

CONTROL AND SAFETY

KEM duct heaters may be fitted with a range of safety and control devices to comply with AS3102. These items are designed to prevent overheating of the elements due to outside influences such as reduced air flow.

The following items are a typical selection from the available range of products.

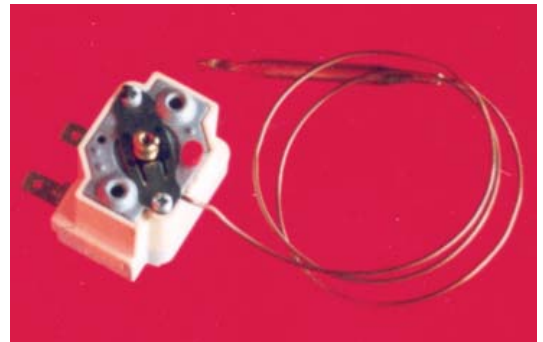
ADJUSTABLE MANUAL OVERTEMPERATURE CUT-OUT

Adjustable manual reset thermostats open at the chosen set point within the available range. May be supplied fitted to the terminal box or separately for fitting in the adjacent ductwork.

SPECIFICATIONS

7286

Temperature Set Point	Adjustable from 60°C to 150°C
Reset	Manual
Sensor	Bulb on 1 metre capillary tube
Rating	20 amp, 240v



MANUAL RESET: CAPILLARY TYPE

A fixed set point over temperature cutout (open on temperature rise) Suitable for incorporation in terminal boxes.

SPECIFICATIONS

LM7

Temperature Set point	120°C (250OF)
Reset	Manual
Sensor	Capillary Tube
Rating	25 amp, 240v



AUTO RESET: CONTACT TYPE

A fixed set point temperature cutout (open on temperature rise) suitable for incorporation in terminal boxes. Surface sensor is incorporated in the unit. Commonly used to limit maximum temperature.

SPECIFICATIONS

QB84C0

Temperature Set Point	75°C
Reset	Auto
Sensor	Open Face
Rating	25 amp, 240v



ADJUSTABLE PRESSURE SWITCH

Typical applications include detection of clogged air filters or faulty fans causing reduction in air flow. They can be incorporated in the duct heater assemblies or supplied separately for remote mounting.

SPECIFICATIONS

930.84222111

Set point range	+ 20 Pa to +300 Pa
Maximum pressure	5000 Pa
Ratings	1 amp @ 250v 50Hz
Protection	Ip54



SOLID STATE RELAY

These SSR units are highly suitable for use where noise may be a problem and where heavy loads are being switched.

SPECIFICATIONS (Available in following rating: 10A, 15A, 25A, 40A)

Load Current Range	10 to 40 Amp
Drivers	TTL, DTL, CMOS
Display	LED
Voltage Range	0 - 240V
Trigger Voltage	3 to 32V DC, 240V AC
Switching	Zero volts on, Zero amps off.



PURCHASE SPECIFICATIONS

To ensure that the duct heaters are made to meet ALL the needs of the system to which they will be fitted the following information is essential.

- 1-Duct height and Width?
- 2-Specify duct heater entry side.
- 3-Total kW required?
- 4-Number of control stages?
- 5-Single or three phase wiring?
- 6-Man reset O/T stat required? (specify type from page 6)
- 7-Prewired to terminal strip or not?
- 8-Location identification if available? eg: second floor DH9 etc: from drawings.
- 9-Check clearance for 75mm deep terminal box if top/bottom mounted?



RM8 24D

Technical data

Torque	8 Nm
Power supply	24 Vac +/-10% 230 Vac +/-10% (50/60 Hz)
Control signals	on/off or 3-point
Running time	156 sec.
Position indicator	Mechanical indication
Angle of rotation	Max. 95° (changeable from outside)
Direction of rotation	Via wiring diagram
Power consumptions	3.0 VA for 24 Vac 6.0 VA for 230 Vac
Noise level	Max. 45dB(A)
Connection	Via terminals 0.5 mm ² to 1.5 mm ²
Protection	IP42
Ambient temperature	-5 to +50°C
Storage temperature	-30 to +70°C
Usage life	>60000 times
Maintenance	Maintenance free
CE	approved
Weight	760 g

Features

- 8 Nm torque to regulate dampers up to approx. 1.6 m²
- Control signal on/off or 3-point
- Power supply 24 Vac and 230 Vac
- Running time 156 sec.
- Suitable shaft dimensions
Max. 13 mm
Min. 10 mm
- Position indicator
- Angle of rotation changeable from outside
- Direction changeable via wiring diagram
- On request
2 Nm torque (running time 72 seconds)
4 Nm torque (running time 108 seconds)
6 Nm torque (running time 108 seconds)
- On request
1 auxiliary switch
2 auxiliary switches

Ordering

Type no.	Description
Damper actuator	
RM8 24D	8 Nm on/off or 3-point 24 Vac 156 sec.
RM8 230D	8 Nm on/off or 3-point 230 Vac 156 sec.

Description

RM on/off type damper actuator uses bi-directional motor.

High dependable performance

RM8 on/off type damper actuator uses bi-directional magnetic clutch synchronous motor. It has overload protection function, and does not need limiter switch. The actuator will stop automatically, because the motor is clutched when it is operating to the end. And the damper actuator has a better precision adjustable mechanical limiter, and 1~2 auxiliary switches can be selected for optional.

Adjustable limiter with precision of 15°.

Optional overtime protection for longer motor life.

1 or 2 optional auxiliary switch(es), the function of which can be made by order. The operational angle of the damper actuator which has 2 limitators can be adjusted by setting the peak turnplate. The adjustable feedback position is larger than 60° on clockwise, and small than 30° on anti-clockwise. Please find the installation details at Fig.4. The default setting of one switch type is at 90°, and that of two switches type is at 0° and 90°.

The 24 volt DC self-setting function is only for 24 volt AC damper actuator. It can supply enough power to let the damper actuator go back to 0°, when power supply is suddenly cut off.

Simple and convient function testing

It is also convenient to test the function of damper operation: push the manual button on the actuator, the gearings inside the actuator will break away. The damper can be operated manually as keeping push the manual button.
PLEASE DO NOT OPERATE WHEN POWER IS ON!

Installation and connection details

All connections to BEMS controllers, data recorders etc. should be made using screened cable.

Normally the screen should be earthed at one end only (usually the controller end) to avoid earth hum loops which can create noise.

Low voltage signal and supply cables should be routed separately from high voltage or mains cabling.

Separate conduit or cable trays should be used.

Where possible, the controller's earth should be connected to a FUNCTIONAL EARTH, rather than the mains safety earth. This will provide better immunity to high frequency noise. Most modern buildings have a separate earth from this purpose.

All system wiring must be in compliance with all applicable

Wiring

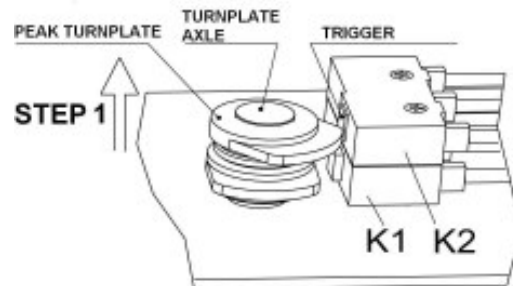
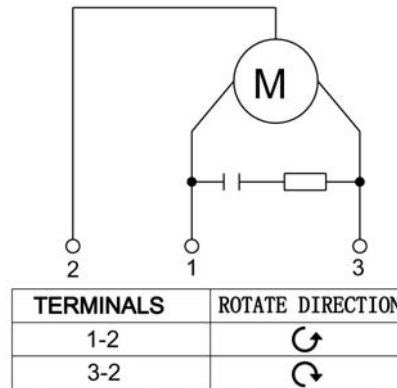



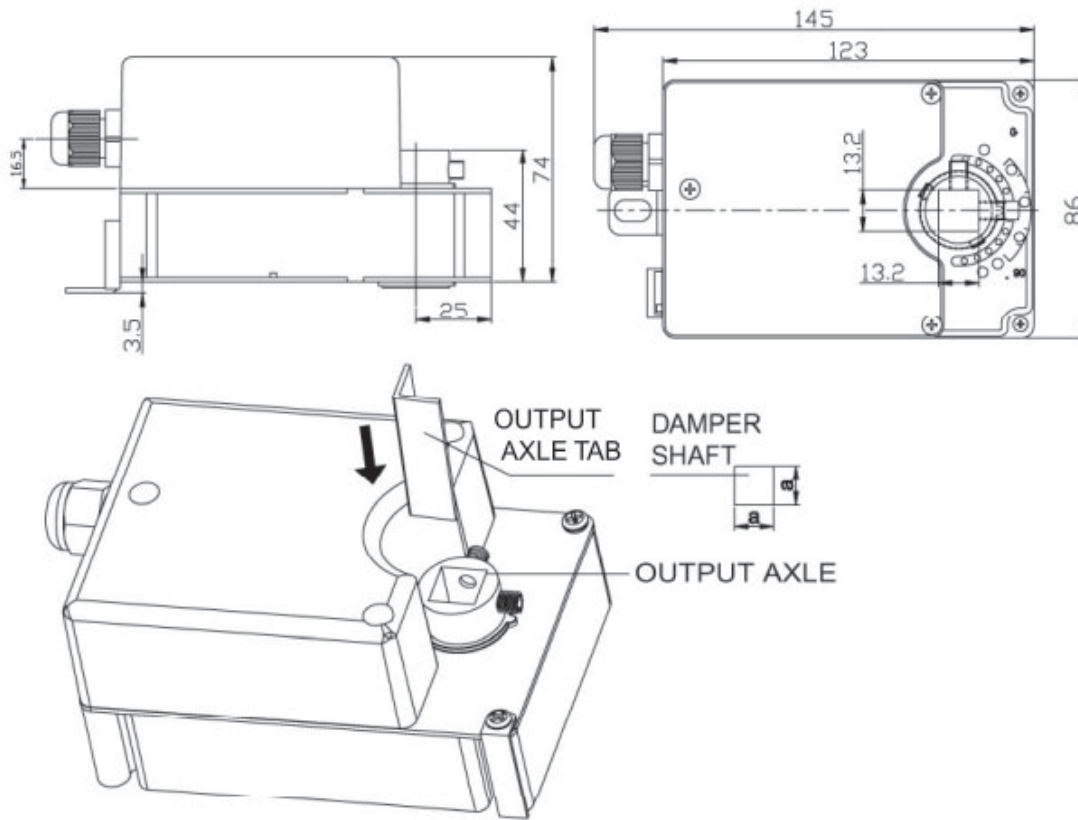
Fig.4

TESTING STEPS:

- 1. Take the peak turnplate out.**
- 2. Turn the axle to the needed position, then put the peak turnplate back, make sure the peak is just against the trigger. (As Fig.4)**

 **DO NOT OPERATE WHEN POWER IS ON!**

Dimensions



Accessories supplied to the damper actuator

2 limitative baffles, 2 baffle setscrews (M3×6), 1 actuator body setscrews (ST4.8X12.5) and 1 aluminium gasket (output axle tab).

Damper shaft dimensions

Max shaft dimension is 13 mm.

Min. shaft dimension is 10 mm when the output axle tab is used.



RM8 24V

Technical data

Torque	8 Nm
Power supply	24 Vac +/-10% (50/60 Hz)
Control signal(s)	0-10 Vdc for RM8 24V 2-10 Vdc or 4-20 mA for RM8 24VC (jumper selectable for RM8 24VC)
Running time	156 sec.
Position indicator	Mechanical indication
Angle of rotation	Max. 95° (changeable from outside)
Direction of rotation	Changeable via jumpers on pcb
Power consumptions	4.0 VA when operating
Position precision	+/- 5%
Noise level	Max. 45dB(A)
Connection	Via terminals 0.5 mm ² to 1.5 mm ²
Protection	IP 42
Ambient temperature	-5 to +50°C
Storage temperature	-30 to +70°C
Usage life	>60000 times
Maintenance	Maintenance free
CE	approved
Weight	760 g

Features

- 8 Nm torque to regulate dampers up to approx. 1.6 m²
- Analogue control signal
0-10 Vdc for RM8 24V
2-10 Vdc or 4-20 mA (jumper selectable) for RM8 24VC
- Power supply 24 Vac
- Running time 156 seconds
- Suitable shaft dimensions
Max. 13 mm
Min. 10 mm
- Position indicator
- Angle of rotation changeable from outside
- Direction changeable via jumpers on pcb
- On request
2 Nm torque (running time 72 seconds)
4 Nm torque (running time 108 seconds)
6 Nm torque (running time 108 seconds)

Ordering

Type no.	Description				
Damper actuator					
RM8 24V	8 Nm	0-10 Vdc	24 Vac	156 sec.	
RM8 24VC	8 Nm	2-10 Vdc/4-20 mA	24 Vac	156 sec.	

Control signals

RM8 24V with 0-10Vdc control signal, the setting position of jumper J3 must be at point V (factory setting)

RM8 24VC with 0-10Vdc or 4-20 mA selectable control signal position of jumper J3 to be at point V for 2-10 Vdc control signal.
position of jumper J3 to be at point A for 4-20 mA control signal.

Simple installation

Fix with square damper shaft.
Damper shaft dimensions see Dimensions next page.
The rotating angle of the actuator can be set by internal potentiometer (PT1). The match between working range and feedback signal is automatically done by the actuator.

Manual operation

It can be operated manually if needed:
push the manual button on the actuator, the gearings inside the actuator will break away.
The damper can be operated manually when keep pushing the manual button.
Please do not operate when power on.

High dependable performance

RM8 24V and RM8 24VC damper actuators uses bi-directional magnetic clutch synchronous motor.
It has overload protection and overtime protection, and no need limitator needed, the actuator will stop automatically when it runs to the end.
And the damper actuator has a precision of 15° adjustable mechanical limitator.

Installation and connection details

All connections to BEMS controllers, data recorders etc. should be made using screened cable.

Normally the screen should be earthed at one end only (usually the controller end) to avoid earth hum loops which can create noise.

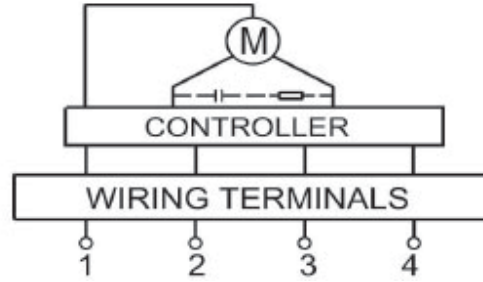
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Separate conduit or cable trays should be used.

Where possible, the controller's earth should be connected to a FUNCTIONAL EARTH, rather than the mains safety earth. This will provide better immunity to high frequency noise. Most modern buildings have a separate earth from this purpose.

All system wiring must be in compliance with all applicable local and national codes.

Wiring

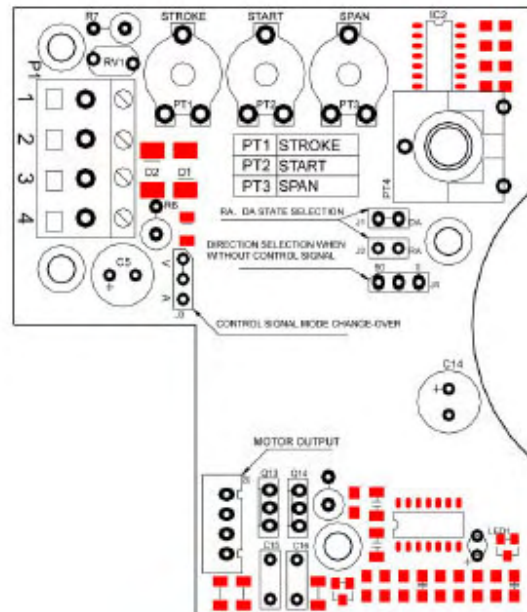


1. Power supply 24 Vac
2. COM
3. Control signal
0-10 Vdc for RM8 24V
2-10 Vdc or 4-20 mA for RM8 24VC
4. Feedback signal 0-10 Vdc

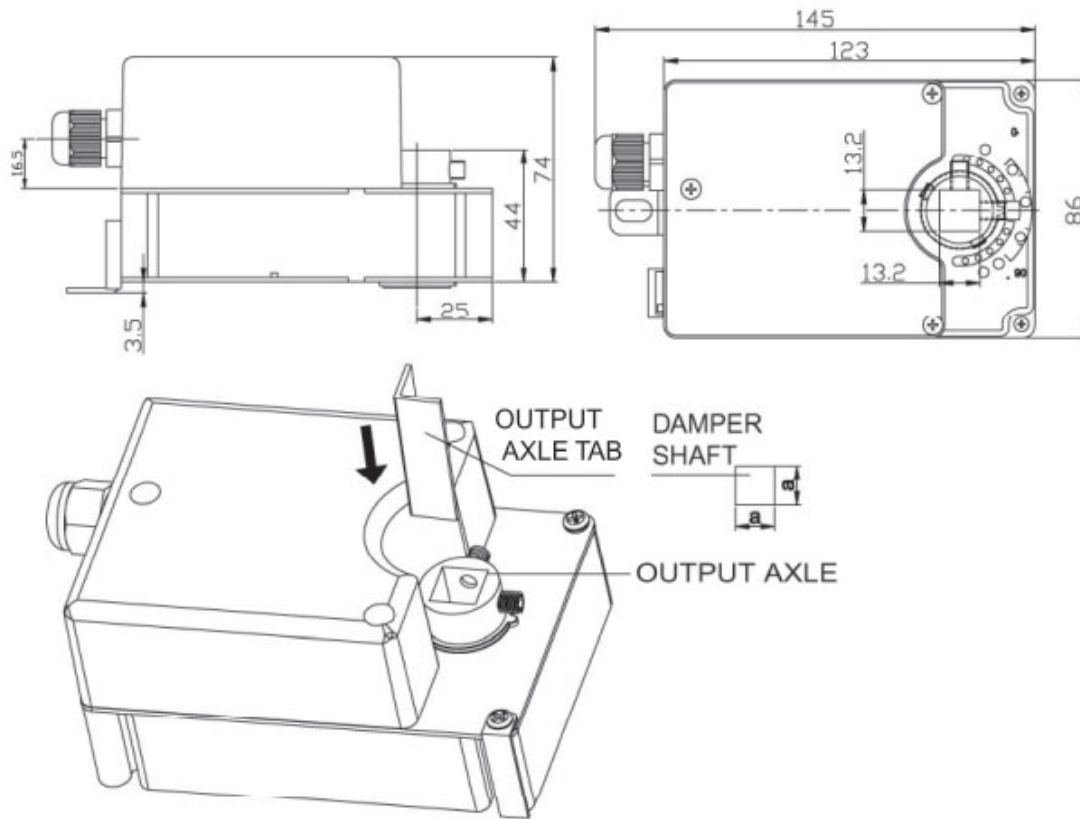
As power supply is 24 Vac, also the wiring for 4-20 mA is 3-wires.

INPUT CONTROL SIGNAL		ROTATE DIRECTION
DA	RA	
INCREASING	DECREASING	
DECREASING	INCREASING	

PCB setting diagram



Dimensions



Accessories supplied to the damper actuator

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Damper shaft dimensions

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