



OpenAir™

## Actuators for Fire and Smoke Protection Dampers

**GNA126.1E/...**  
**GNA326.1E/...**

- Electric motor driven actuators for 2-position control, nominal torque 7 Nm, with spring return to failsafe position, mechanically adjustable span between 0...90°, prewired with 0.9 m long connecting cables
- Operating voltage AC 24 V / DC 24...48 V or AC 230 V
- Optional temperature monitoring unit with 3 thermal cutouts (72 °C) and test button
- Fixed auxiliary switches for switching points 5° and 80°
- Rigid connection between actuator and damper shaft

### Use

For the control of fire and smoke protection dampers.

- Nominal torque of 7 Nm for damper surfaces up to about 1.0 m<sup>2</sup> (friction-dependent)
- In fire protection sections of plant where, in the event the thermal fuse cuts out at a duct or ambient temperature of 72 °C, or in case of a power failure, the actuator must travel to the failsafe position (zero position)

## Functions

### Basic functions

|   |  |
|---|--|
| Rotary movement                             | <ul style="list-style-type: none"><li>Direction of rotation (clockwise or counterclockwise) determined by the way the actuator is mounted on the damper shaft</li><li>When operating voltage is applied, the actuator travels toward the 90° position</li></ul>  |
| Failsafe function                           | <ul style="list-style-type: none"><li>If the thermal fuse cuts out at a duct or ambient temperature of 72 °C (Optional: 95 °C), the return spring drives the actuator to the failsafe position (0°)</li><li>In the event of a power failure or if the operating voltage is turned off, the return spring drives the actuator to the failsafe position (0°)</li></ul> |
| Behavior in the event the damper is blocked | The actuator is equipped with an automatic switch-off mechanism.   |
| Position indication                         | The position indicator located on the shaft adapter shows the rotational angle position of the damper blade.   |
| Manual adjustment when actuator is dead     | <ul style="list-style-type: none"><li>When dead, the actuator can be driven to any angular position using a hex wrench and can then be secured with a screwdriver</li><li>The actuator returns to its zero position when mechanically delocked with a hex wrench (turning toward "90° - opening") or by applying power for a short moment</li></ul>                  |
| Rigid connection                            | Square shafts 10 x 10 or 12 x 12 mm.   |

### Type summary

| Operating voltage       | Auxiliary switches                   | With temperature monitoring unit             | Without temperature monitoring unit        |
|-------------------------|--------------------------------------|--|--|
| AC 24 V<br>DC 24...48 V | Fixed switching points at 5° and 80° | <b>GNA126.1E/T10</b><br><b>GNA126.1E/T12</b> | <b>GNA126.1E/10</b><br><b>GNA126.1E/12</b> |
| AC 230 V                | Fixed switching points at 5° and 80° | <b>GNA326.1E/T10</b><br><b>GNA326.1E/T12</b> | <b>GNA326.1E/10</b><br><b>GNA326.1E/12</b> |

|                 |   |
|-----------------|---|
| <b>Delivery</b> | Due to the mounting choices depending on the direction of rotation and the shaft length, shaft adapter with position indicator and other mounting accessories are shipped unassembled together with the actuator. |
|-----------------|---|

|                   |  |
|-------------------|--|
| Connecting cables | The actuators come with 0.9 m long prewired connecting cables.<br>The cable length to the ready fitted temperature monitoring unit is 0.9 m. |
|-------------------|--|

| Accessories | Designation                             | Type reference                                   | Data sheet / mounting instruction |
|-------------|---|--|-----------------------------------|
|             | Duct tip to temperature monitoring unit | <b>ASK79.4 / 72 °C</b><br><b>ASK79.5 / 95 °C</b> | N4620 / M4610                     |

### Equipment combinations

The damper actuators can be used with all types of controllers having a 2-position output and delivering a switching voltage of AC 24 V / DC 24...48 V or AC 230 V.

## Technical design

|   |   |
|---|---|
| Drive motor   | The brushless DC motor ensures accurate speed control, torque monitoring for protecting the actuator and the air damper, and provides a reliable failsafe function. |
| Spring return mechanism in the event of power failure | Mechanical spring ensure the failsafe function.   |

## Mechanical design

### Basic components

|                       |  |
|-----------------------|--|
| Housing               | Robust, lightweight all metal housing made from die-cast aluminium which guarantees a long service life even under extreme environmental conditions.                         |
| Gear train            | Maintenance- and noise-free gear train with stall and overload protection for the life of the actuator.  |
| Spring preload        | The spring has a factory-set preload of 5° to ensure tight shutoff for the fire and smoke protection dampers.  |
| Manual adjustment     | A hole with a screw in the center of the actuator allows manual setting of the gears. A hex wrench is supplied.  |
| Mounting bracket      | A perforated bracket with pin available, depending on the way the actuator is fixed.   |
| Electrical connection | All actuators come with prewired 0.9 m long connecting cables.   |
| Note                  | The actuators can be mounted on either side depending on the required direction of rotation. All setting and operating elements are available on both sides of the actuator. |
| Auxiliary switches    | Fixed switching points at 5° and 80°.  |

### Temperature

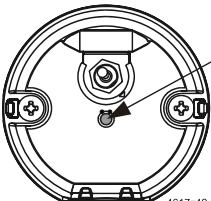
#### monitoring unit

#### Use

The temperature monitoring unit is ready connected to the actuator and is used for forced control of motorized fire and smoke protection dampers should excessive temperatures occur.

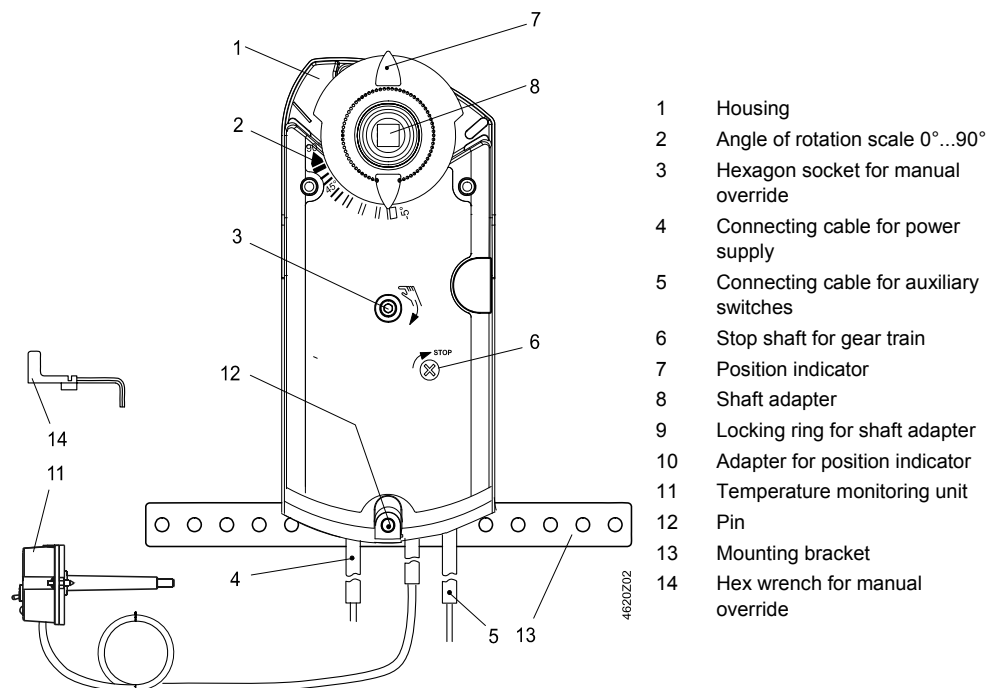
#### Mode of operation

The temperature monitoring unit contains 3 thermal fuses, two for monitoring the duct temperature and 1 for the ambient temperature. If the temperature at any of these fuses exceeds the level of 72 °C (Optional: 95 °C), the power supply will be irreversibly cut. As a result, the return spring will drive the actuator to the failsafe position. A test button is integrated for making functional checks. When pressed, the current path will be cut.

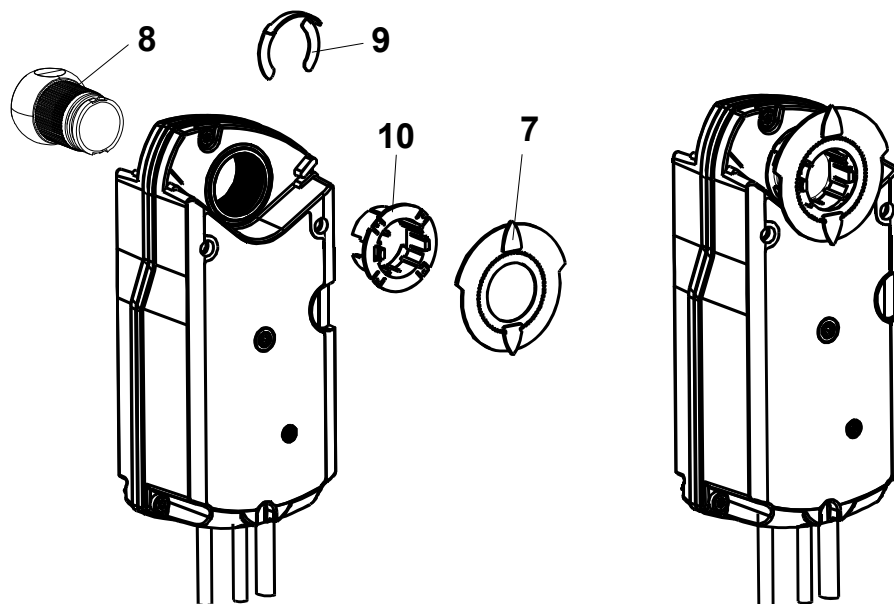
| LED functions   |  |
|---|--|
|  | <ul style="list-style-type: none"><li>○ Red = Operating voltage OK.<br/>Thermo sensor defect</li><li>○ Green = Operating voltage OK<br/>Thermo sensor OK</li><li>● Dark = No operating voltage</li></ul> |

## Setting and operating elements

Refer to "Technical design" and "Commissioning notes" in this Data Sheet.








Arrangement for shaft adapters



## Engineering notes



|   |   |
|---|---|
|   | <p>The basic system data for the control systems in use contain all engineering notes. Read all the engineering notes before mounting, wiring and commissioning the damper actuator and pay special attention to all safety instructions.</p> <p>These damper actuators must be used on applications as described in the basic system data documents for the relevant control systems. Additionally, all actuator-specific features and rules must be observed as described in the brief description on the front page of this Data Sheet (bold print) and in "Use", "Engineering notes", and "Technical data".</p> |
| Correct use   |   |
|    | <p>All paragraphs marked with the special warning triangle as illustrated on the left contain additional safety instructions and limitations that must be observed under any circumstances to avoid physical injuries or damage to equipment.</p>   |
|  Power supply<br>AC 24 V<br>DC 24...48 V | <p>These actuators must be used with <b>safety extra low-voltage (SELV)</b> or <b>protection by extra low-voltage (PELV)</b> in accordance with HD 384.</p>   |
|  Power supply<br>AC 230 V                | <p>The actuators are double-insulated and do not provide a connection for protective ground.</p>  |
|  Auxiliary switches<br>"A", "B"          | <p>Use <b>either mains voltage or safety extra low-voltage</b> for auxiliary switches "A" and "B". Do not mix the 2 for operation. Operation with different phases is <b>not</b> permitted.</p>   |
|  Warning,<br>maintenance                 | <p><b>Do not open</b> the actuator!</p> <p>The actuator is maintenance-free. Maintenance work may only be carried out by the manufacturer.</p>  |
| Parallel connection<br>of actuators   | <p>Electric parallel connection of the same types of actuator is permitted provided operating voltage is within the required tolerance. Voltage drops on the supply lines must be taken into consideration</p>  |
| Sizing transformers<br>for AC 24 V  | <ul style="list-style-type: none"> <li>• Use safety isolating transformers with double insulation conforming to EN 60 742. The transformers must be suited for 100 % duty</li> <li>• Observe all local safety rules and regulations relating to the sizing and protection of transformers</li> <li>• Determine the transformer's size by adding up the power consumption in VA of all actuators used</li> </ul>   |
| Wiring and<br>commissioning   | <p>Refer to "Commissioning notes" and "Internal diagram" as well as to the plant diagram.</p>   |


## Mounting notes

|                           |  |
|---------------------------|--|
| Mounting instructions     | <p>For detailed information on the correct preparation of the actuator, refer to Mounting Instructions GNA...1E/.. M4620. The actuator must be fitted to the fire and smoke protection damper as specified by the OEM. Shaft adapter and other accessory items come unassembled, since their assembly depends on the direction of rotation and the length of the shaft (refer to "Technical design").</p>  |
| Housing protection        | <p>In order to comply with the requirements of IP54 (temperature monitoring unit has IP54), the following mounting conditions must be satisfied:</p> <ul style="list-style-type: none"> <li>• Always mount the actuator vertically (cable entry at the bottom) in the case of air dampers with horizontal shafts</li> <li>• When the actuator is mounted directly on the damper shaft, the mounting angle may be a maximum of <math>\pm 45^\circ</math></li> </ul> |
| Mounting bracket /<br>pin | <p>If the actuator is mounted directly on the damper shaft, the mounting bracket / pin must be used. The insertion depth for the shaft into the housing must be sufficient.</p>  |
| Damper shafts             | <p>For information on minimum length and diameter of the damper shaft, refer to "Technical data".</p>  |






|   |  |
|---|--|
| Spring preload                                | The actuator is supplied with a 5° spring preload to ensure a certain closing pressure for the air damper.   |
| Mechanical limitation of the rotational angle | If required, the angle of rotation can be limited in increments of 5° for the entire correcting span by placing the shaft adapter in the respective position.  |
| <b>Temperature monitoring unit</b>            | <p>The temperature monitoring unit is to be fitted to the duct wall or the damper housing using 2 self-tapping screws of 3.5 mm diameter.</p> <p>The enclosed drilling template facilitates mounting. When mounting, it must be ensured that the thermal fuse is fully exposed to the airflow.</p> |

## Commissioning notes

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|  |  |
|--|--|
| References   | <p>All information required for commissioning is contained in the following pieces of documentation:</p> <ul style="list-style-type: none"> <li>• The present Data Sheet N4620</li> <li>• Mounting Instructions M4620</li> <li>• Plant diagram</li> </ul>  |
| Environmental conditions   | <ul style="list-style-type: none"> <li>• Check to ensure that all permissible values as specified in "Technical data" are observed</li> </ul>  |
| Mechanical check   | <ul style="list-style-type: none"> <li>• Check for proper mounting to ensure that all mechanical settings are in accordance with plant-specific requirements. In addition, ensure that the air dampers are shut tight when in the fully closed position</li> <li>• Fasten the actuator securely to avoid side load</li> <li>• Check the direction of rotation by turning the gearing with a hex wrench in accordance with the Mounting Instructions</li> </ul> |
| Electrical check   | <ul style="list-style-type: none"> <li>• Check to ensure that the cables are connected in accordance with the plant wiring diagram</li> <li>• Operating voltage AC 24 V / DC 24...48 V (SELV / PELV) or AC 230 V must be within the tolerance</li> <li>• Auxiliary switches "A" and "B" change over when the actuator reaches the respective positions</li> </ul>  |
| <b>Temperature monitoring unit</b>  | <p>Functional check on site:</p> <p>Press the button to simulate overtemperature. This simulates the response of the fuse, enabling you to check the proper functioning of the actuator.</p> <p>In plant equipped with a fire alarm device BAM, fire alarm will be triggered. Appropriate measures must be taken before the functional check is made.</p>  |

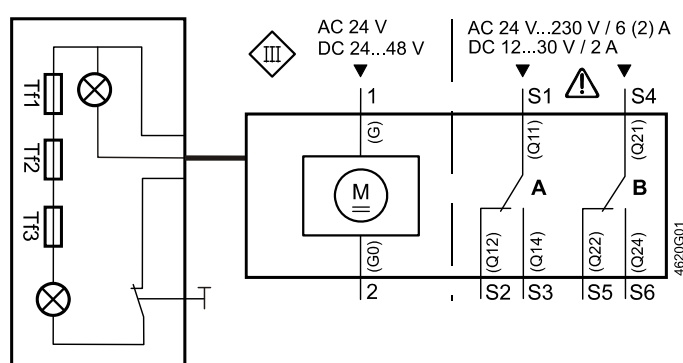
## Technical data

|   |  |   |  |
|---|--|---|--|
|  | Power supply<br>AC 24 V<br>DC 24...48 V<br>(SELV/PELV) | Operating voltage AC / frequency  | AC 24 V $\pm 20\%$ / 50/60 Hz                    |
|   |  | Operating voltage (DC)  | DC 24...48 V $\pm 20\%$                          |
|   |  | Power consumption GNA126.1: when running<br>when holding  | AC: 5 VA / 3.5 W / DC: 3.5 W<br>AC/DC: 2 W       |
|   |  | Safety class  | III to EN 60 730                                 |
|  | Power supply AC 230                                    | Operating voltage / frequency   | AC 230 V $\pm 15\%$<br>50/60 Hz                  |
|   |  | Power consumption GNA326.1: when running<br>when holding  | 7 VA / 4.5 W<br>3.5 W                            |
|   |  | Safety class  | II to EN 60 730                                  |
|   |  |   |  |
| Mechanical data   |  | Nominal torque  | 7 Nm   |
|   |  | Maximum torque (blocked)  | 21 Nm  |
|   |  | Nominal angle of rotation / maximum angle of rotation   | 90° / 95° $\pm 2^\circ$                          |
|   |  | Running time for nominal angle of rotation 90°<br>(motor operation)                                       | 90 s   |
|   |  | Closing with spring return (on power failure)   | 15 s   |
|  | Auxiliary switches                                     | AC power supply   |  |
|   |  | Switching voltage   | AC 24...230 V                                    |
|   |  | Nominal current res./ind.   | 6 A / 2 A  |
|   |  | Life: 6 A res., 2 A ind.<br>without load  | 10 <sup>4</sup> cycles<br>10 <sup>6</sup> cycles |
|   |  | DC power supply   |  |
|   |  | Switching voltage   | DC 12...30 V                                     |
|   |  | Nominal current   | DC 2 A   |
|   |  | Electric strength auxiliary switch against housing  | AC 4 kV  |
|   |  | Switching hysteresis  | 2°   |
|   |  | Factory switch setting  |  |
|   |  | Switch A  | 5°   |
|   |  | Switch B  | 80°  |
| Connecting cables<br>(halogen free)   |  | Power supply line AC 24 V (wires 1-2)   | 2 x 0.75 mm <sup>2</sup>                         |
|   |  | AC 230 V (wires 3-4)  | 2 x 0.75 mm <sup>2</sup>                         |
|   |  | Auxiliary switch cable (wires S1...S6)  | 6 x 0.75 mm <sup>2</sup>                         |
|   |  | Standard length   | 0.9 m  |
| Degree of protection  |  | Housing (actuator only)   | IP54 to EN 60 529                                |
| Environmental conditions  |  | Operation / transport   | IEC 721-3-3 / IEC 721-3-2                        |
|   |  | Temperature   | -32...+50 °C / -32...+50 °C                      |
|   |  | Humidity (non-condensing)   | < 95 % r.h. / < 95 % r.h.                        |
| Standards and directives  |  | Product safety:   |  |
|   |  | automatic electrical controls for<br>household and similar use  | EN 60 730-2-14<br>(mode of action type 1)        |
|   |  | Electromagnetic compatibility (EMC):  |  |
|   |  | Immunity for all models   | IEC/EN 61 000-6-2                                |
|   |  | Emissions for all models  | IEC/EN 61 000-6-3                                |
|   |  |  Conformity to:        |  |
|   |  | EMC-directive   | 2004/108/EEC                                     |
|   |  | Low-voltage directive   | 2006/95/EEC                                      |
| Dimensions  |  |  C-Tick Conformity to: |  |
|   |  | Emissions   | AS/NZS 61000-6-3                                 |
|   |  | Actuator W x H x D (see "Dimensions")   | 81 x 178 x 63 mm                                 |
|   |  | Damper shaft: square<br>min. shaft length   | 10x10, 12x12 mm<br>20 mm                         |

|  |   |   |        |
|--|---|---|--------|
| Weight   | Without packaging:                        | GNA126.1E/T...  | 1.3 kg |
|  |   | GNA326.1E/T...  | 1.4 kg |
|  |   | GNA126.1E/....  | 1.2 kg |
|  |   | GNA326.1E/....  | 1.3 kg |
| <b>Temperature monitoring unit</b><br>(ready connected to actuator<br>GNA...26.1E/T..) | Connecting cable (halogen free)           | 0.9 m long (2 x 0.5 mm <sup>2</sup> )   |        |
|  | Switching temperature for sizing          | Tf1: outside the duct 72 °C<br>Tf2: inside the duct 72 °C<br>Tf3: inside the duct 72 °C |        |
|  | Temperatur tolerance Tf1, Tf2, Tf3        | 72 °C +0 °C/-2 °C   |        |
|  | Safety class                              | III (safety extra-low voltage)  |        |
|  | Degree of protection                      | IP54  |        |
|  | Ambient temperature / storage temperature | -20...+50 °C/-20...+50 °C   |        |
|  | Ambient humidity                          | KL D to DIN 40040   |        |
|  | Maintenance                               | maintenance-free  |        |
|  | Weight                                    | 0.1 kg  |        |

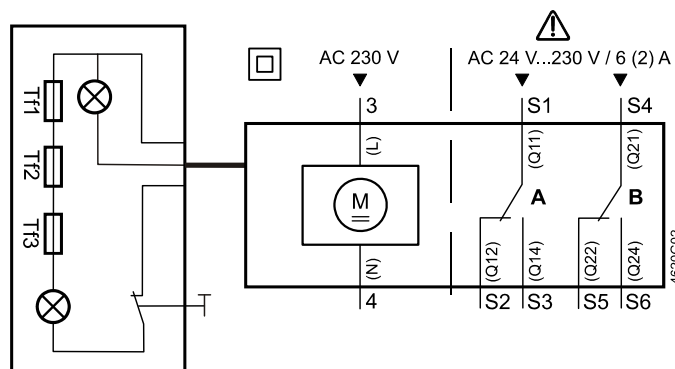
## Diagrams

### Internal diagram GNA126.1E/T..



**AC 24 V**  
**DC 24...48 V**  
**(SELV/PELV)**

### GNA326.1E/T..



**AC 230 V**

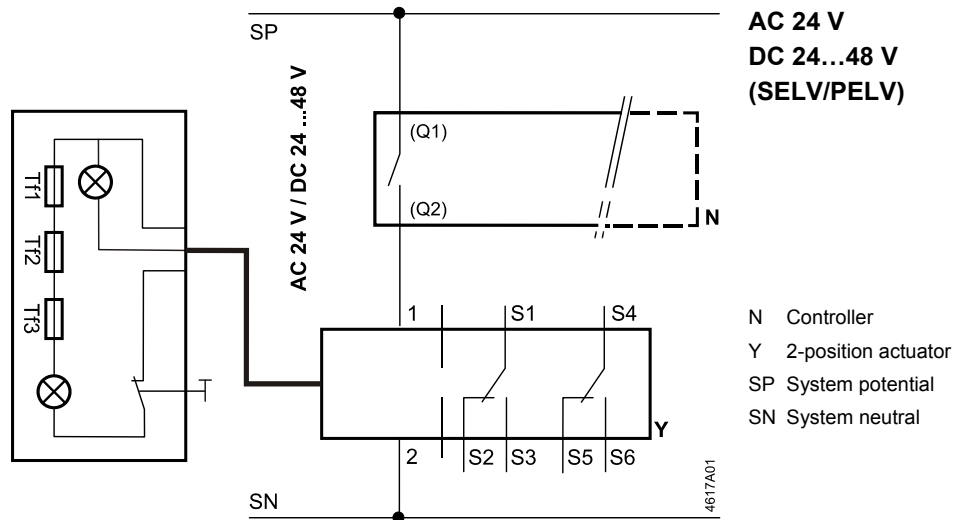
All wires are color-coded and labeled

### Wire designations

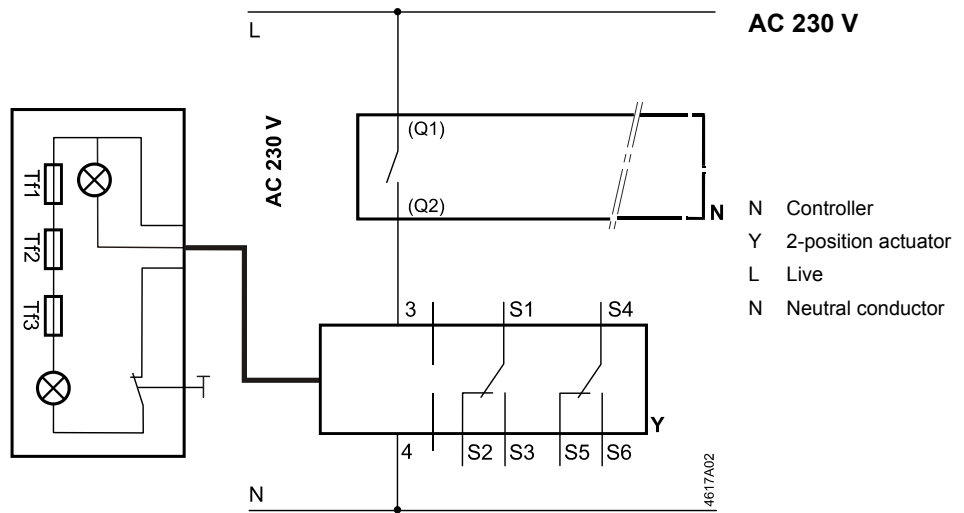
| Connection                           | Cable |     |            |              | Meaning                                 |
|--------------------------------------|-------|-----|------------|--------------|---|
|                                      | Code  | No. | Color      | Abbreviation |   |
| Actuators<br>AC 24 V<br>DC 24...48 V | G     | 1   | red        | RD           | System potential AC 24 V / DC 24...48 V |
|                                      | G0    | 2   | black      | BK           | System neutral                          |
| Actuators<br>AC 230 V                | L     | 3   | brown      | BN           | Line AC 230 V                           |
|                                      | N     | 4   | blue       | BU           | Neutral                                 |
| Auxiliary<br>switch                  | Q11   | S1  | grey/red   | GYRD         | Switch A input                          |
|                                      | Q12   | S2  | grey/blue  | GYBU         | Switch A normally-closed contact        |
|                                      | Q14   | S3  | grey/pink  | GYPK         | Switch A normally-open contact          |
|                                      | Q21   | S4  | black/red  | BKRD         | Switch B input                          |
|                                      | Q22   | S5  | black/blue | BKBU         | Switch B normally-closed contact        |
|                                      | Q24   | S6  | black/pink | BKPK         | Switch B normally-open contact          |

## Connection diagram

### GNA126.1E/T..

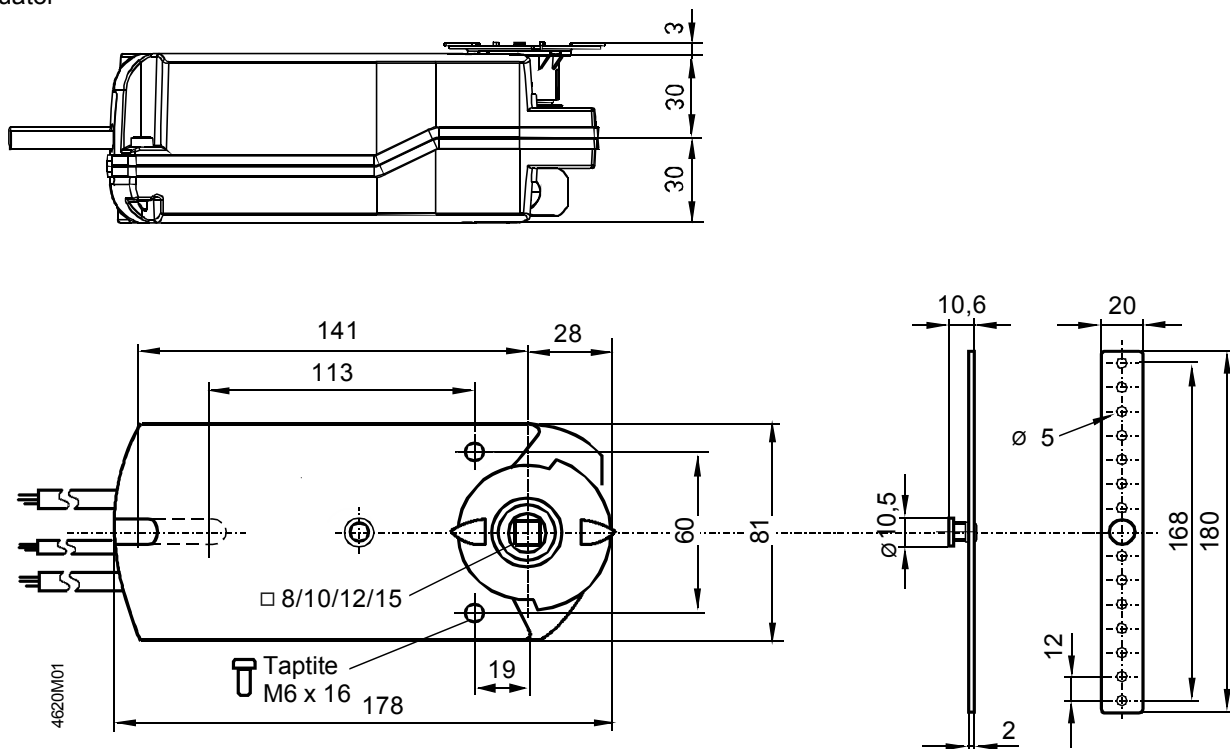


### GNA326.1E/T..

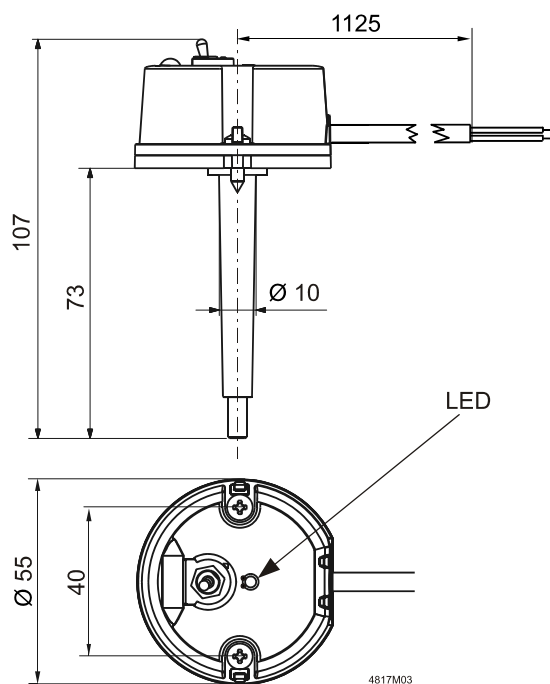


## Dimensions

### Actuator



### Temperature monitoring unit



#### LED function

- Red = Operating voltage OK  
Thermo sensor defect
- Green = Operating voltage OK  
Thermo sensor OK
- Dark = No operating voltage

Dimensions in mm