

## Mounting and operating instructions

Thermal actuators normally closed (NC)  
type TS  
incl. DDC and normally open (NO)  
type TSA

## Application and function

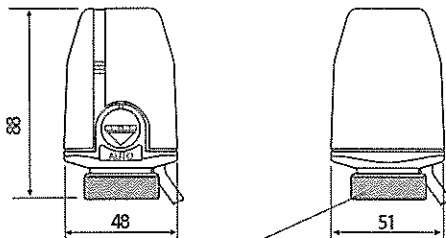
The thermal actuators normally closed (NC) = TS and normally open (NO) = TSA can solve various tasks of controlling and regulating in the applications heating, air-conditioning and ventilation.

Typical areas of application are:

- single room control for under floor heating systems and radiator heating systems
- zone control
- multi-circuit control with 1- or 2-pipe systems
- single room control of 1-pipe heating systems in riding versions

The thermal actuator can be supplied for various valve types and sizes of mechanical connections. It is controlled by a control device (e.g. room thermostat) and can be used as both ON/OFF regulation as well as for pulse width modulation. The DDC actuator is available as a proportional device (0...10 V DV control voltage = 0 ... 100 % stroke)

When using the NC and DDC thermal actuators in the voltage free condition, the valve will be closed. The NO actuator will open the valve in the voltage free condition.



Ring nut connection  
M 30 x 1.5

## Technical Data

Depending on the type the following applies

### 24 V-Version (TS 6, TSA 6)

Power supply	24 V~
Operating current (max.)	~ 400 mA
Power consumption	2,5 W

### 230 V-Version (TS 5, TSA 5)

Power supply	230 V~ 50 Hz
Operating current (max.)	~ 400 mA
Power consumption	2,5 W

### DDC-Version (TS 8)

Power supply	24 V~
Operating current (max.)	~ 250 mA
Power consumption	2,5 W
Control voltage	TS 8.11: 0 ... 10 V= TS 8.12: 2 ... 10 V=
Input resistor	> 10 kΩ

The following applies to all types:

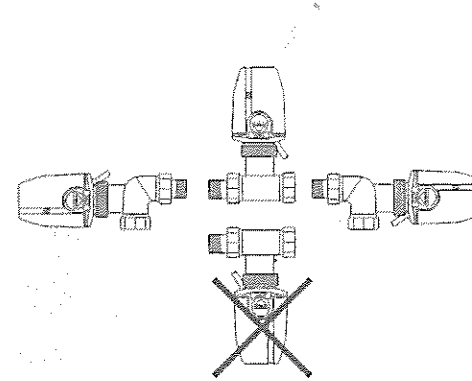
Protection type	IP 44 at vertical installation (see installation)
Protection class	II
Stroke	4 mm
Spring tension	90 N
Mechanical connections	M 30 x 1,5
Wire	2 x 0,5 mm <sup>2</sup>
Weight	~150 g
Operating temperature	-25 ... 50 °C
Storage temperature	-25 ... 70 °C

## Installation

The thermal actuator is screwed on to the valve or manifold with a ring nut. Installation will be easier, when the manual switch (type TS only) is in position manual.

Note:

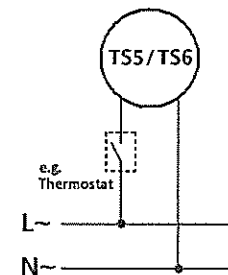
The device can be installed vertically or horizontally. The thermal actuator may not be installed upside down. Ring nut to be hand tightened!



## Electrical connection

All versions are supplied with a cable. When connecting pay attention to rated voltage of the device.

TS 5: 230 V~, 50 Hz  
TS 6: 24 V~



When using the type TS 8/ DDC pay attention to the following connection order:

1. green red + ————— 0...10 V=
2. white blue 0 —————
3. brown black 24 V~ ————— 24 V~

## Operation

The actuator has a manual switch which can be set with a screw driver or coin (please see section "installation"). With this switch two operation modes can be set:



**Manual operation:** The actuator opens the valve independent of the voltage applied.

This position makes the installation easier and makes the running of the system possible in case of power fail.

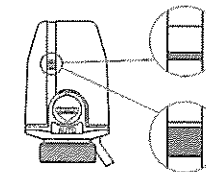


**Automatic operation:** The actuator controls the valve according to the voltage applied. This position is required for normal operation.

The stroke display window situated on the front of the actuator shows how far the actuator is opened. The stroke display shows if the actuator is running well.

If voltage is applied to the device for 5 Min., the indicator should show an open valve.

If disconnecting the voltage for 5 Min., the indicator should show a closed valve.



**Position "closed"**  
The display of the stroke is only visible at the bottom of the display window. The actuator keeps the valve closed.

**Position "opened"**  
The display of the stroke almost fills the whole display window. The actuator has opened the valve.

## Programs

Type	Power supply	Function
TS 5.11	AC 230 V	NC
TS 6.11	AC 24 V	NC
TSA 5.11	AC 230 V	NO
TSA 6.11	AC 24 V	NO
TS 8.11/DDC	AC 24 V; DC 0...10 V	NC
TS 8.12/DDC	AC 24 V; DC 2...10V	NC