EY6IO70: 8 × DI/CI/DO (OC) and 8 × DI/CI I/O module, modu670-IO

EY6IO70F001

Features

- Part of the SAUTER modulo 6 system family
- Plug-in element for extending the modu660-AS and modu680-AS automation stations and the modu612-LC IP coupler
- Activation of actuators such as relays and displays of operational systems, e.g. in HVAC engineering
- Activation of displays in operational systems
- Receiving digital inputs (alarm, status or pulse counter) in operational systems
- Eight digital inputs and eight digital inputs/outputs
- Power supply from modu6**-AS automation station, modu612-LC IP coupler or modu601-LC supply module
- Can be equipped locally with a modu600-LO operating and indicating unit

Technical data

Power supply		
	Power supply	From AS or LC via I/O bus
	Dissipated power[1)]	≤ 0,8 W
Ambient conditions		
	Operating temperature	0…45 °C
	Storage and transport temperature	−20…70 °C
	Ambient humidity	10…90% rh, no condensation
Inputs/outputs		
Digital inputs (DI/CI)	Number of inputs	8
	Pulse counter[2)]	≤ 50 Hz
Digital inputs/outputs (DIO)	Number of inputs/outputs	8
	Type of inputs/outputs	Open collector, normally-open contacts (0-I), outputs switched with respect to ground (any arrangement)
	Power supply for DO	External, positive ≤ 28 VDC
	Load	0...100 mA (max. 2 V voltage drop)
	Power supply for DI	Internal, ~13 VDC
	Pulse counter[3)]	≤ 50 Hz
Interfaces, communication		
	Connection, LOI	4-pin
	Connection, I/O bus	7-pin, spring contact
	Connection terminals	4 x 8-pin spring-loaded plug-in connectors
	Earth connector	Spring contact against DIN rail
Construction		
	Fitting	On metallic DIN rail 35 x 7.5/15 as per EN 60715 DIN rail housing as per DIN 43880
	Dimensions W × H × D	56 (3 HP) × 100 × 59 mm
	Weight	131 g
Standards, directives		
	Type of protection	Connections and terminals:IP00 Front in DIN cut-out:IP30<br(EN 60730-1)
	Protection class	I (EN 60730-1)

1) *Measured value without accessories*
2) *50 Hz only with PC module, otherwise 5 Hz*
3) *50 Hz only with PC module, otherwise 5 Hz*

	Software class[4]	A (EN 60730-1, Appendix H)
	Environment class	3K3 (IEC 60721)
CE/UKCA conformity[5]	EMC-D 2014/30/EU (CE)	EN 50491-5-1, EN 50491-5-2, EN 50491-5-3
	EMC-2016 (UKCA)	See EMC Directive
	RoHS-D 2011/65/EU & 2015/863/EU (CE)	EN IEC 63000
	RoHS-2012 (UKCA)	EN IEC 63000

Overview of types	
Type	Features
EY6IO70F001	8 x DI/CI/DO(OC) and 8 x DI/CI 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 modu670-IO is an I/O module for extending the modu660-AS and modu680-AS automation stations and the modu612-LC coupler.

The modu670-IO serves the following purposes in operational plants (e.g. in HVAC):

- Activation of relays. If applicable, an external lock is required.
- Activation of displays
- Acquisition of digital status and alarm inputs
- Acquisition of digital counter pulses

The module provides eight digital inputs and eight digital inputs/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 Regulation 37/2005
- As a measuring device as per EU Measuring Instruments Directive 2014/32/EU
- For use outside and in rooms with a risk of condensation

Engineering and fitting notes

Notice

Only qualified electricians are permitted to fit and connect the module.

Prevent access by laypersons.

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

[5] *Explanation of abbreviations in the “Further information” section of the product data sheet and in the appendix to SAUTER’s product catalogues*

The modu670-IO is a module that is connected frontally on the DIN rail. The connection between the modules is made via spring contacts on the side.
The spring contacts of the last module on the right side must be covered by the bus cover provided with the automation station.

Note
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
The type and position of the I/O module in the system are defined using CASE Suite. This information is stored permanently in the automation station.
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 following operating statuses of the I/O module are indicated by the front system LED:

Status [6]	Indicator/display	Description
Continuous green	●	Normal mode
Continuous orange	●	Start-up mode
Flashing orange	◉	Configuration error
Continuous red	●	Not configured
Flashing red	◉	I/O bus communication error
Alternating Green → Red → Off (1 sec. each)	● → ● → ●	LED test
Off	●	No power supply

Digital inputs (DI/CI)

Number of inputs	8
Type of inputs	Potential-free contacts, connected to ground
	Opto-coupler
	Transistor (open collector)
Pulse counter[7]	≤ 50 Hz
Pulse status	> 4 ms
Protection against external voltage	± 30 VDC
Output current	≤ 1.5 mA
Measuring period	60 ms

Pulse counters (CI with DI)
At the digital inputs, signals of potential-free contacts, opto-couplers or transistors with an open collector can be connected. The maximum pulse frequency may be 50 Hz.
The de-bounce time can be configured so that switching contacts are correctly detected (CASE Suite: filter setting) (0...100 ms). Pulses can be captured on the falling or rising edge, or on both edges. The minimum pulse duration should be 4 times the de-bounce time.

Digital inputs/outputs (DIO)

The DI/CI data is also valid for the DI/DO as DI.

[6] *LED flashing: 500 ms on, 500 ms off*
[7] *50 Hz only with PC module, otherwise 5 Hz*

Number of inputs/outputs	8
Type of inputs/outputs	Signal to ground/GND
Load on outputs	≤ 28 VDC / 100 mA
Digital output	24 VDC / 0...100 mA (sink)
Processing cycle time	60 ms
Length of connecting cable	≤ 30 m

Characteristics of the digital outputs

Targeted feedback signals can only be implemented via digital inputs.

The open collector outputs (OC) can be supplied with a maximum supply voltage of 28 VDC. The signals are to ground/GND.

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

Note

According to standard EN 61000-6-2, the connecting cables for the digital open collector outputs (DO-OC) may not be longer than 30 m.

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

The OC outputs assume the defined state “0” (off) in the following situations:

- if the power supply to the I/O module fails,
- if the power supply to the automation station 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.

Note

All OC outputs are equipped with protective circuitry. DO-OC is disabled in case of overload. After returning to normal load, the control command must be reset.

When connecting relays with integrated protection, e.g. with flyback diodes, the correct polarity must be observed.

Technical specification of the inputs and outputs

Binary input	Switching threshold high “0”	Switching threshold low “1”	Switching hysteresis	Pulse counter
Digital input[8)] (DI)	4 V	1 V	0.4 V	≤ 50 Hz[9)]

Binary output	I_{max}	Voltage drop at I_{max}
Digital output (DO-OC)	100 mA	2 V

Channel and terminal assignment

Digital input for pulse counter (CI)

Duct	Schematic	Terminals	
		Signal	GND
0	d0	2	1
1	d1	4	3
2	d2	6	5
3	d3	8	7
4	d4	10	9
5	d5	12	11
6	d6	14	13
7	d7	16	15

8) *Between 1 and 4 V the switching transitions are not defined*

9) *50 Hz only with PC module, otherwise 5 Hz*

Digital input/output, open collector transistor

Duct	Schematic	Terminals	
		Signal	GND
8	od8	17	18
9	od9	19	20
10	od10	21	22
11	od11	23	24
12	od12	25	26
13	od13	27	28
14	od14	29	30
15	od15	31	32

Connection of the local operating and indicating unit (LOI)

The I/O module can be supplemented by the LOI modu600-LO. The LOI enables the direct control of the positioning signals and the display of the input and output signals.
The unit can be installed and removed during operation (hot-pluggable) without affecting functions of the automation station or I/O module.
For detailed information on the control function and display, see product data sheet 91.141 for the modu600-LO.

Note
The modu600-LO does not store any override values. When a unit is removed and inserted, the signals remain unchanged.
Override values are deleted during a firmware update.

LOIs allow limited operation of system components without the intervention of the automation station 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 analogue outputs in the automation station directly even without a user application (CASE Engine).
As required by EN ISO 16484, the modu600-LO offers independent local priority operation on the IO modules when the automation station is switched off or has failed. This requires 24 VDC from the module for separate IO module supply, the modu601-LC.
Modules supplied via a modu612-LC can also benefit from local priority operation with the modu600-LO if the automation station fails.

Note
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.

Additional information

Fitting instructions	P100017303
Declaration on materials and the environment	MD 91.126

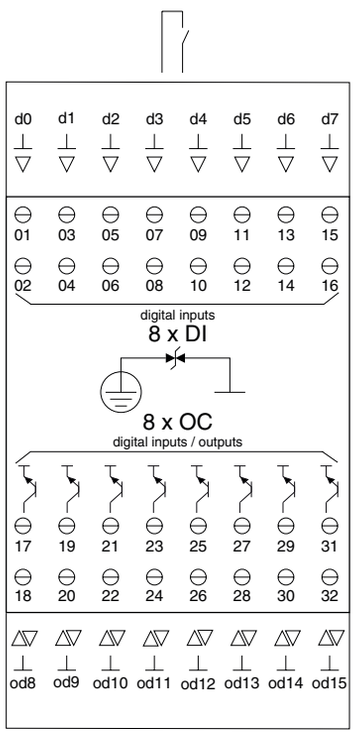
Abbreviations used

CE	Manufacturer’s Declaration of Conformity for the European Union (EU)
UKCA	Manufacturer’s Declaration of Conformity for the United Kingdom of Great Britain and Northern Ireland (UK)
EMC-D	Electromagnetic Compatibility Directive 2014/30/EU
EMC-2016	Electromagnetic Compatibility Regulations 2016 (UK)
RoHS-D	Restriction of Hazardous Substances in Electrical and Electronic Equipment Directives 2011/65/EU & 2015/863/EU
RoHS-2012	Restriction of Hazardous Substances (RoHS) Regulations 2012 (UK)

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.

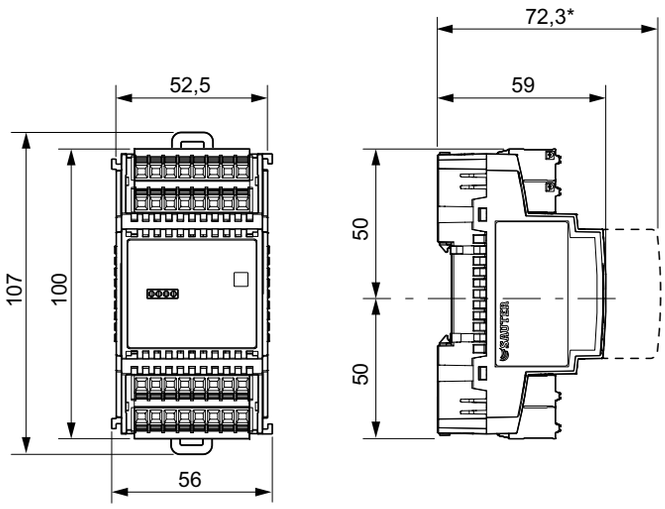
Connection diagram



od8…od15 max. 100 mA

Dimension drawing

All dimensions in mm.



*) Depth when installing modu600-LO

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