

Zaphire

Building Automation and Energy Monitoring with Zaphire IoT Coupler

Intruduksjon

Zaphire is a Norwegian company based in Drammen. Since 2018, we have developed solutions for building automation and energy management with a focus on user-friendliness, security, and reliability.



Zaphire IoT Coupler

The Zaphire IoT Coupler functions as a universal protocol gateway between the field level and the cloud. Modules that add support for BACnet IP, Modbus TCP, MQTT and OPC UA can be installed. Field data is collected through standard discovery and polling mechanisms and converted into a unified JSON format.

With a minimum of 2 GB of RAM and built-in storage for local buffering, the Coupler can perform edge processing, data logging, and filtering directly on the device. Data points are published via WebSockets over HTTPS to the cloud, using subscription-based change detection where possible. Other channels use polling for the protocol-layer, with automatic retransmission and failure detection, with change-of-value based transmission to the WebSocket. All communication is TLS-encrypted, and data is serialized in JSON for seamless integration with Zaphire Cloud or third-party systems.

Communication and Networking	
Supported Protocols	BACnet/IP, Modbus TCP, MQTT og OPC UA
BACnet Functions	Foreign Device, Scheduler, Trend Log, Notification Class
Data Objects	Up to 20 000 tags per controller
Modbus functions	Read/Write Coils, Registers, Discrete Inputs, Holding Registers
Data Encryption	HTTPS / TLS 1.2/1.3
API Access	REST API

Minimum Specifications	
Processor	Intel Atom E3845 Quad-Core @ 1.91 GHz
RAM	2GB
Storage	16GB
Networking	1× Gigabit Ethernet
Supported OS	Zaphire Edge OS / Ubuntu Core / Debian 11 / Redhat Enterprise Linux 10

Zaphire BACnet - Integration Module for Building Automation Systems

Zaphire BACnet is the component within the Zaphire IoT platform responsible for enabling reliable, standards-based communication with BACnet building automation systems. The module provides structured access to BACnet/IP devices and exposes data points in a unified, cloud-friendly object format for downstream processing within the broader Zaphire ecosystem.

As a BACnet Advanced Workstation (B-AWS), Zaphire BACnet delivers the device, object, and service features required for supervisory interaction with BACnet networks. It acts as a focused protocol driver responsible for data point discovery, polling, COV handling, serialization, and event-driven updates, with processed data flowing through the Zaphire IoT Coupler to cloud and analytics services via the cloud-connected WebSocket.

The module is designed for low latency and high data fidelity, with support for dynamic data point registration and edge-based filtering to reduce unnecessary upstream traffic. It can run as part of a Zaphire IoT Coupler installation or be embedded into third-party solutions through the Zaphire SDK.

Certification Phase for BACnet Revision 26

Zaphire BACnet is currently in the certification process for BACnet Revision 26, which includes enhanced authentication and updated compliance requirements from ASHRAE and the BACnet Testing Laboratories (BTL). Support for BACnet Secure Connect (BACnet/SC) is planned, but it is not part of the initial release. SC functionality will be introduced in a later development phase once the core Revision 26 certification is completed.