



## Data sheet

# Thermal actuator TWA-ZL

### Description



Danfoss thermal actuator TWA-ZL is used with Danfoss valves type VZL. The actuator can be controlled with a on/off controller or switch.

These provide a cost effective solution for the control of hot and/or chilled water for fan coil units, small reheaters and recoolers in temperature control systems.

#### Features:

- Position indicator
- Normally opened (NO) or normally closed (NC) version
- Cable included

#### Main data:

- Nominal voltage:  
- 24 V AC/DC or 230 V AC ; 50/60 Hz
- Control input: on/off
- Force: 105 N
- Stroke: 2,8 mm
- Full stroke travel time: 3 min
- Max. medium temperature: 120 °C

### Ordering

| Type      | Power supply | Code No.        |
|-----------|--------------|-----------------|
| TWA-ZL NC | 24 V AC/DC   | <b>082H3100</b> |
| TWA-ZL NO | 24V AC/DC    | <b>082H3101</b> |
| TWA-ZL NC | 230 V AC     | <b>082H3102</b> |
| TWA-ZL NO | 230 V AC     | <b>082H3103</b> |

### Technical data

|                                   |     |                    |
|-----------------------------------|-----|--------------------|
| Power supply                      | V   | 24 AC/DC or 230 AC |
| Power consumption                 | VA  | 2                  |
| Frequency                         | Hz  | 50/60              |
| Control Input                     |     | on/off             |
| Closing force                     | N   | 105                |
| Max. stroke                       | mm  | 2,8                |
| Full stroke travel time           | min | 3 <sup>1)</sup>    |
| Max. medium temperature           |     | 120                |
| Ambient temperature               | °C  | 2 ... 60           |
| Storage and transport temperature |     | -40 ... +70        |
| Protection Class                  |     | II                 |
| Grade of enclosure                |     | IP 41              |
| Weight                            | kg  | 0,5                |
| Cable length                      | m   | 1,2                |

<sup>1)</sup> When heating the actuator full stroke time increases up to some minutes – it depends on the ambient temperature

Operation

TWA-ZL actuator works on the thermal expansion principle:

- moves actuator stem in one direction in case of heating of the actuator and
- moves actuator stem in another direction in case of no heating of the actuator

Two versions of actuators are available:

- TWA-ZL NC version, in the non-energized state actuator's stem is retracted
- TWA-ZL NO version, in the non-energized state actuator's stem is extracted

Both versions are available in 24V (SELV) or 230V.

The TWA-ZL NO has an internal spring, which is factory fixed with a split ring (fig.1) to hold the spring retracted in its off-the-shelf state. The use of split ring allows the actuator to be mounted to the valve. Once mounted, the split ring has to be removed.

**Remark:**

*In case the actuator has been dismantled and split ring removed, split ring can be added back to the actuator after the heating of the actuator.*

The actuator is equipped with a position indicator to show the position of the actuator stem (fig.2).

VZL valve has closed AB port in stem up position. This is done by means of valve internal spring in case of no actuator force.

**TWA-ZL & VZL combinations**

TWA-ZL NC & VZL:

- in the non-energized state valve path A-AB is closed (fig.3)
- in the energized state valve path A-AB is opened

TWA-ZL NO & VZL:

- in the non-energized state path A-AB is opened (fig.4)
- in the energized state path A-AB is closed

**Remark for 3-port or 4-port VZL valves:**

*Due to shorter actuator stroke in compare to the valve stroke port B can not be closed. Therefore this combination can not be used as a switch over valve.*

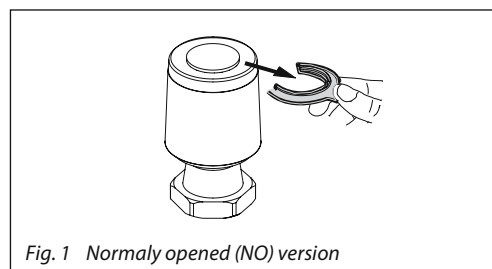


Fig. 1 Normally opened (NO) version

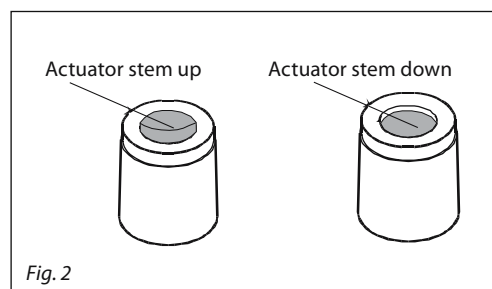


Fig. 2

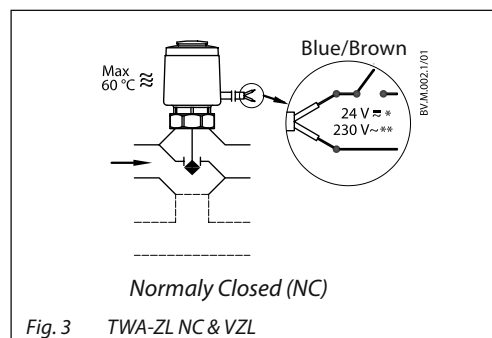


Fig. 3 TWA-ZL NC & VZL

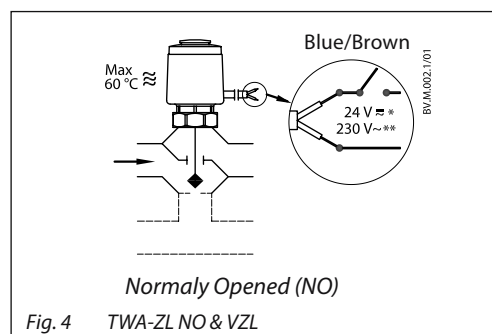
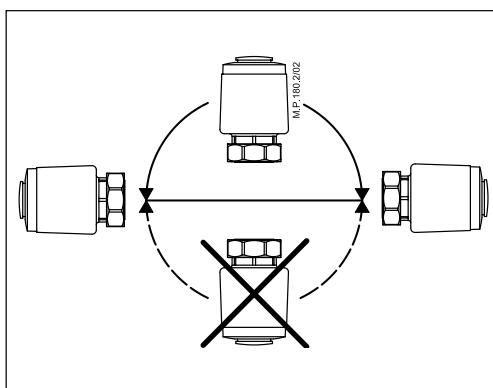


Fig. 4 TWA-ZL NO & VZL

Disposal

The actuator must be dismantled and the elements sorted into various material groups before disposal.

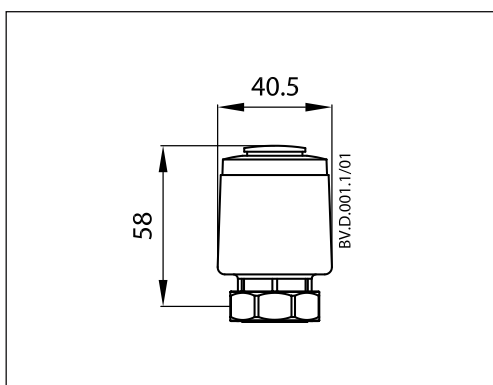
Installation



Mechanical

Installation of the valve with the actuator is allowed in horizontal position or upwards.

Dimensions



Actuator - valves combinations

