

Product and Functional Description

The thermal drive actuator N 605 has been specially developed to control miniature valves with electrothermal valve drives for AC 230 V operating voltage. It is a DIN rail mounted component for the *instabus* EIB. All the cable connections are carried out via screw terminals except for the bus cable which is plugged in.

6 channels with semiconductor outputs are available to control the valve drives. The outputs each have 2 output terminals available (for N and switched L). A maximum of 4 thermal drives may be connected in parallel to one channel (actuator output). The outputs are monitored for short circuits and overload. If a short circuit or overload is detected, all the outputs are temporarily de-energized and the red LEDs are triggered to show a circulating light. After a cooling down period of 6 minutes, the individual outputs are switched on in sequence to determine where the short circuit or overload has occurred. It is reported via a special communication object which outputs are affected. These outputs are disabled for further operation and the associated red LEDs flash rapidly. All the other outputs are then operated as normal. It is only possible to reset a disabled channel by switching off the actuator from the mains voltage.

The application program enables the actuator outputs to be controlled via ON/OFF switching commands or via positioning commands expressed as a percentage. The latter are converted into switching commands with pulse width modulation under consideration of the heating up and cooling down periods of a thermal drive. A changed status or the current state of an output can be queried via a separate status object or sent automatically. The type of the output status object is always the same as the trigger object. The behaviour of the actuator on bus voltage failure can also be preselected (no action, switch on, switch off, forced position).

If the program function "Calcification protection" is activated, each actuator output is switched on and off once within a period of 6 days to prevent the valves from being fixed in position outside the heating respectively cooling period.

If you do not want that, in a room with several windows, the opening of only one window will switch the room thermostat to the building protection mode, hereby closing all heating and cooling valves, then the program function "Constrained Position" has to be activated. In this case, only the valve of the respective radiator or cooling ceiling element that is located in the immediate vicinity of the opened window is closed, except for a set residual opening (constrained position). If a logical connection of the "Constrained Position" object with the "Frost alarm" or "Outside temperature" object is selected and a frost alarm is not present or the outside temperature is $\geq 1^{\circ}\text{C}$, the valve is fully closed if the "Constrained Position" object is identical to logical 1.

There are 6 additional binary inputs available for floating signal contacts in order to record and transmit the switching state e.g. of the window contacts or dew point detectors.

The power supply of the actuator electronics is carried out via an integrated power supply unit which is independent of the EIB bus voltage. Each output in a group of three outputs (outputs 1-3 or outputs 4-6) can be manually switched on or off or to the 50% open position via three push buttons which are integrated in the actuator and each have 1 red LED. The manual switching also functions if the bus cable is not connected or if the bus communication fails. After a long push button action (> 2 s), the other valve group is selected. The yellow LED indicates which of the two output groups can be operated (continuous light = outputs 1-3, flashing light = outputs 4-6).

Prerequisites

The user of the program must ensure that the following requirements are met for the error-free operation of the application program for the N 605:

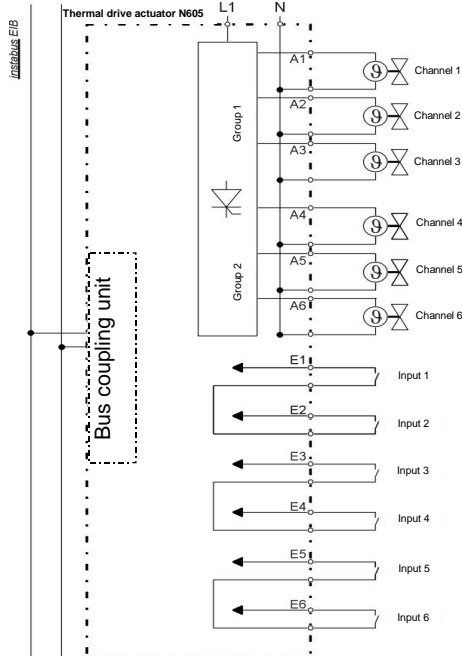
- The user must specify via a parameter whether the room thermostat only sends switching command telegrams of type EIS 1 to activate a valve whereby a logical 0 corresponds to the command for closing the valve and a logical 1 corresponds to the command for opening the valve. Otherwise, it must be defined whether the valve is triggered via positioning commands of type EIS 6 expressed as percentage values whereby 0% corresponds to a closed valve and 100% to an opened valve.
- The room thermostat must ensure that it never sends switching or positioning commands which lead to the simultaneous opening of the heating and cooling valves (i.e. a switching/positioning command to open a valve may only be sent by the thermostat if it has previously sent a switching/positioning command to close the other valve).
- Thermal drives of the same type from the same manufacturer must be connected to all the outputs of the N 605. The user must indicate for each valve whether it is closed or opened in the de-energized state.
- If dew point detectors have been installed and are connected to the EIB, the room thermostat must send a "CLOSE" command (0% command) to the cooling supply valve if a dew point alarm is present followed by an "OPEN" command (100% command) when the dew point alarm is no longer present and further cooling is required.

5. If the opening of a window is reported to the room thermostat via the EIB and the program function "Constrained Position" has not been activated, the thermostat must switch to "Building protection mode" and immediately send a "CLOSE" command (0% command) to the currently opened supply valve. In the "Building protection mode", the room thermostat must ensure by controlling the valves that the room temperature does not fall below the setpoint value for frost protection respectively does not exceed the setpoint value for heat protection.

Additional Information

<http://www.siemens.de/gamma>

Connection Example



Technical Specifications

Power supply

- Via an integrated power supply unit (230 V AC +10% -15%), independent of the EIB bus voltage
- KNX bus current: 5 mA

Outputs

- Number: 6 (semiconductor switches)
- Rated voltage: AC 230 V, 50 ... 60 Hz
- Rated current: 0,05 A (short-time 1.5 A, resistive load)
- Continuous load per output: 12 W (resistive load)
- Minimum loads per output: 3 W (resistive load)

Inputs

- Number: 6 (for floating signal contacts)
- Length of connection cable: max. 50 m

Connections

- Mains connection: 2-pole (N, L)
Insulation strip length 9 ... 10 mm
0.5 ... 2.5 mm² single-core or
0.5 ... 1.5 mm² finely stranded with connector sleeve
- 6 load outputs: 2-pole (N, switched L)
Insulation strip length 9 ... 10 mm
0.5 ... 2.5 mm² single-core or
0.5 ... 1.5 mm² finely stranded with connector sleeve
- Bus line: screwless bus terminal
Insulation strip length 5 mm
0.6 ... 0.8 mm AE single-core

CAUTION

- The device must be protected against short circuits with a circuit-breaker of characteristic A or B with a maximum nominal current of 10 A.
- Limited by the permitted printed conductor load, the total of the switched currents may not exceed 10 A.
- A faulty connection of AC 230 V on the screw terminals for connection of floating signal contacts can lead to the electronics module being damaged.
- To ensure that the inputs for the window contacts function without any errors, the terminal pairs 18/20, 22/24 and 26/28 may not be connected together.

Physical specifications

- Dimensions: DIN rail mounted device in N-system dimensions, width = 6 modules (1 module = 18 mm)
- Weight: approx. 380 g

Electrical safety

- Type of protection (according to EN 60529): IP 20

Environmental conditions

- Ambient operating temperature: -5 ... +45 $^{\circ}\text{C}$
- Storage temperature: -25 ... +70 $^{\circ}\text{C}$

- Relative humidity (not condensing): 5% ... 93%

Location and Function of the Display and Operating Elements

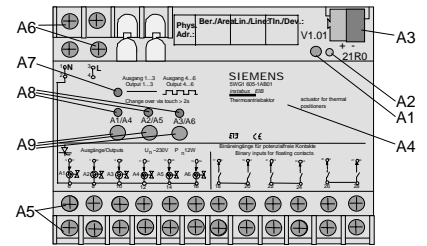


Diagram 1: Location of the display and operating elements

- A1 Learning button for toggling between normal mode and addressing mode for transferring the physical address
- A2 LED (red) for displaying normal mode (LED off) or addressing mode (LED on); it is extinguished automatically once the physical address has been transferred
- A3 Plug for bus connecting terminal
- A4 Label
- A5 Screw terminals for connecting the valve drives and signal contacts
- A6 Screw terminals for connecting the mains voltage
- A7 LED (yellow) for displaying the operating voltage and the outputs that can currently be operated (continuous light = outputs 1-3 can be operated, flashing light = outputs 4-6 can be operated)
- A8 3 LEDs (red) for displaying the switching state of a group of 3 outputs (LED lights up if 230 V is present at the output)
- A9 3 push buttons for toggling a group of three outputs locally, independent of the EIB

Mounting and Wiring

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

⚠ DANGER

- The device may only be installed 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 with sticked-in data rail must be covered with covers, order no. 5WG1 192-8AA01.
- The prevailing safety rules must be heeded.
- The device may not be opened.
- For planning and construction of electric installations, the relevant guidelines, regulations and standards of the respective country are to be considered.

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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