ATX2000-WP:

ATX2000 Hazardous Area Gateway with Wirepas Support

(Optimized for Industrial IoT Hazardous Areas)

OVERVIEW

The Cassia Networks™ ATX2000-WP Gateway is a long-range IoT gateway that supports both Bluetooth protocol and Wirepas protocol at the same time. ATX2000-WP is optimized for industrial IoT hazardous areas applications. There are two Bluetooth radio chips inside ATX2000-WP and two subtypes of ATX2000-WP:

1) ATX2000-WP1: the first Bluetooth radio chip (chip 0) of ATX2000-WP is configured to support Bluetooth protocol, and the second Bluetooth radio chip (chip 1) of ATX2000-WP is configured to support Wirepas protocol.

2) ATX2000-WP2: both Bluetooth radio chips of ATX2000-WP are configured to support Wirepas protocol.

The all-weather-proof, IP66 and NEMA 4 rated ATX2000-WP gateway is ideal for hazardous manufacturing and plant facilities and is fully certified for all hazardous areas. The ATX2000-WP delivers cost-effective connectivity for demanding indoor/outdoor Bluetooth and Wirepas IoT environments. The ATX2000-WP features an IP66 and NEMA 4 rated ruggedized enclosure uniquely designed for Zone 2, 22, and Division 2 hazardous areas. The ATX2000-WP features an integrated TPM chip, more power/Wi-Fi/antenna options, larger RAM, and supports both Bluetooth Low Energy (BLE) 5.0 and Wirepas protocol at the same time. It supports Power over Ethernet (PoE), AC, and DC power sources.

The ATX2000-WP1 extends Bluetooth connectivity up to 400 meters for Bluetooth 4 and 1 kilometer for Bluetooth 5 (using radio chip 0) in open space direct line of sight. Furthermore, the range extension does not require replacing existing Bluetooth Low Energy end devices, nor is it dependent on Bluetooth Mesh. In bi-directional mode, the ATX2000-WP1 can pair and connect up to 20 end devices. While in broadcast/advertising mode, it can listen to hundreds of end devices. Cassia's ATX2000-WP can be used as a protocol gateway, which translates between Bluetooth protocol and IP protocol. The ATX2000-WP Internet Protocol (IP) backhaul options include Ethernet, 2.4/5GHz Wi-Fi, and USB cellular modem. As a result, end devices are remotely accessible and controllable via an Internet application.

Wirepas is a wireless protocol providing decentralized mesh network technology. It provides many benefits for enabling the implementation of large-scale IoT applications. Wirepas not only offers unlimited scale, coverage, and density, but it also offers high reliability and availability. The Wirepas devices are easy to install and maintain with a low cost of ownership. The X2000-WP acts as an Internet gateway in the Wirepas mesh network and helps complement the coverage and reliability of the Wirepas network with Cassia's patented long-range technology and enterprise-level functions. For commercial deployment, Cassia signed SPLA with Wirepas. It allows Cassia to sell X2000-WP (running Wirepas Massive) to customers who are Wirepas licensees. The ATX2000-WP1 and ATX2000-WP2 can extend the range of Wirepas up to 200 meters and 500 meters in a line-of-sight open space environment, respectively.

The Cassia IoT Access Controller (AC) provides an easy-to-use device management platform. The IoT AC user interface simplifies the deployment and management of thousands of ATX2000-WP gateways and connected end devices (see Figure 1 below).
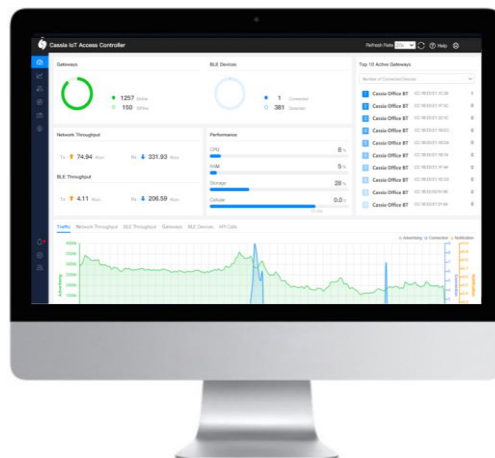

Figure 1 - Cassia IoT Access Controller (AC)

UNIQUE BENEFITS

Supporting Wirepas Mesh Protocol

The ATX2000-WP gateway can act as an Internet gateway in the Wirepas mesh network. The ATX2000-WP also helps to complement the coverage and reliability of the Wirepas network with Cassia's patented long-range technology and enterprise-level functions. A user can order ATX2000-WP with dual Wirepas sink/chip only, or opt for an ATX2000 with a Wirepas sink/chip and a Bluetooth chip.

Reliable Long-Range and Seamless Coverage

The ATX2000-WP1 gateway delivers Bluetooth coverage of up to 400 meters with Bluetooth 4 or up to 1 kilometer with Bluetooth 5 (using radio chip 0) in open space direct line of sight using Cassia patented technologies. The ATX2000-WP1 can extend the range of Wirepas up to 200 meters (using radio chip 1) in a line-of-sight open space environment. The ATX2000-WP2 can extend the range of Wirepas up to 200 meters (for radio chip 1) and up to 500 meters (for radio chip 0) in a line-of-sight open space environment.

IP66 & NEMA 4 Rated Enclosure

The ATX2000-WP gateway features an IP66 and NEMA 4 rated ruggedized enclosure to withstand harsh environments and is fully certified for Zone 2, 22, and Division 2 hazardous areas.

Remote Access and Control

The ATX2000-WP gateway connects to end devices and uploads the aggregated device data to the Cassia IoT AC via a LAN or the Internet, which enables remote control of BLE end devices.

Edge Computing

The ATX2000-WP can run applications within a container (Linux Ubuntu OS) which provides edge benefits such as reduced latency and cloud costs, as well as customized IoT applications and data management.

Cost-Savings and Easy Integration

Using Cassia's RESTful APIs, developers can easily integrate end devices with the ATX2000-WP and AC for native mobile apps or cloud applications. The ATX2000-WP does not require costly custom end devices or any changes to existing end devices. In addition, with a high number of end connections per gateway, enterprises benefit from significantly reduced deployment and equipment costs.

Easy Setup and Management

The ATX2000-WP's Wi-Fi hotspot mode improves the setup experience when performing an initial installation without network access. The ATX2000-WP is managed by the Cassia IoT AC allowing administrators to quickly provision and check the status of all Cassia gateways in an enterprise IoT network.

Bluetooth Location Tracking

Together with the Cassia IoT AC, the ATX2000-WP tracks and reports the location of BLE devices providing real-time geolocation data. It is also ideal for personnel and asset-tracking applications.

Bluetooth Roaming

Cassia's patented Bluetooth Roaming technology allows the seamless authentication and mobility of Bluetooth devices from one Cassia gateway to another.

Flexible Deployment

In network-restricted environments, the ATX2000-WP gateway is configurable to a "Stand-Alone Mode" where data is sent directly to a local application server. In a remote management situation, the ATX2000-WP in "AC Manage Mode" sends data to a remote application server via the Cassia IoT AC.

TECHNICAL SPECIFICATIONS

Ratings & Hazardous Area Certifications

- IP rating: IP66
  NEMA rating: NEMA 4

- NA (MET), EU (ATEX), and Global (IECEx)

  ⟨Ex⟩ II 3 (3) G Ex ec [ic Gc] nR IIC T6 Gc
           D Ex [ic Dc] tc IIIC T85°C Dc
  cMETus Class I, Div 2, Groups A - D
           Class II, Div 2, Groups F - G
  cMETus Class I, Zone 2 AEx ec ic nR IIC T6 Gc
           Class II, Zone 22 AEx ec ic tc IIIC T85°C Dc
  -40°C <= Tamb <= 60°C

- Japan: CML 21JPN31157X

- Note: once the unit is assembled at an authorized manufacturing plant/facility, the enclosure does not require re-certification (unless opened)

Radio Certifications

- Available: FCC (US), IC (Canada), CE (Europe), TELEC (Japan), RCM (Australia & New Zealand), CRC (Colombia), NCC & BSMI (Taiwan), ICASA & NRCS (South Africa), SUBTEL (Chile), IMDA (Singapore), SIRIM (Malaysia), NRTA (Egypt), IFT & NYCE (Mexico), BQB (Global), CB (Global)

- Available in 2024 (plan): NBTC (Thailand), SDPPI (Indonesia), PTA (Pakistan)

Processor & Memory

- RAM: 1GB DDR3 (approximately 700MB for container)

- CPU: 4 core ARM Cortex-A5, up to 1.5GHz

- Storage: 4GB eMMC

Bluetooth

- One Bluetooth Low Energy chip: Nordic nRF52840 or none

- Version: Bluetooth Low Energy 4.0/4.1/4.2/5.0

- Connections: up to 20 connections

- Frequency: 2.400 to 2.483 GHz

- Data rates: up to 2Mbps

- Tx power: configurable in 3~19dBm (limited by local regulatory requirements)

- Rx sensitivity: -105dBm

- Antenna: default is 6dbi Omni-directional. For other antenna requirements, please contact Cassia.

Wirepas

- Wirepas sink/chip: one or two nRF52840

- Frequency: 2.400 to 2.483 GHz

- Maximum Tx power for the US: 20 dBm (FCC)

- Maximum Tx power for the EU: 10 dBm (ETSI)

- Antenna: default is 6dbi Omni-directional. For other antennarequirements, please contact Cassia.

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

- Frequency: 2.4GHz and 5GHz ISM band

- Mode: Wi-Fi client or hotspot (for setup only)

- Tx power:
  12.5 to 17.5dBm for 2.4GHz,
  8.5 to 15.5dBm for 5GHz

- Rx sensitivity:
  -96 to -71dBm for 2.4GHz band,
  -91 to -71dBm for 5GHz band depending on modulation

- Antenna: default is 6dbi Omni-directional. For other antenna requirements, please contact Cassia.

Multiple Roles

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

Security Services

- TPM (Trusted Platform Module) chip-based security
- Bluetooth Secure Simple Pairing (Just Works, Passkey Entry, Legacy OOB, Secure OOB, Numeric Comparison)
- Advanced 128bit AES encryption
- Communication between the gateway and AC is based on TLS 1.2 (MQTT) or DTLS 1.2 (CAPWAP)
- Supports HTTPS access to Cassia RESTful API and gateway webconsole

- Supports Bluetooth 4.2 security standards
- WPA2 enterprise security (PEAP-MSCHAPv2, EAP-TLS, EAP-TTLS)
- Password-protected gateway web console page
- Firmware is signed by certificate to ensure authenticity
- Dedicated SSL private key and certificate import options

Power Interface

- Options for PoE /POE+ IEEE802af/at and AC or DC power input

- Power consumption: Basic configuration at 2.5 W

Input Connections

- POE / POE+ Gigabit Ethernet on RJ45 or Weidmuller 8-way wired connector
- AC or DC power via Phoenix 1829167 socket with either Gigabit Ethernet on RJ45 or Dual LC fiber connector

Output Connections

- 3 galvanically isolated, intrinsically safe external RF outputs for BLE and Wi-Fi via external N-type RF connectors
  2 additional RF outputs will be provided if the cellular backhaul option is chosen
  Internal surge arrestors are optional

Network Connections

- 10/100/BASE-T Ethernet on CAT6: up to 100m
  1000BASE-LX Multimode fiber: up to 2km, wavelength 1310nm
  1000BASE-LX Single mode fiber: up to 10km, wavelength 1310nm
  Cellular: 4G-LTE, Cat 4 or Cat 1

Environmental

- Operating: Temperature: -40°C to +60°C (-40°F to +140°F), Humidity: 0% to 95%, non-condensing
- Storage and transportation: Temperature: -50°C to +70°C (-58°F to +158°F)
- Enclosure material: Marine grade copper-free aluminum alloy, epoxy powder coated

Mechanical

- Dimensions: 293 mm (H) x 388 mm (W) x 220 mm (D)
  11.5 inch (H) x 15.2 inch (W) x 8.6 inch (D)

- Weight: 10 kg / 353 oz

Warranty

- 1-year limited, replacement hardware warranty

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