud Essentials for Branch Routers (Prime) with AER1600 (no modem)	BAx-1600NM-0NN
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+ NetCloud Essentials for Branch Routers (Prime) with AER1650LP6	BAx-1650LP6I-N0N
+ NetCloud Essentials for Branch Routers (Prime) with AER1650LP4	BAx-1650LP4-N0N
+ NetCloud Essentials for Branch Routers (Prime) with AER1650 (no modem)	BAx-1650NM-00N
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<b>U.S.</b>	
+ NetCloud Essentials for Branch Routers (Prime) with AER1600LPE	BAx-1600LPE-VNN
+ NetCloud Essentials for Branch Routers (Prime) with AER1650LPE	BAx-1650LPE-V0N
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<b>Europe (EU)</b>	
+ NetCloud Essentials for Branch Routers (Prime) with AER1600LP6-EU	BAx-1600LP6I-EWM
+ NetCloud Essentials for Branch Routers (Prime) with AER1600-EU (no modem)	BAx-1600NM-0WM
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+ NetCloud Essentials for Branch Routers (Prime) with AER1650LP6-EU	BAx-1650LP6I-E0M
+ NetCloud Essentials for Branch Routers (Prime) with AER1650-EU (no modem)	BAx-1650NM-00M
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<b>Asia-Pacific (Australia, New Zealand, Singapore)</b>	
+ NetCloud Essentials for Branch Routers (Prime) with AER1600LP5-AP	BAx-1600LP5-PWM
+ NetCloud Essentials for Branch Routers (Prime) with AER1600-AP (no modem)	BAx-1600NM-0WM
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+ NetCloud Essentials for Branch Routers (Prime) with AER1650LP5-AP	BAx-1650LP5-P0M
+ NetCloud Essentials for Branch Routers (Prime) with AER1650-AP (no modem)	BAx-1650NM-00M
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<b>All Regions</b>	
+ NetCloud Advanced Upgrade for Branch Routers (Enterprise)	BAx-NCADV

x = 1, 3, or 5 years

**NetCloud Essentials** contains all the features and capabilities required for smaller site applications. Essentials packages include 24x7 support (phone support: 24 hour weekdays with emergency response on weekends, web: 24x7, chat: 24x5) and a limited lifetime warranty.

For additional capabilities, a **NetCloud Advanced** upgrade can be added to the NetCloud Essentials Package at any time.

See additional details of what is included in the Essential and Advanced NetCloud software:

[cradlepoint.com/branch-networks](https://cradlepoint.com/branch-networks)

For more details on the AER1600 Series branch router, included with the NetCloud Solution Packages for branch, see below.

## WHAT'S IN THE BOX

The Cradlepoint AER1600/AER1650 is available with different modem options:

- LPE and LP4 models include an embedded modem and a slot to add an MC400 modem
- LP6, LP5, and LP3 models include a bundled MC400 modem and do not include an embedded modem
- AER1600/AER1650 only include a slot for an MC400 modem and do not include an embedded modem

Also included:

- MC400 3G/4G Modem with Antennas\*
- External 3G/4G mobile broadband modem antennas‡ (2) (SMA) w/ multiplexing for GPS†; finger tighten only
- 12 V 3A AC/DC power adapter (WARNING: using a power adapter other than the one provided may damage the device and will void the warranty)
- Ethernet cable
- Quick Start Guide
- Mounting hardware
- Modem door screw
- Warranty/Regulatory information

\* - Included with LP6, LP5, and LP3 models, optional for AER1600/AER1650, LPE, and LP4 models

‡ - LPE and LP4 models only

† - GPS not included on LP4 models

## KEY FEATURES

### WAN

- LP6 Modems: LTE Advanced LTE/HSPA+ for all North American carriers and European operators (SIM-based Auto-Carrier Selection)
- LP5 Modems: Cat 6 LTE Advanced for operators in Asia Pacific and Saudi Arabia (SIM-based Auto-Carrier selection)
- LP4 Modems: LTE/HSPA+ for AT&T, Verizon, T-Mobile and Canadian carriers (SIM-based Auto-Carrier Selection, dual-modem capable)
- LPE Modems: 4G LTE/HSPA+/EVDO (multi-carrier, North America, dual-modem capable)
- LP3 Modems: 4G LTE/HSPA+ (Europe, Middle East, Africa, Australia, New Zealand)
- Dual integrated modem option (LPE and LP4 only)
- Dual SIM slot in each modem
- Most models include support for active GPS
- Five 10/100/1000 Ethernet ports (WAN/LAN switchable)
- WiFi as WAN (only on AER1600)
- Failover/Failback
- Load Balancing
- Advance Modem Failure Check
- WAN Port Speed Control
- WAN/LAN Affinity
- IP Passthrough
- Standby

### LAN

- Five 10/100/1000 Ethernet ports (WAN/LAN switchable)
- LLDP support
- VLAN 802.1Q
- DHCP Server, Client, Relay
- DNS and DNS Proxy
- DynDNS
- Split DNS
- UPnP
- DMZ
- Multicast/Multicast Proxy
- Auto QoS
- QoS (DSCP and Priority Queuing)
- MAC Address Filtering

### WIFI (ONLY ON AER1600)

- Dual-Band Dual-Concurrent (2x2 MIMO; internal antennas)
- 802.11 (a/b/g/n/ac)
- Up to 128 connected devices (64 per channel – 2.4 GHz and 5 GHz)
- WEP Auto, WPA/WPA2 Personal, WPA2 Enterprise (WiFi)
- Hotspot/Captive Portal
- SSID-based Priority

## MANAGEMENT

- OOBM (Out-of-Band Management) via USB to Serial
- Cradlepoint NetCloud Manager (NCM)
- NetCloud Engine gateway support
- SDK support
- Web UI, API, CLI
- GPS Location
- Data Usage Alerts (router and per client)
- Advanced Troubleshooting (support)
- Device Alerts
- SNMP
- SMS control

## VPN & ROUTING

- IPsec Tunnel – up to 20 concurrent sessions
- IKEv2 support (includes MOBIKE)
- OpenVPN (SSL VPN)
- L2TP
- GRE Tunnel
- OSPF/BGP/RIP
- Route Filters (Access Control Lists, Prefix Filters, Route Maps, Communities for BGP)
- Per-Interface Routing
- Static Routing
- Policy-based Routing
- NAT-less Routing
- Virtual Server/Port Forwarding
- VTI Tunnel Support
- NEMO/DMNR
- IPv6
- VRRP
- STP
- NHRP

## SECURITY

- RADIUS and TACACS+ support\*
- 802.1x authentication for Wireless and Wired Networks
- Zscaler Internet Security<sup>2</sup>
- Certificate support
- ALGs
- MAC Address Filtering
- CP Secure Threat Management<sup>1</sup>
- Advanced Security Mode (local user management only)
- Per-Client Web Filtering
- IP Filtering
- Content Filtering (basic)
- Website Filtering

\* – Native support for authentication. Authorization and accounting support through hotspot/captive portal services.

## CLOUD OPTIMIZED IP COMMUNICATIONS

- Automated WAN Failover/Failback support
- WAN Affinity and QoS allow prioritization of VoIP services
- Advanced VPN connectivity options to HQ
- SIP ALG and NAT to allow VoIP and UC communications to traverse firewall
- MAC Address Filtering
- 802.1p/q for LAN QoS segmentation and treatment of VoIP on LAN
- Private Network support (wired and 4G WAN)
- Cloud-based management<sup>2</sup>

1 – Requires a [CP Secure Threat Management](#) license

2 – Requires [Zscaler](#) Internet Security License

## SPECIFICATIONS

### WAN:

- Integrated LP6 Category 6 LTE Advanced LTE modem (with DC-HSPA+ failover), LP5 Category 6 LTE Advanced LTE modem (with DC-HSPA+ failover), LP4 Category 4 LTE modem (with DC-HSPA+ failover), LPE 4G LTE modem (with HSPA+/ EVD0/3G and 2G failover), or LP3 4G LTE modem (with HSPA+ and 2G failover)
- Embedded 4G LTE (one modem included; dual-modem option) Multi-Carrier Software-Defined radio (LPE and LP4 models)
- 5 10/100/1000 Ethernet ports (cable/DSL/T1/satellite/Metro Ethernet; WAN/LAN switchable)
- WiFi\* (as WAN; Metro WiFi) 2x2 MIMO 2.4 GHz or 5 GHz (802.11 a/b/g/n/ac; internal antennas)

### LAN:

- Dual-band dual-concurrent WiFi\* (802.11 a/b/g/n/ac)
- 5 10/100/1000 Ethernet ports (WAN/LAN switchable)

### TEMPERATURE:

- 0 °C to 50 °C (32 °F to 122 °F) operating
- -20 °C to 70 °C (-4 °F to 158 °F) storage

### HUMIDITY (non-condensing):

- 10% to 85% operating
- 5% to 90% storage

MEMORY: 256 MB DRAM; 16 MB SPI Flash; 256 MB NAND Flash

### SIZE:

- 8.3 × 6.6 × 1.7 in (210 × 167 × 44 mm)
- 1U height for rack mount

WEIGHT: 1 lb 4.4 oz (.58 kg)

**CERTIFICATIONS:** FCC, WiFi Alliance, CE, IC, carrier certifications

**WIFI POWER (FCC):**

- 2402-2483.5 MHz (2.4 GHz band): 28.51 dBm conducted
- 5150-5250 MHz (5 GHz band 1): 26.66 dBm conducted
- 5725-5850 MHz (5 GHz band 3): 23.54 dBm conducted

**WIFI POWER (Europe/Rest of World):**

- 2.4 GHz band: 19.95 dBm EIRP
- 5150-5250 MHz: 22.98 dBm EIRP

**POWER CONSUMPTION (Typical)**

AER1600

- Idle: 9.5 W
- Single Modem: 13.1 W
- Dual Modem: 15.2 W

AER1650

- Idle: 7.3 W
- Single Modem: 8.6 W
- Dual Modem: 10.6 W

\*-only on AER1600

## ACCESSORIES

- Second integrated 4G LTE modem
  - MC400LP6 (North America or EU)
  - MC400LP5 (Asia Pacific or Saudi Arabia)
  - MC400LP4 (AT&T, Verizon, T-Mobile, and Canada)
  - MC400LPE-VZ (Verizon)
  - MC400LPE-AT (AT&T)
  - MC400LPE-SP (Sprint)
  - MC400LPE-GN (generic – for use on T-Mobile in the U.S. and Rogers, Bell, & TELUS in Canada)
  - MC400LP3-EU (Europe)
- 700 MHz – 2700 MHz Wide Band Directional Antenna (Yagi/Log- Periodic) Part #: 170588-000
- 12" Mag-Mount Antenna with SMA Male Connector Part #: 170605-000
- 4" Mini Mag-Mount Antenna with SMA Male Connector Part #: 170606-000
- 2.4/5 GHz Dual-band Dual-concurrent WiFi Antenna Part #: 170628-000 (WiFi models only)
- Universal 3G/4G/LTE Modem Antenna Part #: 170649-000
- GPS Screw-Mount Antenna Part #: 170651-000
- GPS Mag-Mount Antenna Part #: 170652-000
- Multi-Band Omni-Directional Antenna Part #: 170668-000
- Indoor/Outdoor Panel Patch Part #: 170669-000

## BUSINESS-GRADE MODEM SPECIFICATIONS

**AER1600/AER1650 LP6 and LP5 models** do not include an embedded 4G LTE modem and do not support dual-modem capability.

**AER1600/AER1650 LP6 models** include an integrated LTE Advanced Category 6 4G LTE modem. The LP6 modems support SIM-Based Auto-Carrier selection so there is only one model for all of North America or EU. Simply insert the SIM and wait for the router to automatically detect the SIM and establish a connection.

The LTE bands certified for each carrier are listed below.

### **AER1600LP6-NA-M, AER1650LP6-NA-M, AER1600LP6-EU-M, AER1650LP6-EU-M:**

- Technology: LTE Advanced, DC-HSPA+
- Downlink Rates: LTE 300 Mbps, DC-HSPA+ 42.2 Mbps
- Uplink Rates: LTE 50 Mbps, DC-HSPA+ 5.76 Mbps
- Frequency Bands:
  - LTE Bands 1-5, 7, 8, 12, 13, 20, 25, 26, 29, 30, 41
    - Verizon: 2, 4, 5, 13 (XLTE support w/carrier aggregation)
    - AT&T: 2, 4, 5, 12, 29, 30
    - Sprint: 25, 26, 41 (LTE Plus Support)
    - T-Mobile: 2, 4, 12 (T-Mobile Wideband LTE Support)
    - Generic: all
- Carrier Aggregation:
  - 1+ 8
  - 2+ 2/5/12/13/29
  - 3+ 7/20
  - 4+ 4/5/12/13/29
  - 5+ 2/4/30
  - 7+ 3/7/20
  - 8+ 1
  - 12+ 2/4/30
  - 13+ 2/4
  - 20+ 3/7
  - 30+ 5/12
  - 41+ 41
- Fallback: WCDMA/DC-HSPA+ (42/5.76 Mbps): Bands 1, 2, 3, 4, 5, 8
- Power: LTE 23 dBm  $\pm$  1; DC-HSPA+ 23 dBm  $\pm$  1
- Antennas: two SMA male (plug), finger tighten only (maximum torque spec is 7 kgf/cm<sup>2</sup>)
- GPS: active GPS support
- SMS: SMS support
- Industry Standards & Certs: CE, FCC, GCF-CC, IC, PTCRB, AT&T, Sprint, Verizon
- Modem Part Number: MC400LP6

**AER1600/AER1650LP5 models** include an integrated LTE Advanced Category 6 4G LTE modem, and support Asia Pacific and Saudi Arabia. The LP5 modems support SIM-Based Auto-Carrier selection. Simply insert the SIM and wait for the router to automatically detect the SIM and establish a connection.



**AER1600LP5-AU, AER1650LP5-AU, AER1600LP5-AP-M:**

- Technology: FDD/TDD (Category 6) LTE Advanced, DC-HSPA+
- Downlink Rates: LTE 300 Mbps, DC-HSPA+ 42.2 Mbps
- Uplink Rates: LTE 50 Mbps, DC-HSPA+ 5.76 Mbps
- Frequency Bands:
  - LTE Bands: 1, 3, 5, 7, 8, 11, 18, 19, 21, 28, 38, 39, 40, 41
  - TD-SCDMA: 39
- Carrier Aggregation:
  - 1+ 8/18/19/21
  - 3+ 5/7/19/28
  - 7+ 5/7/28
  - 19+ 21
  - 38+ 38
  - 39+ 39
  - 40+ 40
  - 41+ 41
- Fallback: WCDMA/DC-HSPA+ (42/5.76 Mbps): Bands 1, 5, 6, 8, 9, 19
- Power: LTE: 23 dBm ± 1; DC-HSPA+: 23 dBm ± 1
- Antennas: two SMA male (plug), finger tighten only (maximum torque spec is 7 kgf/cm2)
- GPS: active GPS support
- SMS: SMS support
- Industry Standards & Certs: CE, GCF-CC, RC Australia, others pending
- Modem Part Number: MC400LP5

**AER1600/AER1650 LP4 models** include an embedded LTE Advanced Category 4 4G LTE modem. The LP4 modems support SIM-Based Auto-Carrier selection so there is only one model for North America. Simply insert the SIM and wait for the router to automatically detect the SIM and establish a connection.

**AER1600LP4, AER1650LP4:**

- Technology: Category 4 LTE, DC-HSPA+
- Downlink Rates: LTE 150 Mbps, DC-HSPA+ 42.2 Mbps
- Uplink Rates: LTE 50 Mbps, DC-HSPA+ 5.76 Mbps
- Frequency Bands:
  - LTE: Band 2 (1900 MHz), Band 4 – AWS (1700/2100 MHz), Band 5 (850 MHz), Band 13 (700 MHz), Band 17 (700 MHz)
  - DC-HSPA+/UMTS Rel. 9, Cat 24: Bands 5 and 2 (850/1900 MHz)
- Power: LTE 23 dBm ± 1, DC-HSPA+ 23 dBm ± 1
- Antennas: two SMA male (plug), finger tighten only (maximum torque spec is 7 kgf/cm2)
- Industry Standards & Certs: FCC, WiFi Alliance (AER1600 only), Verizon, AT&T, PTCRB, carrier Private Networks, IC
- SIM: two 2FF slots (secured)
- Modem Part Number: MC400LP4

Please note that LPE models are flexible and support bands for multiple cellular providers; however, only the frequency bands in **bold** below are supported by the listed provider.

**AER1600LPE-VZ – 4G LTE/HSPA+/EVDO for Verizon:**

- Technology: LTE, HSPA+, EVDO Rev A
- Downlink Rates: LTE 100 Mbps, HSPA+ 21.1 Mbps, EVDO 3.1 Mbps (theoretical)
- Uplink Rates: LTE 50 Mbps, HSPA+ 5.76 Mbps, EVDO 1.8 Mbps (theoretical)
- Frequency Bands:
  - LTE Band 2 (1900 MHz), Band 4 – AWS (1700/2100 MHz), Band 5 (850 MHz), Band 13 (700 MHz), Band 17 (700 MHz), Band 25 (1900 MHz)
  - HSPA+/UMTS (850/900/1900/2100 MHz, AWS)
  - GSM/GPRS/EDGE (850/900/1800/1900 MHz)
  - CDMA EVDO Rev A/1xRTT (800/1900 MHz)
- Power: LTE 23 dBm  $\pm$  1; HSPA+ 23 dBm  $\pm$  1; EVDO 24 dBm +0.5/-1 (typical conducted)
- Antennas: two SMA male (plug), 1 dBi (LTE), 2 dBi (Cellular/PCS) gain; finger tighten only (maximum torque spec is 7 kgf/cm<sup>2</sup>)
- GPS: active GPS support
- Industry Standards & Certs: FCC, Verizon

**AER1650LPE-VZ – 4G LTE/HSPA+/EVDO for Verizon:**

- Technology: LTE, HSPA+, EVDO Rev A
- Downlink Rates: LTE 100 Mbps, HSPA+ 21.1 Mbps, EVDO 3.1 Mbps (theoretical)
- Uplink Rates: LTE 50 Mbps, HSPA+ 5.76 Mbps, EVDO 1.8 Mbps (theoretical)
- Frequency Bands:
  - LTE Band 2 (1900 MHz), Band 4 – AWS (1700/2100 MHz), Band 5 (850 MHz), Band 13 (700 MHz), Band 17 (700 MHz), Band 25 (1900 MHz)
  - HSPA+/UMTS (850/900/1900/2100 MHz, AWS)
  - GSM/GPRS/EDGE (850/900/1800/1900 MHz)
  - CDMA EVDO Rev A/1xRTT (800/1900 MHz)
- Power: LTE 23 dBm  $\pm$  1; HSPA+ 23 dBm  $\pm$  1; EVDO 24 dBm +0.5/-1 (typical conducted)
- Antennas: two SMA male (plug), 1 dBi (LTE), 2 dBi (Cellular/PCS) gain; finger tighten only (maximum torque spec is 7 kgf/cm<sup>2</sup>)
- GPS: active GPS support
- Industry Standards & Certs: FCC, Verizon

**AER1600LPE-AT – 4G LTE/HSPA+/EVDO for AT&T:**

- Technology: LTE, HSPA+, EVDO Rev A
- Downlink Rates: LTE 100 Mbps, HSPA+ 21.1 Mbps, EVDO 3.1 Mbps (theoretical)
- Uplink Rates: LTE 50 Mbps, HSPA+ 5.76 Mbps, EVDO 1.8 Mbps (theoretical)
- Frequency Bands:
  - LTE Band 2 (1900 MHz), Band 4 – AWS (1700/2100 MHz), Band 5 (850 MHz), Band 13 (700 MHz), Band 17 (700 MHz), Band 25 (1900 MHz)
  - HSPA+/UMTS (850/900/1900/2100 MHz, AWS)
  - GSM/GPRS/EDGE (850/900/1800/1900 MHz)
  - CDMA EVDO Rev A/1xRTT (800/1900 MHz)
- Power: LTE 23 dBm  $\pm$  1; HSPA+ 23 dBm  $\pm$  1; EVDO 24 dBm +0.5/-1 (typical conducted)
- Antennas: two SMA male (plug), 1 dBi (LTE), 2 dBi (Cellular/PCS) gain; finger tighten only (maximum torque spec is 7 kgf/cm<sup>2</sup>)
- GPS: active GPS support
- Industry Standards & Certs: PTCRB, FCC, IC, AT&T

**AER1650LPE-AT – 4G LTE/HSPA+/EVDO for AT&T:**

- Technology: LTE, HSPA+, EVDO Rev A
- Downlink Rates: LTE 100 Mbps, HSPA+ 21.1 Mbps, EVDO 3.1 Mbps (theoretical)
- Uplink Rates: LTE 50 Mbps, HSPA+ 5.76 Mbps, EVDO 1.8 Mbps (theoretical)
- Frequency Bands:
  - LTE Band 2 (1900 MHz), Band 4 – AWS (1700/2100 MHz), Band 5 (850 MHz), Band 13 (700 MHz), Band 17 (700 MHz), Band 25 (1900 MHz)
  - HSPA+/UMTS (850/900/1900/2100 MHz, AWS)
  - GSM/GPRS/EDGE (850/900/1800/1900 MHz)
  - CDMA EVDO Rev A/1xRTT (800/1900 MHz)
- Power: LTE 23 dBm  $\pm$  1; HSPA+ 23 dBm  $\pm$  1; EVDO 24 dBm +0.5/-1 (typical conducted)
- Antennas: two SMA male (plug), 1 dBi (LTE), 2 dBi (Cellular/PCS) gain; finger tighten only (maximum torque spec is 7 kgf/cm<sup>2</sup>)
- GPS: active GPS support
- Industry Standards & Certs: PTCRB, FCC, IC, AT&T

**AER1600LPE-SP – 4G LTE/HSPA+/EVDO for Sprint:**

- Technology: LTE, HSPA+, EVDO Rev A
- Downlink Rates: LTE 100 Mbps, HSPA+ 21.1 Mbps, EVDO 3.1 Mbps (theoretical)
- Uplink Rates: LTE 50 Mbps, HSPA+ 5.76 Mbps, EVDO 1.8 Mbps (theoretical)
- Frequency Bands:
  - LTE Band 2 (1900 MHz), Band 4 – AWS (1700/2100 MHz), Band 5 (850 MHz), Band 13 (700 MHz), Band 17 (700 MHz), Band 25 (1900 MHz)
  - HSPA+/UMTS (850/900/1900/2100 MHz, AWS)
  - GSM/GPRS/EDGE (850/900/1800/1900 MHz)
  - CDMA EVDO Rev A/1xRTT (800/1900 MHz)
- Power: LTE 23 dBm  $\pm$  1; HSPA+ 23 dBm  $\pm$  1; EVDO 24 dBm +0.5/-1 (typical conducted)
- Antennas: two SMA male (plug), 1 dBi (LTE), 2 dBi (Cellular/PCS) gain; finger tighten only (maximum torque spec is 7 kgf/cm<sup>2</sup>)
- GPS: active GPS support
- Industry Standards & Certs: FCC, Sprint

**AER1650LPE-SP – 4G LTE/HSPA+/EVDO for Sprint:**

- Technology: LTE, HSPA+, EVDO Rev A
- Downlink Rates: LTE 100 Mbps, HSPA+ 21.1 Mbps, EVDO 3.1 Mbps (theoretical)
- Uplink Rates: LTE 50 Mbps, HSPA+ 5.76 Mbps, EVDO 1.8 Mbps (theoretical)
- Frequency Bands:
  - LTE Band 2 (1900 MHz), Band 4 – AWS (1700/2100 MHz), Band 5 (850 MHz), Band 13 (700 MHz), Band 17 (700 MHz), Band 25 (1900 MHz)
  - HSPA+/UMTS (850/900/1900/2100 MHz, AWS)
  - GSM/GPRS/EDGE (850/900/1800/1900 MHz)
  - CDMA EVDO Rev A/1xRTT (800/1900 MHz)
- Power: LTE 23 dBm  $\pm$  1; HSPA+ 23 dBm  $\pm$  1; EVDO 24 dBm +0.5/-1 (typical conducted)
- Antennas: two SMA male (plug), 1 dBi (LTE), 2 dBi (Cellular/PCS) gain; finger tighten only (maximum torque spec is 7 kgf/cm<sup>2</sup>)
- GPS: active GPS support
- Industry Standards & Certs: FCC, Sprint

**AER1600LP3-EU – 4G LTE/HSPA+ for Europe:**

- Technology: LTE, HSPA+
- Downlink Rates: LTE 100 Mbps, HSPA+ 21.1 Mbps (theoretical)
- Uplink Rates: LTE 50 Mbps, HSPA+ 5.76 Mbps (theoretical)
- Frequency Bands:
  - LTE Band 1 (2100 MHz), Band 3 (1800 MHz), Band 7 (2600 MHz), Band 8 (900 MHz), Band 20 (800 MHz)
  - HSPA+/UMTS (800/850/900/1900/2100 MHz)
  - GSM/GPRS/EDGE Quad-Band (850/900/1800/1900 MHz)
- Power: LTE Band 1/3/8/20 – 23 dBm ± 1; LTE Band 7 – 22 dBm ± 1, HSPA+ 23 dBm ± 1 (typical conducted)
- Antennas: two SMA male (plug), 1 dBi (LTE), 2 dBi (Cellular/PCS) gain; finger tighten only (maximum torque spec is 7 kgf/cm<sup>2</sup>)
- GPS: active GPS support
- Industry Standards & Certs: CE, GCF-CC
- Modem Part Number: MC400LP3

**AER1650LP3-EU – 4G LTE/HSPA+ for Europe:**

- Technology: LTE, HSPA+
- Downlink Rates: LTE 100 Mbps, HSPA+ 21.1 Mbps (theoretical)
- Uplink Rates: LTE 50 Mbps, HSPA+ 5.76 Mbps (theoretical)
- Frequency Bands:
  - LTE Band 1 (2100 MHz), Band 3 (1800 MHz), Band 7 (2600 MHz), Band 8 (900 MHz), Band 20 (800 MHz)
  - HSPA+/UMTS (800/850/900/1900/2100 MHz)
  - GSM/GPRS/EDGE Quad-Band (850/900/1800/1900 MHz)
- Power: LTE Band 1/3/8/20 – 23 dBm ± 1; LTE Band 7 – 22 dBm ± 1, HSPA+ 23 dBm ± 1 (typical conducted)
- Antennas: two SMA male (plug), 1 dBi (LTE), 2 dBi (Cellular/PCS) gain; finger tighten only (maximum torque spec is 7 kgf/cm<sup>2</sup>)
- GPS: active GPS support
- Industry Standards & Certs: CE, GCF-CC
- Modem Part Number: MC400LP3

**AER1600LPE-GN – 4G LTE/HSPA+/EVDO (generic – for use on T-Mobile and US Cellular in the U.S. and Rogers, Bell, & TELUS in Canada):**

- Technology: LTE, HSPA+, EVDO Rev A
- Downlink Rates: LTE 100 Mbps, HSPA+ 21.1 Mbps, EVDO 3.1 Mbps (theoretical)
- Uplink Rates: LTE 50 Mbps, HSPA+ 5.76 Mbps, EVDO 1.8 Mbps (theoretical)
- Frequency Bands:
  - LTE Band 2 (1900 MHz), Band 4 (AWS), Band 5 (850 MHz), Band 13 (700 MHz), Band 17 (700 MHz), Band 25 (1900 MHz)
  - HSPA+/UMTS (850/900/1900/2100 MHz, AWS)
  - GSM/GPRS/EDGE (850/900/1800/1900 MHz)
  - CDMA EVDO Rev A/1xRTT (800/1900 MHz)
- Power: LTE 23 dBm ± 1; HSPA+ 23 dBm ± 1; EVDO 24 dBm +0.5/-1 (typical conducted)
- Antennas: two SMA male (plug), 1 dBi (LTE), 2 dBi (Cellular/PCS) gain; finger tighten only (maximum torque spec is 7 kgf/cm<sup>2</sup>)
- GPS: active GPS support
- Industry Standards & Certs: PTCRB, FCC, IC

**AER1650LPE-GN – 4G LTE/HSPA+/EVDO (generic – for use on T-Mobile and US Cellular in the U.S. and Rogers, Bell, & TELUS in Canada)**

- Technology: LTE, HSPA+, EVDO Rev A
- Downlink Rates: LTE 100 Mbps, HSPA+ 21.1 Mbps, EVDO 3.1 Mbps (theoretical)
- Uplink Rates: LTE 50 Mbps, HSPA+ 5.76 Mbps, EVDO 1.8 Mbps (theoretical)
- Frequency Bands:
  - LTE Band 2 (1900 MHz), Band 4 (AWS), Band 5 (850 MHz), Band 13 (700 MHz), Band 17 (700 MHz), Band 25 (1900 MHz)
  - HSPA+/UMTS (850/900/1900/2100 MHz, AWS)
  - GSM/GPRS/EDGE (850/900/1800/1900 MHz)
  - CDMA EVDO Rev A/1xRTT (800/1900 MHz)
- Power: LTE 23 dBm  $\pm$  1; HSPA+ 23 dBm  $\pm$  1; EVDO 24 dBm +0.5/-1 (typical conducted)
- Antennas: two SMA male (plug), 1 dBi (LTE), 2 dBi (Cellular/PCS) gain; finger tighten only (maximum torque spec is 7 kgf/cm<sup>2</sup>)
- GPS: active GPS support
- Industry Standards & Certs: PTCRB, FCC, IC

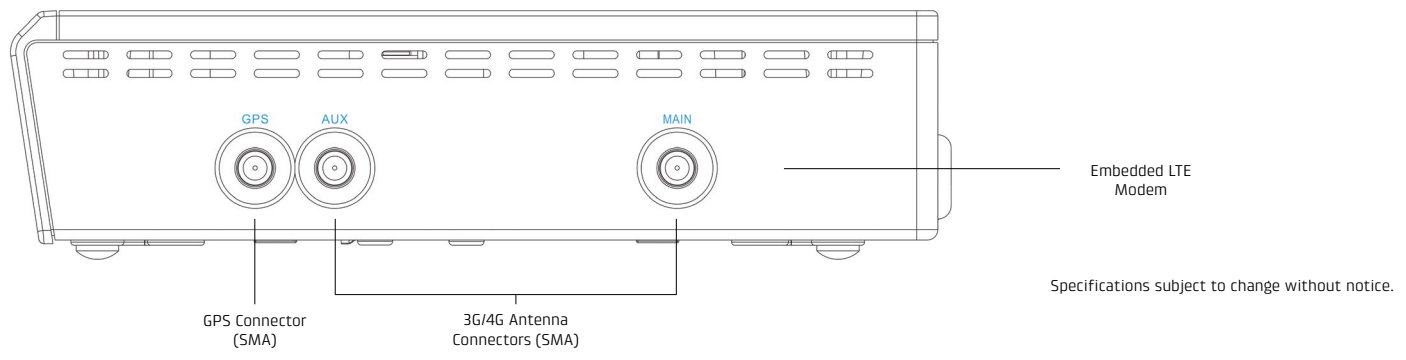
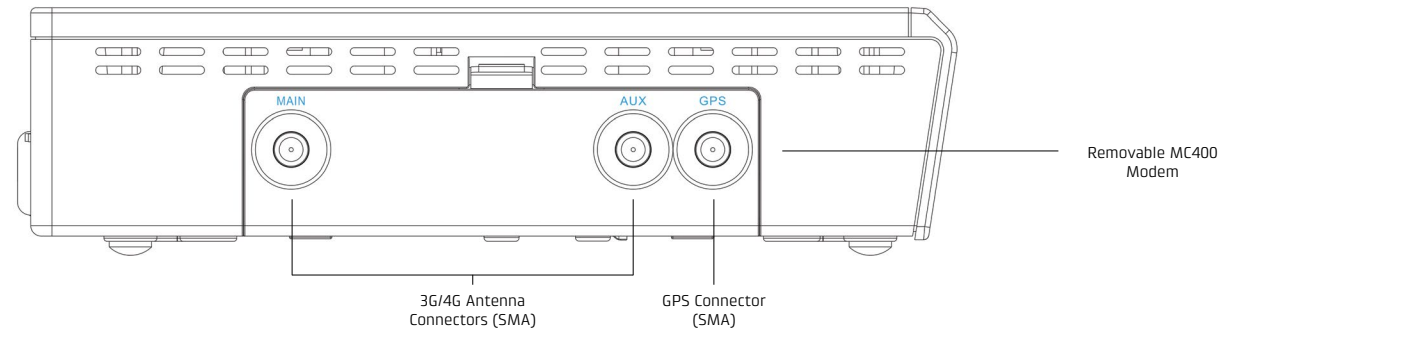
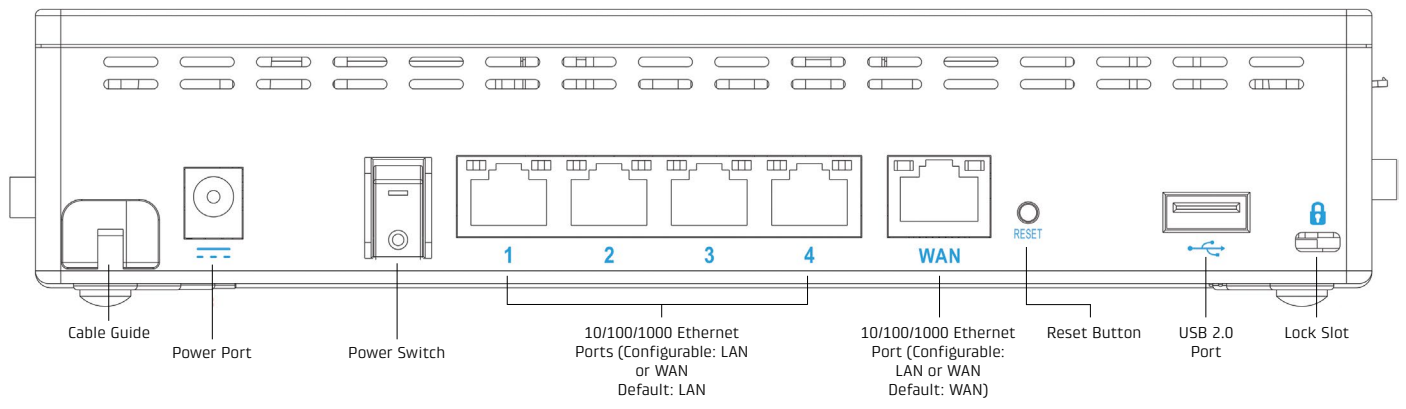
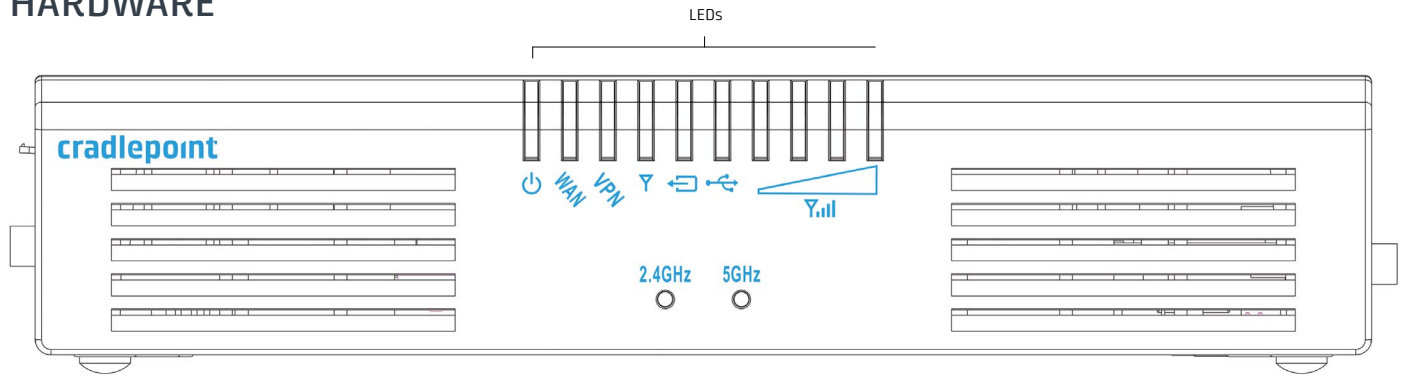
## SUPPORT & WARRANTY

The AER1600 Series is only sold as a component of NetCloud Solution Packages.

- NetCloud Solution Packages include support for the full subscription term.
- All Cradlepoint hardware products are covered by a limited lifetime warranty for as long as they are under a NetCloud Solution Package subscription.






The AER1600 Series includes a minimum three-year hardware warranty when purchased from an authorized Cradlepoint Partner.

# HARDWARE



Specifications subject to change without notice.

## LEDS

INDICATOR	BEHAVIOR
	<p><b>POWER:</b> The Cradlepoint AER1600/AER1650 must be powered using an approved 12 V DC power source.</p> <ul style="list-style-type: none"> <li>Green = Powered ON.</li> <li>No Light = Not receiving power. Check the power switch and the power source connection.</li> <li>Amber = Attention. Open the administration pages and check the router status.</li> </ul>
<b>WAN</b>	<p><b>ETHERNET WAN:</b> Indicates status of WAN connection.</p> <ul style="list-style-type: none"> <li>Blue = Connected to an active Ethernet WAN interface.</li> </ul>
<b>VPN</b>	<p><b>VPN:</b> Indicates status of VPN connection.</p> <ul style="list-style-type: none"> <li>Blue = Connected to an active VPN.</li> </ul>
	<p><b>INTEGRATED MODEM:</b> Indicates information about the integrated modem.</p> <ul style="list-style-type: none"> <li>Green = Modem has established an active connection.</li> <li>Blinking Green = Modem is connecting.</li> <li>Blinking Amber = Data connection error. No modem connection possible.</li> <li>Blinking Red = Modem is in the process of resetting.</li> </ul>
	<p><b>REMOVABLE MODEM:</b> Indicates the status of removable modem(s).</p> <ul style="list-style-type: none"> <li>Green = Modem has established an active connection.</li> <li>Blinking Green = Modem is connecting.</li> <li>Blinking Amber = Data connection error. No modem connection possible.</li> <li>Blinking Red = Modem is in the process of resetting.</li> </ul>
	<p><b>EXTERNAL USB MODEM:</b> Indicates the status of external USB modem. Both internal and external USB modems have the following LED indicators:</p> <ul style="list-style-type: none"> <li>Green = Modem has established an active connection.</li> <li>Blinking Green = Modem is connecting.</li> <li>Blinking Amber = Data connection error. No modem connection possible.</li> <li>Blinking Red = Modem is in the process of resetting.</li> </ul>
	<p><b>SIGNAL STRENGTH:</b> Blue LED bars indicate the active modem's signal strength (only for integrated and removable modems).</p> <ul style="list-style-type: none"> <li>4 Solid Bars = Strongest signal.</li> <li>1 Blinking Bar = Weakest signal. (A blinking bar indicates half of a bar.)</li> </ul>
<b>2.4GHz</b> <b>5GHz</b>	<p><b>WiFi BROADCAST:</b> These two LEDs indicate activity on the WiFi broadcast for both the 2.4 GHz and 5 GHz bands (AER1600 only).</p> <ul style="list-style-type: none"> <li>2.4 GHz (green) = 2.4 GHz WiFi is on and operating normally.</li> <li>5 GHz (blue) = 5 GHz WiFi is on and operating normally.</li> </ul>
<b>Other</b>	<p><b>ADDITIONAL LED INDICATIONS</b></p> <ul style="list-style-type: none"> <li>Several different LEDs blink when the factory reset button is detected.</li> <li>Two of the modem LEDs blink red in unison for 10 seconds when there is an error during NCOS upgrade.</li> <li>WAN Ethernet LED: only right LED will light up and/or blink with data.</li> </ul>