S2000 Enterprise Bluetooth Gateway

(Indoor Use)

The Cassia Networks S2000 Bluetooth gateway delivers cost- saving, reliable long-range Bluetooth low power connectivity to enterprise Bluetooth IoT solutions. Its patents enable long-range Bluetooth connectivity at up to 1000 ft / 300 m, bidirectional control of up to 20 BLE devices (and broadcasts to 100s) without requiring changes to existing end devices. The S2000 Bluetooth gateway is designed for enterprise Bluetooth IoT applications, including industrial automation, health monitoring, senior safety, smart campuses, buildings and cities.

OVERVIEW

The Cassia S2000 Bluetooth gateway reliably delivers the benefits of enterprise Bluetooth IoT connectivity, including: low-cost, worldwide standardization, low-power requirements, multiple connections, remote management, and long-range.

The S2000's compact, cost-effective design makes it the ideal Bluetooth routing solution for indoor applications. The S2000 is an enterprise-grade, long-range Bluetooth gateway, extending Bluetooth's range up to 1000 ft / 300 m and expanding the number of paired and controlled end devices up to 20. The CassiaRESTful APIs enable easy integration of proprietary end devices tothe S2000 without changing the end devices. Its patented smart antenna is optimized for horizontal orientations.

The S2000 is a protocol gateway, translating between the Bluetooth protocol and the IP protocol. Its IP backhaul options include: Ethernet, 2.4Ghz Wi-Fi, and cellular dongle. The S2000 enables remote access and control of end devices via an Internet application or a mobile app.

The Cassia S2000 attaches to the ceiling or wall with an included mounting kit. Placing it on a flat surface is also an option. The S2000 receives power from either a Micro USB adapter or a switch using PoE via the uplink Ethernet port.

Scalable Enterprise Bluetooth IoT Management

The Cassia IoT Access Controller (AC) provides easy-to-use devicemanagement for scaling enterprise Bluetooth IoT applications. Using a single user interface, the AC simplifies deploying, updating, and managing hundreds of Cassia S2000 gateways and thousands of connected Bluetooth low power end devices.

Figure 1 - Cassia IoT Access Controller (AC)

UNIQUE BENEFITS

Reliable Bluetooth Connectivity, Cost Savings

With its smart antenna and RF management technology, the S2000 delivers wall-penetrating Bluetooth coverage up to 1000 ft / 300 m in open space direct line of sight. Coupled with an industry-leading number of end device connectionsper gateway, the total gateway costs for deploying seamless Bluetooth coverage are reduced.

Remote Access and Control

The S2000 connects to your end devices and uploads the aggregated end device data to the AC via your LAN or Internet. The end devices are remotely controllable via the AC interface.

Easy Integration

Cassia S2000 RESTful APIs enable developers to easily integrate the S2000 and AC with native mobile app or cloud applications.

Easy Setup and Management

The Cassia S2000 Wi-Fi hotspot mode improves the setup experience when performing an initial installation without network access. Using the IoT AC, provisioning and status-checking gateways inan enterprise Bluetooth IoT network is simplified. Status data includes: connected and/or identified sensors, throughput, CPU consumption, device location, etc.

Room-based Location Tracking

Together with the Cassia IoT AC, the S2000 tracks and reports the location of end devices, providing geolocation data in real-time.

Flexible Deployment

In a network restricted environment, the S2000 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 S2000 in "AC Manage Mode" sends data to a remote third-party application via the Cassia IoT AC.

Pure Scan & High-Speed Multiple Connection Mode

The Bluetooth chips can be configured as pure scan or high speed multiple connection mode. Pure scan mode offers the best scan performance in high noise floor and the situations with a large number of Bluetooth devices. High speed multiple connection mode optimizes the connection performance when receiving data from multiple Bluetooth devices simultaneously.

Bluetooth Roaming

Bluetooth roaming occurs when a Bluetooth device switches its association to the Bluetooth gateway with a stronger Bluetooth signal when moving from the coverage area of one Bluetooth gateway to the next. Unlike Cellular and Wi-Fi, Bluetooth protocol has no inherent roaming support, and Bluetooth end devices can't initiate a roaming handoff. Cassia invented fast and secure Bluetooth roaming technology to solve this problem without requiring changes to the Bluetooth protocol and/or end devices.

Tx Power

Based on the country code selected, the S2000's Bluetooth transmit power and Wi-Fi transmit power is limited to the maximum value allowed by the country.

ADVANCED FEATURES

Processor & Memory

- CPU: MIPS processor, up to 535MHz
- 64MB RAM DDR2, 16MB flash

Bluetooth

- Bluetooth low power chip: Nordic nRF52832
- Bluetooth version: 4.0/4.1/4.2, 5 compliant
- Connections: Up to 20 connections
- Frequency: 2.400 to 2.483 GHz
- Data rates: up to 1Mbps
- Tx power: Configurable in 3~19dBm (limited by local regulatory requirements)
- Rx sensitivity: -105dBm
- Antenna Gain: 5dBi peak

Wi-Fi (802.11 b/g/n)

- Frequency: 2.4 GHz
- Mode: Wi-Fi client or hotspot (for setup only)
- TX power: 12.5 to 17.5dBm
- RX sensitivity: -96 to -71dBm
- Antenna: Integrated

Multiple Roles

- Supports peripheral, central, broadcaster and observer roles, and plays multiple roles simultaneously.

Security Services

- Supports Bluetooth 4.2 security standards
- Bluetooth Secure Simple Pairing (Just Works, Passkey Entry, Legacy OOB, Secure OOB, Numeric Comparison)
- WPA2 enterprise security (PEAP-MSCHAPv2, EAP-TLS,EAP-TTLS)
- Advanced 128bit AES encryption
- Password protected gateway web console
- Communication between the Cassia IoT AC and the gateway is based on DTLS 1.2 over UDP
- MQTT communication encryption between Cassia gateway and broker. Gateway to AC MQTT option supported
- Firmware is signed by a certificate to ensure authenticity

- Supports HTTPS access to Cassia RESTful API and gateway web console
- Dedicated SSL private key and certificate import option

Network Features

- Diagnostic tools: Ping, Traceroute, TCP dump andNetCat on gateway's console
- Configurable statistic report interval: for reducingbackhaul traffic between AC and gateway

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 (can be used for cellular dongle)

Mechanical

- Dimensions:
  150 mm (W) x 150 mm (L) x 62 mm (D)
  5.9 inch (W) x 5.9 inch (L) x 2.4 inch (D)
- Weight: 320 g / 11 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

- Mounting kit for wall or ceiling included

Certification

- FCC (US), IC (Canada), CE (Europe), BQB, RoHS, REACH,CB, SRRC (China), China RoHS, TELEC (Japan)

Warranty

- 1-year limited hardware warranty