# EY6IO50: 6 × relay (2A) outputs I/O module, modu650-IO

## Features

- Part of the SAUTER modulo 6 system family
- Plug-in element for extending the modu660-AS and modu680-AS automation stations and modu6*2-LC link coupler
- Activation of displays in operational systems, such as HVAC engineering
- Activation of actuators such as contactors or valve actuators, in operational systems
- Six digital outputs (relay)
- Power supply from automation station (modu6**-AS), link coupler (modu6*2-LC) or supply module (modu601-LC)
- Can be equipped with a local operating and indicating unit (modu600-LO)

**EY6IO50F001**

## Technical data

| Power supply | | |
|---|---|---|
| | Power supply | From AS or LC via I/O bus |
| | Dissipated power[1] | ≤ 1,3 W |

| Ambient conditions | | |
|---|---|---|
| | Operating temperature | 0…45 °C |
| | Storage and transport temperature | −25…70 °C |
| | Ambient humidity | 10…90% rh, no condensation |

| Inputs/outputs | | |
|---|---|---|
| Digital outputs (DO) | Number of outputs | 6 |
| | Type of outputs | Relay (0-I), normally-open contact, galvanically isolated |
| | Load | 24 VDC, 24...250 VAC<br>Resistive load: 2 A<br>Inductive load: ≤ 1 A, cos φ ≥ 0.8<br>Start-up current: ≤ 5 A |
| | Switching frequency, mechanical | 300,000 cycles for 2 A |

| Interfaces and communication | | |
|---|---|---|
| | Connection, LOI | 4-pin |
| | Connection, I/O bus | 7-pin, spring contact |
| | Connection terminals | 6 x 2-pin spring-loaded plug-in connectors |
| | Earth connector | Spring contact against DIN rail |

| Construction | | |
|---|---|---|
| | Fitting | On metallic DIN rail<br>35 x 7.5/15 as per EN 60715 |
| | Dimensions W × H × D | 55.7 (3 HP) x 100 x 59 mm |
| | Weight | 124 g |

| Standards and directives | | |
|---|---|---|
| | Protection type (as per EN 60730) | Connections and terminals: IP00<br>Front in DIN cut-out: IP30 |
| | Protection class | I |
| | Environment class | 3K3 (IEC 60721) |
| | Software class[2] | A (EN 60730-1, Appendix H) |
| CE conformity according to | EMC Directive 2014/30/EU | EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 50491-5-1, EN 50491-5-2, EN 50491-5-3 |
| | Low-Voltage Directive 2014/35/EU | EN 60730-1 |

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[1] *Measured value without accessories*

[2] *The product is not suitable for safety functions*

## Overview of types

| Type | Features |
|---|---|
| EY6IO50F001 | 6 x relay (2 A) outputs I/O module |

## Accessories

| Type | Description |
|---|---|
| EY6LO00F001 | Local operating and indicating unit for I/O modules |

**Manuals**

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

## Description of operation

The modu650-IO is an I/O module for extending the modu660-AS and modu680-AS automation stations and the modu6*2-LC link coupler.
The modu650-IO serves the following purposes in operational plants (e.g. in HVAC):
• Activation of gates and actuators, e.g. valve actuators. If applicable, an external lock is required.
• Activation of displays (start-up current < 5 A)
The module provides six digital relay outputs.

## Intended use

This product is only suitable for the purpose intended by the manufacturer, as described in the "Description of operation" section.
All related product regulations must also be adhered to. Changing or converting the product is not admissible.

## Improper use

The SAUTER modulo 6 system does not have functional safety and is not fail-safe. MTTF, MTBF and MTTR data is not available.
This product is not suitable:
• for safety functions
• in transportation equipment and storage facilities as per Directive 37/2005
• as a measuring device as per EU Measuring Instruments Directive 2014/32/EU
• for use outside and in rooms with the risk of condensation

## Fitting notes

**Notice**
Only qualified electricians are permitted to fit and connect the module.
Prevent access by laypersons.

The modu650-IO is a module that is connected frontally on the DIN rail. It is not necessary to slide it in from the side. The connection between the modules is made via spring contacts on the side. The modules must be pushed together on the DIN rail in such a way that the spring contacts ensure that the signal cable is connected to the I/O bus system.
The spring contacts of the last module on the right side must be covered by the bus cover provided with the automation station (AS).
All external power supplies must have safe, undamaged insulation.

**Notice**
The ground terminal must not be earthed.
For examples and procedures for problem-free installation and wiring, see the manual "EY-modulo 6 – Best Practice I"

## Assignment to the automation station (AS)

The type and position of the I/O module in the system are defined using CASE Suite. This information is stored permanently in the AS.

If the configuration with CASE Suite does not match the physical arrangement of the module, this is indicated by the system LED of the module.

## LED indicators

The I/O module is equipped with a system LED. The various operating statuses are displayed as follows:

| Status | Description |
| --- | --- |
| Continuous green | Normal mode |
| Continuous red | Not configured |
| Flashing red | I/O bus communication error (iSEB) |
| Continuous orange | Startup mode |
| Flashing orange | Configuration error |
| Off→Green→Red | LED test run |
| Off | No power supply |

## Digital outputs (DO)

| Number of outputs | 6 |
| --- | --- |
| Type of outputs | Relays, normally-open contacts (0-I) |
| Load on outputs | 24 VDC, 24...250 VAC |
| | Resistive load: 2 A, inductive load: ≤ 1 A, cos φ ≥ 0.8, start-up current: ≤ 5 A |
| Processing cycle time | ≤ 60 ms |
| Switching frequency | 300,000 cycles for 2 A with resistive load |

**Characteristics of the digital outputs**

Targeted feedback signals can only be implemented via digital inputs (BACnet COMMANDFAILURE).

The individual relay outputs can be supplied with a maximum voltage of 250 VAC and can be loaded with 2 A.

Plant devices are connected via pluggable spring-type terminals. This may only be carried out when the system is disconnected from the electrical supply.

Special protective measures ensure that the relay outputs can be safely separated from each other. This allows mixed operation of 250 VAC and SELV/PELV circuits without causing mutual interference.

In the event of a module defect, defined relay states are guaranteed by an independent internal cut-off facility. This prevents flickering of the relays/outputs.

The outputs of the relay contacts assume the defined state "0" (open) in the following situations:
• if the power supply to the I/O module fails,
• if the power supply to the AS fails.

A standard or default value can be defined in CASE Engine. This value applies if the module is supplied with power but the station is out of operation.

## Channel and terminal assignment

**Digital output (relay)**

| Duct | Schematic | Terminal | |
| --- | --- | --- | --- |
| 0 | R0 | 2 | 1 |
| 1 | R1 | 4 | 3 |
| 2 | R2 | 6 | 5 |
| 3 | R3 | 8 | 7 |

| Duct | Schematic | Terminal | |
|------|-----------|----------|----|
| 4 | R4 | 10 | 9 |
| 5 | R5 | 12 | 11 |

## Connection of the local operating and indicating unit (LOI)

The modu600-LO LOI can be added to the modu650-IO. The LOI enables the display and direct control of the positioning signals and display of the outputs.

**Notice**

The modu600-LO does not store any override values. When the unit is removed, all outputs are operated with the automatic values of the AS or the I/O module. When an indicating unit is inserted, the signals remain unchanged.

For more information on the control function and display, see product data sheet 91.141 for the modu600-LO.

LOIs allow limited operation of system components without the intervention of the AS intended for the application. Outputs of the I/O modules in manual operation may change the value briefly when the user program is downloading. The LOI can be used to actuate the outputs in the AS directly even without a user application (CASE Engine).

With the modu601-LC module for separate I/O module supply, the I/O modules can be supplied independently of the station, so that the signals can continue to be displayed and controlled in the event of the absence, failure or soft reboot of the station.

**Notice**

The modu600-LO LOI is not suitable to be used as an emergency operating device as per Machine Directive 2006/42/EU.

Standard EN ISO 13849-1 has not been considered. If applicable, a local emergency operating device must be installed on the plant side.

### Access security

**NOTICE!**

Priority operating units can lose their priority function.

► Limit the access to the local operating level (including via apps) on site.

► Consider the access security during the planning and risk assessment of the plant.
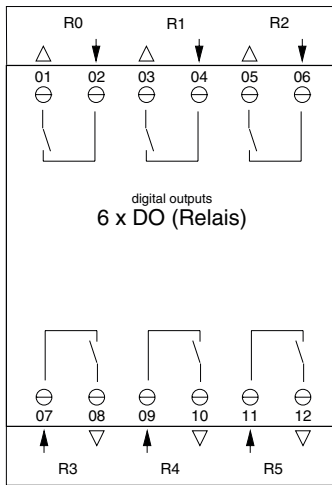
## Labelling concept

The LED display of the modu600-LO shows the individual channels as configured with CASE Suite.

## 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.

## Connection diagram

R0　　　R1　　　R2

| 01 | 02 | 03 | 04 | 05 | 06 |

digital outputs
6 x DO (Relais)

| 07 | 08 | 09 | 10 | 11 | 12 |

R3　　　R4　　　R5

## Dimension drawing

All dimensions in mm.

52.2

58,3

98

49

49

55.7