Critical Things®

Ekko Sense

EkkoLink R

Rack-mounted Data Aggregation

- **Part of the EkkoSense Critical Things® family of monitoring technology, EkkoLink R operates as a data aggregator – receiving data from EkkoHub wireless data receivers and securely forwarding it over a wired or cellular Internet connection to EkkoSoft® Critical software in the cloud**
- **Designed for 1U rack-mount server deployment, EkkoLink R integrates with SNMP, Modbus and BACnet to retrieve data from other on-site third-party devices and networks before forwarding it to EkkoSoft Critical**

Ensuring flexible, safe and secure data continuity with EkkoLink R

In the event of a temporary loss of external connectivity, EkkoLink R buffers site data and automatically transfers it to EkkoSoft Critical software when the connection is restored. EkkoLink R can also make EkkoSense measurement data available to other applications via an oBIX API.

Dual power input

The EkkoLink requires a 90-264V AC supply through an IEC C14 fused connector. Two power inputs are provided feeding two internal independent power supplies with a load sharing / hot swap controller combining the outputs. Either input can be used, or where dual AC supplies are available both can be connected. Total power consumption is 70W maximum.

Connectivity

EkkoLink R connects to EkkoSoft through AWS IoT Core. This is a secure connection using TLS version 1.2 to encrypt all communication with an X.509 client certificate used for authentication.

EkkoLink R features three LAN ports. One is dedicated to the external internet connection, one to the on-site EkkoSense network (for EkkoHubs), and one that can be configured for local data integration. Network configuration and security rules are applied separately for each network to provide robust segregation. EkkoLink R also has two RS485 ports configured for Modbus communication to connect directly to local devices such as power meters to retrieve data for forwarding to EkkoSoft Critical.

Security

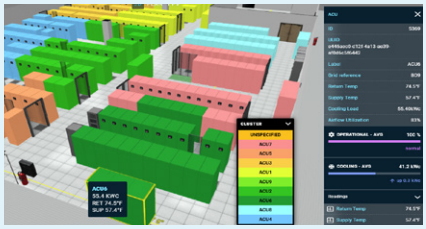
EkkoLink R's operating system has been hardened using Lynis, and is configured for unattended upgrades. In-house C++ applications are developed using CPPdepend, CPPcheck, and CPPlint to ensure best practices. The web interface is written in PHP, and code quality and licensing is continually assessed using SonarCloud and Snyk respectively. Penetration testing is also carried out bi-annually on EkkoLink and EkkoHub devices by a CREST-approved cyber security consultancy.

EkkoLink R features...

EkkoSoft® Critical

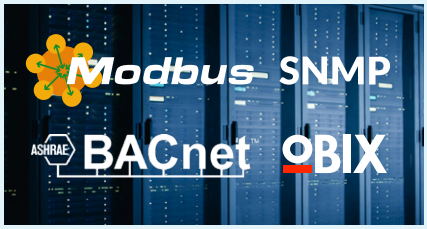
Secure connection using AWS

EkkoLink R provides a secure connection to EkkoSoft Critical in the EkkoSense Cloud through AWS IoT Core.



Real-time pre-processing

EkkoLink R gathers and processes real-time data collected from EkkoSensors via EkkoHubs and (optionally) other field devices. This pre-processed data is then available for viewing in the EkkoSense web application, accessible via the cloud only.



Comprehensive integration

Integration with a wide range of existing 3rd party systems for complete data center coverage.

Images show actual software footage

Critical Things® EkkoLink R

Inbound and Outbound Integration

EkkoLink R is the principal aggregation device that collates information from a variety of sources on site, and also provides a secure connection to EkkoSoft Critical in the cloud.

Inbound/Outbound integration options include:

Outbound Integration:

- **oBIX and BACnet** – To ensure interconnectivity on site, EkkoLink presents all raw data from the Critical Things wireless sensors using the oBIX or BACnet protocols (available during 2025) for existing 3rd party systems to integrate to, which is available with a minimum 1-year EkkoSoft license
- **SNMPtraps** – when alerts are configured centrally via the EkkoSoft platform, SNMPtraps can be alerted on EkkoLink R so that on-site SNMPtrap receivers immediately detect alarm conditions from EkkoSense sensors with zero latency

Inbound Integration:

- **Modbus/RTU** – Integration over RS485 on a dedicated serial port for connectivity to both existing and new Modbus equipment that has not previously been connected into client networks. Up to 30 devices on each serial network can be supported
- **Modbus/TCP** – EkkoLink R is able to collect Modbus data over TCP via both eth1 (the dedicated EkkoSense network) and eth2 (the client network). The protocol is commonly used for direct power monitoring and systems integration
- **Modbus/TCP Gateway** – Installing a Modbus Gateway lets EkkoLink R connect to multiple devices that have already been connected via serial/485 cable. Deploying a dual port gateway lets EkkoLink R integrate with existing Modbus/RTU networks and enables shared access to devices
- **SNMP** – primarily used for UPS and In-Row PDU monitoring, EkkoLink R connects to any SNMP device using v1, v2c or v3 authentication to enable full EkkoSoft capacity management functionality
- **BACnet** – EkkoLink R enables communication with BACnet devices connected to eth 1 (EkkoSense network) and eth2 (Client Network) – enabling a key data communication protocol for Building Automation and Control Networks, BMS Integration and modern cooling systems
- **Tridium (Niagara)** – with integration via a dedicated controller such as the JACE-8000, EkkoLink R lets EkkoSoft collect data from the 1m+ Tridium systems utilizing the Niagara framework installed worldwide
- **Trend** – Modbus/TCP connectivity within EkkoLink R also enables EkkoSoft to integrate with Trend Controls – providing the main controller has been installed with the appropriate license for Modbus/TCP translation, and the relevant data mapping has been carried out

Technical specifications

EkkoLink R is implemented as an appliance running Debian 11. The core hardware is a shallow-depth (184mm) 1U 19"fanless rackmount platform.

The EkkoLink R appliance can be installed in client racks, or in a dedicated EkkoSense CM low profile wall-mount rack along with other infrastructure such as a PoE switch for the EkkoHubs.

Hardware specification
Processor: Intel® Elkhart Lake SoC Processor, Quad Core, 2M Cache, 1.6GHz (2.0GHz), 12W
Memory: 1x SO-DIMM 8GB DDR4-3200MHz

BIOS
Insyde SPI 64bit

Storage
128GB NVMe
Data storage backup configurable – default 24 hours

Data Transfer
Typical transfer rate: <25kB per datapoint per day at 10/100 Mbps
(~1GB per month for 1,500 datapoints)

Communication protocols
Inbound – Modbus/RTU, Modbus/TCP, SNMP, BACnet
Outbound – oBIX, BACnet

Operating System
Debian 11 (updated as required)

I/O
1 x Power button, 1 x Reset button, 1 x Power LED
4 x RJ45 ethernet ports (Intel® i225V 2.5GbE)
2 x RS485 serial port
USB ports are disabled

Mechanical
Design: 19" Rackmount
Construction: Heavy Duty Aluminium
Front panel / Mounting ears black powder coating
Body raw clean finish
Dimensions (WxHxD mm): 429 x 44 x 190

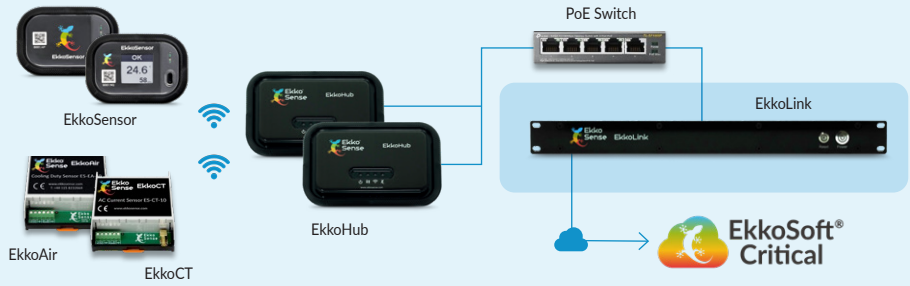
Environment
Operating Temperature: 0°C to 60°C
Operating Humidity: 20 to 90% RH
Storage Temperature: -20°C to 70°C
Storage Humidity: 20 to 90% RH

Power Input
Dual IEC 60320 C14 connector. Power required is 90-264 VAC, 1A maximum, 50-60Hz

Regulatory approval
The EkkoLink appliance is CE marked and conforms to the following standards:
EMC Directive 2014/30/EU
EN 55032
EN 55035
EN IEC 61000-3-2, 3-3
EN 61000-4-2, 4-3, 4-4, 4-5, 4-6, 4-8, 4-11
Low Voltage Directive (LVD) 2014/35/EU
EN 62368-1
RoHS Directive 2011/65/EU
The restriction of the use of certain hazardous substances in electrical and electronic equipment

Standard deployment

Position in EkkoLink architecture



Secure 128-bit AES encryption

EkkoLink Mini mode for Edge support

Integration with existing 3rd party systems

Modbus SNMP BACnet oBIX

Comprehensive integration capabilities for complete data center coverage

Bring the power of EkkoSense AI to your critical facilities

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