EY6RT30: BACnet router and SC hub, B/IP <-> B/SC, modu630-RT

Features

- Part of the SAUTER modulo 6 system family
- Suitable for use as BACnet router between BACnet networks
- Suitable for use as BACnet Secure Connect Hub (B/SC-Hub)
- BACnet profiles: B-RTR, B-SCHUB, B-BBMD
- BACnet data links: BACnet/IP, BACnet/SC
- BACnet/IP-BBMD or FD function
- Four RJ45 connections for two separate IP networks
- Three connections switched for daisy chain
- Encryption of communication with TLS 1.3

EY6RT30F001

Technical data

Power supply		
	Power supply	24 VDC ± 10%
	Power consumption	≤ 3 W
	Dissipated power	≤ 3 W
	Peak inrush current[1]	≤ 20 A, ≤ 1 ms, on the 24 V side

Parameters		
	Connection	Spring-type terminal, pluggable, 0.5...1.5 mm^2 (rigid) 0.5...2.5 mm^2 (flexible) 8...10 mm wire stripped
	Battery (buffer: RTC)	CR2032, pluggable
	Earth connector	Spring contact against DIN rail and PE terminal

Ambient conditions		
	Operating temperature	0…45 °C
	Storage and transport temperature	−20…70 °C
	Ambient humidity	10…90% rh, no condensation

Function		
	BACnet profiles	B-RTR (BACnet router) B-SCHUB (BACnet SC hub) B-BBMD (BACnet Broadcast Manager)
	BACnet router	BACnet/IP, BACnet/SC Data Links

Architecture		
	Processor	ARM Cortex A8, 32-bit, 1 GHz
	RAM	512 MB (DDR3)
	Flash	512 MB
	Operating system	Embedded Linux

Interfaces, communication		
	Communication	Via BACnet/IP (UDP) BACnet/SC (web sockets, TCP)
	Encryption	TLS V.1.3 (BACnet/SC)
Ethernet network #1	Communication protocols	BACnet/IP, BACnet/SC
	Ethernet network	1 × RJ45 connector
	10/100 BASE-T(X)	10/100 Mbit/s
Ethernet network #2	Communication protocols	BACnet/IP, BACnet/SC
	Ethernet network	3 × RJ45 connector
	10/100 BASE-T(X) switched	10/100 Mbit/s

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[1] *Measured value with EY-PS021F021 power supply unit*

Construction		
	Fitting	On metal DIN rail 35 × 7.5/15 as per EN 60715. Rail housing as per DIN 43880
	Dimensions W × H × D	92.6 (5 HP) × 100.9 × 58.3 mm
	Weight	260 g

Standards, directives		
	Type of protection	Connections and terminals: IP00 Front in DIN cut-out: IP30
	Protection class	I
	Environment class	3K3 (IEC 60721)
CE/UKCA conformity[2]	EMC-D 2014/30/EU (CE)	EN 55024, EN 55032 Class B
	EMC-2016 (UKCA)	EN 55024, EN 55032 Class B
	LVD 2014/35/EU (CE)	EN 62368-1
	EESR-2016 (UKCA)	EN 62368-1
	RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000
	RoHS-2012 (UKCA)	EN IEC 63000

Overview of types	
Type	Features
EY6RT30F001	BACnet router and SC hub, BACnet/SC <-> BACnet/IP

Manuals

Document number	Language	Title
D100397589	de	Systembeschreibung SAUTER modulo
D100408512	de	EY-modulo 6 – Best Practice I
D100402674	en	SAUTER modulo system description
D100410201	en	EY-modulo 6 – Best Practice I
D100402676	fr	Description du système SAUTER modulo
D100410203	fr	EY-modulo 6 – Meilleures pratiques I

Description of operation

The modu630-RT can be used as a router between two BACnet networks. The device also supports the BACnet/SC hub functionality.

As a BACnet router, the modu630-RT enables communication between users of a BACnet/IP network and users of a BACnet/SC network. Alternatively, it can also route between two BACnet networks of the same type.

In a BACnet/IP network, the device can be used as a BACnet Broadcast Management Device (BBMD).

Using it as a BACnet/SC hub enables the operation of a small BACnet/SC network of up to 30 nodes overall. The hub is at the centre of every BACnet/SC network and is responsible for controlling the data traffic between approved devices.

Intended use

This product is only suitable for the purpose intended by the manufacturer, as described in the "Description of operation" section.

All related product regulations must also be adhered to. Changing or converting the product is not admissible.

Improper use

The SAUTER modulo 6 system does not have functional safety and is not fail-safe.
This product is not suitable:
• for security functions of the automation
• in outdoor areas and in rooms with the risk of condensation
• on means of transport, e.g. ships.

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[2] *Explanation of abbreviations in the "Further information" section of the product data sheet and in the appendix to SAUTER's product catalogues*

Engineering notes

The configuration of the modu630-RT as a BACnet/SC user is safety-relevant and must be carried out with the utmost care. This also applies to the issuing of certificates. All devices that are issued the appropriate certificates are part of the network. Only authorised persons may have access to the tools required for this (Signing CA).

The configuration of a BACnet/SC network requires what is known as a PKI (public key infrastructure), which creates certificates in a consistent way for the public key of each device. Only devices with valid certificates (not expired, not revoked) that are configured for the same BACnet/SC network can establish a connection with the BACnet/SC hub and communicate with each other from there.

All certificates and keys must be protected with the utmost care. Access may only be granted to trained and authorised personnel. To avoid malfunctions due to expiry of the certificate, it is essential to replace the certificate with a new one before its validity expires.

For network-critical reconfigurations such as a change of certificate, the tools (technician's laptop and software) must have the same certificates as the devices that use the BACnet/SC network and communicate with each other. If these certificates or keys are not available or have been lost, reconfiguration can only be carried out by restoring the factory settings (factory reset). A factory reset deletes all the previously loaded certificates.

Note

The USB and SD interfaces as well as Bluetooth are not functional.
- Do not use unlabelled interfaces.
- Do not assign terminals 09 and 10 (NC).

Reset button

The modu630-RT can be reset to the factory state using the reset button. The reset button must be pressed for at least 10 seconds. The LED indicator changes between green, red and orange until the device is reset and/or restarted.

If the reset button is pressed for less than 10 seconds, the device will simply be restarted.

Ø < 2.5mm
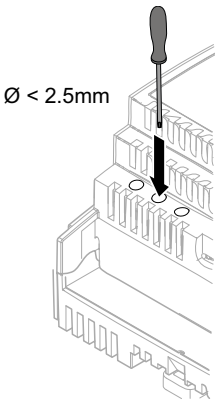
NOTICE!

When a reset is carried out by pressing the button, all settings and data in the device are irretrievably deleted.

LED indicators

The following operating statuses of the device are displayed:

Status [3]	Indicator/display	Description
Continuous green	🟢	OK, normal operation or Reset button is pressed for < 10 seconds
Flashing green	🟢	Identification via CASE Sun
Continuous orange	🟠	Start-up mode, communication is being set up
Flashing orange	🟠	The internal backup battery must be replaced
Continuous red	🔴	No configuration

[3] *LED flashing: 500 ms on, 500 ms off*
   LED flashing rapidly: 100 ms on, 100 ms off

Status [3]	Indicator/display	Description
Flashing red	(red LED)	Configuration active
Rapidly flashing red	(red LED)	Internal device error
Green→red→orange	● → ● → ●	Reset button pressed: > 10 sec. = factory reset

Parameterisation

The basic settings such as IP settings are performed with CASE Sun.

Firmware/update

The modu630-RT is delivered with the latest firmware. Updates can be installed via CASE Sun.

Note

Only operate the device with the latest firmware. Before commissioning, check the firmware version and carry out an update if necessary.
The version of the installed firmware can be read via CASE Sun.

Internal clock

A Real Time Clock (RTC) is integrated in the device. The internal clock is protected against power cuts by a battery.

Battery

A lithium battery (plug-in button cell) ensures that the real-time clock retains the correct time in the event of a power failure.
The battery voltage is monitored by the device.
The battery may only be replaced when the device is disconnected from the power supply. When the battery is replaced, the current time of the internal clock is lost and must be resynchronised.
Follow the safety instructions and the directions in the fitting instructions for the device. If necessary, contact SAUTER Service to replace the battery.

Technical data for the battery

Type (standard)	CR2032 lithium button cell (UN 3091)
Nominal voltage	3 V
Capacity	210 mAh
Dimensions	20 mm × 3.2 mm

The lithium battery should be replaced after five to ten years. It may only be replaced by trained specialist personnel.

WARNING!

Risk of explosion if the battery is short-circuited during replacement.
►Only use insulated tools when replacing the battery.
►Wear safety goggles.

Behaviour in case of power failure

When the mains voltage returns, the device restarts automatically.

Note

Power failures in the EY-PS021F021 switched-mode power supply on the primary side (230 V AC) that last less than 100 ms are bridged without switching off or other consequences. The system continues to run in normal mode.

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[3] *LED flashing: 500 ms on, 500 ms off*
LED flashing rapidly: 100 ms on, 100 ms off

Protection mechanisms at application level

The modu630-RT has the following protection mechanisms:

Access rights

The factory settings of the configuration can only be implemented or restored with the appropriate SAUTER CASE tools. After activation, only devices configured for the same BACnet/SC can communicate with each other. If no communication can be established, the configuration can only be changed by resetting to the factory status (reset button).

Communication security

All BACnet/SC communication takes place in encrypted form (WebSocketSecure, TLS). Communication can only be read by the devices using the network. Telegrams that have not left the secure network environment of the BACnet/SC are marked and can be identified by the recipient. The marking is removed from any telegram that leaves the secure network environment, which means that it is not recognised as secure by the recipient.

Internet communication is encrypted where technically possible. The HTTPS and SMTP protocols are encrypted. Access via HTTP is automatically redirected to HTTPS.

The system only allows communication via authorised ports. All other ports are blocked by the on-board firewall. In addition, an authorisation list with approved devices can be created.

Firmware update

Only firmware updates signed by SAUTER can be installed.

Additional information

Fitting instructions	P100019428
Declaration on materials and the environment	MD 91.300

Abbreviations used

CE	Manufacturer's Declaration of Conformity for the European Union (EU)
UKCA	Manufacturer's Declaration of Conformity for the United Kingdom of Great Britain and Northern Ireland (UK)
EMC-D	Electromagnetic Compatibility Directive 2014/30/EU
EMC-2016	Electromagnetic Compatibility Regulations 2016 (UK)
LV-D	Low Voltage Directive 2014/35/EU
EESR-2016	Electrical Equipment (Safety) Regulations 2016 (UK)
RoHS-D	RoHS Directives 2011/65/EU and 2015/863/EU
RoHS-2012	Restriction of Hazardous Substances (RoHS) Regulations 2012 (UK)

Disposal

The local, currently valid laws must be observed when disposing of the device.

You will find more information on the materials and substances in the Declaration on materials and the environment for this product.

Note

For security reasons, all saved data, operating certificates and keys should be deleted before disposing of the device. To do this, reset the device to the factory settings (reset button).

Connection diagram
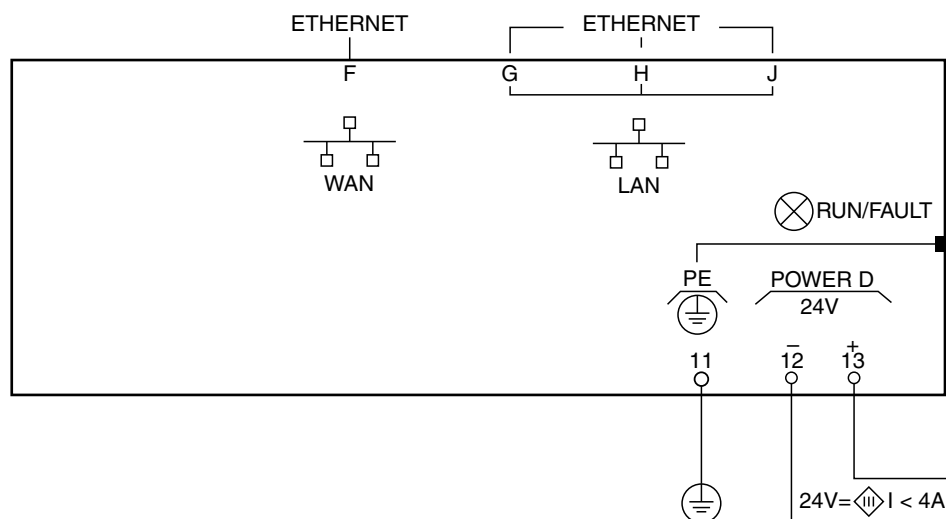
Dimension drawing

All dimensions in mm.