EY-IO 571: I/O module, digital inputs/outputs (open collector), modu571

How energy efficiency is improved

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

Features

- Part of the SAUTER EY-modulo 5 system family
- 16 digital inputs and outputs
- Plug-in element for extending the modu525 automation station (AS)
- Power supply from modu525 AS
- Direct labelling on the front
- Can be equipped with a local operating and indicating unit

EY-IO571F001

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
	Admissible ambient humidity	10...85% rh, no condensation

Inputs/Outputs		
	Digital inputs/outputs	16
	Type of inputs/outputs	Open collector, NO contacts (0-I), outputs switched with respect to ground (any arrangement)
	Power supply for DO	External, positive ≤ 24 V=
	Load	0 mA up to 100 mA
	Power supply for DI	Internal, 13.5 V
	Pulse counter	(DI) ≤ 50 Hz

Interfaces and communication		
	Connection for modu6**	6-pin, integrated
	Connection, I/O bus	12-pin, integrated
	Connection terminals	24 (0.5...2.5 mm²)

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 according to	EMC directive 2004/108/EC[3]	EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4

Overview of types

Type	Properties
EY-IO571F001	I/O module, digital inputs/outputs (open collector), modu571

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

[2] *Supply from modu525 base station*

[3] *EN 61000-6-2: In order to meet the European standard, the power cable should not exceed 30 metres in length.*

Accessories

Local operating and indicating units (LOI)

Type	Description
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

Description of operation

Receiving digital inputs (alarm/status) and activation of actuators such as relays or displays of operational systems, e.g. in HVAC engineering.
The I/O module has a total of 16 digital inputs and digital outputs freely available.
Each hardware connection can be defined individually as an input (DI) or output (DO) by setting software parameters; only one function is possible at a time.

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

The modu571 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 fitted 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.
To guarantee an optimum ground connection, we recommend connecting one ground terminal of the I/O module directly with the AS or each appropriate cabinet terminal.
The baseplate contains a "bus module", which is responsible for power supply and continuous communication as well as the optional emergency power supply. 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 statuses as follows:

System LED

LED I/O bus	Status	Description
No designation	Continuous green light	Module in operation
	Flashing green or red	Module not ready for operation
	Alternating green – red – off	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	≤ 50 Hz
Pulse status	> 4 ms
Protection against external voltage	±30 V/24 V~ (without destruction)
Max. output current	1.2 mA (source) with respect to ground
Update 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.
The digital inputs can be displayed with the local indicating unit (e.g. modu630 accessory).

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 can be captured on falling, rising or both switches. 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

Digital outputs

Number of outputs	16
Type of outputs	Digital, open collector transistor switched to ground
Digital output	24 V=, 0 mA up to 100 mA (sink)
Length of connecting cable	≤ 30 m
Processing cycle	100 ms

The open collector outputs (OCs) can be supplied with a power supply of max. 24 V =; the signals are grounded. The plant devices are connected via screw terminals; this may only take place when the system is disconnected from the electrical supply.
All open collector outputs are equipped with protective switches.
When connecting relays with integrated protection (e.g. freewheeling diode), you must ensure that the polarity is correct.
Real feedback is only possible via digital inputs.
If it is mandatory to comply with the European standard (EN 61000 6 2), the connecting cables for the digital open collector outputs (DO-OC) must not be longer than 30 metres.
Defined switching statuses in the event of a module defect are guaranteed by an independent internal cut-off facility. This prevents the outputs from flickering.
The open collector outputs adopt the defined status "0" (Off) when the power supply/communication on the I/O bus is interrupted or when the AS power supply fails.

Channel and terminal assignment

Description **modu571**	Channel	Schematic	Terminals	
			DI / DO	**GND**
Digital input/output Open collector transistor	0	od0	1	
	1	od1	2	3
	2	od2	4	5
	3	od3	6	7
	4	od4	8	9
	5	od5	10	
	6	od6	11	
	7	od7	12	
	8	od8	13	
	9	od9	14	
	10	od10	15	16
	11	od11	17	18
	12	od12	19	20
	13	od13	21	22
	14	od14	23	
	15	od15	24	

Connection of local operating unit

The I/O module can be complemented with local operating and indicating units (LOI). A unit can be installed and removed during operation (hot-pluggable) without affecting functions of the AS or I/O module. For modu571, the following operating and indicating units can be used:
• EY-LO630F001: 16 LED indicators
• EY-LO650F001: 6 switches (automatic mode "A", 0-I) with LED indicators
• EY-LO650F002: 3 switches (automatic mode "A", 0-I-II) with LED indicators
The function corresponds to the standard EN ISO 16484-2:2004 for local override and indicating units.
Detailed information about the actuation function and LED indicator can be found in the PDS 92.081 for EY-LO 6**.
If an incompatible 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.

> **Note**
> Before inserting an indicating and operating unit, all switch positions (AUTO) must be checked to ensure that no undesired switching statuses are active. When the unit is removed, all outputs are operated with the automatic statuses of the I/O module.

In accordance with the standard, the local override and indicating units allow restricted operation of system components without involvement of the AS planned for the application.
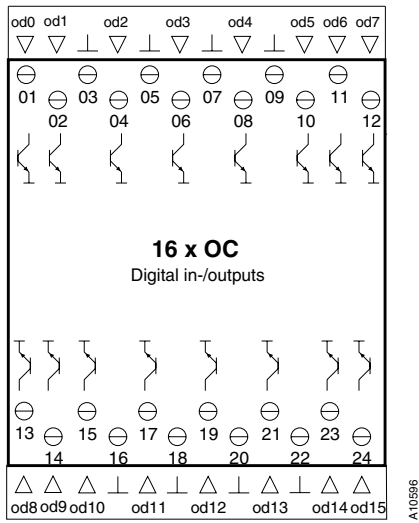Outputs in manual position may change their status briefly when the user program is downloading.
The local operating unit can be used to actuate the channels 0...5 in the AS directly even without a user application (CASE Engine).

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

Dimension drawing

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