GENERAFRIO
LIDERES EN SISTEMAS DE AIRE ACONDICIONADO Y REFRIGERACION

ENGINEERING
TOMORROW

Danfoss

Data sheet

Thermal Actuator TWA-Q

Description

Danfoss thermal actuator TWA-Q is used with Danfoss Pressure Independent Control Valves (PICV) type AB-QM DN10-32.

The actuator can be controlled with an on/off controller, pulse width modulation (PWM), 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.

Main features:

- 24 V AC/DC or 230 V AC supply
- Position indicator
- Normally closed (NC) or normally opened (NO) version
- Max. medium temperature 95 °C
- Cable included, halogen free optional

Ordering

Type	Supply voltage	Cable length	Cable material	Code No.
TWA-Q NC	230V AC	1.2 m	PVC	**082F1600**
TWA-Q NO			PVC	**082F1601**
TWA-Q NC	24V AC/DC		PVC	**082F1602**
TWA-Q NO			PVC	**082F1603**
TWA-Q NC	230V AC	2.5 m	PVC	**082F1606**
TWA-Q NC	24V AC/DC		PVC	**082F1607**
TWA-Q NC	230V AC	5 m	PVC	**082F1604**
TWA-Q NC	24V AC/DC		PVC	**082F1605**
TWA-Q NC	230V AC	2 m	Halogen free	**082F1610**
TWA-Q NC	24V AC/DC		Halogen free	**082F1611**

Technical Data

Power supply	V	24 AC/DC, +25%/-20%	230 AC, ± 15%
Max. inrush current	A	<0.25 (for <60 sec.)	<0.25 for (<1 sec.)
Power consumption	W	< 2	
Frequency	Hz	50/60	
Control input		On/off and PWM	
Closing force	N	110±10	
Min. stroke	mm	5.0	
Full stroke time [1]	min.	< 3	
Max. medium temperature	° C	95	
Ambient temperature		2 … 60	
Storage and transport temperature		-40 … 70	
Ambient humidity		95% r.h., non-condensing (according to EN 60730-1)	
Protection class		III	II
Grade of enclosure		IP 54	
Valve connection	mm	M30 × 1.5	
Cable length	m	1.2m, 2.5m or 5m PVC or 2m Halogen free	
Weight	kg	0.15	

[1] *at room temperature.*

Operation

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

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

The TWA-Q NC 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 easy mounted on the valve. Once mounted, the split ring has to be removed.

Note:
In case the actuator has been dismounted 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*).

The AB-QM valve is closed in stem down position. Without the actuator the force in the AB-QM internal spring opens the valve.

Combination, TWA-Q NC & AB-QM (*Fig.3 & 5)*
- in the non-energized state the valve is closed
- in the energized state the valve is open.

The valve starts to open after preheating the actuator for approx. 1.5 min. if the heating element is switched on in a cold state (room temperature), and achieves the maximum stroke after another approx. 1.5 min. At power-off, the wax element cools down and the valve will be closed.

Combination, TWA-Q NO & AB-QM (*Fig.4 & 6*))
- in the non-energized state the valve is open
- in the energized state the valve is closed

The valve starts to close after preheating the actuator for approx. 1.5 min. if the heating element is switched on in a cold state (room temperature), and closes the valve after another approx. 1.5 min. At power-off, the wax element cools down and the valve will be open.

The Thermal Actuator TWA-Q are noise-free and maintenance-free. When the control signal is applied to the actuator, the temperature of the heating element rises, which causes the wax element to expand, which transfer the stroke to the installed valve.

Some controllers drive the actuators with a PWM (Pulse Width Modulation) signal. This improves the response time.

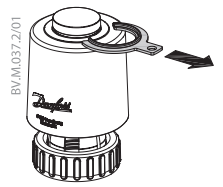

Fig. 1: NC version

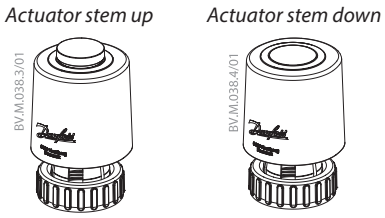

Fig. 2

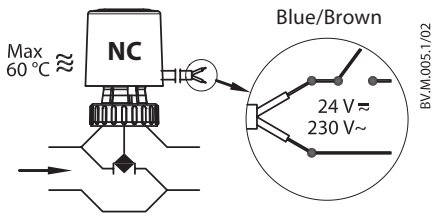

Fig. 3: TWA-Q NC & AB-QM

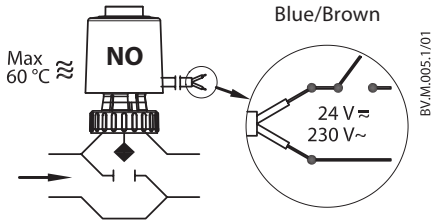

Fig. 4: TWA-Q NO & AB-QM

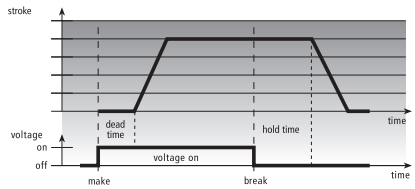

Fig. 5: TWA-Q NC example of opening curve for the Normally closed version.

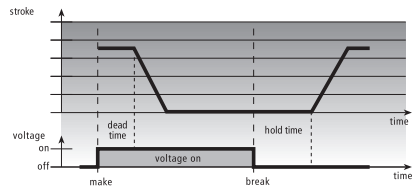

Fig. 6: TWA-Q NO example of opening curve for the Normally open version.

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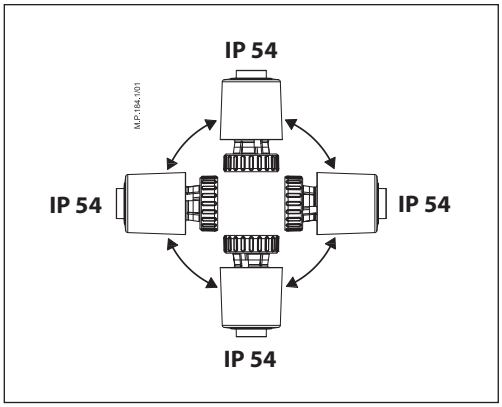
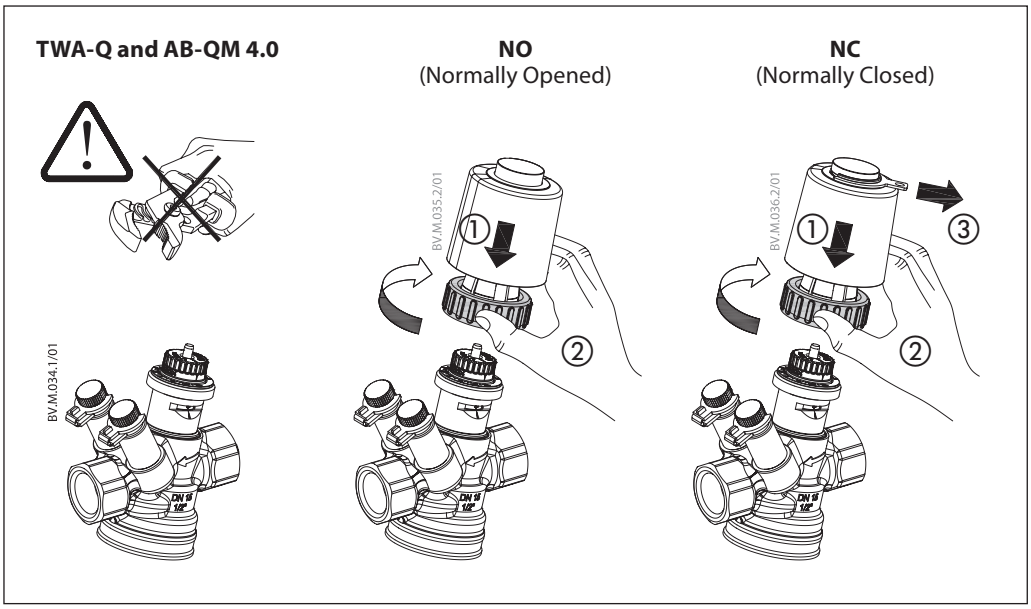
Installation

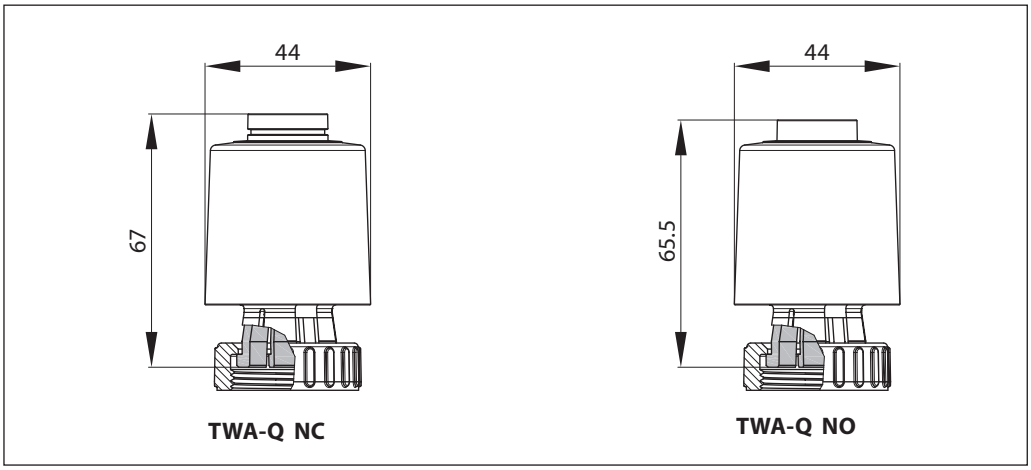
Mechanical
Installation of the valve with the actuator is allowed in all positions.



Actuator / Valve assembly



Dimensions



Tender text

TWA-Q Thermal actuator
On/off thermal actuator used to control pressure independent balancing and control valves DN 10-32.
- Supply Voltage: 24 V AC/DC or 230 V AC, 50/60 Hz.
- Cables: PVC 1.2 m, 2.5 m and 5 m. Halogen free [1] 2 m.
- Normally Closed or Normally Open variants available.
- First open function for the Normally Closed variant for easy installation.
- Visible stroke indicator.
- Power consumption: <2 W, when activated.
[1] halogen free cables available only for the Normally Closed variant.

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