EY-AS 524, 525: Modular automation station, modu524/525

How energy efficiency is improved

SAUTER EY-modulo 5 technology: modular, fast and universal

Features

- Part of the SAUTER EY-modulo 5 system family
- Modular automation station (AS)
- Regulation, control, monitoring and optimisation of operational systems, e.g. in HVAC engineering
- 26 inputs and outputs
- Can be extended with up to 3 (modu524) or 8 (modu525) I/O modules or communication modules
- Communication: BACnet/IP (EN ISO 16484-5)
- BACnet profile B-BC
- AMEV profile AS-B (modu525 only)
- Integrated web server
- Programming/parameterisation via PC using CASE Suite (based on IEC 61131-3)
- Control libraries
- Time and calendar function
- Predictive control based on meteorological forecast data
- Data recording
- Can be equipped with local operating and indicating units, located up to 10 m away
- Alive signal output pulsed

EY-AS525F00*

EY-AS524F001

Technical data

Power supply

Power supply		See list of types
Power consumption		See list of types
Dissipated power		≤ 5 W (excluding accessories)
Peak inrush current		See list of types

Parameters

Battery (buffer: RTC/SRAM)		CR2032, pluggable

Inputs/outputs

Digital inputs		8 (alarm/status)
Digital outputs		6 (relays, 24...250 V~, 2 A)
Universal inputs		8 (Ni1000/Pt1000, U/I/R, DI)
Analogue outputs		4 (0...10 V)
Watchdog output pulsed		1 (5 Hz)

Function

	BACnet data point objects	512 (incl. HW)
	BACnet client links	200 (Peer to Peer)
	Control	32 (Loop)
	Active COV subscription	1500
	Structured view	128 (Structured View)
	BBMD in BDT	32
	FD in FDT	32
Dynamic objects	Time programmes	64 (Schedule)
	Calendar	16 (Calendar)
	Historical data	100 (Trend Log) up to 30000 entries
	Alarms	16 (Notification Class)
	Chart	32 (Log View), only via moduWeb
	Command object	16

Architecture

	Processor	32 bit, 400 MHz
	Flash	16 MB
	Embedded web server	moduWeb
	Application data	Via CASE Engine
	SDRAM (synchronous dynamic RAM)	32 MB

	SRAM (static RAM)	1 MB

Interfaces and communication

	Ethernet network	1 × RJ-45 socket
	10/100 BASE-T(X)	10/100 Mbit/s
	Communication protocols	BACnet/IP (DIX)
	Local operating unit, modu840 (LOP)	1 × integrated interface
Operating and indicating units	Connection for modu 6 (LOI)	1 × integrated interface
	Connection, I/O and COM modules	1 × integrated I/O bus plug for up to 8 modules (max. load 1100 mA)
	Hardware extension	≤ 8 extension modules (modu525) 8 of which are I/O modules or 2 of which are COM modules ≤ 3 extension modules (modu524) 2 of which are I/O modules or COM modules

Ambient conditions

	Operating temperature	0...45 °C
	Storage and transport temperature	-25...70 °C
	Admissible ambient humidity	10...85% rh, no condensation

Construction

	Fitting	On top-hat rail
	Dimensions W x H x D	160 × 170 × 115 mm
	Weight	0.8 kg

Standards and directives

	Type of protection[1]	IP20 (EN 60529)
	Protection class	I (EN 60730-1)
	Environment class	3K3 (IEC 60721)
	Software class A	EN 60730-1 Appendix H
	Energy class[2]	I to VIII = up to 5 % acc. EU 811/2013, 2010/30/EU, 2009/125/EG
	BACnet profile	B-BC (nach ISO 16485)
	AMEV profile	modu525: certified to AS-B modu524: functions like AS-B, but without certification
CE conformity according to	EMC Directive 2004/108/EC	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4
	Low-voltage directive 2006/95/EC	EN 60730-1, EN 60730-2-9 EN 60950-1

Overview of types

Type	Power supply	Power consumption	Peak inrush current	Maximum number of modules
EY-AS524F001	230 V~, ±10%, 50...60 Hz	≤ 13 VA/5 W (excluding accessories)	At 230 V~: 8 A (5 ms)	3
EY-AS525F001	230 V~, ±10%, 50...60 Hz	≤ 13 VA/5 W (excluding accessories)	At 230 V~:8 A (5 ms)	8
EY-AS525F005	24 V=, ±10%, 24 V~, ±20%, 50...60 Hz	≤ 11 VA/4 W (excluding accessories)	At 24 V=:35 A (5 ms) At 24 V~:39 A (5 ms)	8

Accessories

Plug-in I/O modules

Type	Description
EY-IO530F001	Digital and universal inputs (8 DI/8 UI)
EY-IO531F001	Digital inputs (16 DI)
EY-IO532F001	Universal inputs (16 UI)
EY-IO533F001	Universal and digital inputs (8 UI/4 DI/4 S0)

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[1] *Only on front with terminal cover, blanking piece for LOI and transparent cover*

[2] *When the automation station is being used as a temperature controller, most temperature controller classes can be fulfilled according to EU Directive 2010/30/EU, Regulation 811/2013. For information on the exact temperature class, please refer to the system integrator's user program.*

Type	Description
EY-IO534F001	Analogue inputs with galvanic isolation (8 AI current/voltage)
EY-IO550F001	Digital outputs (6 DO, relay)
EY-IO551F001	Digital outputs (16 DO, open collector)
EY-IO570F001	Analogue outputs and universal inputs (4 AO/8 UI)
EY-IO571F001	Digital inputs/outputs (16 DI/DO, open collector)
EY-IO572F001	Analogue outputs, universal and digital inputs (4 AO/8 UI/3 DI)
EY-LM590F001	novaLink module (8 channels)

Plug-in communication modules (COM)

Type	Description
EY-CM721F010	Integration of non-SAUTER systems via EIA-232 and EIA-485 for Modbus/RTU master
EY-CM721F020	Integration of non-SAUTER systems via EIA-232 and EIA-485 for M-Bus
EY-CM731F020	M-Bus and EIA-232 integration of non-SAUTER systems for M-Bus

Local operation and indication

Type	Description
EY-LO625F001	Operation/indication, 6 switches Auto-0-I, 4 LEDs alarm/status, 4 setpoint transmitters (A-0…100%), 8 LED alarm/status
EY-LO630F001	16-LED indication, bi-colour
EY-LO650F001	6 switches, auto-0-I, 4 LEDs operation/indication
EY-LO650F002	3 switches, auto-0-I-II, 4 LEDs operation/indication
EY-LO670F001	4 setpoint transmitters (A-0…100%), 8 LEDs for operation/indication
EY-OP840F001	Local operating and display unit modu840
0930240511	Front frame for 4 operating/indicating units
0930240540	Connection adaptor for RJ-45 operating/indicating units for front frame
0930240541	Connection adaptor for RJ-45 operating panel for front frame

Replacement relay

Type	Description
0929360005	PCB relays (2 × pluggable electronic PCB with 3 relays, including connection terminals)

Manuals

Type	Description
7010050001	Operating manual for moduWeb, German
7010050002	Operating manual for moduWeb, French
7010050003	Operating manual for moduWeb, English

Description of operation

The modu524/525 automation stations (AS) are used to regulate, control, monitor and optimise operational installations. They are based entirely on BACnet/IP communication. A web server (moduWeb) is integrated into the AS for comprehensive operation, direct visualisation of the data points, notification and forwarding of alarms and creation of time profiles (scheduler).

> **Note**
> All information related to the operation of the web server is contained in the document "modu525 web operation" (manual 7010050001). More detailed information on BACnet functionality of the AS can be found in the PICS documentation.

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.

Engineering notes

Fitting and power supply

The modu524/525 AS must be fitted using a DIN rail (EN 60715) in a cabinet. You must ensure that it is not installed in the immediate vicinity of power contactors, frequency converters or other EMC interference sources. We generally recommend fitting the AS in a separated DDC cabinet field. In the case of the EY-AS525F001 and EY-AS524F001, the power supply is from a 230 V mains connection, in the case of the EY-AS525F005, it is from 24 V DC or AC. During installation, there must also be an external, primary isolating facility. Connection may only be performed when the system is disconnected from the electrical supply. The ground terminals are connected internally to the earth connection (PELV electrical circuits). All plant devices are connected using screw terminals. When connecting the

supply/feed, the protective earth must also be connected to the correct terminal (protection class I). Communication wiring is to be carried out professionally and must obey the provisions of the standards EN 50174-1, -2 and -3. Communication and plant device wiring must be separated from live wires.

Special standards such as IEC/EN 61508, IEC/EN 61511, IEC/EN 61131-1 and -2 were not taken into account.

Local requirements regarding installation, usage, access, access rights, accident prevention, safety, dismantling and disposal must be taken into account. Furthermore, the installation standards EN 50178, 50310, 50110, 50274, 61140 and similar must be observed.

For the conductor cross-section, the following applies: min. 0.8 mm², max. 2.5 mm² copper wire in accordance with standards and national installation requirements.

The return line of the Ni/Pt1000 sensors must be separated from the other inputs and outputs, i.e. separate GND terminals ⊥ must be used.

For more information, see fitting instructions MV P100015478.

Inputs/outputs

As a basic unit, the AS has 26 inputs and outputs with the following functionalities:

Universal inputs

Number of inputs	8 (UI)
Type of inputs (software coding)	Ni1000 (DIN 43760)
	Pt1000 (EN 60751)
	Voltage measurement (U)
	Current measurement (I), channel u12, u13 only
	Potentiometer input (Pot)
	Resistance (R)
	Digital input (DI)
Protection against external voltage	
Ni/Pt/U/R/Pot/DI	± 30 V / 24 V~ (without destruction)
I (channel u12, u13)	+12 V / -0.3 V (without destruction)
Update rate	
Channels u12, u16	100 ms
Channels u13, u14, u15, u17, u18, u19	500 ms
For temperature measurement (independent of channel)	≤ 3 s
Resolution	14 bits
Measuring ranges	
Voltage (U)	0 (2)...10 V, 0 (0.2)...1 V
Current (I)	0 (4)...20 mA
Potentiometer (Pot)	0...1 (100%) with 3-wire connection (1…100 kΩ)
Reference	U_{ref} 1.23 V (terminal no. 37, 38) load max. 10 mA
Resistance (R)	200…2500 Ω
Temperature Ni1000 Pt1000	-50...+150 °C -50...+150 °C
Digital input	Potential-free contacts with ground connection opto-coupler, transistor (open collector) approx. I_{out} = 1.2 mA
Pulse counter	≤ 3 Hz

Temperature measurement (Ni/Pt)

The Ni/Pt1000 sensors are connected using two wires between one of the input terminals for universal inputs (channel u12...u19) and a ground terminal. The inputs require no calibration and can be used directly. Line resistance of 2 Ω is pre-compensated as standard. With the correct line resistance of 2 Ω (cable cross-section 1.5 mm²), the power cable (wire) may be no more than 85 m. Larger line resistances can be compensated by the software. The measurement current is pulsed to ensure that the sensor is not heated (I_{meas} approx. 0.3 mA).

Voltage measurement (U)

 ⌁ **SAUTER**

The voltage to be measured is connected between an input terminal for universal inputs (channel u12...u19) and a ground terminal. The signal must be potential-free. The measuring ranges with or without offset 0 (0.2)...1 V or 0 (2)...10 V are selected through the software.
The internal resistance $_i$ of the input (load) is 9 MΩ.

Current measurement (I)

The current can only be measured at two inputs. The current to be measured is connected at one of the two input terminals for universal inputs (channel u12, u13) and a ground terminal. The current signal must be potential-free. The measuring ranges with or without offset 0 (4)...20 mA are selected via the software. The maximum input current must be limited to 50 mA. The internal resistance R_i is < 50 Ω.

Potentiometer measurement (Pot)

The potentiometer is connected between an input terminal for universal inputs (channel u12...u19), a ground terminal and a terminal with reference voltage (U_{ref}). The principle of a voltage divider applies for this measurement. The reference voltage outputs are not short circuit-proof. To avoid overloading them, the overall resistance of all connected potentiometers may not drop below 123 Ω (max. 10 mA load). For a stable, interference-free measurement, a potentiometer value of ≤ 10 kΩ is recommended.

Digital inputs

Digital inputs (DI with UI)

The AS also records binary information with the universal inputs. The information (alarm/status) is connected between an input terminal and the ground (channel u12...u19). The station applies a voltage of approx. 13 V to the input terminal. In the case of an open contact, this corresponds to INACTIVE/bit=0. In the case of a closed contact, this is changed to ACTIVE/bit=1 (principle of normally-open contacts). Virtually 0 V is applied here, with a current of approx. 1.3 mA.
Every input can be defined individually as an alarm or a status by setting software parameters.
The digital inputs can be displayed with the local indicating unit (e.g. modu630 accessory).

Digital inputs (DI fixed)

Number of inputs	8 (DI fixed)
Type of inputs	Potential-free contacts with ground connection Opto-coupler Transistor (open collector)
Pulse counter	≤ 50 Hz
Protection against external voltage	±30 V/24 V~ (without destruction)
Maximum output current	Approx. 1.2 mA with respect to ground
Update rate	100 ms

The binary information is connected between one of the input terminals (d4...d11) and the ground. The station applies a voltage of approx. 13 V to the input terminal. In the case of an open contact, this corresponds to INACTIVE/bit=0. In the case of a closed contact, this is changed to ACTIVE/bit=1 (principle of normally-open contacts). Virtually 0 V is applied here, with a current of approx. 1.3 mA.
Every input can be defined individually as an alarm or a status by setting software parameters.
The digital inputs can be displayed with the local indicating unit (e.g. modu630 accessory).

Pulse counters (CI with DI)

At the digital inputs, meter inputs of potential-free contacts, opto-couplers or transistors with an open collector can be connected. The maximum pulse frequency may be up to 50 Hz. To ensure that switching contacts are recorded correctly, a debounce time of 5 ms is used. Pulses can be captured on the falling or rising edge, or on both edges. The minimum pulse duration should be four times the debounce time.

Overview of pulse detection

Firmware module	BI	PC
Digital input	3 Hz	50 Hz
Universal input	3 Hz	3 Hz

Digital outputs

Number of outputs	6 (DO)
Type of outputs	Relays, normally-open contacts (0-I)
Load on outputs	24...250 V~/2 A resistive load
Processing cycle time	≤ 500 ms
Switching frequency	10^6 cycles

The actuator to be switched is connected directly to the relay terminals (R20...R25).

The outputs can be defined for single- or multi-layered functions. Real feedback is only possible via digital inputs (BACnet COMMAND FAILURE)

The relay outputs can each be supplied with a voltage of a maximum of 250 V~ and loaded with 2 A. The plant devices are connected via screw terminals; this may only take place when the system is disconnected from the electrical supply.

Special protective measures allow the relay outputs to be safely separated from each other. This allows mixed operation with both 250 V~ and SELV/PELV circuits without mutual interference.

The outputs of the relay contacts adopt the defined status "0" (open) when:

• the power supply/communication on the I/O bus is interrupted,

• or, when the AS power supply fails

The relays are installed into 2 pluggable PCBs with connection terminals, allowing them to be easily replaced.

Analogue outputs

Number of outputs	4 (AO)
Type of outputs	4 × 0(2)...10 V
Load	≤ 2 mA
Update rate	100 ms
Resolution	13 bits

The output voltage is issued at one of the output terminals (a0...a3) and a ground terminal. The outputs are designed as push-pull outputs with active sink capability. Every output can be subjected to a load of 2 mA.

The outputs are protected against static discharges, but not against external voltages!

Watchdog

The watchdog signal that monitors the internal process of the AS can be taken from terminal 01. If the processor and program sequence are working correctly, the watchdog output is timed at approx. 5 Hz. It is an open collector design with a ground connection; the following should be noted: Activation of an external actuator, max. 15 V = load of 10 mA.

As a practical application, the signal can be connected directly to a digital or universal input of a second AS and monitored using software.

Technical specifications of the inputs and outputs

Universal input	Measuring range	Resolution	Precision a x measuring span + b x measured value	
Ni/Pt1000	-50…+150 °C	< 0.05 K	±0.5%	±0.5%
U (0/0.2...1 V)	0.02...1.1 V	< 0.1 mV	±0.5%	±0.5%
U (0/2...10 V)	0.15...10.2 V	< 1 mV	±0.5%	±0.5%
I (0/4...20 mA)	0.5...22 mA	< 0.02 mA	±1%	±2%
R	200…2500 Ω	< 0.1 Ω	±0.2%	±1%
Pot (> 1 kΩ)	2...100%	< 0.5%	±1%	±1%

Example of calculating the accuracy: Measured value 20°C. Measuring span: -50°C + 150°C = 200K

Precision = a x measuring span + b x measured value = ±0.5% x 200K ±0.5% x 20°C = ±1K ±0.1K = ±1.1K

Analogue output	Range of adjustment	Resolution	Accuracy
AO (0/2…10 V)	0.01...10.2 V	< 2 mV	< 1% of the end value

Binary input (0-I)	Universal input (UI)	Digital input (DI)
Switching threshold inactive "0"	> 3 V	> 4 V
Switching threshold active "1"	< 1.5 V	< 2.5 V
Switching hysteresis	> 0.4 V	> 0.3 V
Pulse counter	≤ 3 Hz	≤ 50 Hz

Watchdog		
Open collector output	15 V=, ≤ 10 mA	Pulse frequency 5 Hz

Start-up

The switch (designated "ON/OFF") for switching the AS on and off is located on the top left of the AS. This is not a mains power isolating facility. The switch only isolates the secondary circuit of the switch-mode power supply, which supplies the base station, the I/O modules and the operating units.

LED indicators

When the AS is switched on (ON switch), 4 LEDs are used to display the different operating statuses. The following table shows the functions of individual LEDs.

System LED

LED name	Status	Description
RUN/FAULT	Continuous green light	AS in operation
	Flashing green	Identification via CASE Sun
	Flashing red	AS in configuration, restart/download active
	Alternating green – red – off	Lamp test active (indicator type priority)
	Flashing red	Internal error
I/O bus[3] (No designation)	Continuous green light	I/O operation OK
	Pulsating green	No user program (CASE Engine)
	Flashing red or continuously lit	I/O bus not ready for operation
	Alternating green – red – off	Lamp test active (indicator type priority)
LNK	Continuous yellow light, continuous red light	AS in startup mode
	Continuous green light	Network connection present
	Off	Network connection interrupted
ACT	Pulsating yellow	Ethernet (data transmission active)

Programming and parameterisation

The complete user program (Engine Plan) and the different parameterisations (BACnet objects, images for moduWeb, etc.) are created using CASE Suite. Up to 512 BACnet data points incl. hardware inputs and outputs can be used.

Every AS must be configured for communication in an Ethernet network. All settings such as IP address, subnet mask, gateway and instance number (DOI) are parameterised via CASE Suite. Automatic configuration via DHCP servers is also possible.

To identify the AS visually in a network, the CASE Sun commissioning tool can set the run/fault LED to flashing mode.

The AS contains a fast operating program. This reads in all inputs, processes the parameterised function modules, updates the outputs and handles the necessary communication with other stations or the management level (PC).

The user program can be loaded from any point in the IP network using CASE Suite. Flashing red LED indicators show that there is an active download. The data is written to a flash memory and is retained even in the event of a power failure.

The inputs and outputs can be parameterised with the user program and used freely for control and regulation tasks.

Initialisation

An initialisation of the AS can be carried out before the download with CASE Suite.

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[3] The I/O bus LED is located on the top right between two housing ribs

Firmware/update

The AS is delivered with a current version of the firmware. If a newer version of the firmware becomes available before installation and commissioning, the AS can be updated directly via the network using CASE Suite. Flashing red LED indicators show that there is an active update.

The firmware version in the AS can be read out using the modu840 local operating device or via PC/CASE Suite.

Before an AS is commissioned, you must check the firmware version and carry out an update if necessary.

Internal clock

A Real Time Clock (RTC) is integrated in the AS for time programmes. Date, time and time zone are set in the AS when the user data is loaded.

The time, date and time zone can be set manually via the integrated web server (moduWeb) or using the BACnet browser.

The BACnet services "DM-TS-B" and "DM-UTC-B" are used to synchronise the time and date automatically if the correct BACnet time server data is specified (e.g. SAUTER Vision Center). The AS can also be used as a BACnet time server (DM-ATS-A service).

The summer time setting (daylight saving) is activated in the network properties (CASE Engine) of the AS by default and includes all the automation stations integrated into the same network. If there is a deviation with regard to the European summer time regulation, the switchover date can be adapted to local conditions.

Time programmes, calendar

The BACnet functionality can be used to create up to 64 time programme objects (scheduler) and up to 16 calendar objects (calendar) in the AS.

Display, operation and adjustment of the time or calendar objects can be carried out with the modu840 local operating device or the moduWeb web server.

Data recording

The BACnet functionality can be used to create up to 100 Trend Log objects (data points). A log can be defined either periodically (time interval) or grid threshold-based (COV).

The integrated moduWeb web server can be used to log data points periodically at a time interval of one minute and independently of trend objects.

Battery, data buffering

A pluggable lithium button-cell battery ensures that the RTC for time programmes (scheduler/calendar) and data such as counters, adaptive control algorithms and historical data (Trend Log) are retained in the memory (SRAM), even if there is a power failure. The battery buffering is activated immediately after a power failure. After approx. 1 week without power supply, the AS switches to what is known as storage mode. This is to ensure the longest possible serviceable life for the battery in devices not being operated. In the process, data buffering by the battery is switched off and the Real Time Clock is discontinued. Historical data, meter readings and adaptive control algorithms are no longer buffered either. Therefore, after the power supply reactivates the device, it is necessary to reset the date and time. The battery voltage is not monitored by the AS.

Note
After approximately 1 week without a power supply, the AS goes into storage mode, i.e. data buffering by the battery is switched off and data may be lost! The battery voltage is not monitored by the AS.

Technical data

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

If the battery needs to be changed during the operating time, this may only be performed by trained specialist personnel.

The user data from CASE Engine and changed user data (e.g. changed by the BACnet client) are stored permanently in the flash memory and do not require battery buffering.

We recommend, however, that user data (CASE Engine) and the changed user data be backed up (e.g. with BACnet DM BR); this decreases the risk of data loss.

Behaviour in case of mains failure

There are different types of power failure:

Micro-interruptions

Grid interruptions shorter than 1 ms are bridged without any switch-offs or other consequences. The system continues to run in normal mode.

Normal interruptions

Grid interruptions longer than 1 ms mean that the AS is switched off correctly. When the mains voltage returns, the system is switched back on according to priority. Behaviour when switching on and off is defined by the AS itself; the following applies to BACnet objects and functions:

- Every restart can be announced with a restart notification (DM-R-A service).
- The "Notification Class Recipient List" remains and the clients still automatically receive the event and alarm information without logging in again.
- The COV subscriptions on other stations are logged in again automatically.
- Connections between automation stations (AS-AS) are updated again (re-subscription). When the power returns, the AS will check the consistency of the data and will automatically restart communication.

Switch

The "ON/OFF" switch (µP power, stand-by) is used only to isolate the secondary circuit of the switched-mode power supply, which supplies the AS and the I/O modules with operating units internally. When the AS is switched off, all applications are stopped correctly and the CPU function is switched off; static RAM and the Real Time Clock (RTC) for date and time continue to be operated from the primary circuit. This ensures that the data-buffering battery is not affected by the mains voltage.

Extension options

To extend the base station, additional I/O or communication modules can be used. The modules are arranged directly on the right-hand side of the AS and are thus connected with the I/O bus plug. The AS automatically detects the connected modules on the I/O bus. The module attribution and the allocation of inputs and outputs must additionally be carried out by the CASE Suite software in the AS.

The number of attachable modules is limited to 8 (modu525) or 3 (modu524), and the maximum current loading of 1100 mA in the modu525 AS may not be exceeded when all connected devices (modules and operating units) are added up. This condition must be verified before engineering. Information regarding the current consumption of individual modules and operating and indicating units can be found in the appropriate PDS data sheets.

For each AS, up to 2 COM modules (modu721, 731) can be used. The COM modules must be used for position 1, or for position 1 and 2.

For modu524, note that, out of the maximum of 3 attachable modules, no more than 2 COM modules and 2 I/O modules can be used (in this case, modu590 is considered an I/O module).

> **Note**
> I/O modules may only be added or removed when the AS has been disconnected from the electrical supply. Non-compliance with this instruction can destroy the electronics! The maximum current loading of 1100 mA for the modu525 AS may not be exceeded. It must be ensured during the engineering that this value is not exceeded. The maximum current loading is the sum of all the connected devices incl. the I/O modules and operating units. Information on the current consumption of I/O modules and operating and indicating units can be found in the respective product data sheets.

Meteorological forecast data

The AS can obtain weather forecast data (temperature (min, max), hours of sunshine, global radiation, amount of precipitation, rel. humidity, wind speed and direction) for energy-efficient and proactive regulation via a constant internet connection, directly and without additional components.

Local operating and indicating unit (LOI)

The AS can be complemented with a local operating and indicating unit (LOI) to allow manual actuation or indication of system components. The unit can be installed and removed during operation (hot-pluggable) without affecting functions of the AS. The switch positions are detected and implemented by the AS directly. The function corresponds to the standard EN ISO 16484-2:2004 for local override and indicating units.

The 4-fold front frame (accessory) allows remote operation of the units at distances of up to 10 m.

> **Note**
> Before a unit is inserted, the switch positions should be set to automatic mode to avoid triggering unwanted switch actions at the outputs. When the unit is removed, all outputs are actuated with the automatic values of the AS.

In accordance with the standard, the local override and indication devices allow restricted operation of system components without the involvement of the AS intended for the application.
Outputs in manual position may change their status briefly when the user program is downloading.

Functions
- In the automatic position ("A"), the switching status is specified by the AS program.
- In the manual mode position (0, I, II or 0...100%), these functions have priority over AS program operation. In each manual mode position, the status flag "overridden" is activated for assigned BACnet objects (AO, BO, MO).
- Using LED indicators:
  - In principle, the LEDs of the digital inputs show the status of the input allocation. But LEDs can also be allocated using CASE programming as an indicator for functions such as collective alarm, violation of limit value, etc. Generally, a permanently lit green LED can be actuated for status information and a red LED for alarms.
- The BACnet function of alarm acknowledgement allows unacknowledged alarms to flash directly and, if they are acknowledged but still active, to remain lit permanently.
- The analogue and digital outputs can be actuated without a user application (CASE Engine).
Details on the method of operation of the local operating and indicating units can be seen in PDS 92.081 (EY-LO 625...670).
Labelling concept
The local operating and indicating units are labelled with function-specific symbols or numbered. Additionally, individual labelling can be made with a paper insert in the front transparent cover. The labelling is usually carried out using texts generated from CASE Suite, and the labels are printed on normal A4 paper using commercial printers.

modu840 local operating unit

The AS can be operated using the modu840 accessory. The connection is made directly at the front of the housing.
Turning and pressing shows all data points in plain text, also allowing them to be operated and set. An operating unit can be used with an AS.
Adding the 4-fold front frame (accessory) allows simultaneous operation of modu840 and modu625...modu670 operating and indicating units. The devices can be installed directly in the cabinet or externally (at a distance of up to 10 m).

Local operating unit


Channel and terminal assignment

Description	Channel	Schematic	Terminals	
modu524/525			**Signal**	**GND**
Watchdog output (OC pulsing)		WD	1	
Analogue output	0	a0	2	3
(0...10V)	1	a1	4	5
	2	a2	6	7
	3	a3	8	

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| Description	Channel	Schematic	Terminals	
modu524/525			**Signal**	**GND**
Digital input	4	d4	9	
Pulse counter (CI)	5	d5	10	11
	6	d6	12	13
	7	d7	14	15
	8	d8	16	17
	9	d9	18	
	10	d10	19	
	11	d11	20	
Universal input	12	u12	22	21
(Ni/Pt1000/U/I/R/Pot/DI)	13	u13	24	23
Current signal only on channels 12, 13 or	14	u14	26	25
terminals 22, 24	15	u15	28	27
	16	u16	30	29
	17	u17	32	31
	18	u18	34	33
	19	u19	36	35
Reference voltage 1.23 V			37	
			38	
			In	Out
Digital output (relay 0-I)	20	R20	39	40
	21	R21	41	42
	22	R22	43	44
	23	R23	45	46
	24	R24	47	48
	25	R25	49	50

Disposal

When disposing of the product, observe the currently applicable local laws.

More information on materials can be found in the Declaration on materials and the environment for this product.
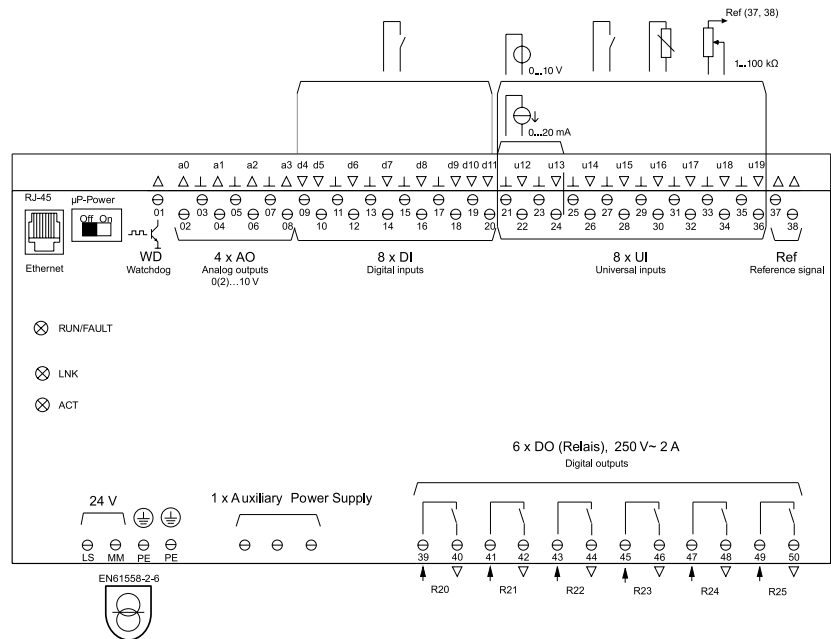
Dimension drawing
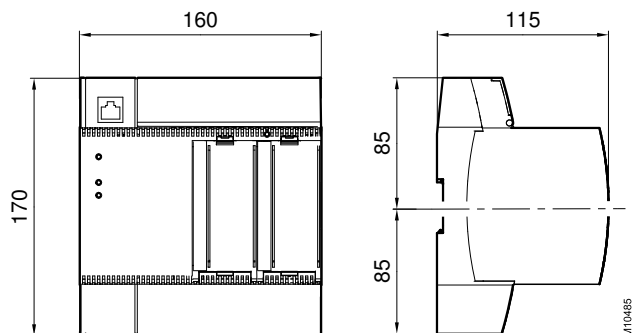
Connection diagram

EY-AS 524F001 or EY-AS525F001
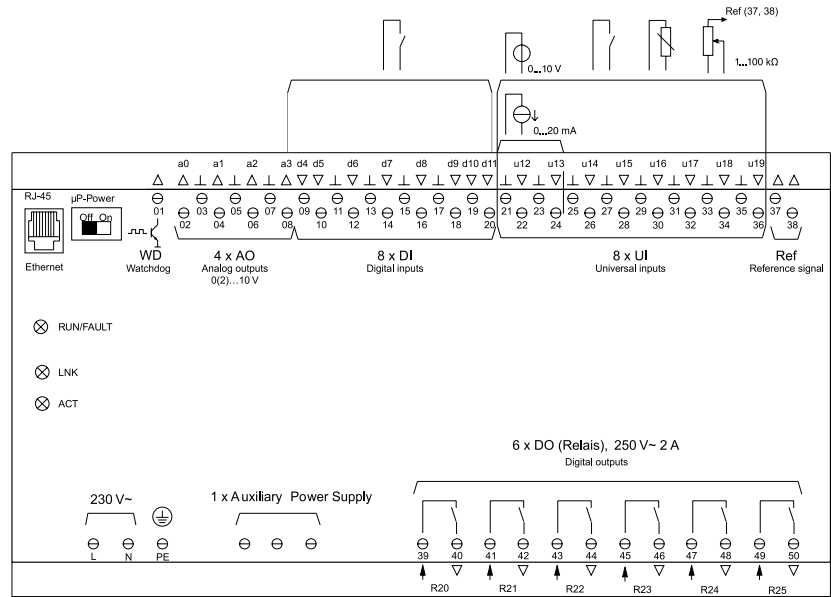
EY-AS525F005

On the EY-AS525F005, terminals MM, PE (earth) and ground have the same potential.