

## EY-IO 534: I/O module, analogue inputs with galvanic isolation, modu534

### How energy efficiency is improved

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

### Features

- Part of the SAUTER EY-modulo 5 system family
- I/O module power supply from modu525 AS
- Plug-in element for extending the modu525 automation station (AS)
- 8 analogue inputs (U/I) with electrical isolation for non-isolated sensors with external power supply
- Modular design (baseplate/electronics)
- Direct labelling on the front
- Can be equipped with a local indicating unit



EY-IO534F001

### Technical data

Parameters		
	Power supply	From modu525 via I/O bus
	Power consumption <sup>1)</sup>	Up to 3.5 VA / 1.3 W
	Power loss	Up to 1.1 W
	Current consumption <sup>2)</sup>	80 mA
Ambient conditions		
	Operating temperature	0...45 °C
	Storage and transport temperature	-25...70 °C
	Humidity without condensation	10...85% rh
Version		
	Analogue inputs	8 (with power applied)
	Voltage	0(2)...10 V
	Current	0(4)...20 mA
	Max. disturbance voltage	Common-mode voltage 80 V= / 50 V~
Interfaces and communication		
	Connection, I/O bus	12-pin, integrated
	Connection terminals	24, 0.5...2.5 mm <sup>2</sup>
	Connection for modu6 (LOI)	6-pin, integrated
Construction		
	Fitting	On top-hat rail
	Weight	0.285 kg
	Dimensions W x H x D	42 × 170 × 115 mm
Standards and directives		
	Type of protection	IP 30 (EN 60529)
	Protection class	III (EN 60730-1)
	Environment class	3K3 (IEC 60721)

### Overview of types

Type	Description
EY-IO534F001	I/O module, analogue inputs

### Accessories

Type	Description
EY-LO630F001	16-LED indication, bi-colour
0920362003	24 V I/O module baseplate, galvanic isolation (pack of 3)
0929360534	modu534 electronics module, 8 U/I

<sup>1)</sup> Primary side of modu525 base station

<sup>2)</sup> Supply via modu525 base station



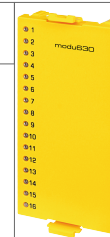
## Additional information on accessories

### EY-LO630F001

Single unit used for indication of the data points of the modu534 I/O or modu525 AS

16 LEDs

LED indication, bi-colour, green/red (freely configurable for Event/Alarm)



### Description of operation

The modu534 I/O module is used to record analogue inputs in operational systems, e.g. in HVAC engineering. The I/O module has a total of 8 analogue inputs available for the function of current or voltage measurement. The analogue inputs are electrically isolated.

### 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 modu534 I/O module consists of two components: the I/O electronics module and the baseplate, in which the I/O bus system and the connection terminals are integrated.

Voltage and current signals can be connected to the inputs. The modular structure with galvanic isolation of the inputs also enables measuring signals with external potential to be connected.

The measuring signals must come from SELV or PELV voltage ranges. Signals from FELV, ELV, LV and HV ranges are not admissible, since the I/O module has no safe isolation for such signals.

(Based on Namur NE23 standard).

### 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 may only be carried out in the de-energised state. Removal/insertion of the I/O electronics module from/to the baseplate is not allowed during operation of the AS.

The I/O electronics module are encoded on the hardware side using pin inserts so that they can only be used with the appropriate baseplate.

The "bus module", through which the power supply and communication are implemented, is located in the baseplate.

The modu534 I/O electronics module may only be used with the P100012139 baseplate. The galvanic isolation of the analogue inputs means the baseplate is also structured accordingly, thus differing from the conventional 24 V module baseplate. In addition, the coding switches are sealed to the baseplate and the electronic connector is equipped with a lock insert to exclude any possibility of confusion with other I/O modules.

### Labelling concept

The I/O module can be labelled with a paper insert in the frontal transparent cap. There are specially perforated label sheets available for this purpose.

The labelling is usually carried out using texts generated from CASE Suite, and the labels are printed on normal A4 paper using commercial printers.

### Assigning modules to AS

The modu534 I/O module can be used from AS firmware revision V2.6.x and hardware functionality index 8. The modu525 AS detects that the module is plugged into the I/O bus. The placement of the baseplate and the assignment of the module types are defined in the "Module Configuration" menu of the AS using 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 oo	Lamp test active (indicator type priority)
	No indicator		No power supply

## Analogue inputs

Number of inputs	8
Type of inputs	Voltage measurement (U) Current measurement (I)
Measuring ranges	
Voltage (U)	0 (2)...10 V
Input resistance Ri	> 100 K $\Omega$
Max. values	$\pm 30$ V
Current (I)	0(4)...20 mA
Input resistance Ri	= 150 $\Omega$
Max. values	$\pm 40$ mA
External voltage	Common-mode voltage 80 V= $\pm 50$ V~ Inputs galvanically isolated
Resolution	14 bits
Linearity error	< 1% of measuring span
Scan rate	500 ms

## Function assignment of voltage/current signals

Connection of the measuring signals is made at the input terminals, which are individually provided for voltage and current for each channel. Only one signal may be connected per channel. Connecting a voltage signal at input terminals for current, or vice versa, must be avoided under all circumstances. One terminal per channel is also available for the return line. Since the measuring inputs are completely galvanically isolated, each plant device must be connected within the channel on the corresponding return line terminals. Return line connections to each other (known as "looping") are not admissible.

Power must be supplied to the sensors externally.

To minimise interference with the measuring signals, it is recommended that shielded cables be used for the plant devices. The shielding should be connected on one side directly and short as well as to earth.

### Voltage measurement (U)

The voltage signal is connected between an input terminal for voltage (U0+...U7+) and the corresponding channel return line terminal (com0-...com7-). The measuring ranges with or without offset 0 (2)...10 V are selected using the CASE software.

### Current measurement (I)

The current signal is connected between an input terminal for current (i0+...i7+) and the corresponding channel return line terminal (com0-...com7-). The measuring ranges with or without offset 0 (4)...20 mA are selected through the software.

### Note for current signals as per NAMUR NE43

- Measuring range 3.8...20.5 mA
  - Signal > 20.5 mA: short circuit, malfunction report > 21 mA
  - Signal < 3.8 mA: broken line, malfunction report < 3.6 mA
- The Namur limit values for the current range and the dynamics for fault detection must be defined by parameter settings in the Analog Input module.

The following setpoints are recommended for this:

- Minimum for hardware 0 mA
- Maximum for hardware 22 mA
- LoLi 3.6
- HiLi 21

### Technical specification of the inputs and outputs

Analogue input	Measuring range	Resolution	Accuracy of the measuring span
U (0/2...10 V)	0.15...10.5 V	< 10 mV	±1%
I (0/4...20 mA)	0.02...22 mA	< 0.02 mA	±1%

Description				
	Channel	Type of signal	Schematic	Terminal
Analogue inputs with galvanic isolation	0	Return line	com0-	01
		Voltage	U0+	02
		Current	i0+	03
	1	Return line	com1-	04
		Voltage	U1+	05
		Current	i1+	06
	2	Return line	com2-	07
		Voltage	U2+	08
		Current	i2+	09
	3	Return line	com3-	10
		Voltage	U3+	11
		Current	i3+	12
	4	Return line	com4-	13
		Voltage	U4+	14
		Current	i4+	15
	5	Return line	com5-	16
		Voltage	U5+	17
		Current	i5+	18
	6	Return line	com6-	19
		Voltage	U6+	20
		Current	i6+	21
	7	Return line	com7-	22
		Voltage	U7+	23
		Current	i7+	24

### Connection of local operating unit

The I/O module can be complemented with a modu630 local indicating unit (LOI). This enables direct display of the analogue inputs and measuring signals for the Event or Alarm states.

The function corresponds to the standard EN ISO 16484-2:2004 for local priority control/indicator units. The modu630 unit can be installed and removed during operation (hot-pluggable) without affecting functions of the AS or I/O module.

The modu630 includes 16 indicators in the form of bi-colour LEDs, with the indicators 1... 8 able to be assigned to the analogue inputs of the modu534.

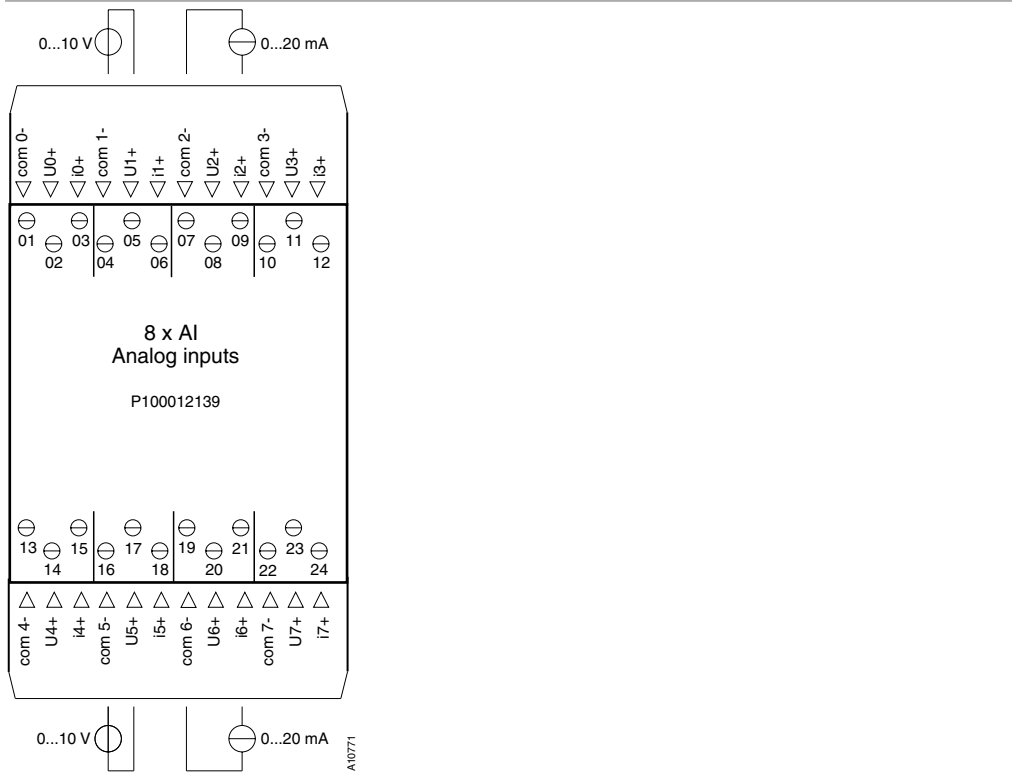
Detailed information and the functions of the LED control options are shown on data sheet PDS 92.081 EY-LO6\*.

### 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

