

## DATA SHEET

# E1000 Bluetooth Edge Router (Indoor Use)

The Cassia Networks E1000 is an industry-leading, enterprise Bluetooth IoT edge router. Its patented Bluetooth 1000-ft / 300 m range, edge computing, and remote control of up to 40 Bluetooth low power devices (and 100s in broadcast mode) delivers unparalleled enterprise Bluetooth IoT network value. The E1000 delivers data analytics and security to the edge of enterprise Bluetooth IoT networks. The E1000 is designed for enterprise IoT applications, such as: industrial IoT automation, connected health, asset-tracking, smart cities and buildings, etc... requiring robust IoT edge network capabilities.

## OVERVIEW

The Cassia E1000 Edge Bluetooth router intelligently aggregates, secures, analyzes, and relays data from diverse sensors at the edge of the network. This capability delivers business insights based on real-time, pervasive data obtained from innovative applications used in enterprise Bluetooth IoT settings.

The E1000's enterprise Bluetooth IoT capabilities do not require costly changes to existing Bluetooth low power devices, nor is it dependent on Bluetooth 5.0 or Mesh. Its patented smart antenna delivers range optimized for horizontal use. The E1000 is also a protocol gateway, translating between the Bluetooth protocol and Internet protocol (IP). It supports Ethernet, Wi-Fi 2.4GHz and 5GHz, or cellular dongle as an IP backhaul. As a result, end devices are remotely accessible, and controllable via an Internet application.

The E1000's compact design is ideal for indoor usage. It attaches to ceilings or walls using an included mounting kit, or places on a flat surfacesuch as counter space. The E1000 power options include: a Micro USB adapter plug or Power over Ethernet (PoE).

The Cassia RESTful APIs enable the integration of proprietary end devices to the E1000 without requiring any changes to them. In addition, the Cassia IoT Access Controller (AC) provides easy-to-use device management at scale. The Cassia IoT AC eases deployment and manages hundreds of Cassia routers and thousands of connected devices from a single user interface.

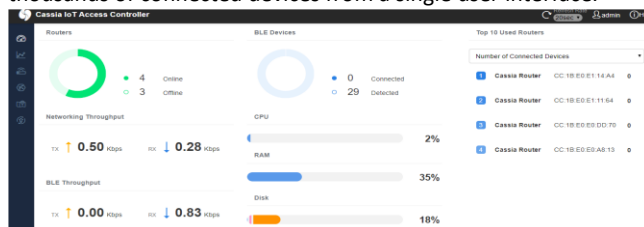


Figure 1 - Cassia IoT Access Controller (AC)



## UNIQUE BENEFITS

### Reliable long-range Bluetooth, Seamless Coverage

With its smart antenna and RF management technology, the E1000 delivers wall-penetrating Bluetooth coverage of up to 1000 ft / 300 m. Its long-range capability increases “connection density” and reduces cost, allowing solution providers to deploy seamless Bluetooth coverage.

### Remote Access and Control

The E1000 connects your Bluetooth low power devices, uploads the aggregated device data to the AC via your LAN or Internet, and allows them to be controlled remotely.

### Edge Computing

Custom applications run inside a container within the router result in reduced latency and cloud costs, customized command and control, and better data management. The E1000 supports Ubuntu OS with built-in packages for Python and NodeJS.

### Easy Integration

Cassia's E1000 provides a set of RESTful APIs which developers can easily integrate into their native mobile app or cloud applications. Cassia partners use the extended range and routing capabilities of the E1000 without a need to make costly changes to their Bluetooth end devices.

### Easy Setup and Management

Cassia's E1000 comes with Wi-Fi hotspot mode, which improves a user's overall setup experience when performing an initial installation without network access.

The E1000 can be managed by the Cassia IoT AC. Administrators can quickly provision and check the status of all routers in their network. Status data includes: connected and/or identified sensors, throughput, CPU consumption, device location, container status, and more.

### Room-based Location Tracking

Together with the Cassia IoT AC, the E1000 tracks and reports the location of Bluetooth low power devices, providing geolocation data in real-time.

### Flexible Deployment

In a network restricted environment, the E1000 is configurable to a “Stand-Alone Mode,” where the data is sent directly to a local third-party application server. In a remote management scenario, the “AC Manage Mode” sends data to a remote third-party application via the Cassia IoT AC.

### Tx Power

Based on the country-code selected, the Bluetooth transmit power and Wi-Fi transmit power is limited to the maximum value allowed by the country.

## ADVANCED FEATURES

### Processor & Memory

- CPU: 4 core ARM Cortex-A5, up to 1.5GHz
- 256MB RAM DDR3, 4GB eMMC storage

### Bluetooth

- Bluetooth low power chip: 2x Nordic nRF52832
- Bluetooth version: 4.0/4.1/4.2, 5 compliant
- Connections: Up to 40 connections
- Frequency: 2.400 to 2.483 GHz
- Data rates: up to 2x1Mbps
- Tx power: 0 to 8dBm
- Rx sensitivity: -105dBm
- Antenna Gain: 5dBi peak

### Wi-Fi (802.11 a/b/g/n/ac)

- Frequency: 2.4 GHz and 5GHz ISM band
- Mode: Wi-Fi client or hotspot (for setup only)
- Tx power: 12.5 to 17.5dBm for 2.4GHz band, 8.5 to 15.5dBm for 5GHz band
- Rx sensitivity: -96 to -71dBm for 2.4GHz band, -91 to -71dBm for 5GHz band, depending on modulation
- Antenna: Integrated dual band

### Multiple Roles

- Supports broadcaster, listener, sender and receiver roles, and plays multiple roles simultaneously.

### Security Services

- Supports Bluetooth 4.1 security standards
- Bluetooth Secure Simple Pairing (Just Works, Passkey Entry, OOB)
- WPA2 enterprise security (PEAP-MSCHAPv2, EAP-TLS, EAP-TTLS)
- Advanced 128bit AES encryption
- Password protected router web console
- Communication between the Cassia IoT AC and the router is based on DTLS 1.2 over UDP
- MQTT communication encryption between Cassia router and broker. Supports router to AC MQTT option.
- Firmware is signed by certificate to ensure authenticity
- Supports HTTPS access to the Cassia AC and router
- Dedicated SSL private key and certificate import option



### Power Interface

- Power-over-Ethernet (PoE): 802.3af/at compliant source
- Micro-USB, multi-plug adapter + plugs
  - Input: 100-240V (50-60Hz), 0.6A
  - Output: DC 5V, 2A
- **IMPORTANT:** Limited to one power source at a time (PoE or Micro-USB)
- Power consumption: up to 2.5W for normal usage; cellular dongle adds up to an additional 2.5W

### Other Interfaces

- 10/100 BASE-T Ethernet (RJ-45) uplink
- Reset button
- LED lights: Wi-Fi / BT / System / Power / Ethernet
- USB 2.0 (used for cellular dongle)

### Mechanical

- Dimensions:
  - 164 mm (W) x 164 mm (L) x 62 mm (D)
  - 6.45 inch (W) x 6.45 inch (L) x 2.44 inch (D)
- Weight: 410 g / 14 oz

### Environmental

- Operating:
  - Temperature: 0°C to +40°C (+32°F to +104°F),
  - Humidity: 0% to 90% non-condensing
- Storage and transportation:
  - Temperature: -40°C to +70°C (-40°F to +158°F)

### Mounting

- Wall or ceiling mounting kit included

### Certification

- FCC (US), IC (Canada), CE (Europe), TELEC (Japan), REACH, CB, BQB, SRRC (China), IMDA (Singapore), RCM (Australia), SDoC (Thailand), Sirim (Malaysia), Ethernet Alliance, RoHS

### Warranty

- 1-year limited hardware warranty