Pulse Convert+

BACnet® IP and MQTT Gateway

Effortlessly connect your Building Automation devices to an MQTT infrastructure for streamlined, fast, and efficient performance management."

Product Overview

Pulse Convert+ is a versatile and robust protocol converter designed to seamlessly integrate BACnet devices into an MQTT infrastructure. It enables BACnet-based systems—such as HVAC, lighting, energy management, and security systems—to communicate with MQTT devices for efficient remote monitoring and control. With support for TLS v1.2, it ensures secure, encrypted MQTT communication.

Built on an industrial-grade fanless PC, **Pulse Convert+** is suitable for both commercial and industrial applications. Its flexible configuration allows it to function as a BACnet Client/Master, MQTT Subscriber, BACnet Server, and MQTT Client. This versatility supports data collection from BACnet devices and secure publishing over MQTT for remote clients, while also enabling remote commands to control field devices.

Pulse Convert+ scales easily to connect multiple devices and brokers, making it ideal for networks of any size. Its compact design ensures easy installation, providing a powerful yet straightforward solution for optimizing building automation and control systems.

Product Features

✓ **Seamless Integration:** Converts BACnet devices to MQTT protocol, enabling real-time data exchange for remote monitoring and control.

✓ **Flexible Configuration:** Supports multiple modes—BACnet Client/Master, MQTT Subscriber, BACnet Server, and MQTT Client for versatile data handling.

✓ **Secure Communication:** Utilizes TLS v1.2 for encrypted and secure MQTT data transmission.

✓ **Scalable Solution:** Connects to multiple devices and brokers, suitable for both small and large network infrastructures.

✓ **Robust Industrial Design:** Built on a fanless industrial-grade PC,

ensuring reliability in demanding environments.

✓ **Compact & Easy to Install:** Space-efficient form factor for quick and hassle-free installation.

✓ **Cross-Protocol Interoperability:** Enables BACnet-based HVAC, lighting, energy, and security systems to communicate seamlessly over MQTT.

✓ **Bidirectional Data Flow:** Collects data from field devices and supports command subscriptions for remote control actions.

✓ **Supports Multiple Applications:** Ideal for both commercial and industrial automation setups.

✓ **Efficient Performance Management:** Optimizes operational efficiency by centralizing data and control within an MQTT infrastructure.

Product Applications

REMOTE ASSET MONITORING

Gather data from geographically distributed BACnet devices and transmit it securely over MQTT for centralized remote management.

SMART BUILDINGS

Integrate HVAC, lighting, and security systems into an MQTT infrastructure for centralized monitoring, control, and data analytics, enhancing operational

INDUSTRIAL IoT

Enable seamless communication between BACnet-based industrial equipment and MQTT systems for efficient control, predictive maintenance, and process automation.
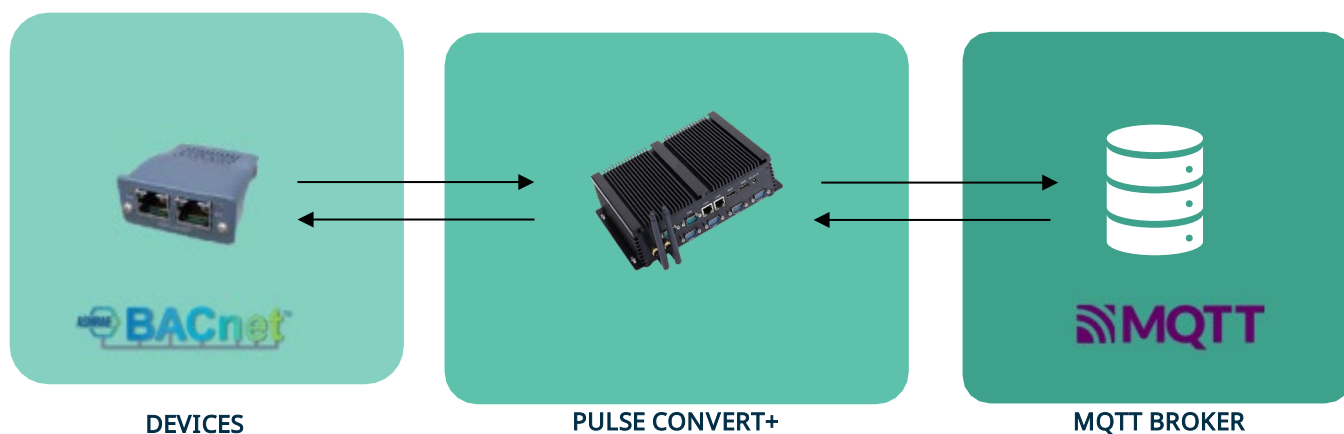
FACILITY MANAGEMENT

Simplify the integration of diverse building systems into a single platform for remote diagnostics, maintenance, and performance management.

Architecture

| DEVICES | PULSE CONVERT+ | MQTT BROKER |

o **MQTT to BACnet Conversion:** Retrieve data payloads from an MQTT server, convert the received data into BACnet format, and make it accessible on a specified IP address. This allows Building Management System (BMS) networks to seamlessly discover and utilize the information.

o **BACnet to MQTT Conversion:** Capture data from BACnet devices within the BMS network, transform it into a JSON format, and publish the data as topics for IoT devices. This enables efficient communication and integration with IoT platforms for remote monitoring and control

Technical Specification

Motherboard	
CPU	Intel® I5 4200U (3M Cache, up to 2.60 GHz) Intel® I7 4500U ((4M Cache, up to 3.30 GHz)
Chipset	SOC
Network Card	2 x Intel 82574L 10/100/1000 gigabit ethernet nics
Wi-Fi	With dual antennas, 802.11ac 2.4+5Ghz
Bluetooth	BT 4.0/4.2
Memory (RAM)	1 x SO-DIMM DDR3L 1333/1600, up to 8GB RAM

Storage	256 GB SSD
	1TB HDD
Software	
Bios	AMI Bios
System Support	Windows 10, Linux ubuntu etc
General	
Cooling Mode	Fanless
Power Supply	DC100-240V AC/50-60 Hz, DC12V/3A-5A
Auto Power On	Enabled
I/O Interfaces	
Front Panel	1 x Power button
	4 x USB3.0
	4 x USB2.0
	1 x Audio
Rear Panel	1 x DC Input
	2 x HDMI
	2 x LAN
	6 x COM RS232
	2 x Wi-Fi antennas
Mechanical	
Material	Aluminum Alloy
Colour	Black
Size	175 x 210 x 45mm
Weight	3 Kgs
Installation Method	With mounting ears
Environment	
Operating Temperature	0°C~70°C Centigrade (32°F~140°F)
Storage Temperature	-20°C~80°C Centigrade (-68°F~176°F)
Relative Humidity	10%~90% (non-condensing)
Ventilation	Required
Standards	

Certification	CE, RoHS

MQTT to BACnet/IP Data Representation

	Time	Battery	Frequency	Barometer	Humidity	Temperature
2	7/25/2022 20:00	3.6400	867.9000	400.4000	8.0000	27.1000
3	7/25/2022 20:20	3.6400	867.3000	400.3000	10.5000	27.0000
4	7/25/2022 20:30	3.6400	867.5000	400.6000	10.5000	27.4000
5	7/25/2022 20:40	3.6500	867.1000	400.2000	7.5000	26.9000
6	7/25/2022 22:21	3.6400	868.1000	399.3000	5.0000	25.7000
7	7/25/2022 22:31	3.6500	868.3000	399.1000	4.0000	25.3000
8	7/25/2022 22:51	3.6400	867.9000	400.5000	10.0000	27.2000
9	2022-07-25 23:01:30.752258	3.6400	867.5000	400.8000	10.0000	27.7000
10	2022-07-25 23:11:34.737844	3.6400	867.5000	401.0000	9.5000	28.0000
11	2022-07-25 23:21:38.564223	3.6400	868.5000	400.4000	7.5000	27.1000