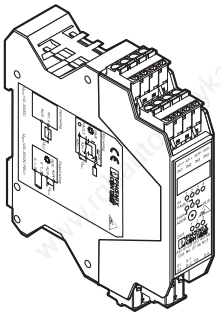
ASI IO SV DIO 4/3 AB

AS-Interface (AS-i) Input/Output Module With Four Digital Inputs and Three Digital Outputs (AB Slave)



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Data Sheet 696100 01/2004

Function

The AS-Interface (AS-i) input/output module is used to input and output digital signals in the control cabinet.

Features

- Four digital signal inputs
- Three digital signal outputs, each with a load capacity of 0.5 A
- Diagnostics and status indicators
- External auxiliary voltage indicator
- Addressing socket
- AB slave with extended addressing options for up to 62 AS-i slaves
- Pluggable COMBICON connections
- Communication monitoring
- Inputs for mechanical contacts (acc. to EN 61131-2, type 1)
- Input supply from external auxiliary voltage
- Output supply from external auxiliary voltage

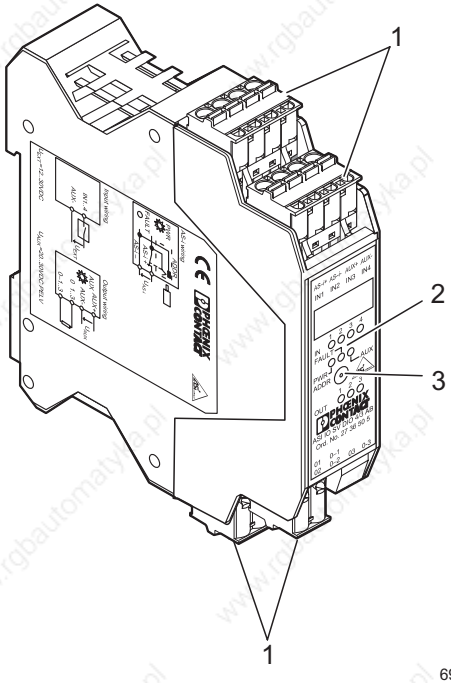

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Figure 1 Module view

The AS-Interface (AS-i) input/output module consists of the following components:

1 Pluggable COMBICON connections

2 Diagnostics and status indicators

3 Addressing socket

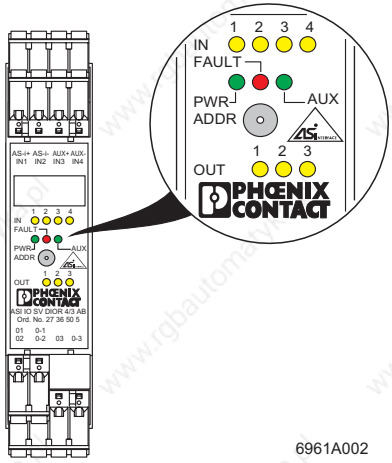


Figure 2 Indicators of ASI IO SV DIO 4/3 AB

Local Diagnostic and Status Indicators

Des.	Color	Meaning
IN 1, 2, 3, 4	Yellow LED	Input status
	ON:	Input active
	OFF:	Input not active
PWR	Green LED	AS-i operating voltage
	ON:	Operating voltage present
	OFF:	Operating voltage not present
FAULT	Red LED	Indication
	ON:	Communication error or address is 0
	Flashing:	Output overload
	OFF:	No error
AUX	Green/red LED	External auxiliary voltage
	Green ON:	Auxiliary voltage present
	Red ON:	Auxiliary voltage reversed
	OFF:	Auxiliary voltage not present
OUT 1, 2, 3	Yellow LED	State of the outputs
	ON:	Output active
	OFF:	Output not active

Terminal Assignment

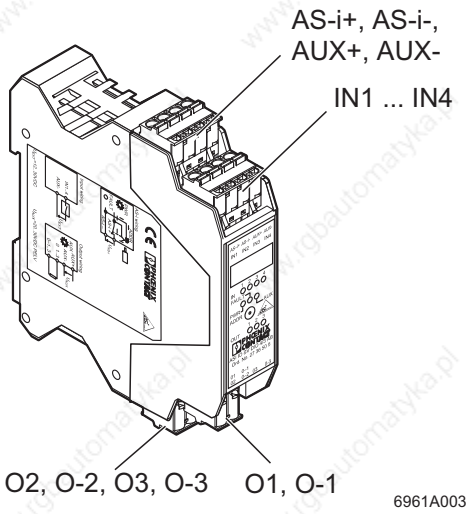


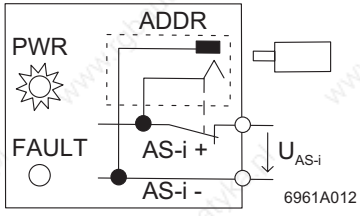
Figure 3 Terminal assignment

Terminal Point	Assignment
IN1 ... IN4	Input N1 to IN4
O1, O2, O3	Output OUT1 to OUT3
O–1,O–2, O–3	Return line for output OUT1 to OUT3 (optional)
AS-i+	AS-i+
AS-i–	AS-i–
AUX+	External auxiliary voltage +
AUX–	External auxiliary voltage -; common return line for all inputs

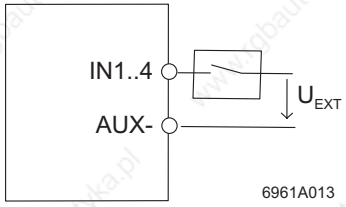
Use a PELV power supply!

The external auxiliary voltage must be taken from a power supply with safe electrical isolation (PELV acc. to IEC 60364-4-41, 60 V DC, max.).

AS-i wiring

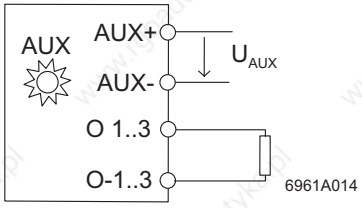


Wiring the inputs



U_{EXT} = 12 V DC to 30 V DC

Wiring the outputs



U_{AUX} = 20 V DC to 30 V DC PELV

Figure 4 Principal connection of AS-i, inputs and outputs

Mounting and Removing

Snapping on the AS-i module

- Place the AS-i module onto the DIN rail (A) from above and press it down firmly (B).

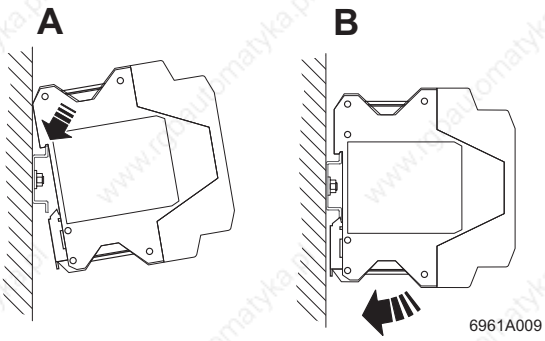


Figure 5 Snapping on the AS-i module

Removing the AS-i module

- Use a tool to grip the module foot brackets and pull the tool upwards (A).
- Remove the AS-i module from the DIN rail (B, C).

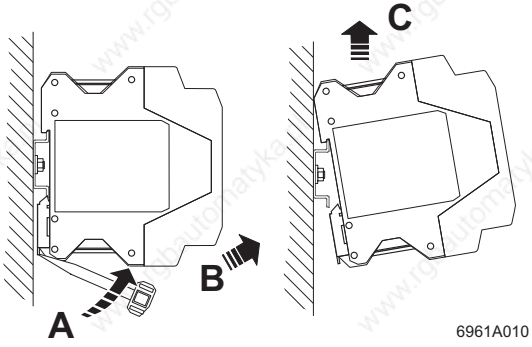


Figure 6 Removing the AS-i module

Connecting cables

The spring-cage connections of the AS-i module are designed for solid cables or cables with ferrules. In this case, you can connect the cables without using tools.

- Strip off 8 mm from the cable.
- Connect the cable.
- Check whether the cable is mounted firmly.

Removing cables

- Release the spring by pressing with the screwdriver (A).
- Remove the cable (B) and the screwdriver.

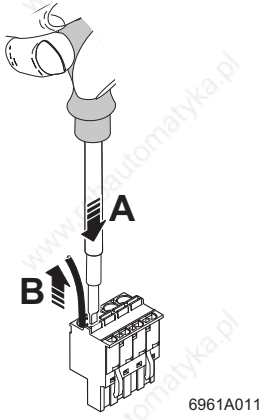


Figure 7 Removing the cable

Connecting the Addressing Device

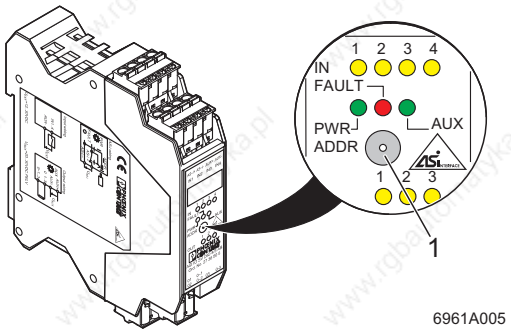


Figure 8 Addressing socket

To set the address of the module manually instead of via the master, proceed as follows:

- Connect the addressing device (Order No. 27 41 33 8) to the addressing socket (1) using an addressing cable (Order No. 27 41 34 1).
- Set the address of the module.
- Disconnect the addressing device from the module.

Programming Data

Configuration Data	
IO Code	7_{hex} (7_{dec})
ID code ID0	A_{hex} (10_{dec})
ID1 code ID1	7_{hex} (7_{dec})
ID2 code ID2	E_{hex} (14_{dez})
Profile	S-7.A.E
AS-i specification	2.1 (AB slave)

Data Bit (Output Via AS-i)	
Bit	**Function**
D0	Input IN1 or output OUT1
D1	Input IN2 or output OUT2
D2	Input IN3 or output OUT3
D3	Input IN4

Parameter Bit (Programmable Using AS-i)	
Bit	**Function**
P0	Not used
P1	Not used
P2	Not used
P3	Not used

Technical Data

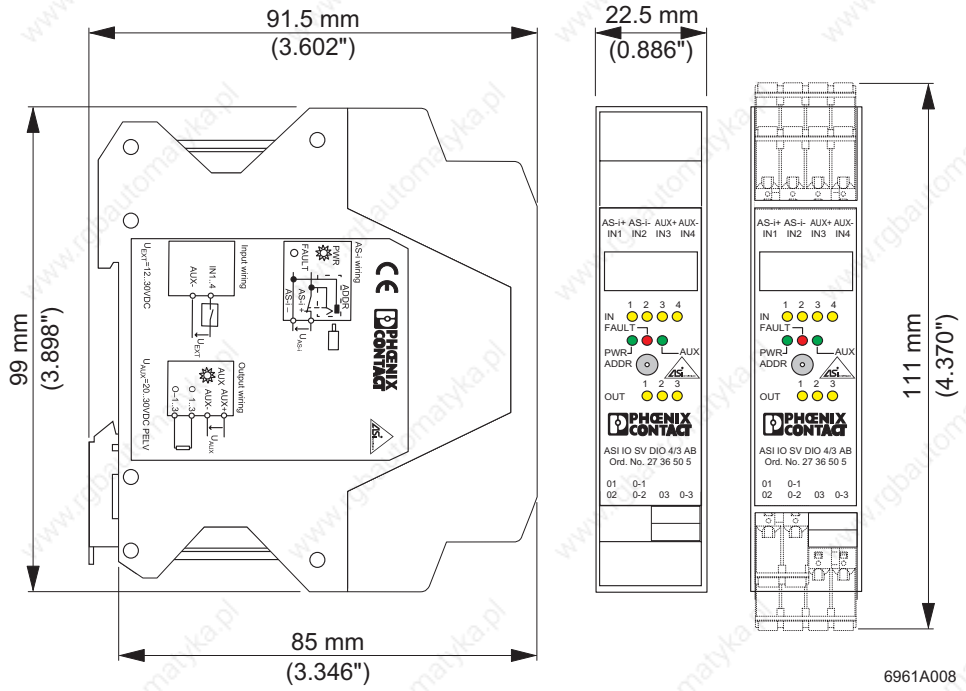


Figure 9 Module dimensions (without connector or with connectors)

General Data	
Order designation	ASI IO SV DIO 4/3 AB
Order No.	27 36 50 5
Housing dimensions (width x height x depth); with connectors	22.5 mm x 111 mm x 91.5 mm (0.886 in. x 4.370 in. x 3.602 in)
Housing material	PA 6.6-FR
Weight (typical)	100 g, approximately
Permissible temperature (operation)	-25 °C to +60 °C (-13°F to +140°F)
Permissible temperature (storage/transport)	-25 °C to +85 °C (-13°F to +185°F)
Permissible humidity (operation)	75% permanent, 85% occasionally no condensation
Permissible humidity (storage/transport with unused interfaces [standard packaging])	75% permanent, 85% occasionally

For a short period, slight condensation may appear on the outside of the housing if, for example, the module is brought into a closed room from a vehicle.

Permissible air pressure (operation)	80 kPa to 106 kPa (up to 2,000 m [9,843 ft.] above sea level)
Permissible air pressure (storage/transport)	70 kPa to 106 kPa (up to 3,000 m [9,843 ft.] above sea level)
Degree of protection	IP20 according to EN 60529
Class of protection	Class 3 according to VDE 0106, IEC 60536
Free from substances that would hinder coating with paint or varnish	Yes

Connections	
AS Interface	Terminal connection ≤ 2.5 mm (0.098 in.)
External auxiliary voltage	Terminal connection ≤ 2.5 mm (0.098 in.)
Inputs and outputs	Terminal connection ≤ 2.5 mm (0.098 in.)

Mechanical Requirements	
Vibration test sinusoidal vibrations according to EN 60068-2-6; IEC 60068-2-6	2g load, 2 hours in each space direction

Power Supply	
Auxiliary voltage U_{AUX}	20 V DC to 30 V DC PELV
AS-i voltage	26.5 V DC to 31.6 V DC
Current consumption of AS-i	≤ 30 mA

Digital Inputs	
Status indication	LED (yellow)
Number	4
Connection method	2-wire technology
Sensor voltage	Externally: 12 V DC to 30 V DC PELV acc. to IEC 60364-4-41 (60 V DC, max.)
Nominal input current	3 mA, typical
Switching Threshold	
“0“	≤ 0.5 mA according to EN 61131-2, type 1
“1“	≥ 2 mA according to EN 61131-2, type 1
Delay time	
“0“ ⇔ „1“	1.5 ms, typical
“1“ ⇔ „0“	1.5 ms, typical

Digital Outputs	
Status indication	LED (yellow)
Number	3
Connection method	2-wire technology
Minimum output voltage U_{AUX}	U_{AUX} – 0.5 V
Nominal current per output	0.5 A, maximum
Total current per module	1.5 A
ON delay time	≤ 1 ms
OFF delay time	≤ 1 ms
Permissible load per output	
Ohmic load	12 W
Inductive load	12 VA
Lamp load	12 W

Digital Outputs (Continued)	
Permissable switching frequency at	
Ohmic load	0 kHz to 1 kHz
Inductive load	0 Hz to 1 Hz
Lamp load	0 Hz to 10 Hz
Limitation of the voltage induced on circuit interruption	Yes
Operating voltage	From external auxiliary voltage
Protective function	Short-circuit and overload protection

Approvals	
CE	Yes
AS-i certification	Yes

Conformance With EMC Directive 89/336/EEC		
Noise Immunity Test According to EN 61000-6-2		
Electrostatic discharge (ESD)	EN 61000-4-2/ IEC 61000-4-2	Criterion B 8 kV contact discharge 8 kV air discharge
Fast transients (burst)	EN 61000-4-4/ IEC 61000-4-4	Criterion B Supply lines: 2 kV Signal/data lines: 2 kV
Conducted interference	EN 61000-4-6/ IEC 61000-4-6	Criterion A, test voltage 10 V
Surge voltage	EN 61000-4-5/ IEC 61000-4-5	AUX: Criterion B, 42 Ω 0.5 kV/1.0 kV (symmetrical/asymmetrical) AS-i Criterion B, 82 Ω 0.5 kV/1.0 kV (symmetrical/asymmetrical)
Noise Emission Test According to EN 50081-2		
Noise emission of housing	EN 55011	Class B

Ordering Data

Description	Order Designation	Order No.
AS-Interface (AS-i) input/output module (AB slave) with four digital inputs and three digital outputs	ASI IO SV DIO 4/3 AB	27 36 50 5
Cinch programming cable for module addressing	ASI CC ADR CAB CINCH	27 41 34 1
Addressing device	ASI CC ADR	27 41 33 8

Make sure you always use the latest documentation.
This is available on the Internet to be downloaded at www.phoenixcontact.com.

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