

EY-IO 531: I/O module, digital inputs, modu531

How energy efficiency is improved

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

Features

- Part of the SAUTER EY-modulo 5 system family
- Plug-in element for extending the modu525 automation station (AS)
- 16 digital inputs
- Power supply from modu525 AS
- Recording digital inputs (alarm/status) in operational systems, e.g. in HVAC engineering
- Modular design (baseplate/electronics)
- Direct labelling on the front
- Can be equipped with a local indicating unit



EY-IO531F001

Technical data

Power supply

Power supply	From modu525 AS via I/O bus
Power consumption ¹⁾	≤ 1 VA/0.4 W
Power loss	≤ 0.4 W
Current consumption ²⁾	25 mA

Ambient conditions

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

Inputs/Outputs

Digital inputs	16
Pulse counter	≤ 10 Hz

Interfaces and communication

Connection for modu6 (LOI)	6-pin, integrated
Connection, I/O bus	12-pin, integrated
Connection terminals	24 (0.5...2.5 mm ²)

Construction

Fitting	On top-hat rail
Dimensions W x H x D	42 × 170 × 115 mm
Weight	0.29 kg

Standards and directives

Type of protection	IP 30 (EN 60529)
Protection class	I (EN 60730-1)
Environment class	3K3 (IEC 60721)

CE conformity as per	EMC directive 2004/108/EC	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4
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Overview of types

Type	Properties
EY-IO531F001	I/O module, digital inputs, modu531

Accessories

Local operating and indicating units (LOI)

Type	Description
EY-LO630F001	16-LED indication, bi-colour

¹⁾ On the primary side of modu525 base station (230 V~)

²⁾ Supply via modu525 base station



Components

Type	Description
0920360003	24 V I/O module baseplate (pack of 3)
0929360531	Electronics module, modu531, 16 DI

Description of operation

The modu531 I/O module is used to record digital inputs (alarm/status) in operational systems, e.g. in HVAC engineering. The I/O module has a total of 16 digital inputs.

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 documents must also be adhered to. Changing or converting the product is not admissible.

Engineering notes

The modu530 I/O module is generally comprised of two components. The baseplate in which the I/O bus system and the connection terminals are integrated and the actual I/O module electronics.

Fitting/assembly

The baseplate of the I/O module is mounted in a cabinet using a top-hat rail (EN 60715) and connected on the side directly to the I/O bus of the modu525 AS or modules. This work must only be carried out in the de-energised state.

The baseplate contains the "bus module", which is responsible for power supply and continuous communication. This ensures that faults due to a failure or partial defect in the electronic component do not affect the function of other downstream modules.

Removing/inserting the I/O module electronics from/to the baseplate is possible while the AS is in operation.

To ensure plant safety and to avoid any faults at inputs or outputs, the I/O module electronics should only be removed or inserted while the base station is switched off.

Labelling concept

The I/O module can be labelled with a paper insert in the frontal transparent cap. The labelling is usually carried out using texts generated from CASE Suite, and the labels are printed on normal A4 paper using a commercial printer.

Assigning modules to AS

The I/O module electronics are encoded on the hardware side using pin inserts so that only the appropriate baseplate can be used. The modu525 AS detects whether a module baseplate is plugged into the I/O bus. Baseplate number and assignment of module types for the I/O modules on the AS are defined with CASE Suite. This information is permanently stored in the AS.

LED indicator/function

The I/O module is equipped with a system LED that indicates the operating modes as follows:

System LED

LED I/O bus	Status	Indicator sequence	Description
No designation	Continuous green	—————	Module in operation
	Pulsating green	o o o o o	Module not assigned with the base station
	Rapid pulsating red	oooooooooooooooo	AS in configuration, update or download
	Flashing red	o o o o o o o	Module incorrectly assigned or internal error
	Alternating green – red – off	oo oo oo oo	Lamp test active (indicator type priority)
	No indicator		No power supply

Digital inputs

Number of inputs	16
Type of inputs	Potential-free contacts with ground connection Opto-coupler Transistor (open collector)
Pulse counter	≥ 10 Hz (100 ms scan rate)
Protection against external voltage	±30 V/24 V~ (without destruction)

Max. output current	1.2 mA to ground
Scan rate	100 ms

The binary information is connected between one of the input terminals and the ground. The module applies a voltage of approximately 13 V to the terminal. If a contact is open, this corresponds to an INACTIVE state (bit = 0). If a contact is closed, there is an ACTIVE state (bit = 1) and 0 V is applied, giving a current of approximately 1 mA. Short-term changes (default 33 ms) between the station queries are saved briefly and processed at the next cycle.

Every input can be defined individually as an alarm or a status through software parameter setting. With a local indicating unit (e.g. modu630 accessory) the digital inputs can be displayed.

Pulse counters (CI with DI)

At the digital inputs, counter inputs of potential-free contacts, opto-couplers or transistors with an open collector can be connected. The maximum pulse frequency may be up to 10 Hz. To ensure that switching contacts are recorded correctly, a debounce time of 5 ms is planned. Pulses may be captured on falling, rising or both edges; the minimum pulse duration should be four times the debounce time.

Technical specification of the inputs and outputs

Digital input (0-I)

Switching threshold active	> 4 V
Switching threshold inactive	< 2.5 V
Switching hysteresis	> 0.4 V
Pulse counter	≥ 10 Hz

Channel and terminal assignment

Description modu531	Channel	Schematic	Terminals	
			Signal	GND
Digital input Pulse counter (CI)	0	d0	1	
	1	d1	2	3
	2	d2	4	5
	3	d3	6	7
	4	d4	8	9
	5	d5	10	
	6	d6	11	
	7	d7	12	
	8	d8	13	
	9	d9	14	
	10	d10	15	16
	11	d11	17	18
	12	d12	19	20
	13	d13	21	22
	14	d14	23	
	15	d15	24	

Connection of local operating unit

The I/O module can be complemented with a modu630 local indicating unit (LOI) to allow digital inputs to be displayed directly. The function corresponds to the standard EN ISO 16484-2:2004 for local override and indicating units. The unit can be installed and removed during operation (hot-pluggable) without affecting functions of the AS or I/O module.

modu630 contains 16 indicators in the form of bi-colour LEDs. It can be defined individually for each input whether it is used as an alarm or a status input. An alarm is generally indicated in red when the contact is open; a status is generally green when the contact is closed.

Detailed information/functions of the LED actuation options can be seen in the PDS 92.081 for EY-LO 6**.


If an incompatible operating unit is connected, this status is indicated by the flashing of all LEDs (red and yellow); there is no risk of the I/O module being destroyed.

Disposal

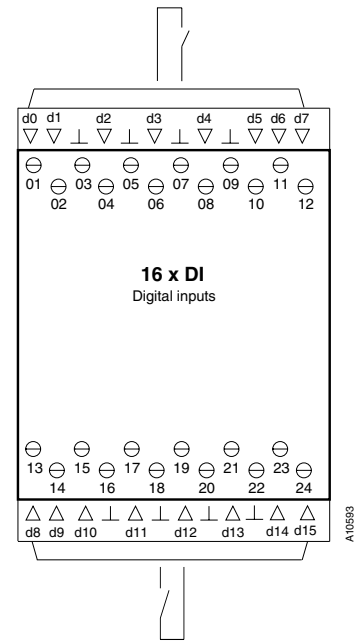
When disposing of the product, observe the currently applicable local laws.

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

Accessories

<p>EY-LO630F001</p>	<p>Single unit used for indication of the data points of the modu531 I/O or modu525 AS</p> <p>16 LEDs LED indication, bi-colour, green/red (freely configurable for Event/Alarm)</p>	
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Connection diagram



Dimension drawing

