

Universal I/O-Module N 670

5WG1 670-1AB03

Product and Applications Description



The universal I/O module is a N-system DIN-rail mounted device. Besides the contacting system for the data-rail it provides an EIB connection block for the connection to the bus. The module requires a 24 V direct or alternating current external voltage supply (e.g. 6EP1 332-1SH41 LOGO! power). Two Universal in-/outputs are available, allowing to use each terminal as binary or analog in- or output, thus causing the existence of 4 operating modes for each universal input/output fundamentally different from each other:

- binary input
- binary output
- analog input
- analog output

2 inputs for Pt1000 two-wire operated sensors are available for temperature measuring. Furthermore 2 performance relays with the appropriate switching- and force guidance objects are available.

Application Programs

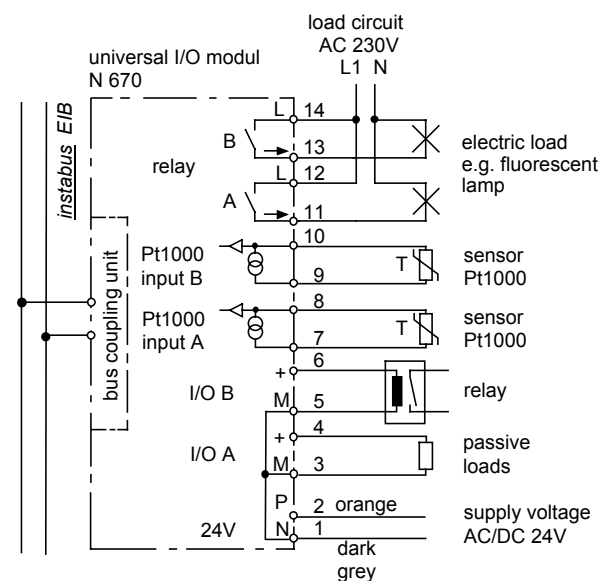
20 CO Uni I/O Unit 2IO 2Rel 2Pt 900501

- binary inputs for switching on/off/toggle
- binary outputs each providing one positive drive
- analog inputs for voltage range 0 – 10 V
- analog outputs for voltage range 0 – 10 V
- two Pt1000 sensor inputs available
- two bistable power relays for operations supporting only switching tasks
- allows switching on bus voltage failure
- allows switching on bus voltage recurrence

Note

If the application program is not loaded completely by the ETS, you had better interrupt the 24 V voltage supply of the I/O-module during the loading interval.

Example of Operation



Installation Instructions

- The device may be used for permanent interior installations in dry locations within distribution boards or small casings with DIN rail EN 60715-TH35-7,5.

⚠ WARNING

- The device must be mounted and commissioned by an authorised electrician.
- A safety disconnection of the device must be possible. Especially if the device is connected to different phases.
- Free DIN rail areas must be covered with covers, order no. 5WG1 192-8AA01.
- The prevailing safety rules must be heeded.
- The device must not be opened.
- For planning and construction of electric installations, the relevant guidelines, regulations and standards of the respective country are to be considered.

Technical Specifications

Power supply

- bus voltage: via bus line
- external module supply
24 V AC/DC \pm 10%, max. 100 mA (depending on the load)
DC reverse voltage protection available



WARNING

The bus voltage mustn't be used for the 24 V supply of the module. The external 24 V module supply must be equipped with a basic insulation for 250 V. The connection block "N" of the external module supply is connected with the mass connection blocks "M" of the Universal terminals.

If a number of modules are fed by alternating current from a single transformer take care that the phases of the connection blocks 1 and 2 are equally connected if in-/outputs or Pt1000 sensors of different modules are galvanically connected.

Control elements

1 learning button:
for switching between normal operating mode and addressing mode

Display elements

1 red LED:
for monitoring bus voltage and displaying mode, selected with the learning button

In-/ Outputs

- universal in-/outputs
 - number: 2
- binary respectively analog input
 - min. input voltage: 0V
 - max. input voltage: 10 V
 - input resistance: 25 k Ω



WARNING

Take care that the terminals are polarised correctly. The input voltage range must not be exceeded!

- binary respectively analog output
 - for passive loads and relays
 - min. output voltage 0 V
 - max. output voltage: 10V
 - accuracy: \pm 50mV
 - resolution approx. 20 mV
 - permanent output current: max. 10 mA
 - limited short-circuit strength

- Pt1000 inputs
 - number: 2
 - temperature range: -25...45°
 - accuracy: \pm 0,5 K
 - resolution: 0,1 K

Relay outputs

- number: 2 outputs (volt-free contacts)
- rated voltage: AC 230 V, 47...63 Hz
- rated current: 10 A resistive load
- switching current at AC 230 V: 0.01...10 A resistive load
- switching current at DC 24 V:
 - 10 A resistive load
 - 4 A inductive load (L/R = 7 ms)

Switching power at AC 230 V

- at incandescent lamp load: max. 1000 W
- at fluorescent lamp (FL) load:
 - uncorrected FL, $\cos \varphi$ 0,5: max. 500 VA
 - parallel corrected FL, $\cos \varphi$ 1 (at $C_{tot} \leq 14 \mu F$):
2 x 58 W or 3 x 36 W or 6 x 18 W
 - twin-lamp circuit, $\cos \varphi$ 1: max. 1000 W
 - OSRAM ECG for 58 W FL: max. 10 units
 - OSRAM ECG for 36 W FL: max. 15 units
 - OSRAM ECG for 18 W FL: max. 20 units



WARNING

If 230 V-loads are connected the terminal blocks 12 and 14 have to be connected to the same phase.

Connections

- load circuit and external power supply (connection block 1 and 2, 11-14), physical: strip insulation for 9...10 mm
permissible conductor types/cross sections:
 - 0,5 ... 2,5 mm² single core or flexible conductor, 8 mm ultrasonically compacted
 - 0,5 ... 2,5 mm² flexible conductor with terminal pin, crimped on gas tight
 - 0,5 ... 1,5 mm² flexible conductor with connector sleeve
 - 1,0 and 1,5 mm² plain flexible conductor
- Universal in-/output and PT1000-inputs (connection blocks 3 – 10)
strip insulation for 9...10 mm
permissible conductor types/cross sections:
 - 0,5 ... 1,5 mm² single core
 - 0,5 ... 1,5 mm² flexible conductor with terminal pin, crimped on gas tight
 - 0,5 ... 1,5 mm² flexible conductor with connector sleeve

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- 1,0 and 1,5 mm² plain flexible conductor
- load circuit, electrical:
 - plain flexible conductor, min. 1 mm²:
current carrying capacity max. 6 A
 - all other conductors, min. 1,5 mm²:
current carrying capacity max. 10 A
 - The load circuits must be protected with a 10 A miniature circuit breaker A or B characteristic

**WARNING**

When looping through the L-conductor (connection blocks 12 and 14), take care that the maximum connection current of 10 A (as governed by the maximum permissible printed conductor load) is not exceeded!

- Bus line
 - pressure contacts on data rail
 - screwless bus connection block
Ø 0,6 ... 0,8 mm single core
remove approx. 5mm of isolation

Physical specifications

- housing: plastic
- N-system DIN-rail mounted device,
width 4 SUs (1 SU = 18 mm)
- weight: approx. 160 g
- fire load: approx. 3100 kJ
- installation: rapid mounting on
DIN rail EN 60715-TH35-7,5

Electrical safety

- Degree of pollution (according to IEC 60664-1): 2
- protection (according to EN 60529): IP 20
- overvoltage class (according to IEC 60664-1): III
- bus: safety extra low voltage SELV DC 24 V
- the device complies with
EN 50090-2-2 and EN 60669-2-1

Reliability

rate of failure: 961 fit at 40 °C

Electromagnetic compatibility

complies with
EN 50081-1, EN 50082-2 and EN 50090-2-2

Environmental specifications

- climatic conditions: EN 50090-2-2
- ambient temperature operating: - 5 ... + 45 °C
- ambient temperature non-op.: - 25 ... + 70 °C
- relative humidity (non-condensing): 5 % to 93 %

Certification

EIB certificate

CE norm

complies with the EMC regulations (residential and functional buildings), and low voltage regulations

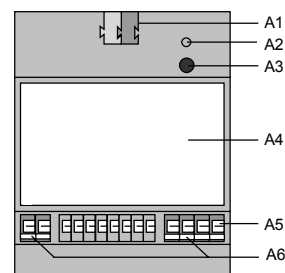
Location and Function of the Display and Operator Elements

Figure 1: Location of the display and operator elements

- A1 bus connection block screwless
- A2 LED for indicating normal operating mode (LED off) and addressing mode (LED on);
upon receiving the physical address the device automatically returns to normal operating mode
- A3 Learning button for switching between normal operating mode and addressing mode for receiving the physical address
- A4 Type plate
- A5 Screwless plug-in terminals for connecting load circuits
- A6 Test sockets for observing the voltage

Mounting and WiringGeneral description

The N-system DIN-rail device can be installed to N-system distribution boards, surface or flush mounted, or to any available DIN rail EN 60715-TH35-7,5.

The connection to the bus line is established by bus connection blocks or by clicking the device onto the DIN-rail (with a data rail installed). Take care that the type plates of all devices on a DIN-rail can be read in the same direction, guaranteeing the devices are polarised correctly.

If the connection is established via bus connection blocks (data-rail not installed) the contacting system towards the data-rail has to be covered by removing the guide top e.g. with a screw-driver and afterwards

snapping on the insulation top to ensure a sufficient insulation towards the DIN-rail.

For mounting the I/O modules (and all other DIN rail devices) the usually employed adapter is not necessary. The bus voltage is forwarded from the bus connection block to the data rail.

Mounting DIN-rail devices (Figure 2)

- Slide the device (B1) onto the DIN-rail (B2) and
- swivel back the device until the slide clicks into place audibly.

Dismounting DIN-rail devices (Figure 2)

- Remove all connected wires,
- press down the slide (C3) with a screw-driver and
- swivel the device (C1) from the DIN-rail (C2).

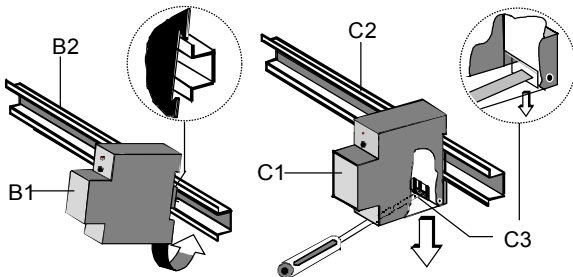


Figure 2: Mounting and dismounting a DIN-rail device

Removing the guide top (figure 3)

- The guide top (D3) encloses the contacting system (D2) on the back side of the universal module N 670 (D1)
- Insert the screw-driver between the DIN-rail mounted device (D1) and the guide top (D3) and pull out the guide top.

Snapping on the insulation top (figure 3)

- Stick the insulation top (D4) onto the contacting system and snap it on by pressing.

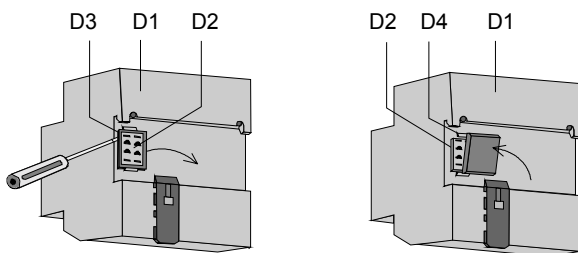


Figure 3: covering the contacting system

Slipping off bus connection blocks (Figure 4)

- The bus connection block is situated on the top of the Universal I/O module N 670(E2).
- The bus connection block (E1) consists of two components (E1.1 and E1.2) with four terminal contacts each. Take care not to damage the two test sockets (E1.3) by accidentally connecting them to the bus cable or with the screw-driver (e.g. when attempting to unplug the bus connection block).
- Carefully put the screw-driver to the wire-inserting slit of the bus connection block's grey component (E1.1) and pull the bus connection block from the Universal I/O module (E2).

Note

Don't try to remove the bus connection block from the bottom side! There is a risk of shorting-out the device!

Slipping on bus connection blocks (Figure 4)

- Slip the bus connection block onto the guide slot and
- press the bus connection block (E1) down to the stop.

Connecting bus cables (Figure 4)

- The bus connection block (E1) can be used with single core conductors $\varnothing 0,6 \dots 0,8$ mm.
- Remove approx. 5 mm of insulation from the conductor (E1.4) and plug it into the bus connection block (E1) (red = +, black = -).

Disconnecting bus cables (Figure 4)

- Unplug the bus connection block (E1) and remove the bus cable conductor (E1.4) while simultaneously wiggling it.

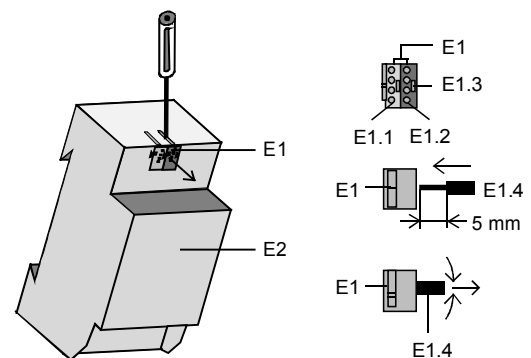


Figure 4: Connecting and disconnecting bus cables

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Connecting control and load circuits (Figure 5)

- The load circuits are connected via screwless plug-in terminals (F1).
- Remove approx. 9 to 10 mm of insulation from the wire (F1.1) and plug it into the terminal (F1).

Conductor cross sections:

- load circuit and external power supply (connection block 1 and 2, 11-14), physical: strip insulation for 9...10 mm permissible conductor types/cross sections:
 - 0,5 ... 2,5 mm² single core or flexible conductor, 8 mm ultrasonically compacted
 - 0,5 ... 2,5 mm² flexible conductor with terminal pin, crimped on gas tight
 - 0,5 ... 1,5 mm² flexible conductor with connector sleeve
 - 1,0 and 1,5 mm² plain flexible conductor
- Universal in- / output and PT1000-inputs (connection blocks 3 – 10) strip insulation for 9...10 mm permissible conductor types/cross sections:
 - 0,5 ... 1,5 mm² single core
 - 0,5 ... 1,5 mm² flexible conductor with terminal pin, crimped on gas tight
 - 0,5 ... 1,5 mm² flexible conductor with connector sleeve
 - 1,0 and 1,5 mm² plain flexible conductor
- load circuit, electrical:
 - plain flexible conductor, min. 1 mm²: current carrying capacity max. 6 A
 - all other conductors, min. 1,5 mm²: current carrying capacity max. 10 A

Disconnect control and load circuits (Figure 5)

- Press the terminal lock (F1.2) with a screw-driver and
- remove the wire (F1.1) from the terminal (F1).

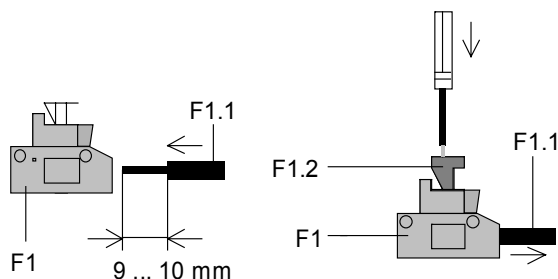
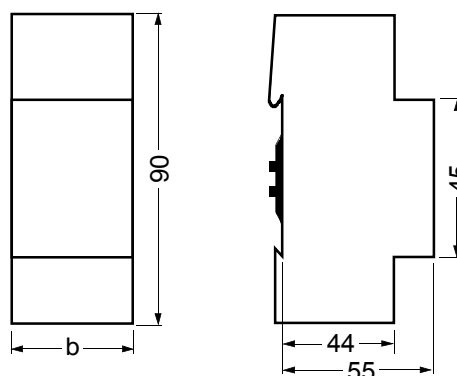


Figure 5: Connecting and disconnecting control and load circuits

Dimension Diagram

Dimensions in mm



b = 4 SU

1 Spacer unit (SU) = 18 mm

General Notes

- Any faulty devices should be returned to the local Siemens office.
- If you have further questions about the product, please contact our Technical Support:

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