

Heating Device with Adjustable Thermostat

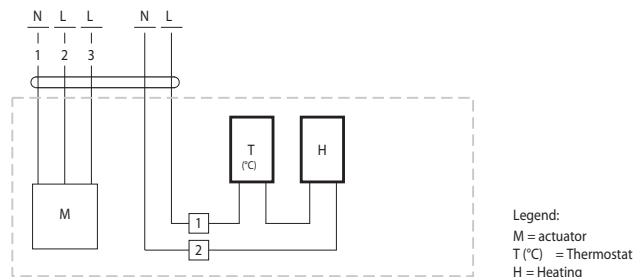
Actuators

NMX24-MFT-T N4H

AMX24-MFT-T N4H

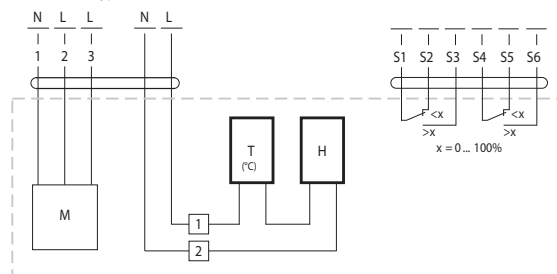
Wiring diagram

with actuator types ..-3

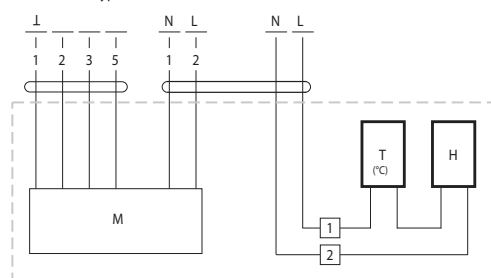


Examples of external wiring

with actuator types ..-3 with switch



with actuator types ..SR or MFT



- Where necessary, use cables with sufficient numbers of wires, e.g. so that the heating and the actuator can be supplied separately with voltage.



Tel. 800-543-9038, Fax 800-228-8283, marketing@us.belimo.com

Tel. 866-805-7089, Fax 905-712-3124, marketing@us.belimo.com

Latin America Customer Service, Tel. 203-791-8396, Fax 203-791-9139, marketing@us.belimo.com

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Mounting Installation Instructions

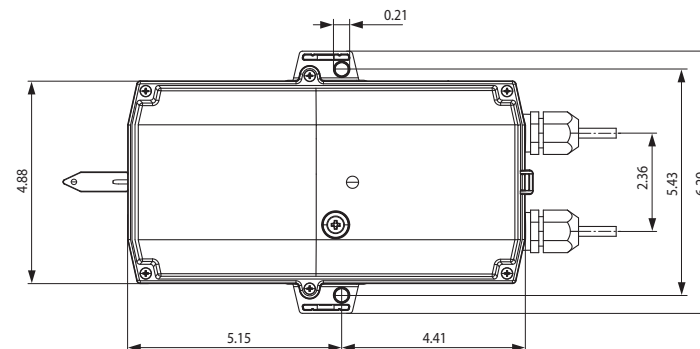
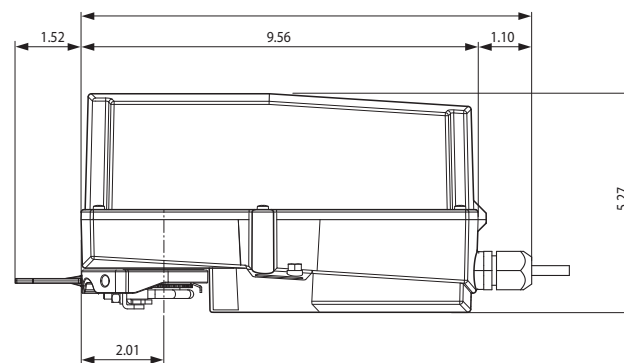


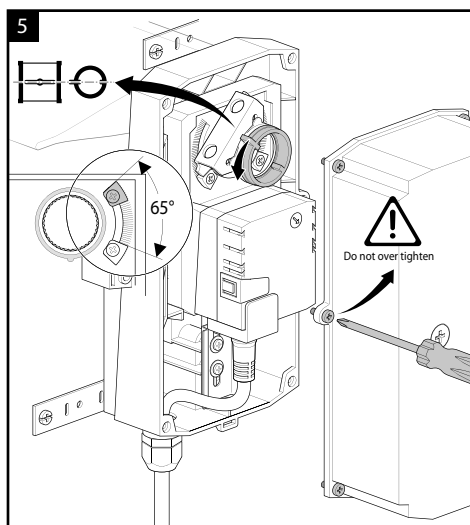
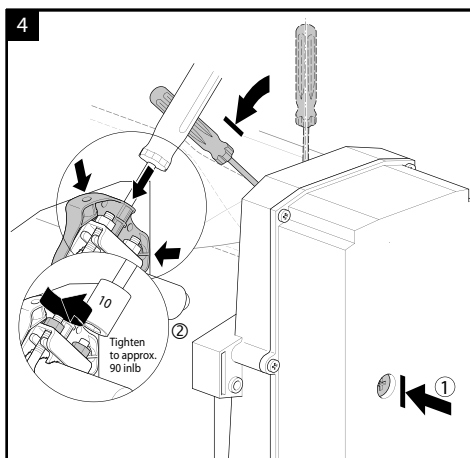
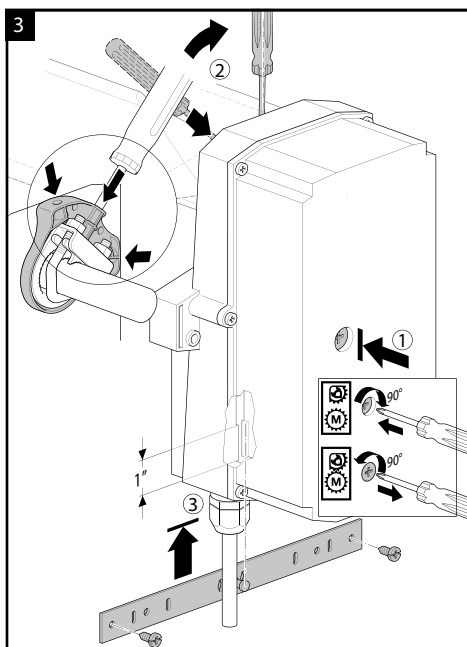
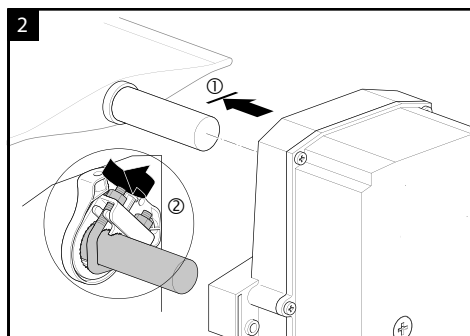
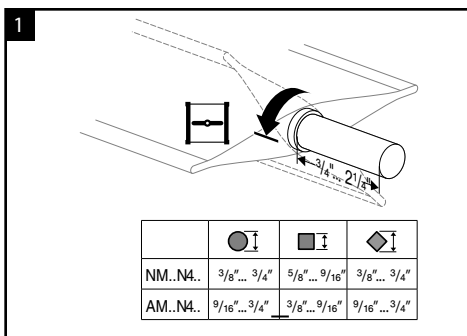
General Information

Protection: NEMA 4X, UL Type 4X, IP66
& IP67

UV protected housing

Weather-tight and corrosion resistant
for the harshest indoor and outdoor
conditions





Heating with the adjustable thermostat to preclude insufficient temperatures and the formation of condensation water in BELIMO NEMA 4X actuators with nominal voltage AC 24 V

- Thermostat adjustable (+14 ... +122°F)
- Utilization range -40°F to +122°F

Application

The thermostat records the temperature in the actuator housing and switches the connected heating system on when the temperature falls below the one that has been set. This prevents the formation of condensation on assemblies and electronic components, even in the presence of frequent and severe temperature fluctuations. The heating elements is designed for continuous operation.

Technical Data

Range:	+14...122°F (factory setting 86°F)
Switching differential (temperature):	7 K (±4 K tolerance)
Sensor element:	Thermobimetal parts
Type of contact:	NC contact
Contact junction resistance:	<10 mΩ
Service life:	>100,000 cycles
Connection:	2-pole terminal, torque max. 0.5 Nm: Rigid wire line 2.5 mm ² Strand line with wire end ferrule 1.5 mm ²
Heating output:	20 W
Switch-on current:	max. 6 A
Nominal voltage:	AC/DC 24 V
Heating element:	Positive temperature coefficient resistor (PTC), self-regulating, temperature-limiting
Heater:	Aluminium profile, anodised
EMC:	Accordance with EN 55014-1-2, EN 61000-3-2 and EN 61000-3-3
Ambient temperature:	-40 ...+122°F
Non-operating temperature:	-40 ...+158°F

Safety Notes

It is absolutely imperative that operators ensure that both, heating device and actuator, are disconnected from the voltage source before settings or manipulations are carried out on the device.

- The thermostat can be removed by trained personnel when repair work is being performed.
- The heating device itself is not permitted to be removed. The entire actuator must be replaced when repair or warranty work is being performed!
- The self-regulating function of the PTC heating element is not a substitute for the utilisation of the installed thermostat!
- The thermostat is not permitted to be set at $\geq 90^\circ\text{F}$ in the presence of ambient temperatures of $\leq -4^\circ\text{F}$.
- The following points must be taken into account with independent, external wiring:
 - All contact between the cables or wires that are introduced and the heating element is to be avoided.
 - Where necessary, use cables with sufficient numbers of wires, e.g. so that the heating and the actuator can be supplied separately with voltage (see «Electrical Installation»).
 - All legal regulations or regulations issued by authorities must be observed.
- The thermostat is factory set 86°F. Set to your required setting.

Airside Product

	Torque (based on 4 Running in-lb per sq. ft)		Power Time	Power Supply	Power Consumption		Feedback	
	70 in-lb [8 Nm], Apprx. 16 sq. ft.	160 in-lb [18 Nm], Apprx. 40 sq. ft.	Motor Drive (seconds)	24 VAC ±20%, VDC ±15%	VA Rating	Wattage Running (holding)	2 to 10 VDC (default)	VDC Variable (0 to 10 VDC)
NMX24-MFT-T N4	•		95	•	5.5	3.5 (1.25)	•	•
AMX24-MFT-T N4		•	95	•	5	2.5 (0.4)	•	•

Wiring

VDC/4-20 mA

PWM

On/Off

Floating Point

Notes:

- 1 Provide overload protection and disconnect as required.
- 2 Actuators may be connected in parallel if not mechanically mounted to the same shaft. Power consumption and input impedance must be observed.
- 3 Actuators may also be powered by 24 VDC.
- 4 Position feedback cannot be used with a Triac sink controller. The actuator internal common reference is not compatible.
- 6 Control signal may be pulsed from either the Hot (Source) or Common (Sink) 24 VAC line.
- 7 ZG-R01 may be used.
- 8 Contact closures A & B also can be triacs. A & B should both be closed for triac source and open for triac sink.
- 9 For triac sink the common connection from the actuator must be connected to the hot connection of the controller.

Standard Mounting

1. Turn the damper shaft until the blades are fully closed
2. (1) Slip the actuator's universal clamp over the damper shaft. Make sure that the duct and the controls on the cover are accessible. Place the actuator in the desired mounting position.
(2) Hand tighten the two nuts on the actuators universal clamp.
3. (1) Disengage the actuator gear train by pressing the manual override button. Using a Phillips screwdriver press down and turn 90 degrees to lock the override. Rotate the clamp until centered.
(2) This can be done by inserting a screwdriver into the override component and manually moving the device clockwise or counter clockwise.
(3) Slide the anti-rotation bracket up under the actuator so it engages the actuator at the center of the cutout. Bend the bracket as needed to support the rear of the actuator. Secure to duct work with self-tapping screws (No. 8 recommended).
4. Loosen the nuts on the universal clamp.
(1) Press the manual override button and rotate clamp about 5° from the closed position (1/16" to 1/8" between stop and clamp).
(2) Tighten the two nuts on the universal clamp with a 10 mm wrench. Do not over tighten.
5. Remove cover by unscrewing the six screws. Make adjustments to the CW/CCW switch if needed. Adjust end-stops if required. Wire the actuator as described

on pages 4, 5 and 6. Insert position indicator flag in override component.

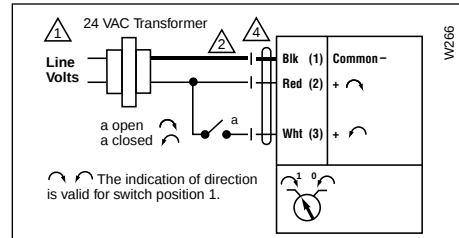
6. Install the cover. The damper is now fully closed but the actuator is 5° from fully closed. This is called "pre-loading" the actuator. When the actuator is powered and sent to the closed position, it will put its full torque on the shaft compressing the edge and blade seals. This ensures that the damper will meet its leakage rating. The actuator is electronically protected from overload and will not be damaged.

Testing the installation without power

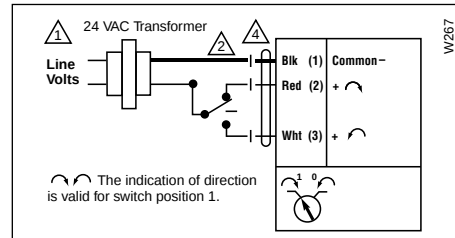
1. Disengage the gear train with the manual override button and move the shaft from closed to open to closed. Stroking the damper from fully open to close, with 5° of actuator stroke left, ensures there is no binding.
2. Correct any problems and reset.

Airside Product	Torque (based on 4 in-lb per sq. ft)		Running Time	Power Supply		Power Consumption		Feedback
	70 in-lb [8 Nm], Apprx. 16 sq. ft.	160 in-lb [18 Nm], Apprx. 40 sq. ft.	Motor Drive (Default)	24 VAC ±20%, VDC ±15%	24 Volt	VA Rating	Wattage running (holding)	Position Feedback
NMB24-3-T N4	•		95	•	4	2 (0.2)	add-on	
AMB24-3-T N4		•	95	•	5.5	2.5 (0.2)	add-on	

Wiring



On/Off



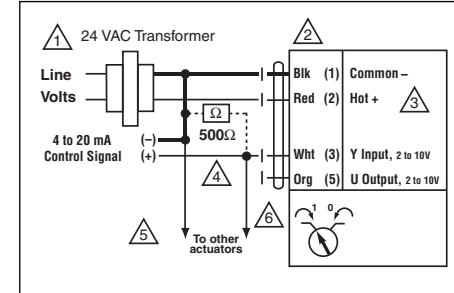
Floating Point or On/Off control

Notes:

- 1 Provide overload protection and disconnect as required.
- 2 Actuators may also be powered by 24 VDC for a 24V power supply.
- 4 Meets cULus requirements without the need of an electrical ground connection.

Airside Product	Torque (based on 4 in-lb per sq. ft)		Running Time	Power Supply		Power Consumption		Feedback
	70 in-lb [8 Nm], Approx. 16 sq. ft.	160 in-lb [18 Nm], Approx. 40 sq. ft.	Motor Drive (Default)	24 VAC ±20%, VDC ±15%	24 Volt	VA Rating	Wattage running (holding)	Position Feedback 2-10 VDC
NMB24-SR-T N4	•		95	•	5	2.5 (0.4)	•	•
AMB24-SR-T N4		•	95	•	5	2.5 (0.4)	•	•

Wiring



Notes:

- 1 Provide overload protection and disconnect as required.
- 2 Actuators may be connected in parallel. Power consumption and input impedance must be observed.
- 3 Actuators may also be powered by 24 VDC.
- 4 The ZG-R01 500 Ω resistor converts the 4 to 20 mA control signal to 2 to 10 VDC, up to 2 actuators may be connected in parallel.
- 5 Only connect common to neg. (–) leg of control circuits.