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

EY-IO534F001

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 modu524/525 automation station (AS)
- Receiving analogue inputs in operational systems, such as HVAC engineering
- 8 analogue inputs (U/I) with electrical isolation for non-isolated sensors with external power supply
- Power supply for I/O module of the automation station
- Direct labelling on the front
- Can be equipped with a local indicating unit

Technical data

Parameters		
	Power supply	From AS via I/O bus
	Power consumption[1)]	≤ 3.5 VA / 1.3 W
	Dissipated power	≤ 1.1 W
	Current consumption[2)]	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. external 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 mm²
	Connection, modu6 (LOI)	6-pin, integrated
Construction		
	Fitting	On DIN rail
	Weight	0.285 kg
	Dimensions W x H x D	42 × 170 × 115 mm
Standards and directives		
	Type of protection	IP30 (EN 60529)
	Protection class	III (EN 60730-1)
	Environment class	3K3 (IEC 60721)
CE conformity according to	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2, EN 61000-6-4

Overview of types

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

Accessories

Local operating and indicating units (LOI)

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

1) *Primary side of base station*
2) *Supply via base station*

Description of operation

The modu534 I/O module is used to extend the modu524 and modu525 automation stations. It is used to receive analogue inputs in operational systems such as HVAC engineering. It 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 regulations must also be adhered to. Changing or converting the product is not admissible.

Engineering notes

The modu534 I/O module comprises two components: the I/O module electronics and the baseplate into 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. (The basis is the Namur NE23 standard).

Fitting/assembly

The baseplate of the I/O module is fitted in a cabinet using a DIN rail (EN 60715) and connected on the side directly to the I/O bus of the AS or the extension modules. This work may only be carried out when the system is disconnected from the electrical supply. 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 is encoded on the hardware side using pin inserts so that it can only be used with the appropriate baseplate.
The “bus module”, through which the power supply and communication flows, 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 a mix-up with other I/O modules.

Labelling concept

The I/O module can be labelled with a paper insert in the front 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 AS detects that the module is plugged into the I/O bus. Placement of the baseplate and 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 statuses as follows:

System LED

I/O bus LED	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

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 kΩ
Max. values	±30V
Current (I)	0(4)...20 mA
Input resistance Ri	= 150 Ω
Max. values	±40 mA
External voltage	Common-mode voltage 80 V=/50 V~ Inputs galvanically isolated
Resolution	14 bits
Linearity error	< 1% of measuring span
Refresh 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.

Instruction 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
U (0/2...10 V)	0.15...10.5 V	< 10 mV	±0.1 V
I (0/4...20 mA)	0.02...22 mA	< 0.02 mA	±0.2 mA

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

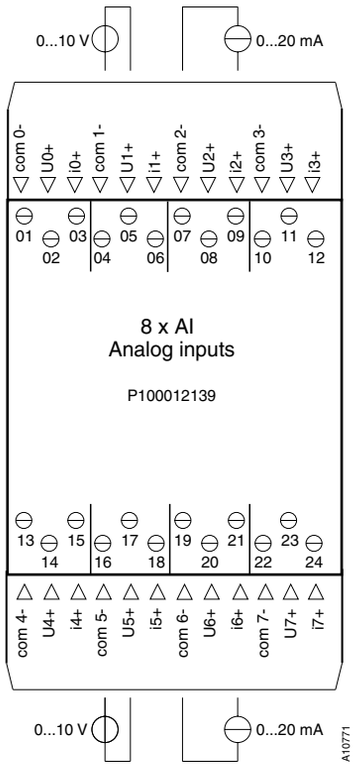
Connection of local operating unit

The I/O module can be complemented with a modu630 local indicating unit. 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 override and indication devices. 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 assignable 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*.

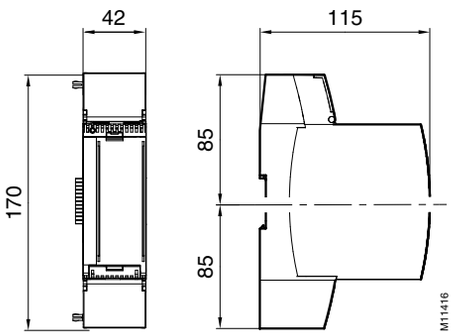
Disposal

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



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