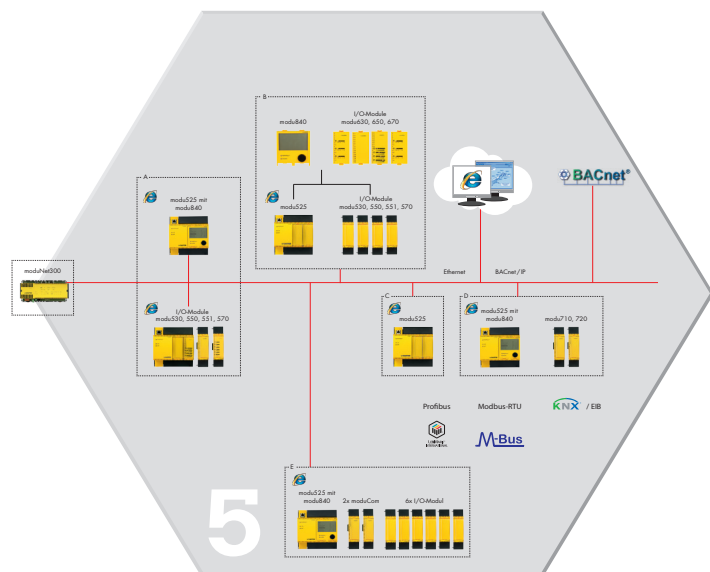


# EY-modulo 5 System Description

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## 1 Introduction

**EY-modulo 5** is the **high-end building management system from SAUTER**.

It is the most powerful of any of our systems, and it can accomplish all the functions required for technical building automation, including precise air-conditioning and regulation, a wide variety of alarm functions, easy-to-use room reservation applications and much more besides. It is a single, integrated system with unlimited scalability.

Because it is a “native” **BACnet system** it is open by its very nature. All relevant third-party functions, devices and applications can be integrated. It is also backwards- and downwards-compatible with all other SAUTER EY systems.

Its communication medium is the commonly-used **Ethernet** network technology with the **IP internet protocol**.

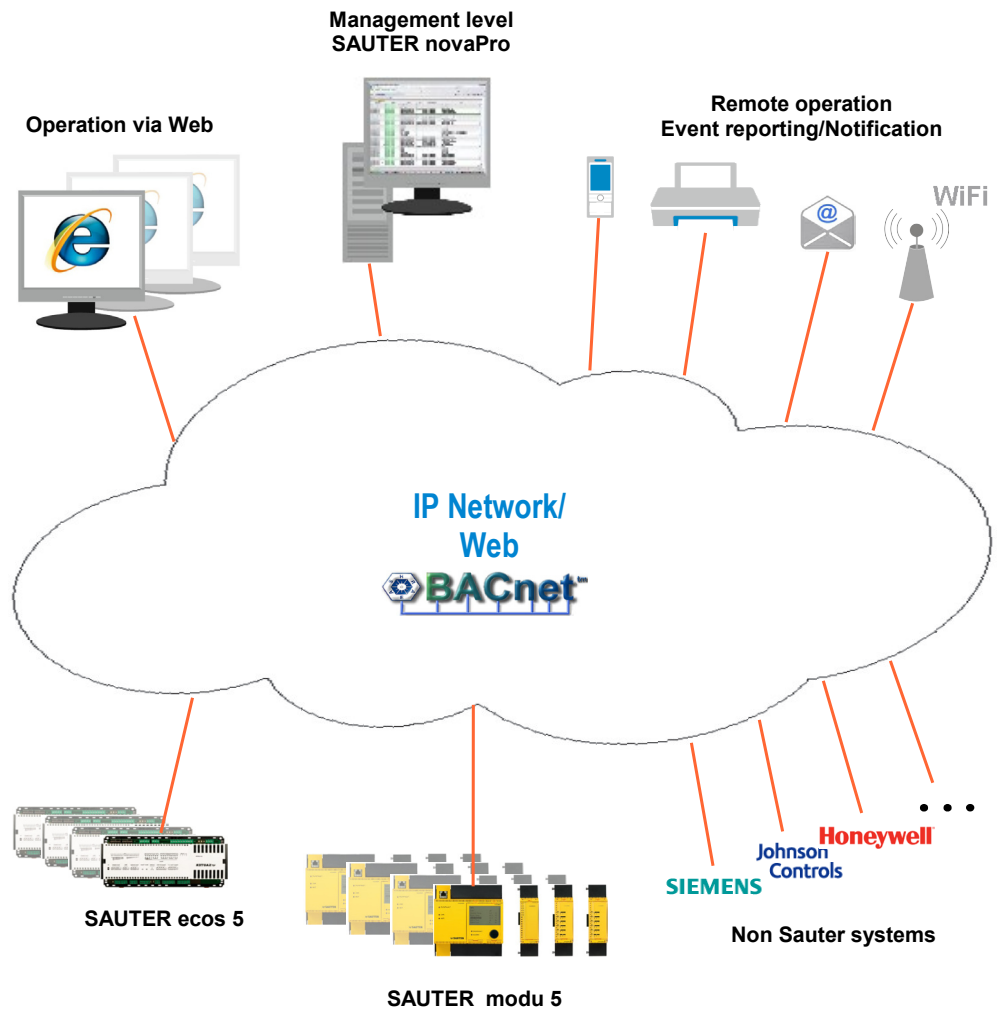
The automation stations have integrated **web technology** for intuitive operation via web browser on the intranet, extranet or internet, and there are also wide-ranging **local display and operating functions** on the station.

Together with the **CASE Suite** project processing and engineering software and the **SAUTER solution libraries** in which SAUTER’s accumulated HVAC know-how is implemented, it is possible to realise projects with optimum efficiency.

The **complete system**, comprising the EY-modulo 5 stations, the novaPro management level, the CASE Suite engineering software and the SAUTER solution libraries, is an extremely comprehensive, high-performance package for **increasing energy efficiency** in buildings.



## 2 System overview



The modu 5 automation and room management stations are the core of this complete system range for regulating, controlling and monitoring building services installations.

The overall system consists of the following components:

- **SAUTER modu 5** modular automation stations
- **SAUTER ecos 5** room automation stations
- Management level with **SAUTER novaPro**
- **SAUTER CASE Suite** project engineering software
- The **SAUTER solution libraries**

In addition, there are devices for connecting non-BACnet third-party systems and for backwards and downwards compatibility with the other SAUTER EY systems:

- SAUTER moduCom interface module for system integration
- SAUTER moduNet300 BACNet application master

(See section 7: "Backwards and downwards compatibility, system integration")

## System overview

The **Ethernet with IP** network technology, which is widely used nowadays, serves as the communication medium for all the elements. This enables the components to be deployed anywhere on the intranet, extranet and internet.

All the stations are structured with **native BACnet** technology and communicate via the standardised open **BACnet/IP** communication protocol. This means that, theoretically, the system can integrate all BACnet components and systems from other manufacturers.

The **modu525** modular automation station is designed for controlling and regulating the primary energy supply. It is modular in structure. The number of inputs and outputs available in the base station (16/10) can be increased as required with up to 8 I/O modules (up to a total of 154 I/O).

The snap-on **modu840** LCD operating unit can be used to display all information from the modu525, and it enables comprehensive operation. Snap-on **local override and indication units** also allow the inputs and outputs to be viewed and displayed directly. Mounting frames (accessories) allow local operation at a remote location (for example, in the front of a control cabinet).

The modu525 automation station has **integrated web technology** with a **web server**. This means that the data from the station can be visualised and used with any web browser. Any device in the network with a web browser is suitable for this purpose; examples include desktop PCs, laptops, industrial PCs, panel PCs, touch-panels, Linux PCs, Apple computers and mobile clients such as smart phones or PDAs. The integrated web technology also enables the station to send direct alarms via **e-mail, SMS, fax** etc.

**Room automation** (IRC) takes place using the **ecos 5** room automation stations. These stations enable energy-optimised room control, including control of lighting and window blinds. The I/O mix of the 502 is designed for two rooms or two functional axes.

Local operation of the ecos502 room automaton station is handled by the **room operating units** of the **ecoUnit** type, which are available in different design versions. They are used for recording the temperature in the room and, depending on the design version, for individual presence/absence settings, room setpoint corrections and for controlling lighting and window blinds.

The management level PCs with **novaPro Open** are used for comprehensive operation and administration of the system. They can forward events and logs to various destinations such as e-mail, printer, fax and paging systems with defined times and priorities. They communicate with the automation stations via BACnet/IP, and with each other using any common network protocol.

As well as the automation stations, the novaPro management level has an integrated **web server**, which means it can be operated using any device that has a web browser, for example desktop PCs, laptops, industrial PCs, panel



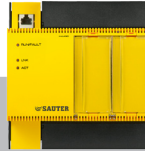
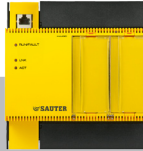
PC's, touch panels, Linux PCs and Apple computers, as well as mobile clients such as smartphones and PDAs.

System overview

### 3 modu 5 automation stations

The modu 5 automation stations are normally used in the building's energy supply systems.

#### 3.1 modu525 automation station

Type	 EY-AS525F001	 EY-AS525F005
Name Device Family Protocol	modu525 Modular AS with web server modu 5 BACnet/IP	modu525 Modular AS with web server modu 5 BACnet/IP
<b>Inputs</b> Universal inputs Digital inputs Non-isolated Overvoltage protection	8 (Ni/Pt1000 U/I/R; DI) 8 DI ✓ Up to 24 V~	8 (Ni/Pt1000 U/I/R; DI) 8 DI ✓ Up to 24 V~
<b>Outputs</b> Analogue outputs Non-isolated Digital outputs Different phases Potential-free Watchdog outputs	4 (0...10 V) (up to 5 mA) ✓ 6 relays (230 V, 2 A) ✓ ✓ 1 (pulsed open collector)	4 (0...10 V) (up to 5 mA) ✓ 6 relays (230 V, 2 A) ✓ ✓ 1 (pulsed open collector)
<b>Objects</b> Data points Hardware Third-party systems Loop Calendar Schedule Notification class Trend log Total entries	Up to 512 Up to 154 Up to 512 32 16 64 16 100 30,000	Up to 512 Up to 154 Up to 512 32 16 64 16 100 30,000
<b>Miscellaneous</b> Cycle time Interfaces	100 ms 1 Ethernet RJ-45 (10/100 MBit/s)	100 ms 1 Ethernet RJ-45 (10/100 MBit/s)
<b>Internal system interfaces (optional)</b> modu721 - (RS232+RS485) modu731 - (RS232+M-Bus)	Modbus RTU, M-Bus M-Bus	Modbus RTU, M-Bus M-Bus
Buffer battery life Power supply	5 years 230 V ~	5 years 24 V ~/=

The **modu525** automation station (AS) is a modular unit in the EY-modulo 5 system family. It is designed to control and regulate building automation systems in accordance with EN ISO 16484. It is structured as a **native BACnet** device.

The **modu525** makes use of high-performance processor technology and all the functions are based on a Linux operating system. Short cycle times also make it possible to carry out complex control and regulation tasks.

## modu 5 automation stations

The basic **modu525** device contains the processor, power supply, communication and other central functions. It has 16 inputs (including 8 universal inputs) and 10 outputs.

**LEDs** on the front indicate the operating status of the device.

Optionally, the **modu840 local operating unit** or **local override and indication units** can be added to the station (see sections 3.3 and 3.4). The override and indication units can be individually labelled using **paper inserts** in the clear front cover.

The device is **mounted** on a top-hat rail (EN 50022) in a control cabinet. It is connected to the Ethernet via a standard RJ45 socket and a patch cable (Cat 5).

Programming and configuration are carried out from a PC using the Sauter **CASE Suite** engineering software (based on IEC 61131-3), and extensive **CASE solution libraries** are available for all technical building applications. The user program is saved in a Flash memory for protection from power failure.

A **plug-in lithium button-cell battery** backs up the real-time clock for time programmes (schedules/calendars), data such as from counters, adaptive control algorithms and log data (trend logs) in the memory (SRAM).

A **watchdog signal** (open collector) is present at terminal 01; this can be used to monitor the function of the automation station via a second AS.

The **universal inputs (UI)** can be freely configured for temperature, voltage or current measurement, or as binary inputs. This ensures optimum utilisation of the I/O mix of the AS and the I/O modules and reduces the number of data points that cannot be used.






In addition to the control and regulation functions, extensive **time and calendar functions** are available, as well as configurable recording of **log data**. Up to 64 BACnet time programme objects (schedulers), up to 16 BACnet calendar objects (calendars) and 100 BACnet trend log objects can be created in the automation station. Recording of log data may be defined either as periodic (with a time interval) or as threshold-orientated (COV). Up to 30,000 entries are possible in the AS for each trend log object. Data points for web operation can be recorded with the integrated moduWeb web server, independently of the trend log objects (periodic: time interval 1 min).

As a **BACnet server**, the AS makes all its objects available externally, together with the associated properties and the required services. Typical users (BACnet clients) of this information include open management systems, bus-wide operating units and other BACnet-compatible controllers. In its function as a **BACnet client**, the AS supports peer-to-peer transmission (see also section 5: "BACnet communication protocol".)





The integrated **moduWeb** web server enables complete operation and visualisation of all objects with a standard internet browser. Visualisation and operation are implemented ergonomically and intuitively using web pages that are specifically optimised for PCs or mobile clients, with object lists and operating masks for the calendar and time programme objects etc. Dynamic plant diagrams and additional pages can be created using CASE Suite. User-specific access rights can be defined for the web pages. Integrated **e-mail services** allow forwarding of defined events by e-mail (and also SMS/fax via Unified Messaging Provider) (also see section 3.6 "Web operation / web services".)

### 3.2 modu530, 531, 532, 533, 550, 551, 570, 571 and 572 I/O modules

The plug-in **modu 530 to 572 I/O modules** can be used to increase the number of inputs and outputs (16/10) available in the basic device as required, up to a total of 154 inputs and outputs (max. 8 modules).

Type					
	EY-IO530F001	EY-IO531F001	EY-IO532F001	EY-IO533F001	EY-IO550F001
Name Device For stations	modu530 I/O module, digital/universal inputs modu525	modu531 I/O module, digital inputs modu525	modu532 I/O module, universal inputs modu525	modu533 I/O module, universal, digital and SO inputs modu525	modu550 I/O module, digital outputs (relays) modu525
<b>Digital inputs</b>	8 (up to 50 Hz)	16 (up to 10 Hz)		8 (including 4 SO) (up to 50 Hz)	
<b>Universal inputs</b> Analogue Digital	8 Ni/Pt1000 U/I/R/Pot DI (up to 3 Hz)		16 Ni/Pt1000 U/I/R/Pot DI (up to 3 Hz)	8 Ni/Pt1000 U/I/R/Pot DI (up to 3 Hz)	
<b>Digital outputs</b>					6 (relays 0V, 24..250 V~, 2A, potential- free)
<b>Analogue outputs</b>					
<b>Optional operating elements</b>	modu630	modu630	modu630	modu630	modu630/ modu650
Connections to AS Power supply	Plug-in From modu525	Plug-in From modu525	Plug-in From modu525	Plug-in From modu525	Plug-in From modu525

**modu 5 automation stations**

Type				
	EYIO551F001	EYIO570F001	EYIO571F001	EYIO572F001
Name Device	modu551 I/O module, digital outputs (open collector)	modu570 I/O module, digital outputs/universal inputs	modu571 I/O modules, digital inputs/outputs (open collector)	modu572 I/O module, analogue outputs, universal and digital inputs
For stations	modu525	modu525	modu525	modu525
<b>Digital inputs</b>				3 (up to 10 Hz)
<b>Universal inputs</b> Analogue Digital		8 Ni/Pt1000, U/I/R/Pot DI (up to 3 Hz)		8 Ni/Pt1000, U/I/R/Pot DI (up to 3 Hz)
<b>Digital inputs/outputs</b>			16 (open collector, up to 10Hz/100mA)	
<b>Digital outputs</b>	16 (0-1), open collector, up to 100mA)			
<b>Analogue outputs</b>		4 (0...10V, push pull up to 2mA)		4 (0..10V,/0..20mA source, up to 20mA)
<b>Optional operating elements</b>	modu630/ modu650	modu630/ modu670	modu630/ modu650	modu630/ modu670
Connections to AS Power supply	Plug-in From modu525	Plug-in From modu525	Plug-in From modu525	Plug-in From modu525


The I/O modules are lined up directly on the AS (on the side, to the right) and thus connected via the I/O bus connector. The power supply is provided through the AS.

An I/O module generally consists of two components: the **base** which contains the I/O bus system and the connection terminals, and the **electronics**. The AS automatically detects whether a module on is plugged into the I/O bus. The I/O modules are assigned using CASE Suite.

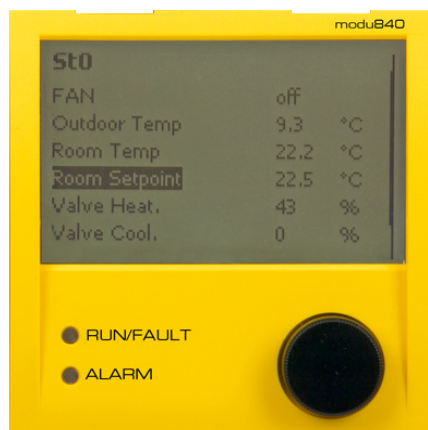
Optionally, **local override and indication units (LOI)** can be added to the I/O modules; these units allow local indication and manual override of outputs at local level (see section 3.4).

All override and indication units can be labelled individually by inserting a **paper insert** behind the transparent front cover.

### 3.3 modu840 local operating unit

Type	 EY-OP840F001
Name Device Function Indicators/display For stations	modu840 Operating unit Visualisation, operation Structured installations modu525
Interfaces Power supply	I/O bus From AS

The modu840 LOP (local operating panel) is clicked directly into a recess in the front of the automation station, or it can be installed remotely in the cabinet door with the aid of a mounting frame.



It allows direct, **comprehensive operation** of the corresponding modu525. Data points can be visualised in plain text and operated by turning and pushing the button.


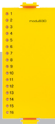



The operating unit does not need **any configuration**. All necessary data specific to the project is stored in the automation station.

The connection is directly in the front of the station, which means simultaneous operation with override and indication units inside the base station is not possible.

### 3.4 modu625, 630, 650 and 670 local override and indication units

**Local operating/indicating units (LOI)** can be added to the modu252 AS and its I/O modules; these units allow local indication by LEDs and manual override of outputs with switches or sliders.

## modu 5 automation stations

Type					
	EY-LO625F001	EY-LO630F001	EY-LO650F001	EY-LO650F002	EY-LO670F001
Name	modu625	modu630	modu650	modu650	modu670
Function	Override/indication unit	Indicating unit	Override/indication unit	Override/indication unit	Override/indication unit
Operation	6xA-0-1, 4xA-0..100%	16xLED alarm/status	6xA-0-1	3xA-0-1-2	4xA-0..100%
Indicators	4+8 LED alarm/status		4xLED alarm/status	4xLED alarm/status	8xLED alarm/status
For stations	modu525	modu525	modu525	modu525	modu525
Use	modu525	modu525, 530..572	modu525, 550, 551, 571	modu525, 550, 551, 571	modu525, 570, 572
Interfaces	I/O bus	I/O bus	I/O bus	I/O bus	I/O bus
Power supply	From AS or I/O module	From AS or I/O module	From AS or I/O module	From AS or I/O module	From AS or I/O module

The units can be either mounted directly in a recess in the front of the automation station or the I/O modules, or at a remote location such as the cabinet door in a **mounting frame** (available as an accessory). The units can be inserted or removed during operation without impairing the functions of the AS (hot-plug capability). The switch and slider settings are directly detected and implemented by the AS. No configuration at all is required.

By default, the **LEDs** show the current status of the input and output signals (analogue signals display threshold violations). However, using CASE programming, **free LEDs** (free channels) can also be assigned to indicate functions such as collective alarms and threshold violations. The LEDs generally light up continuously: green for status information and red for alarms. With the **BACnet alarm acknowledgement function**, unacknowledged alarms are indicated by a flashing LED and alarms that are still active after acknowledgement are shown by a continuously-lit LED. For outputs (DO and AO), a yellow LED is also activated in the manual operation position (manual override).

The local override and indication units are numbered or labelled with symbols representing specific functions. In addition, a **paper insert** can be put into the clear front cover for individual labelling.

### 3.5 Remote installation for local operation

The optional quadruple front frame accessory and the matching connection adaptor allow remote installation (max. 10m) of the override and indication unit (for example in the cabinet door).





Required components: quadruple front frame (0930240511, including bracket), the required number of connection adaptors (0930240540 for the modu840 operating unit, one 0930240541 for each modu625...modu670 override and indication unit), plus a patch cable (RJ45  $\geq$  Cat5) for each unit.



Using the quadruple front frame also makes it possible to simultaneously operate a modu840 and the modu625 override and indication unit with the modu525 basic module.

### 3.6 Web operation & web services

Thanks to **moduWeb**, the **web server** that is integrated in the automation station, operation via web browser is available for every automation station. This means that an intuitive user interface is available for the operation and maintenance of an EY-modulo 5 system, even **without a management level**; this interface can be integrated perfectly into the modern IT infrastructures of a building or those belonging to the operator.

## modu 5 automation stations

The screenshot shows the moduWeb interface for an automation station. The top navigation bar includes 'Information', 'Settings', and 'Extra' tabs, along with a user profile 'admin', a 'Logout' button, and language options 'DE', 'EN', and 'FR'. The main content area is titled 'System graphics' and 'System view'. A left sidebar contains a tree view with items like 'Overview', 'Control loops', 'Alarms', 'G003\_I01\_L003\_BDE', 'Gebäude G003', 'Heizung H003', 'Lüftung L003', 'Meteo M001', 'Data points', and 'Audit trail'. The main panel displays 'Control loops' for 'Heizung H003' with columns for 'Actual value', 'Target value', and 'Deviation'. Below this, a table lists various control elements with their status, names, descriptions, and current values.

Status	Name	Actual value	Action
✓	G003_I02_H003_K001XS1	XS Nachtabsenkung 10 °K	10
✓	G003_I02_H003_K001ZP1	ZP Nachtabsenkung Aus	Aus
?	G003_I02_H003_B101ME1	Außentemperatur u1 2	50 °C
✓	G003_I02_H003_Y101YB1	Regelventil a1	30 %
✓	G003_I02_H003_B201ME1	VL-Temperatur	30 °C
✓	G003_I02_H003_B201XC1	XC VL-Temperatur	30 °C

The AS are operated via **moduWeb** using a **standard web browser**, in other words from any PC, Mac, notebook or PDA, smart phone etc. The operating units do not need any configuration for this purpose. A specifically adapted presentation is available for mobile clients with a small screen.

The **data point lists** etc. are generated automatically on the basis of the project-specific data stored in the automation station. In addition, **dynamic plant diagrams** can be generated with CASE Suite and stored in the web server.

When configured appropriately, moduWeb can also forward alarms and log data to any **e-mail address**. Unified Messaging Providers also make it possible to forward these e-mails to **fax** or **SMS** destinations.

#### Functional scope of moduWeb

- Data point representation:
  - Data point list (linear/structured)
  - Dynamic plant images (generated with CASE Suite)
- Data recording in moduWeb:
  - Graphic or table representation
- Export of recorded data as a file or via e-mail
- Control loops:
  - Colour-coded representation of control loops
  - Direct configuration option for control parameters (Xp, Tn, Set etc.)
- Operation of time programmes (schedule/calendar)
- Alarm notification:
  - Use of BACnet Intrinsic Reporting
  - Current alarms shown in sortable list
  - Acknowledgeable alarm messages

- Historical alarm display
- Alarm notification by e-mail
- Modified representation for mobile clients
- Online language selection
  - German, English, French, 1 additional language
- User management
  - Role concept (admin, specialist, user, guest)
  - Individual authorisation to equipment systems and nodes

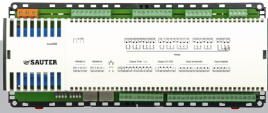
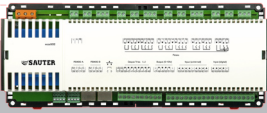
modu 5 automation stations

## 4 ecos 5 room automation

The **ecos 5 room automation stations** are a range of stations in the EY-modulo 5 family that are specially designed to meet the requirements of comprehensive room automation.

They are structured according to the same technology as the SAUTER modulo 5 automation stations, which means they are also **native BACnet** stations with communication via **Ethernet/IP**. They integrate into the complete EY modulo 5 system in a totally homogeneous manner.

### 4.1 ecos500 and ecos502 room automation stations

Type	 EY-RC502F001	 EY-RC500F001/F002
Name Device modu Bus	ecos502 Room automation station 5 BACnet/IP	ecos500 Room automation station 5 BACnet/IP
ecoUnit room operating units ecolink I/O modules	4 –	4 16
<b>Inputs</b> Universal inputs Digital inputs Overvoltage protection	12 8 (Ni/Pt1000, U (0-10V), DI) 4 ✓ (Up to 24 V~)	12 8 (Ni/Pt1000, U (0-10V), DI) 4 ✓ (Up to 24 V~)
<b>Outputs</b> Analogue outputs Digital outputs	30 4 (0...10 V) 16 relays (250V~) 2 relays (24V=) 8 triac (24V~)	28 4 (0...10 V) 16 relays (250V~) 8 triac (24V~)
<b>Objects</b> Data points Hardware Loop Calendar Schedule Notification class Trend log Total entries	Up to 256 Up to 44 32 8 32 16 16 2,000	Up to 256 Up to 44 32 8 32 16 16 2,000
Power supply Buffer battery life Dimensions Plug-in terminals	230 V~ 10 years 299 x 120 x 73 (mm)	230 V~ 10 years 299 x 120 x 73 (mm) EY-RC500F002

The **ecos500 and ecos502 room automation stations** are designed for temperature regulation and for controlling lighting and window blinds in individually regulated rooms.

The **ecos502** is designed for controlling **2 rooms or 2 segments** (in other words, the I/O mix of the ecos502 is adapted for 2 rooms or 2 segments), while the **ecos500** is for **4 rooms or 4 segments**.

## ecos 5 room automation

On both stations, 8 of the 12 inputs are **universal inputs** (UI), which can be freely configured as temperature, voltage, current measurement or binary inputs. This facilitates **optimum exploitation of the I/O mix** of the station.

On the **ecos500**, remote-mounted **ecoLink input/output modules** can be added to the I/O mix for complex applications. These modules are connected by bus (RS485 interface) to the ecos500 and can be situated up to 500 metres away from the station (see section. 4.2: ecoLink remote I/O modules).

Extensive **time and calendar functions** are available in addition to the control and regulation functions. Up to 32 BACnet time programme objects (schedules) and up to 8 BACnet calendar objects (calendars) can be created in the automation station.

Four connectable **room operating units** of types ecoUnit 3 (EY-RU3..) or ecoUnit 1 (EY-RU1..) enable individual recording of the room temperature and adjustment of the room climate according to the users' wishes. (See section 4.2: "ecoUnit room operating units".)

Powerful function modules in the ecos 5 stations allow **energy-optimised room regulation**. In addition, the following functions are used to optimise **energy consumption** in the controlled rooms: occupancy function, window contact monitoring, demand-based fan speed switching, control of lighting and window blinds, plus time-dependent setpoint specification.

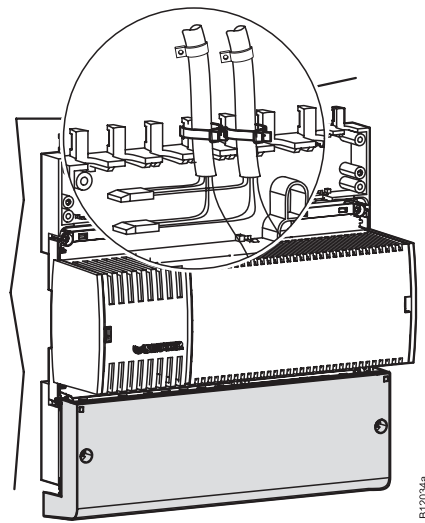
The complete **user programme** and the various configurations (BACnet objects etc.) are created using **CASE Suite**. Up to 256 BACnet data points, including input and output hardware, can be used. Extensive **control technology libraries** are available for programming and configuration in CASE Suite.

The user programme and the modified user data (such as that modified by the BACnet client) are stored permanently in the **flash memory**. A plug-in **lithium button-cell battery** ensures that the real-time clock for time programmes (schedules/calendars) and data such from counters (for example adaptive control algorithms) are retained in the memory (SRAM).

The **ecos 5** are compact devices that are designed for wall mounting or for serial installation according to DIN 43880 on a 35 mm top-hat rail.

Two RJ-45 network connections with integrated **Ethernet switch** functionality are available for BACnet communication. This means that the ecos 5 can be connected in series (daisy chain wiring).

A snap-on, two-part **wiring box** is available as an accessory for the ecos stations to accommodate the necessary connections for the neutral and earth conductors, so that the ecos 5 can be installed at low cost without additional wiring boxes.







### 4.2 ecoUnit room operating units

**ecoUnit** are the room operating units for the ecos 5 room automation stations. They record the temperature in the room and, depending on the type, have various operating options and a display containing information on the state of the room.

The range of room operating units comprises **three basic versions**:

- Devices with **LED indicators** (ecoUnit310..316):



Type				
	EY-RU310F001	EY-RU311F001	EY-RU314F001	EY-RU316F001
Name Use	ecoUnit310 Temperature	ecoUnit311 Temperature	ecoUnit314 Temperature, fan, occupancy	ecoUnit316 Temperature, fan, occupancy, window blinds or lighting
Indicators	LEDs	LEDs	LEDs	LEDs
Button functions	–	Rotary knob	Rotary knob	Rotary knob
Fan speeds	–	–	Auto-0-1-2-3	Auto-0-1-2-3
Setpoint adjustment	–	Adjustable	Adjustable	Adjustable
Room occupancy	–	–	3 modes	3 modes
Fan	–	–	5 modes	5 modes
NTC sensor	✓	✓	✓	✓
Power supply	From ecos 5	From ecos 5	from ecos 5	From ecos 5

ecos 5 room automation

- Devices with a **digital display** (ecoUnit341..346):

Type			
	EY-RU341F001	EY-RU344F001	EY-RU346F001
Name Use	ecoUnit341 Temperature	ecoUnit344 Temperature, fan, occupancy	ecoUnit346 Temperature, fan, occupancy; window blinds/lighting (2 assignments)
Display Button functions Fan speeds Setpoint adjustment Room occupancy Fan NTC sensor Power supply	LCD – – Adjustable – – ✓ from ecos 5	LCD – Auto-0-1-2-3 Adjustable 3 modes 5 modes ✓ from ecos 5	LCD 2 buttons Auto-0-1-2-3 Adjustable 3 modes 5 modes ✓ From ecos 5

- Devices with **wireless communication (EnOcean standard)**  
(ecoUnit110..146):

Type				
	EY-RU110F001	EY-RU141F001	EY-RU144F001	EY-RU146F001
Name Use	ecoUnit110 Temperature	ecoUnit141 Temperature	ecoUnit144 Temperature, fan, occupancy	ecoUnit146 Temperature, fan, occupancy/light
Display Data transmission Button functions Fan speeds Setpoint adjustment Room occupancy Fan NTC sensor Power supply	– Wireless (868.3 MHz) – – – – – ✓ Solar cell	LCD Wireless (868.3 MHz) – – Adjustable – – ✓ Solar cell	LCD Wireless (868.3 MHz) – – Auto-0-1-2-3 Adjustable 3 modes 5 modes ✓ Solar cell	LCD Wireless (868.3 MHz) 2 buttons Auto-0-1-2-3 Adjustable 3 modes 5 modes ✓ Solar cell

Within these 3 versions, the devices are classified according to **functionality**:

- Temperature measurement
- Plus setpoint correction
- Plus fan control, occupancy button
- Plus control of lights and/or window blinds

All ecoUnit room operating units have the same installation dimensions. They are **installed** in standardised mounting frames with a cut-out measuring 55x55mm. These frames are available in a wide variety of design versions, materials and colours, for surface or recessed mounting, from SAUTER and from third-party suppliers.



A **labelling insert** behind the transparent front cover enables the room operating units to be adapted to local requirements.

The **connection** to the ecos 5 is a serial connection (RS485). For **wireless** devices (ecoUnit110..146), communication complies with the **EnOcean standard**. On the ecos 5, an EnOcean wireless gateway (ecoMod580) is used.




The ecoUnit room operating units can be extended with an additional **ecoUnit306** or **ecoUnit106 switching unit**.

### 4.3 ecoLink remote I/O module

The **ecoLink input/output modules**, which can be remotely mounted, are an extension to the **I/O mix** of the ecos500 **and also reduce the wiring costs**. The modules are connected by bus (RS485 interface) to the ecos500 and can be situated up to 500 metres away from the station.

There are six different types with various I/O mixes and power supplies available:




- Three models with a 24 V power supply:  
(Primarily used for fan coil units and valve actuators):

Type	 EY-EM510F001	 EY-EM511F001	 EY-EM512F001
Name Function For station	ecoLink510 Remote IO module, 24 V~, 3 relays, 3 triacs ecos500	ecoLink511 Remote IO module, 24 V~, 3 triacs ecos500	ecoLink512 Remote IO module, 24 V~, 2 triacs ecos500
<b>Inputs</b> Analogue/digital Analogue	4 0...10V/0-1 2 NI/PT1000	4 0...10V/0-1 2 NI/PT1000	4 0...10V/0-1
<b>Outputs</b> Digital relay Digital triac Analogue	3 (230 V~, 5 A (total 10 A)) 3 (24 V~, 0.5 A) 3 (0-10V, 2 mA)	3 (24 V~, 0.5 A) 3 (0-10V, 2 mA)	2 (24 V~, 0.5 A) 2 (0-10V, 2 mA)
Power supply	24 V~ (max. 10 W)	24 V~ (max. 10 W)	24 V~ (max. 10 W)

They are fed by an external power supply unit.

ecos 5 room automation

- Three models with a 230 V power supply:  
(Primarily used for controlling lamps and window blinds):

Type	 EY-EM520F001	 EY-EM521F001	 EY-EM526F001
Name Function For station	ecoLink520 Remote IO module, 230 V~, 4 NO relays ecos500	ecoLink521 Remote IO module, 230 V~, 2 NO relays ecos500	ecoLink526 Remote IO module, 230 V~, 3 change-over relays ecos500
<b>Inputs</b> Analogue/digital	4 0...10V/0-1	4 0...10V/0-1	4 0...10V/0-1
<b>Outputs</b> Digital NO relay Digital change-over relay Analogue	4 (230 V~, 1 A/5 A) 2 (DIM-10 V)	2 (230 V~, 1A /5 A) 2 (DIM-10 V)	3 (230 V~, 5 A) 2 (DIM-10 V)
Power supply	230 V~ (max. 8 W)	230 V~ (max. 8 W)	230 V~ (max. 8 W)

Up to 16 modules can be connected to the sub-bus. This means the I/O mix can be optimally adapted as required.

Each module can be assigned to a segment for flexible room control.

## 5 BACnet communication protocol

### 5.1 BACnet

The **EY-modulo 5** automation and room automation stations use the **BACnet open data communication protocol** for room automation (**B**uilding **A**utomation and **C**ontrol **n**etwork). The **manufacturer-neutral communication standard** defines and describes a “common language” which supports data communication between **different equipment systems** (heating, ventilation, fire detection and security), and, in particular, between **devices from different manufacturers**. The aim is to ensure that **installations are open** for extension, replacements etc.

The **BACnet standard** was developed by **ASHRAE** (**A**merican **S**ociety of **H**eating, **R**efrigerating and **A**ir-**C**onditioning **E**ngineers). It began in 1987. In 1995, BACnet became the ASHRAE-/ANSI- standard and in **2003 it was adopted as an international standard** (ISO 16484-5) **and a European standard** (EN ISO 16484-5). The **BACnet standard** is being developed continuously by various working groups.

In order to map the various **elements in building automation**, the BACnet standard defines corresponding **BACnet objects** (such as analogue values and controllers) and a number of **properties** for each object (such as the present value, name and number of the object and the physical units).

The standard also defines **BACnet services** for accessing objects or executing functions. There are 38 services in all (for example, to read and write object properties, or to run functions on other devices such as restart and notification for alarms). As well as reading properties (such as the present value), there is also a **service for subscribing** to a value. The original object then automatically reports the value (property) to the subscriber as soon as it changes (**COV notification**).

Example of analogue input:

Object_Name	SPACE TEMPERATURE
Object_Type	ANALOGUE INPUT
Present_Value	22.3
Status_Flags	OUT-OF-SERVICE
High_Limit	24
Low_Limit	20

As well as the standard objects, properties and services, the standard allows optimum definition and use of **proprietary objects, properties and services**.

## 5.2 Native BACnet

The term **native BACnet device** refers to equipment that is **entirely structured according to the BACnet standard**, so it requires no conversion whatsoever (such as gateways or conversation processors) for **BACnet** communication ("native" is used in the sense of "hereditary", "innate" or "natural"). The inputs and outputs are mapped directly in the device as **BACnet objects**.

All **EY-modulo 5** stations are based on native BACnet technology. Their inputs and outputs are mapped directly as BACnet objects, as are most of the other objects such as control loops, calendar and trend objects.

## 5.3 BACnet/IP

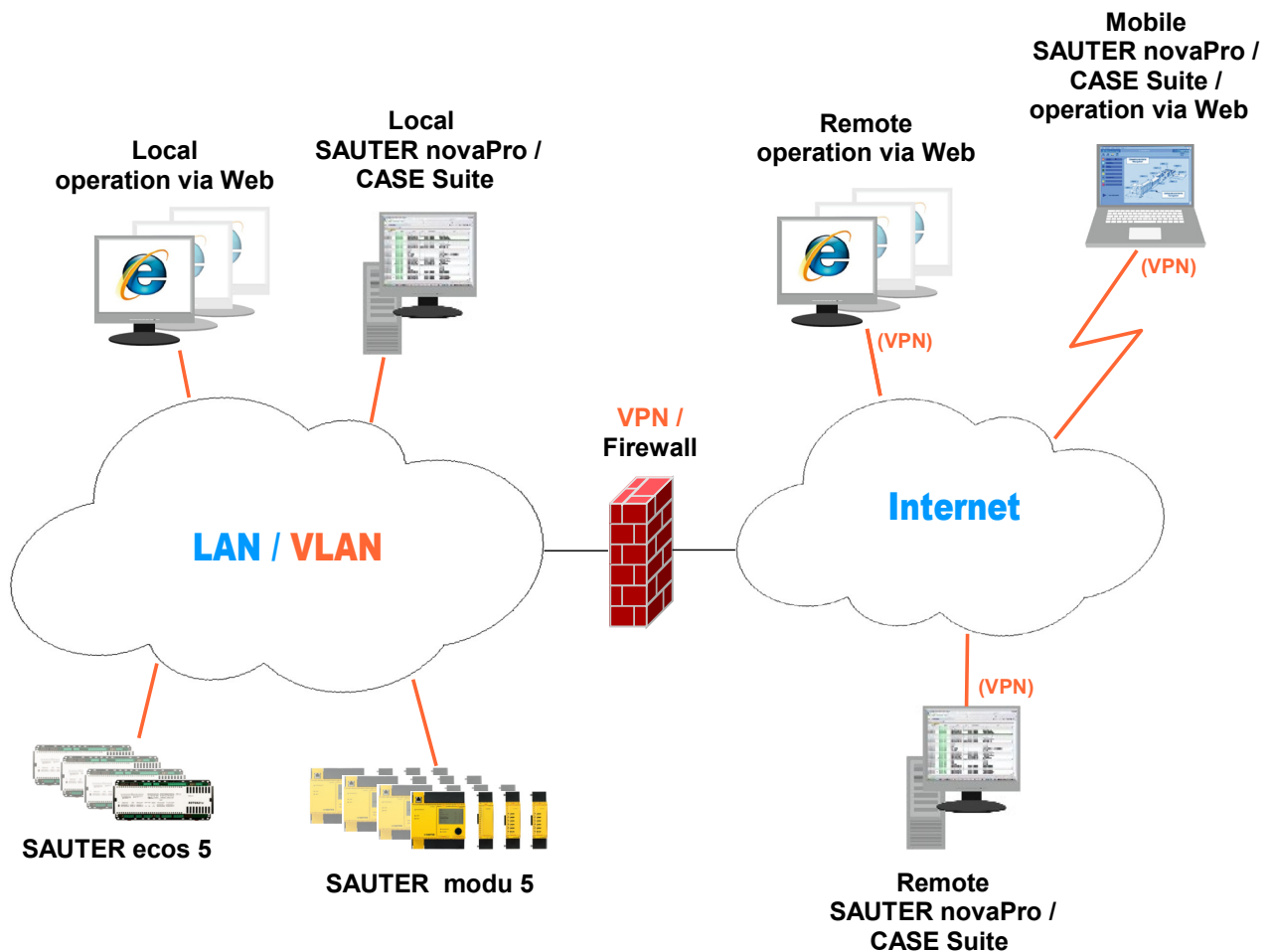
The **BACnet standard** supports various **communication platforms** such as **PTP** (point-to-point) - EIA-232, **MS/TP** (master slave/token passing) - EIA-485, **Ethernet** - ISO 8802-3 (direct Ethernet, without IP), **LONtalk** and also the **BACnet/IP** used by the EY-modulo 5.

**BACnet/IP** uses the widespread **IP protocol** for communication between the **BACnet devices** (automation stations, PCs etc.). In order to do this, every individual BACnet device is IP-compatible and has its own **IP address** (i.e. it is an IP node).

This means that the building management system can also be integrated in **Enterprise IP networks** or the **internet** and the devices can communicate with each other across the entire network. (See also section 5.4: "Topologies, access and security")

In this context, the term **BACnet/IP network** refers to a virtual network which extends over one or more IP sub-networks (IP domains) and has a single **BACnet network number**. This virtual **BACnet/IP network** contains BACnet/IP nodes which communicate with each other via **various physical networks** (subnets) using the BACnet/IP protocol. A BACnet Broadcast Management Device (BBMD) manages the **IP broadcasts** used by BACnet and forwards them selectively to the relevant IP networks. This allows communication across multiple physical IP networks without putting the network as a whole under unnecessary strain.

#### 5.4 Topologies, access and security



In principle, **BACnet/IP** can be operated in any IP network. (In addition, the **moduWeb** functions of the AS (operation with browser and e-mail) generally integrate into every IP-LAN / WAN / internet environment with no problems.)

Depending on the requirements, the SAUTER EY-modulo 5 BACnet/IP AS and the SAUTER BMS operating stations can be integrated directly into a building's existing IP network (such as the office LAN), or else a physically separate, **dedicated BMS-IP network** is set up for this purpose.

For integration into the customer's existing IP network, it is usually advisable to **logically demarcate** the BMS components from the office LAN by grouping the EY-modulo 5 AS and the BMS operating stations together in a **VLAN** (virtual LAN).

**Access to the AS from outside the building** (from outside the LAN/VLAN containing the stations, for example from the internet) with SAUTER novaPro / SAUTER CASE Suite via BACnet/IP can be effected either **directly** or via a VPN (Virtual Private Network) that is set up for this purpose.

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## BACnet communication protocol

In order to overcome NAT routers and/or firewalls, except in the case of very small plants, either a BACnet router is required, or access via **VPN** is set up. Access via **VPN** is a highly advisable solution in all cases, not only because of the clear delimitation and, therefore, **increased security**, but also because it makes configuration simpler. (With access via **VPN**, the operating stations on the internet are integrated virtually into the LAN/VLAN of the stations with the aid of VPN client drivers.)

In order to enable access from outside, suitable precautions and **configurations** must always be implemented for **internet access and firewalls**.

For this reason, and in general, it is essential to **consult and co-operate with the customer's IT supervisor** (starting in the planning phase) regarding implementation in the customer's IT environment.

## 6 Management level

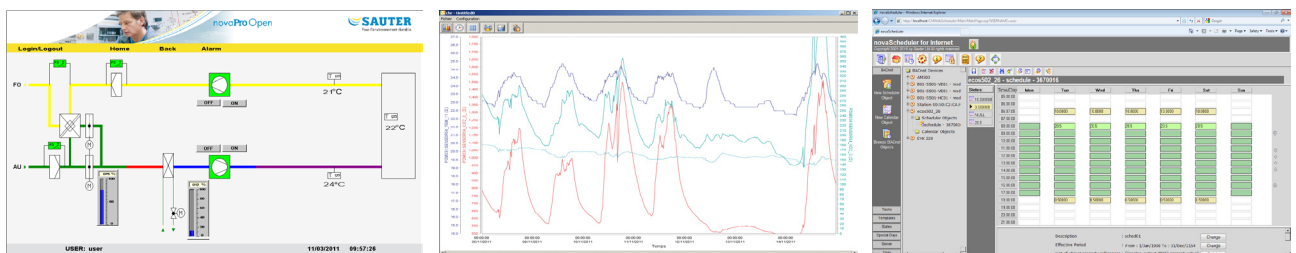
Normal commercial PCs with the **MS Windows operating system** are used for visualisation and operation at management level with SAUTER novaPro Open. All available models such as desktop, notebook, tablet and panel PCs etc. can be used for this purpose. The **web operating functions** allow plants to be operated using other devices such as Linux PCs, Apple computers, PDAs and smartphones.

### 6.1 novaPro Open management level software

**SAUTER novaPro Open** is the software tool that is tailor-made for the EY-modulo system's **management level** (HMI functionality = human-machine interface).

It provides comprehensive **visualisation, operation and monitoring** of building management systems. All the information is collated and evaluated here.

**Alarms** are triggered, **messages** are processed, **events** are logged and **data** is evaluated.



It makes it very easy to obtain an overview of **energy and media consumption** so that targeted **measures to improve efficiency** can be taken. The recording of **log data** makes it possible to check the efficiency of the measures taken.

**novaPro Open** is highly versatile in terms of communication. Operating stations can be positioned **anywhere in the network**, and alarms and signals can be forwarded via various media to different destinations such as **e-mail addresses and mobile phones** (text messaging). Access to the plant is also possible from **mobile operating stations** via switched or permanently connected networks. With its integrated web functionality, novaPro Open allows intranet- and internet-wide **operation via web browser**.

novaPro Open communicates with the EY-modulo 5 stations via **BACnet/IP**. There is also a wide range of options for integrating third-party systems.

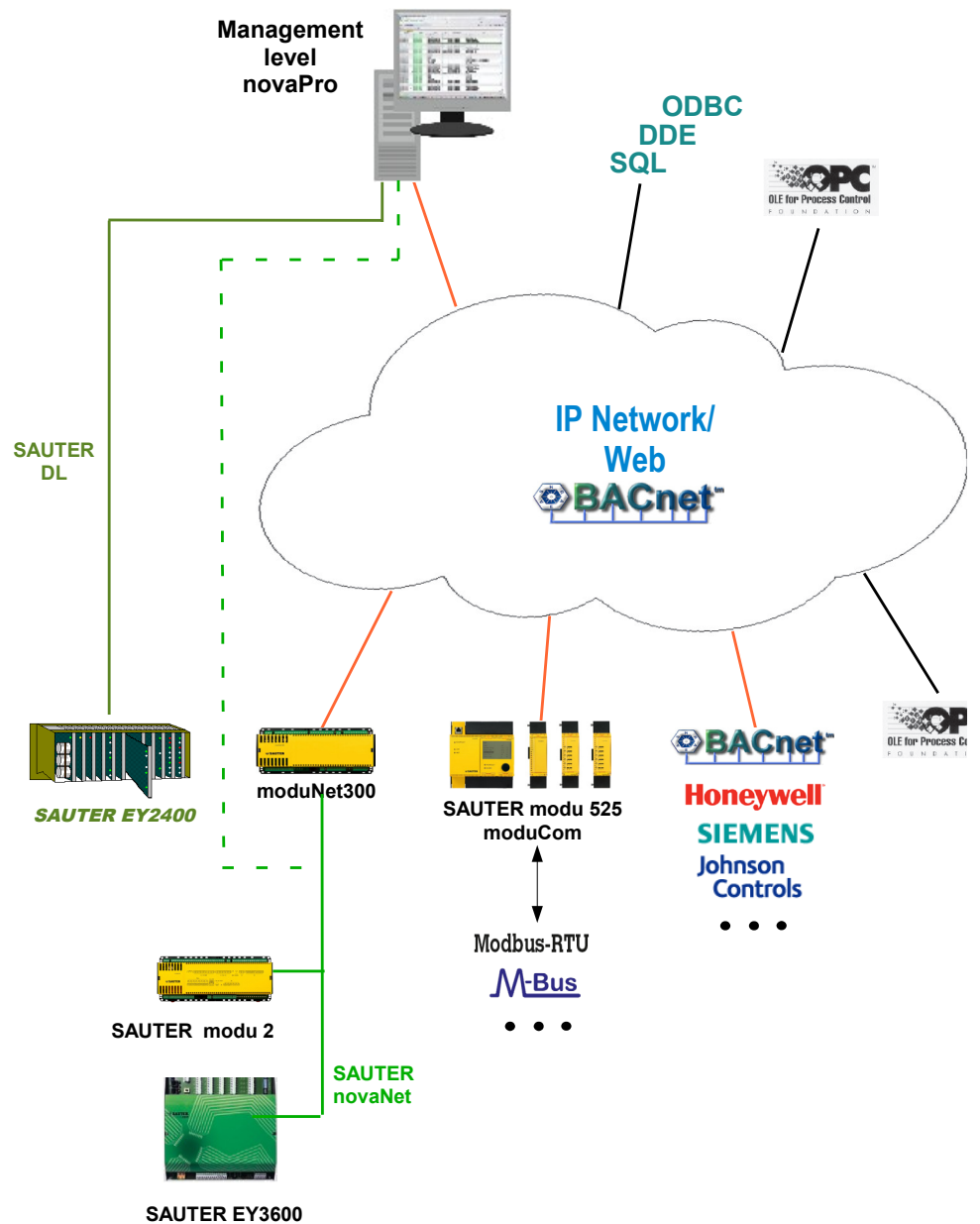
Because it is a **SCADA application** (SCADA = supervisory control and data acquisition), novaPro Open also offers options for **data processing** (soft SPS).

As a SAUTER management level, novaPro Open is optimally harmonised with **SAUTER CASE Suite**. This means that the necessary **engineering** can be handled largely automatically.

Management level



7 Backward and downward compatibility, system integration



Because it is a **BACnet** system, **SAUTER EY-modulo 5** is theoretically open for direct integration with all third-party BACnet equipment systems or with third-party systems which can connect to BACnet (such as gateways).

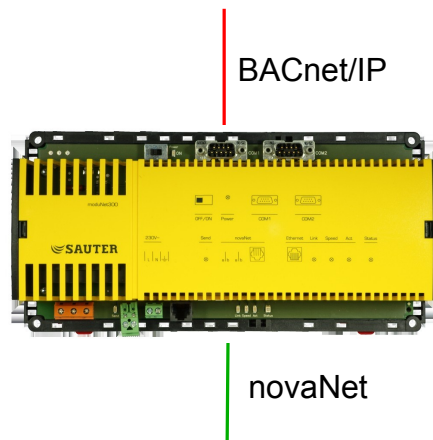
Moreover, **SAUTER EY-modulo 5** has various integration options for non-BACnet third-party systems and for the other SAUTER EY systems.

7.1 SAUTER EY3600 and SAUTER EY-modulo 2 via moduNet300

Downwards or backwards compatibility with the SAUTER EY3600 and EY-modulo 2 novaNet systems is achieved with the aid of the **moduNet300 novaNet-BACnet application master** (or directly from the SAUTER novaPro management level (see section 7.3: "Non-Sauter and SAUTER systems via

Backward and downward compatibility, system integration

novaPro Open"). This means EY-modulo 2 systems (or EY3600 systems) can be expanded with EY-modulo 5 (or other BACnet systems), or vice-versa.



The **moduNet300 application master (AM)** integrates the SAUTER EY-modulo 2 automation stations and room controllers (as well as EY3600 stations) connected via the novaNet into the open, standardised BACnet/IP communication protocol.

As a **BACnet server**, it makes the addresses available to the nova AS as BACnet objects with the associated properties and the required services. As a **BACnet client**, the AM supports peer-to-peer transfer with present-value properties.

It supports **notification class** and **event enrolment** objects for alarm and event notification.

Thanks to the scheduler (daily and weekly calendar) and the **schedule** and **calendar** BACnet objects connected to it, local BACnet time programmes can be processed so that process variables for the novaNet stations can be controlled on a time-dependent basis.

**Log data** can also be kept on the AM with dynamically-created BACnet trend log objects. This data is stored permanently in the AM.

The BACnet objects can be read by the BACnet clients either in a regular polling process or actively via the COV (change of value) subscription mechanism in the AM.

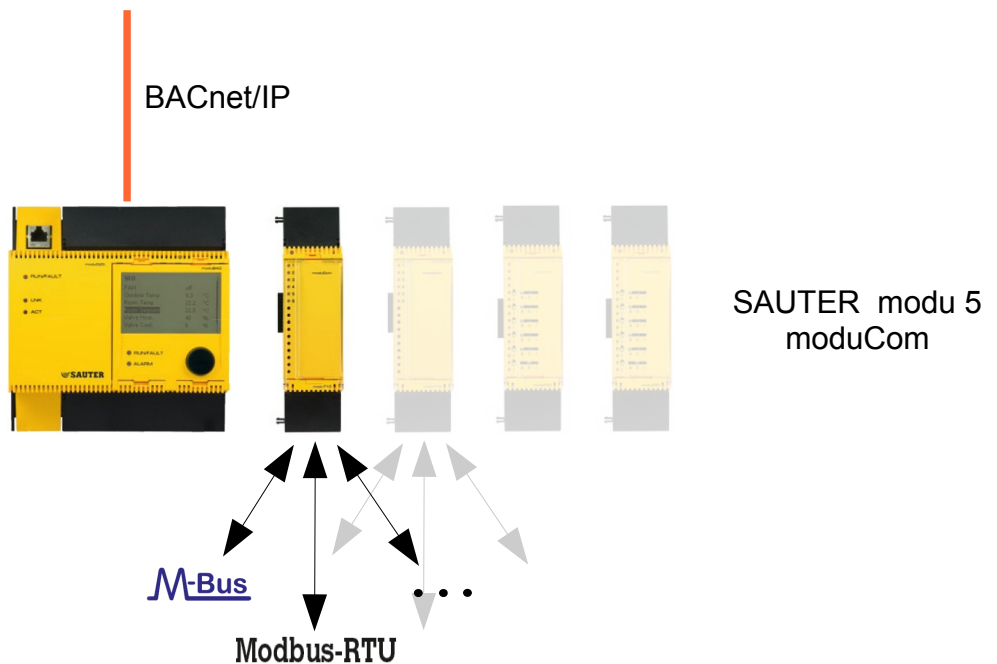
The AM automatically converts the **addresses** of configured buildings used in the EY-modulo 2 (or EY3600) automation stations to **BACnet objects** and updates them. No additional outlay is incurred for generation.

The total **processing capacity** for BACnet objects is 1000 per moduNet300 application master. Each moduNet300 used in the novaNet needs a novaNet PC address.

The **configuration** of the IP address and other parameters takes place with the BACnet Server Configurator, a software tool in the SAUTER CASE Suite.

## 7.2 System integration via EY-modulo 5 with moduCom

On the **AS level**, third-party systems are implemented using the SAUTER EY-modu525 automation station in combination with the **moduCom** communication module:



up to **2 moduCom** modules can be plugged in to each modu525 AS. They must be inserted in positions 1 and 2. The modu525 can also be expanded in the normal manner by adding more I/O modules so that plant devices can be connected directly (max. 6 or 7 units, max. 148 I/O, up to 512 BACNet objects in total).

The logical **AS functions** for regulation, control, optimisation, monitoring and web services are also available for directly connected plant devices and for the integrated addresses of the third-party system.

There are four types of moduCom communication module, each with different interfaces: **modu710**, **modu720**, **modu721**, **modu731**. All types are freely programmable as regards their data transmission protocol, so they can be adapted for a varied range of products such as PLCs, chillers and energy counters.

The **modu710 with the EIA-RS232** has the Modbus/RTU and M-Bus protocols.

The **modu720 with the EIA-RS485 bus system** has the Modbus/RTU protocol.

Backward and downward compatibility, system integration

The **modu721 with the EIA-RS232 and EIA-RS485** currently has the Modbus/RTU and M-Bus protocols.

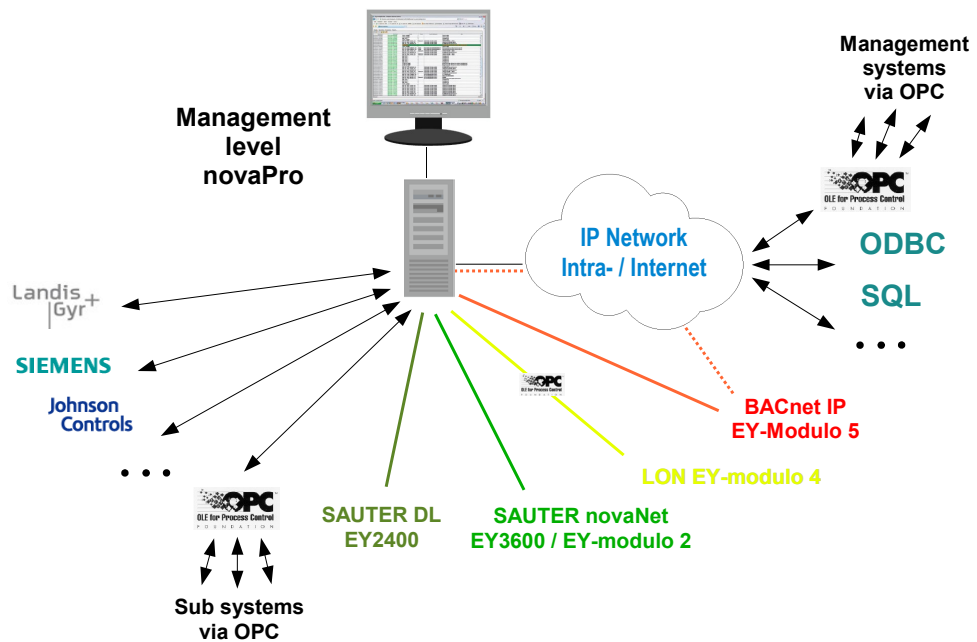
The **modu731 with the M-Bus 2-wire interface and EIA-RS232** has the M-Bus protocol.

Other protocols can be implemented in all the modules on demand. Please contact us for the latest protocols available ex works and for implementation of other protocols.

**7.3 Non-Sauter and SAUTER systems via novaPro Open**

The SAUTER **novaPro Open** management level software features a wide variety of **connection options**. They support the connection of all SAUTER EY systems, as well as a large number of third-party systems and various databases.

In addition, it is possible to find solutions for all further connections that are not available as standard, based on the available technologies and tools.



**7.3.1 SAUTER EY-modulo 2 and EY3600**

As well as integration via moduNet300 (see 7.1), **SAUTER EY-modulo 2 and EY3600 stations** (SAUTER novaNet- stations) can also be connected to BACnet / EY-modulo 5 systems via novaPro Open using the appropriate drivers. Existing EY-modulo 2 and EY3600 systems can be extended with BACnet / EY-modulo 5 stations in this way.

**Cross-communication** between the EY-modulo 2 / EY3600 and the EY-modulo 5 stations can take place using the SCADA functions of the novaPro Open software.

Whether BACnet and novaNet are connected via the novaPro Open management level, via the moduNet300 novaNet-BACnet application master or via both is a decision that must be based on the number of addresses and the data flow for each individual case.

### 7.3.2 SAUTER EY2400

**SAUTER EY2400 systems** with or without LZ4 or LZ10 can be integrated using the corresponding drivers via novaPro Open into BACnet / EY-modulo 5 systems, and existing EY2400 systems can be expanded in this way with BACnet / EY-modulo 5 stations.

The **LZ control centre** and its functions are replaced by the SCADA functions of novaPro Open. The control centre can be programmed for this purpose using a tool (part of CASE Vision).

Cross-communication between the EY2400 stations and the BACnet / EY-modulo 5 stations is also implemented via the SCADA functions of the novaPro Open software.

### 7.3.3 LON, SAUTER EY-modulo 4

**SAUTER EY-modulo 4 stations** which use the standardised LON data bus and third-party **LON stations** are integrated in the SAUTER management level with novaPro Open using LON-OPC-Server and novaPro Open OPC-Client.

### 7.3.4 Third-party systems via drivers

A large number – over 100 – of **data bus drivers** are available for integrating a wide range of third-party systems in the SAUTER novaPro Open management level software.

The main drivers for **building management systems** are:

- Johnson Controls System 91, N2 Protocol
- Landis & Gyr PRV 1 Controller
- Landis & Gyr PRV 2 Controller
- Siemens SIMATIC S5 / S7, TCP/IP (vpiwnstp)
- OPC LonWorks through LNS database
- OPC LonWorks native LNS / LCA
- OPC client as per OPC Data Access 2.0 specification
- OPC AE (alarm and event)
- Modbus RTU / Modbus TCP
- Profibus DP

As well as these, there are solutions for other connections, based on the available technologies and tools. Please contact us for the latest available drivers and for implementation of new ones.

Backward and downward compatibility, system integration

### 7.3.5 Third-party systems via databases

SAUTER novaPro Open support **data exchange with databases** via DDE, ODBC, SQL, OPC:

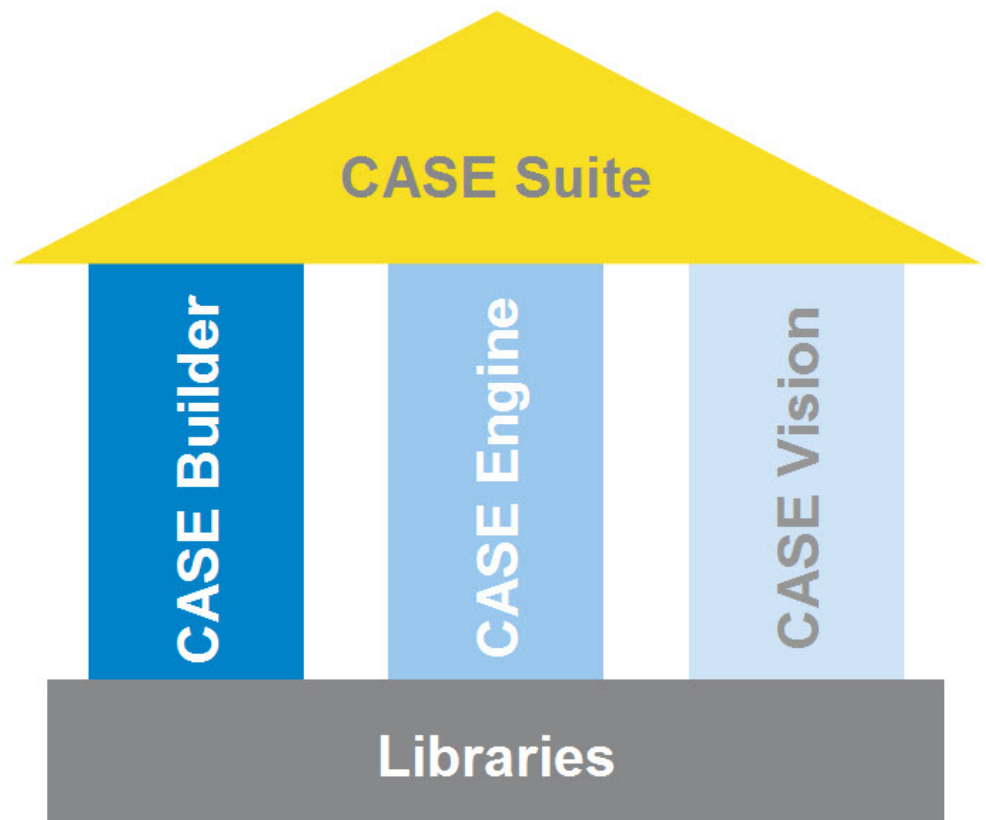
- Standard **DDE** (dynamic data exchange) functions and block DDE functions are available as clients and as servers.
- The **SQL module** is a highly flexible method of connecting to the most common standard databases via the Microsoft **ODBC interface**. This makes it easier to configure data exchange with other applications and databases such as Microsoft SQL Server, Sybase and Oracle.
- **Event-controlled SQL or ODBC** queries can be used to read data from existing databases and to write real-time log data to databases (for example transmitting current meter readings to ERP systems).
- The standardised **OPC (OLE for Process Control)** data exchange can be used to integrate various third-party systems that have their own OPC server (see also above).

## 8 Integrated CASE Suite service

**CASE Suite** is SAUTER's integrated service package. The **software bundle** includes all the programmes and libraries required for the various service steps in a project, from **planning** and **engineering** through to **commissioning** and **maintenance**.

The first key benefit of the program package is that all **data** entered at any time during the project processing is used throughout, so the data **needs to be entered only once**. Once this data, such as in-house and third-party material, services, data points, plant devices and their functions has been entered, it is available to all CASE programmes for further use. **This saves time, improves quality, reduces costs and helps to prevent errors.**

The second key benefit is the extremely comprehensive range of **libraries with standard and model solutions**. They an immense **gain in efficiency** in terms of **labour time**. With just a few simple operations, solutions are assembled from the libraries in line with customers' wishes, and they can be adapted individually as required. This jigsaw method of assembling plants is simple, and it improves the engineering process. As well as **high-quality solutions**, this method also exploits the **SAUTER specialists' plant expertise** which has been accumulated over the years and is contained in these libraries. Nevertheless, there are no obstacles to individual solutions adapted to the specific customer requirements at all levels of project processing.



Integrated CASE Suite service

The **CASE Suite** platform gathers together the following programs:

8.1 CASE Builder

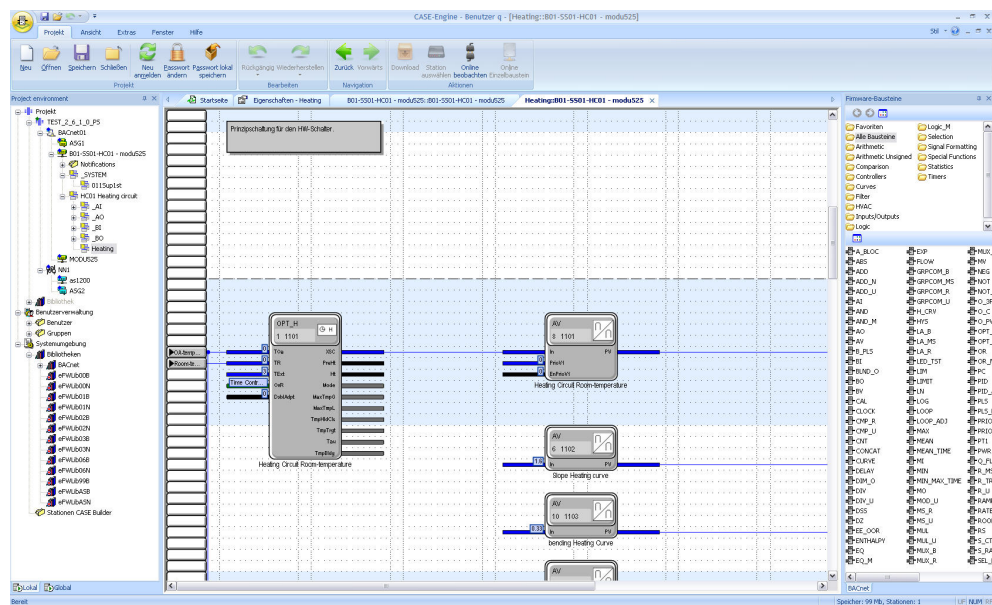
The CASE Builder program was developed to make **technical project processing** more efficient. Following the principle that values that are entered once – such as data points, plant devices and their functions – are automatically re-used during the project without having to enter them again at each stage of it, a tool was developed on the basis of a Microsoft Office graphical program, which very closely meets this demand.

Thanks to a **comprehensive library**, CASE Builder can very efficiently create all the documents needed for planning and implementation and adapt them to specific project requirements. When a plant is put together (in graphic form or as a tree structure) from the existing function groups, all the necessary information is collated so that the following items can be generated at the click of a button:

- Function descriptions
- Lists of devices, cables, motors and valves
- Data point lists, labels for automation stations

Project data obtained in this way is kept in a project database and can be used for subsequent processing and documentation. The process plans and data point information created by CASE Builder can be in the SAUTER visualisation applications for graphically representing the plant.

8.2 CASE Engine



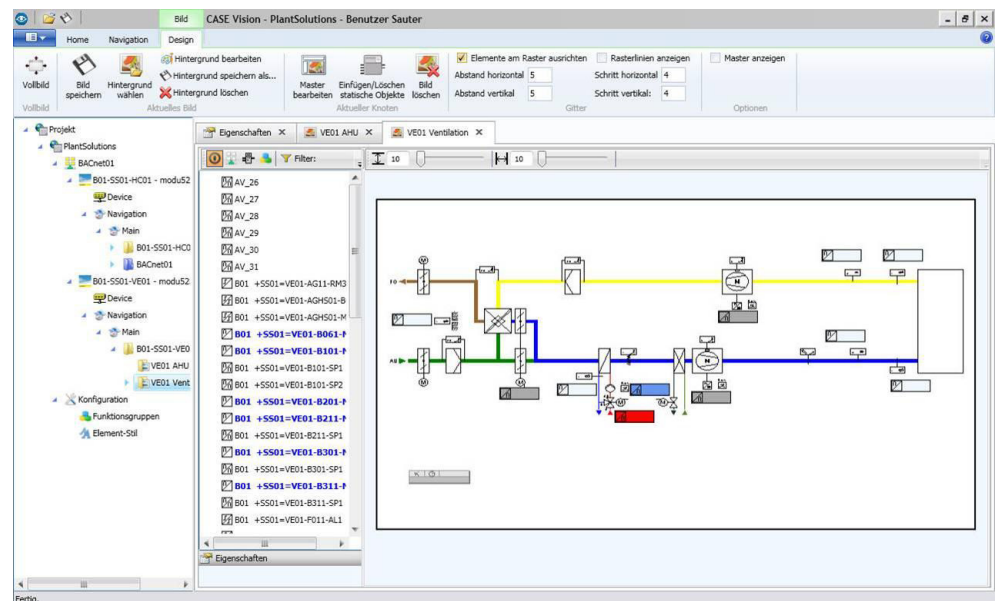
Using the CASE Engine editor and the **integrated library** you can quickly and graphically create the **plant-specific software of the automation stations (AS)** within the project. You can create **function plans** and configure stations.



Technical control processes are shown in **graphic** form, making them easier to monitor.

The programming, based on the **IEC61131-3 (FBD) standard**, makes operation of CASE Engine – which is already simple – even easier. CASE Engine also allows users to work in a team. Access to a **common project database** means that all the team members have the same information available to them at the same time (simultaneous engineering).

### 8.3 CASE Vision



The CASE Vision program enables you to easily create **plant navigation trees** and **dynamic plant images** for various SAUTER visualisation applications.

The project data from CASE Engine is used as data point references. The images and navigation structures are prepared with CASE Vision and then displayed later in the visualisation application or processed as required.

### 8.4 CASE Library Management

The **CASE Library Browser** program is used to display the installed library packages and their components and, if necessary, to delete them.

The administrator can use **CASE Library Manager** to create and manage library packages so that they can be distributed to the users.

**CASE Library Import** is used to integrate additional library packages in the CASE package. These packages are subsequently available to the user for project creation.

Integrated CASE Suite service

## 8.5 Components

### **CASE VAV**

All the necessary settings for trouble-free operation of the ASV115 can be made using the menus of the CASE-VAV software tool. The main input and output configuration parameters are preset at the factory in order to simplify commissioning. Special functions for online monitoring and troubleshooting round off the package.

### **CASE TPC** (Touch Panel Configurator)

The CASE TPC software is used for graphically programming the EYT250. The software is not only a user-friendly tool for creating the functional interface, and for configuring and commissioning the EYT250, but also for modifying structures and parameters.

### **CASE Drives**

CASE Drives is a software tool for starting up the Sauter ASM105SF132 and ASM115SF132 damper actuators and the AVM105SF132 and AVM115SF132 valve actuators. The actuator parameters can be set and read out on site using CASE Drives. The connection is made via a serial interface on the PC.

### **CASE Sensors**

CASE Sensors allows you to configure and monitor SAUTER sensors. All parameters that can be changed using hardware controls can be set with this application. As well as this, other device-specific parameters can be made available for setting. CASE Sensors supports the following sensors: SGUF010/011 path measuring sensors and EGP and SDX differential pressure sensors.

## 8.6 Tools

The CASE Tools provide a range of useful functions, including:

### **CASE Export BACnet**

CASE Export allows you to make information from the automation stations, such as I/O module parameters (building address, address text, dimensions etc.), available to other applications.

The CASE Export BACnet program creates EDE (engineering data exchange) files (format 2) for the BACnet stations (SAUTER EY-modulo 5), and makes them available to other applications.

### **CASE Export novaNet**

CASE Export novaNet provides three functions: Exporting BMT parameters without groups (BMT 5.1), exporting BMT parameters with all tables (BMT 5.1 All Tables) and exporting the EDE file.

### **CASE Import**

During upgrades or when an old automation station fails, stations from the EY2400 system are often replaced with state-of-the-art EY-modulo 5 stations.

This is where CASE Import is used. The address designations for the EY2400 station can be transferred from the EY2400 FBD (function block diagram or FuPlan) project into a current EY-modulo 5 CASE Builder project, with no need to type them in again. In addition, a terminal list is generated, showing the old and new terminal numbers, making it very easy to connect the existing plant devices to the EY-modulo 5 station.

### **BACnet Server Configurator**

The IP address and other parameters of the novaNet-BACnet application master (EYK300 communication card, EYK220, EYK230 and EY-modulo 5 EY-AM300 BACnet automation stations) are configured using the SAUTER BACnet Server Configurator software module.

The configuration is transferred via the serial COM interface (DB9 connector) or the Ethernet/IP interface where it is stored in a Flash memory safe from power failure. Data transfer via IP is effected using the preset TCP Port 51966.

## **8.7 Communication**

### **CASE HWC (hardware commissioning)**

The hardware commissioning program enables the technician to check the automation stations (novaNet AS) in the system, as well as the connected field equipment. After the hardware has been put into service, the program can be used for initial, simple troubleshooting.

### **CASE Sun**

CASE Sun is the configuration tool for the automation and ecos stations in the SAUTER EY-modulo 5 range. CASE Sun can be used to configure the Ethernet network, perform the 1:1 test during commissioning and update the firmware in the stations when necessary. CASE Sun is designed to be used by SAUTER service engineers, as well as by electricians on site.

### **novaNet292 Configurator**

The novaNet292 Configurator is used for configuring the novaNet292 Ethernet access unit. It can be used, for example, to set the IP address of the port number.

### **novaVPort**

novaVPort starts the communication driver for virtual COM ports. After selecting the configured driver, you can use the novaNet292 virtual port monitor to view the status and various information (such as version numbers) on novaNet292. If no application is using the port, you can stop the novaVPort driver yourself.

### **novaMit29x**

novaMit29x is an analysis tool for the novaNet communication protocol. It allows you to record data transfer from the network and then analyse it.

Integrated CASE Suite service

## 9 Example applications

### 9.1 Office building in the Netherlands



Two towers, each 105 m high, fully enclosed in glass, space for 6500 workstations.

#### Requirements:

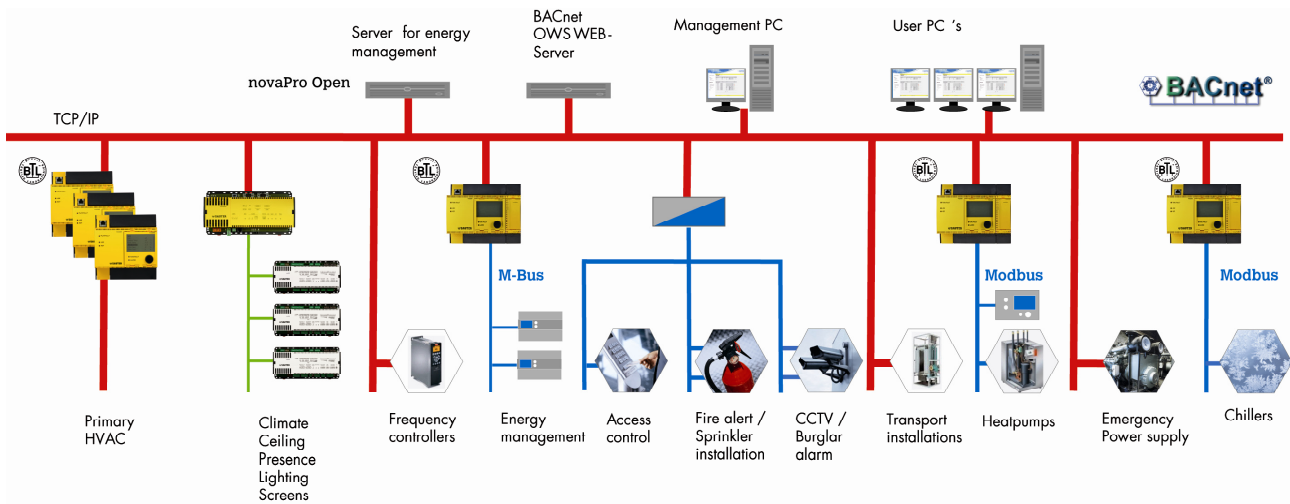
- Extensive and **complex list of tasks:**
  - 50,000 data points
  - 2,500 room controllers
  - 4,000 window blinds
  - 6,000 strip lights
  - 25 cabinets for primary automation
  - 55 cabinets for decentral functions
  
- Very high requirements for **energy efficiency and sustainability** of the building. The target is that the energy coefficient of the building should be 35% below the applicable regulations:
  - Ingenious energy concept with a mix of heat pumps and geothermal probes as heat/cold accumulators, with district heating for any additional demand
  - Differentiation between comfort and process cooling
  - Control of the solar protection incorporated into the facade, room comfort and room lighting by 500 single-room control systems
  
- **Integration** of all specialist systems throughout the building:

Example applications

- **Via BACnet:** Air-conditioning plants, emergency power generators, UPS, lift, lighting (DALI), pumping systems, >100 frequency controllers, as well as the security management system (SMS), consisting of access control, surveillance camera system, intrusion detection, evacuation, fire alarm system and sprinkler system
- **Via Modbus RTU** Heat pumps, ventilation of car parking areas and chillers
- **Via M-Bus:** Energy consumption meters
- **Via OPC:** Energy measurement
- **Proprietary:** Lightning protection system

**Solution with SAUTER EY-modulo 5:**

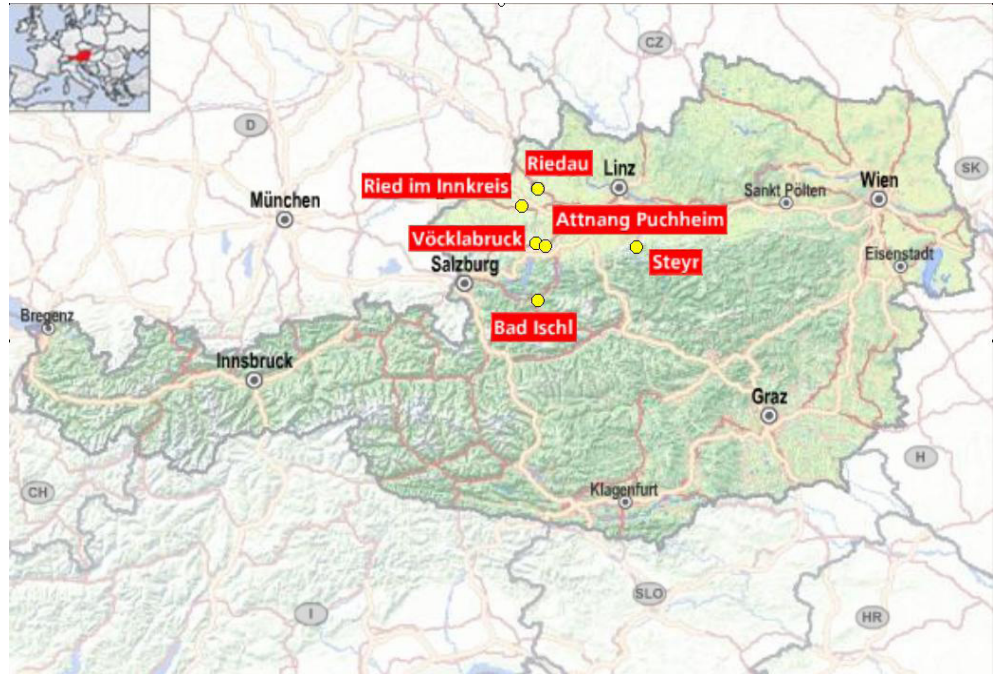
- Sixty modu525 automation stations in 25 cabinets for controlling and regulating all primary systems, individually structured in a modular system depending on the application.
- Seven modu710/731 moduCom modules for M-Bus integration.
- Fifteen modu720/721 moduCom modules for Modbus integration.
- 2500 single-room controllers for room control including control of lighting, and for automatic control of the solar protection integrated in the facade.
- novaPro Open management level with integration of all Sauter and third-party equipment systems: Four 19-inch PDM data servers, two operating stations in the BMS centre, one Touch-PC operating station in the energy centre, operation via web browser, alarm notification with AAM to e-mail/text. ESXI server with EMS.



SAUTER EY modulo 5 ideally meets the high requirements for this project thanks to its **high performance, modular design** and wide range of open **communication options** via BACnet/IP and moduCom.

## 9.2 Railway station buildings in Austria

Small railway stations of different sizes spread across the state.



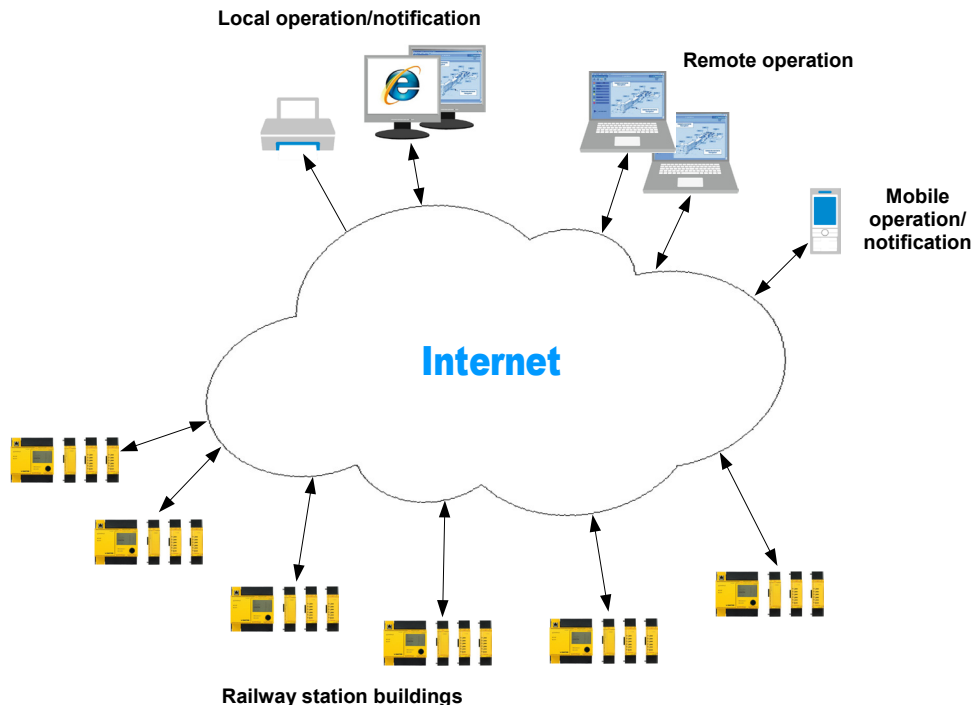
### Requirements:

- Variable building sizes and corresponding differences in the scope of control tasks (e.g. 1x heat-producing plant, 1x solar plant (optional), 2–3x radiator groups, 1x water heater)
- Central administration and monitoring, but no management level
- Central and decentral operation via internet using web browser
- Local operation of plant from AS or cabinet
- Central and decentral alarms via internet using e-mail or text
- Customer's LAN/WAN cannot be used for BMS
- Minimisation of fixed and variable communication costs

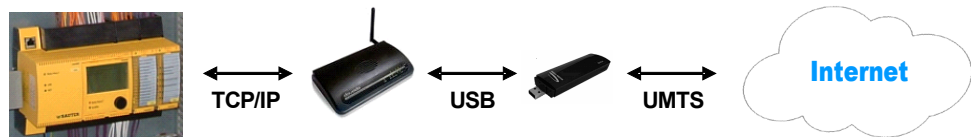
### Solution with SAUTER EY-modulo 5:

- One modu525 AS per railway station, individually structured in a modular system depending on the scope of the application.
- Local operation with the modu840 local operating unit and/or modu 625, 630, 650 or 670 local override and indication units, according to I/O modules fitted.
- Operation and indication to and from the central national unit, mobile operating stations and smartphones, via moduWEB in each station.

Example applications



- Cost-optimised connection to the internet via a router with a USB-UMTS stick in each railway station.



- A further reduction in costs is achieved by using a DynDNS service instead of fixed IP addresses for access to the web servers in the stations.

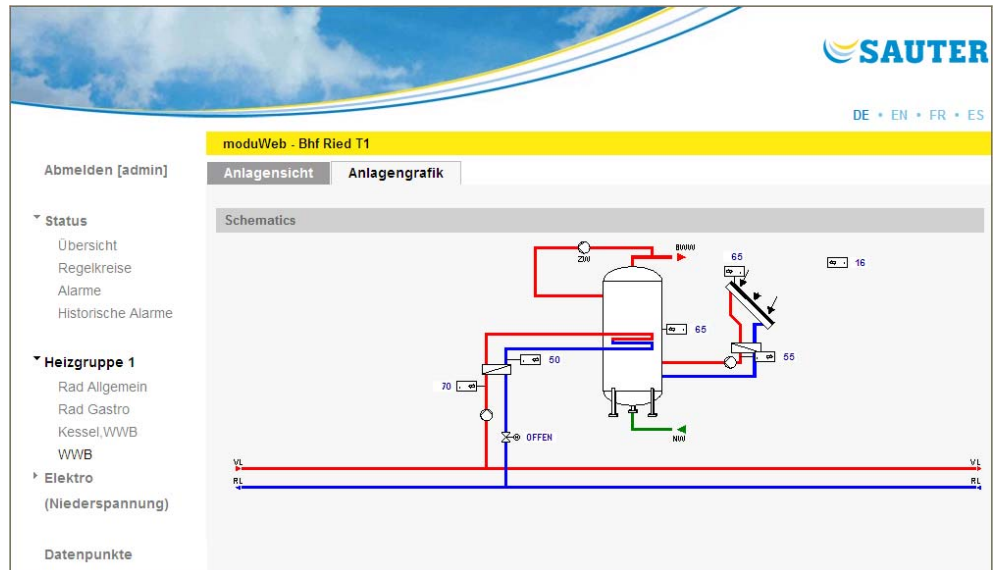
Operation via moduWeb, plant list:

The screenshot shows the 'moduWeb - Bhf Ried T1' interface. On the left is a navigation menu with options like 'Abmelden [admin]', 'Status', 'Heizgruppe 1', 'Elektro', and 'Datenpunkte'. The main area displays a table of functional groups:

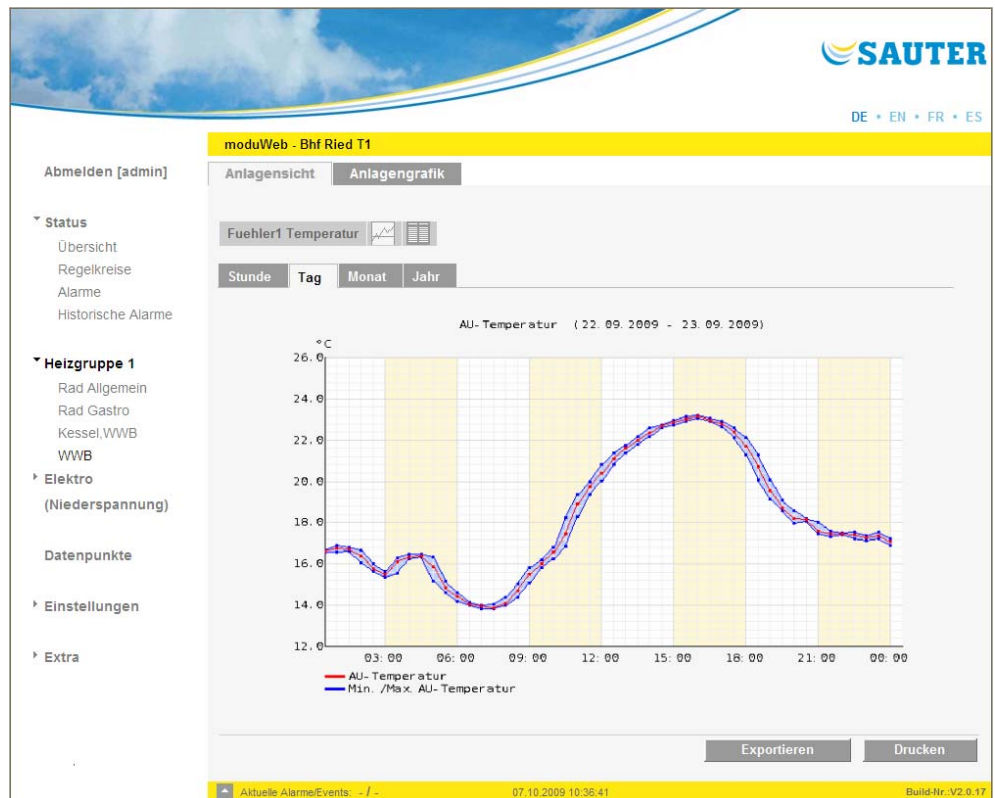
Funktionsgruppen	Details	Istwert	Status
<b>WWB Zirkulationspumpe</b>			
Zirk.-Pumpe - H04 Zirk.-Pumpe SB		0	✓
Zirk.-Pumpe - H04 Zirk.-Pumpe Stoer.		0	✓
<b>WWB Speicher: Fühler mitte</b>			
Temp. Speicher - H04 Temp. Speicher		100	✓
<b>WWB Solar indirekt: WT, Pumpe, Kollektor temp.</b>			
Solarpumpe pri. - H04 Solarpumpe pri. SB		0	✓
Solarpumpe pri. - H04 Solarpumpe pri. Stoer.		0	✓
<b>WWB indirekt primär: VL-Fühler</b>			
VL-Temp. pri. - H04 VL-Temp. pri.		100	✓



Operation via moduWeb, plant diagram:



Operation via moduWeb, trend diagram:



SAUTER EY modulo 5 ideally meets the requirements for this project without a management level thanks to its **modular design**, its extensive **local operating options**, and remote operation and alarms with **moduWEB**.



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