

Section 8

Controls for air heating



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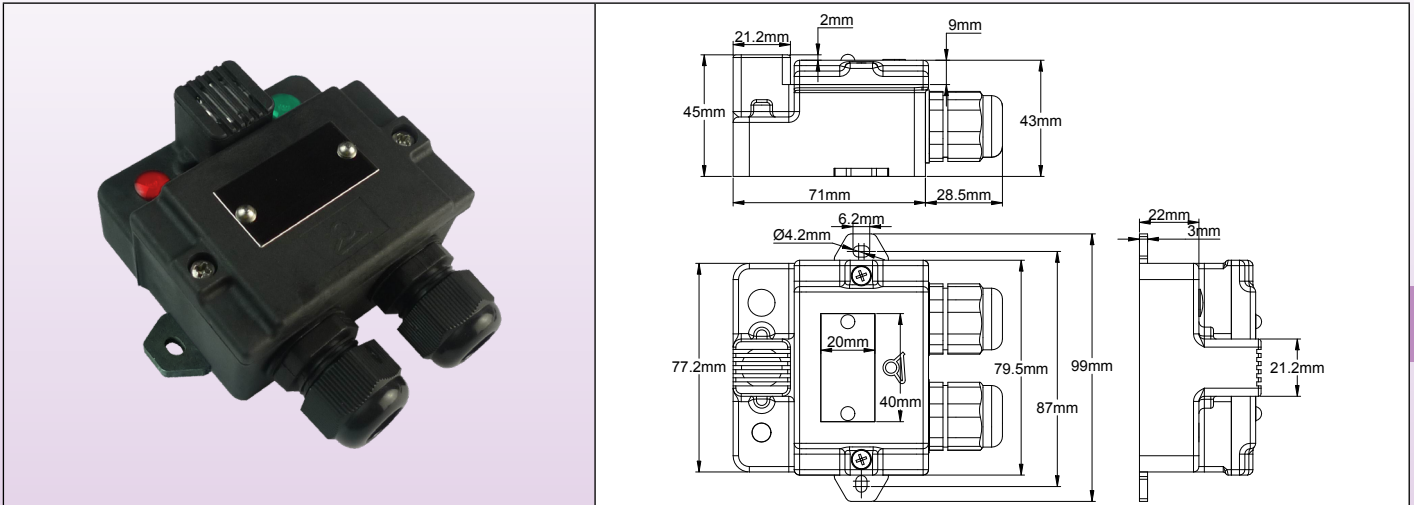
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Cat24-2-8-1



Controls for air heating

IP65 fixed setting ambient thermostat, cable gland output, two pilot lights Type Y22



Applications

Used to sense the ambient temperature indoors or outdoors, and open or close an electrical contact to a predetermined and non-adjustable value. Can be used as an alarm or antifreeze thermostat. In these devices, the thermostat, bimetal disc type, is over-molded, and is thermally insulated from the wall on which it is mounted. Its temperature sensing cup is mechanically protected by a grid. It is located in front of the enclosure to be in an area of natural circulation of air.

Main features

Mounting: Wall, by external side brackets. These tabs can be folded inwards.

Protection: IP65 and IK03 On thermostat guard, IK10 the rest of the housing)

Material: ABS-PC black glass-fiber reinforced

Screws: Stainless steel, captive

Output: 2 Cable glands M20, PA66, IP66, for cable 6 to 12 mm dia.

Electrical rating: Single pole, 8 to 16A 250V (100000 cycles). Contact style can be open on rise or close on rise.

Pilot lights: allow to visualize the power supply and thermostat contact position

Identification: The cover has a 20x40mm recess for a riveted stainless steel identification plate or a sticker

Customization: On request (MOQ apply)

Connection: Built in 4mm² screw terminal block

Options:

- Other calibration temperatures
- Cream color housing
- 115V pilot lights

Open temperature (°C/°F)	Close temperature (°C/°F)	Electrical rating	Main uses	References
8°C/46.4°F	3°C/37.4°F	8A 250V	Freeze protection, switches on defrost device or heating	Y22D9J00806USUSA
10°C/50°F	4°C/39.2°F	10A 250V	Freeze protection, switches on defrost device or heating	Y22D9K01006USUSA
10°C/50°F	4°C/39.2°F	16A 250V	Freeze protection, switches on defrost device or heating	Y22D9L01006USUSA
30°C/86°F	20°C/68°F	10A 250V	Room overheat detection, switches off heating	Y22D9K03006USUSA
20°C/68°F	30°C/86°F	10A 250V	Room overheat detection, switches on alarm (close on rise contact)	Y22D9K02006USUSA
70°C/158°F	60°C/140°F	10A 250V	Fire detection (withstand sprinklers water splash)	Y22D9K07006USUSA



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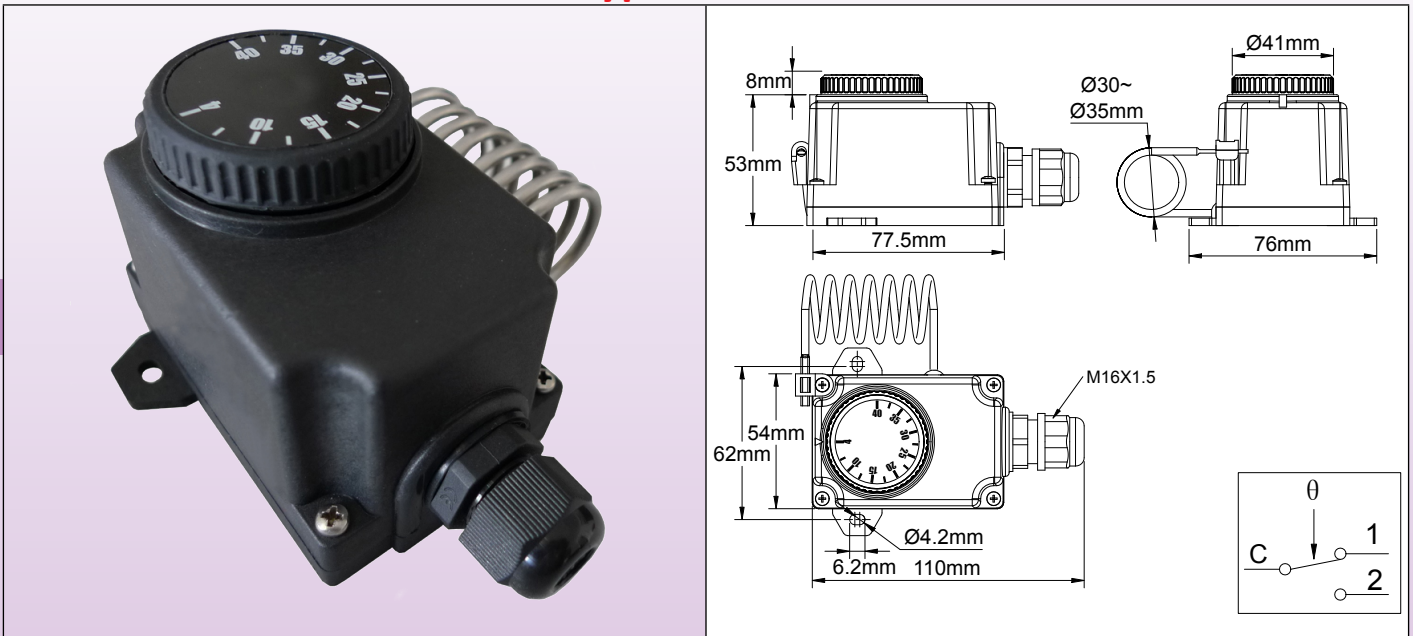
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Cat24-2-8-3

Controls for air heating

“Pig tail” bulb room thermostat, IP44 enclosure

Type Y0308G



Applications

Ambient temperature control in professional premises where good protection to liquid splashes or dust is requested. Used in technical rooms, livestock premises, as frost protection or temperature control of heating or ventilation.

Main features

Housing: IP44, 77,5 x 54 x 53 mm, (Knob and cable gland not included), black PC-ABS, UL94V0. High impact and UV resistance. 2 removable wall mounting lugs.

Electrical input: M16 cable gland.

Temperature Adjustment: With °C printed knob. (°F printed knobs available in option)

Sensing element: Liquid filled “pig tail” bulb, mounted on the side of plastic housing

Adjustment ranges: 4-40°C (40-105°F). Other temperature ranges available with straight bulb and 1.5m capillary: -35+35°C (-30+95°F), 30-90°C (85-195°F), 30-110°C (90-230°F), 50-200°C (120-390°F), 50-300°C (120-570°F)

Electrical connections: screw terminals

Mounting: Wall mounting, by two side lugs with holes for dia. 4mm screws, 62 mm distance.

Contact: SPDT

Electrical rating:

- Open on temperature rise contact (C-1) 16A(2.6) 250VAC
- Close on temperature rise contact (C-2) 6A(0.6) 250VAC
- Electrical life >100.000 cycles.

Main references

°C		°F		Bulb diameter (D, mm)	Bulb length (L, mm)	Differential °C (°F)	Max temperature on bulb °C (°F)
References (°C)	Temperature ranges (°C)	References (°F)	Temperature ranges (°F)				
Y038GA004040AA3K	4-40°C	Y038GA004040AA3K	40-105°F	Dia 3	Dia 35 x 40mm coiled	3±2 (5.5±4)	60 (140)
Y038GA004040AO6J	4-40°C	Y038GA004040AA3K	40-105°F	6	140 straight	3±2 (5.5±4)	60 (140)

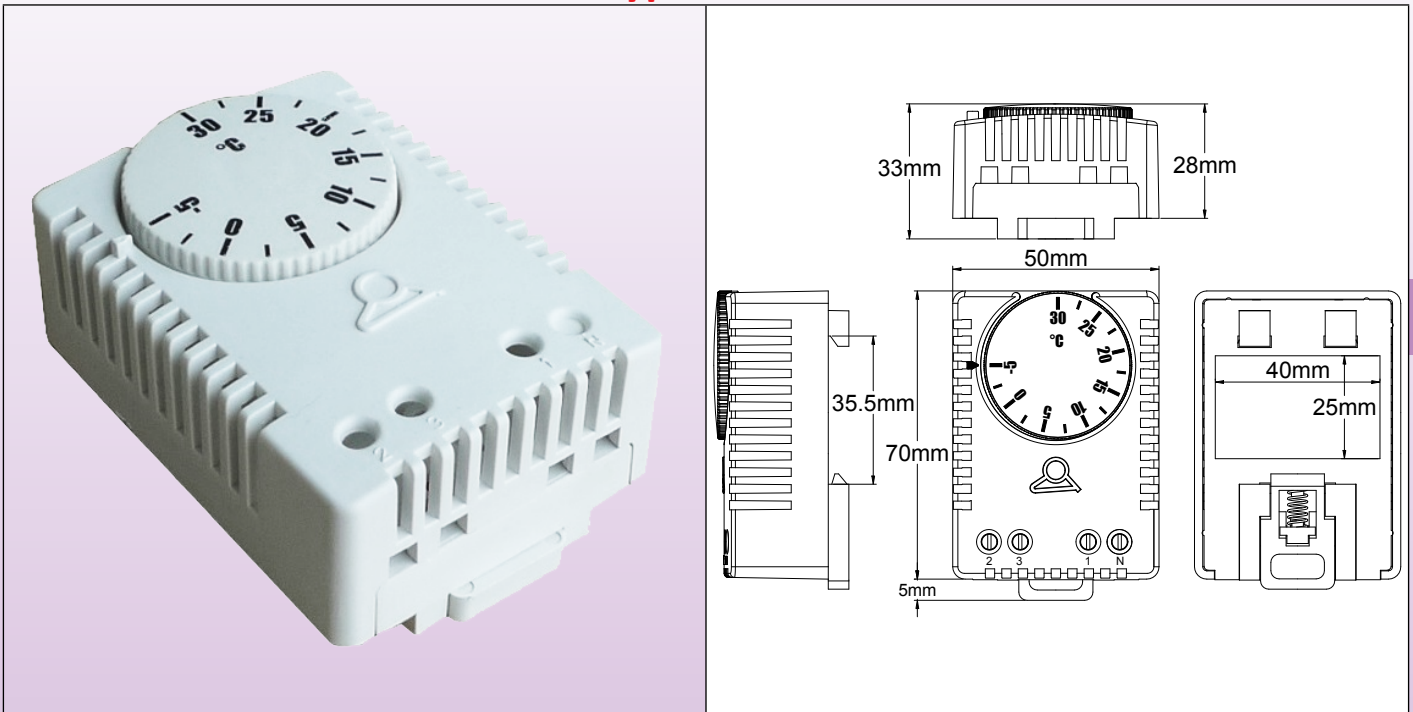
Knob printings

°F Printing	°C Printing
40-105°F	4-40°C

Controls for air heating

Electrical cabinet ambient temperature thermostats, Din Rail mounting

Type Y02N



Main use:

These models have been designed to control the temperature inside electrical cabinets, being mounted on their DIN rail. Their SPDT contact allows their use to control a cabinet heater, a fan, or a cooling system. The anticipation function allows to select 2 different values for the differential.

Main features

Temperature ranges: -10+50°C (15-120°F); -5+30°C (23-86°F); 0+60°C (30-140°F); +20+80°C (70-180°F)

Set point adjustment: °C or °F printed knob

Sensing element: bimetal

Contact type: snap-action contact, open or close on temperature rise, 10(2)A 125/250V alt.

Electrical life: > 10.000 cycles at rated values

Contact resistance: < 10mOhm

Electrical connection: 4 screw terminals, for 1.5 mm² wires. Neutral terminal must be used only when thermal anticipation is needed (reduced differential)

Attention: in standard, thermal anticipator (TA) is wired for use in 230V

Mounting: by clip for 35mm DIN rail, EN50022

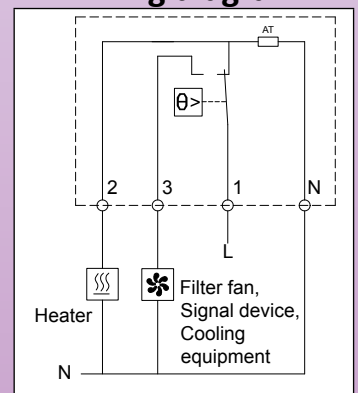
Casing: UL94 V0, PC-ABS, RAL 1010 light grey

Dimensions: 70 x 50 x 33 mm

Operating temperature range: -20 to +80°C (-4+176°F)

Ingress protection: IP30

Wiring diagram



Main references (with 230V thermal anticipator)*

°C types				°F types			
Temperature range (°C)	Differential °C thermal anticipator not connected	Differential °C thermal anticipator connected	References	Temperature range (°F)	Differential °F thermal anticipator not connected	Differential °F thermal anticipator connected	References
-10+50°C	6°C±3°C	4°C±2°C	Y02NAC-10050114L	15-120°F	11±4°F	7±3°F	Y02NAC-10050114P
-5+30°C	6°C±3°C	4°C±2°C	Y02NAC-10050114L	23-86°F	11±4°F	7±3°F	Y02NAC005035114P
0+60°C	6°C±3°C	4°C±2°C	Y02NAC005035114L	30-140°F	11±4°F	7±3°F	Y02NAC000060114P
+20+80°C	6°C±3°C	4°C±2°C	Y02NAC020080114L	70-180°F	11±4°F	7±3°F	Y02NAC020080114P

* Type with 115V thermal anticipator: replace 114 in the reference by 115

* Type with 24V thermal anticipator: replace 114 in the reference by 112



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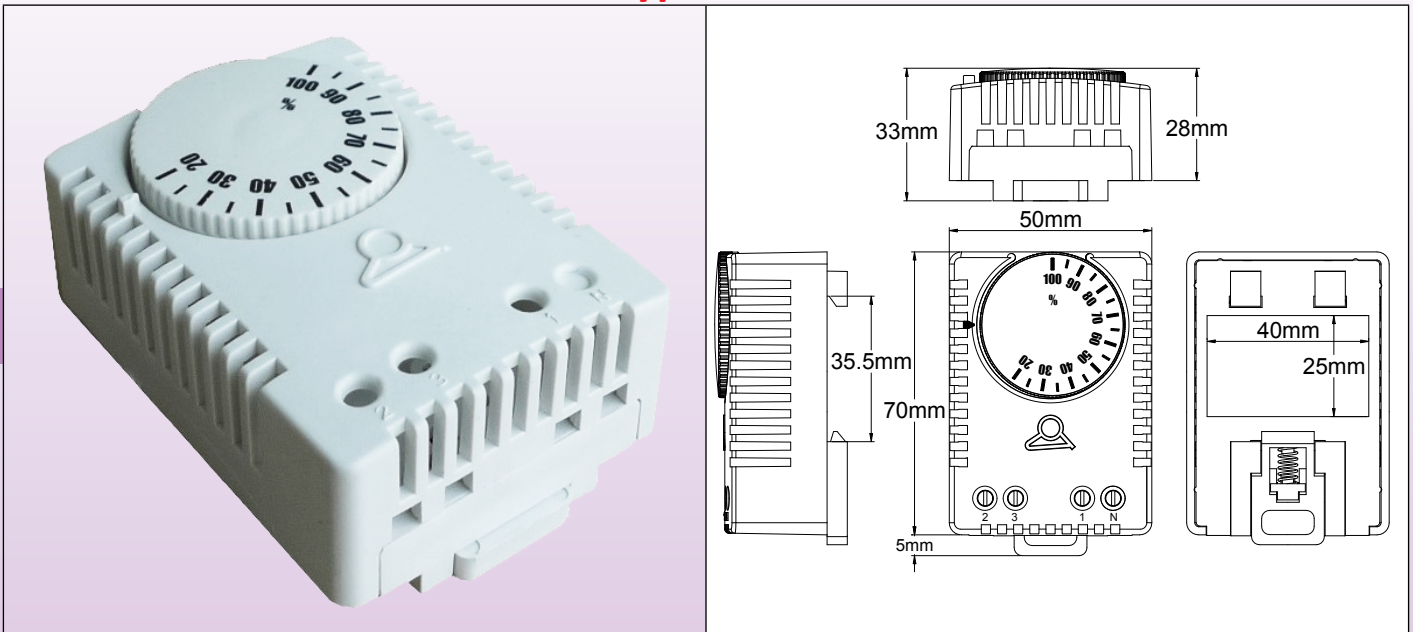
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Cat24-2-8-5

Controls for air heating

Cabinet humidistats, DIN rail mounting

Type Q7C



Applications

Condensation in electrical enclosures and cabinets can be critical for electrical components and safety. This miniature humidistat is designed to switch on a heater or a ventilating fan when the relative humidity rises at dangerous levels, when there is a risk to reach the dew point usually around 65%. It can also be used to switch on humidifiers, dehumidifiers, or other devices. It is designed for mounting on standardized DIN rail.

Main features

Humidity sensing element: hygroscopic polymer film with special treatment, produced by Ultimheat, ensuring a fast response, long life and high stability

Setting range: 35 to 95% RH

Measuring accuracy: $\pm 5\%$ RH

Differential at 50% RH: 4% RH ($\pm 3\%$ RH)

Measuring medium: air, pressure-less, non-aggressive

Electrical contact: silver contacts, SPDT, 10A 250V

Connection: 3 screw terminals for 1.5mm² wires, max torque 0.5Nm

Mounting: clip for 35mm DIN rail EN50022

Operating temperature: 0 to +60°C (+32 to +140°F)

Storage temperature: -20 to +70°C (-4 to +158°F)

Mounting position: vertical

Voltage supply: the humidistat should be mounted such that there is no buildup of condensate on or in the device. If the voltage supply is higher than 48V there is a risk of voltage arcing in the event of water condensation on the micro-switch or connecting terminals which might destroy the control.

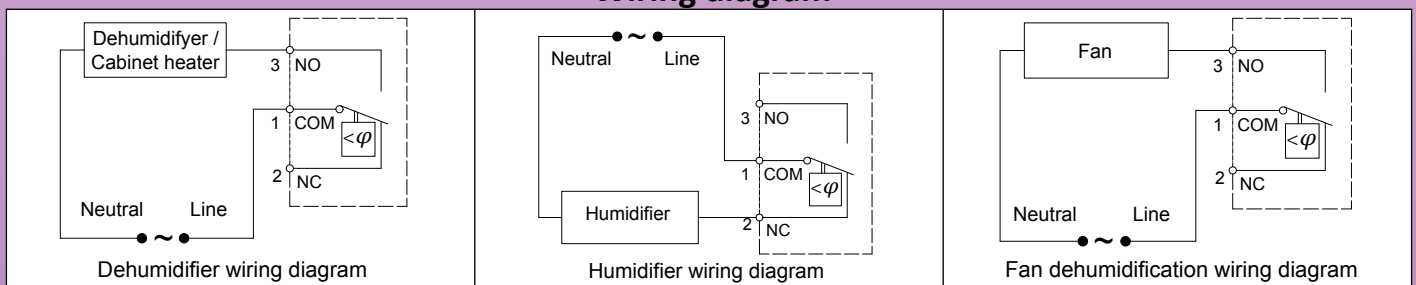
Ingress protection class: IP30

Dimension: 67x50x 36mm

Maintenance: The humidity sensing ribbon is maintenance-free in clean air. Air containing solvent can cause measuring errors and failure, depending on the type and concentration. Deposits such as resin aerosols, lacquer aerosols, smokes, which eventually form a water-repellent film are harmful for the measuring element.

Reference: Q7C030100I001R00

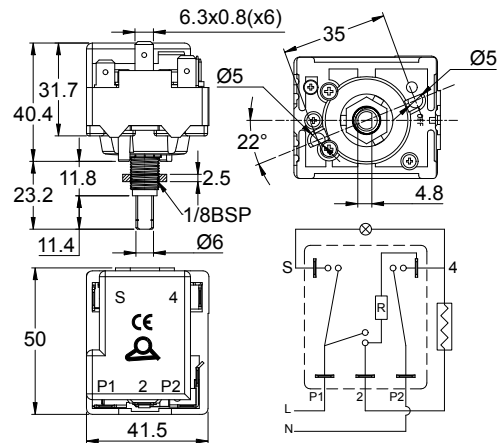
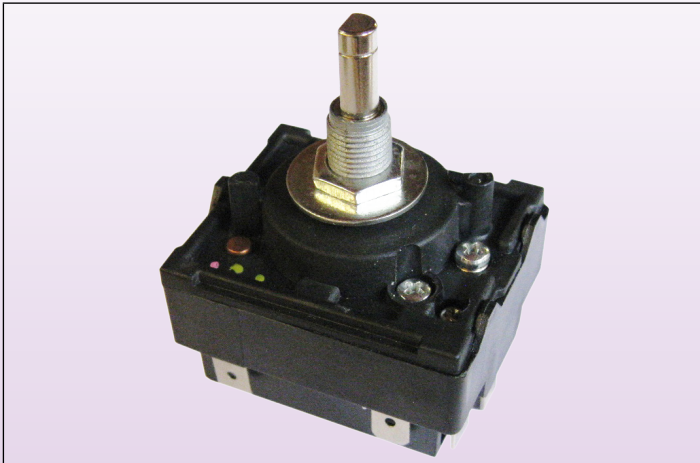
Wiring diagram



Controls for air heating

Energy regulators, 6 mm shaft, bush mounting

Type 35ER



Applications

Energy regulators are used to adjust power on electrical heaters. Connected in line with electrical heaters, they provide adjustable cycling sequence, thus adjusting average electrical power.

Main features

Housing dimensions: 50 x 42 x 39 mm (shaft not included)

Housing material: high temperature resistant PPS

Terminals: 6.3 x 0.8 quick connect

Adjustment: dia. 6 mm with 4.8 flat shaft, length 11.4 mm (UK style models with 4.75 mm dia. shaft available on request, MOQ apply)

Angulation:

- Mechanical: 360°, with two pole off position at 0°

- Electrical: Min position at 75° angular, Max position at 285° angular. (Other angulation with max at 208.5° available on request, MOQ apply)

Mounting: Center ¼ BSP bush with centering studs. 2 M4, 28 mm distance, screw mounting bracket available on request (MOQ apply)

Rating: 12A 230V resistive, SPDT+ on off pilot contact. Other contact configuration (SPST, SPDT without pilot, double circuit etc... are available on request, MOQ apply)

Max ambient temperature: 125C/257°F

Approval: CE

Main References

Reference	Voltage	Reference	Voltage
35ER102TF024V	24	35ER101TF230V	230
35ER102TF048V	48	35ER104TF400V	400
35ER105TF110V	110		

Knobs and dials

		Black polyamid knob with white printing	Reference: 66MD003 000071			Black ABS knob dia. 50mm, printed 0 to 8	Reference: 66MU006 OMN008E AW
		Black polyamid knob with white arrow, for anodized aluminum dial	Reference: 66MF006 000001			ABS black bezel for 50mm dia. knob	Reference: 66EN5
		Anodized aluminum dial with 0-100 printing for arrow knob	Reference: 66CG5001				



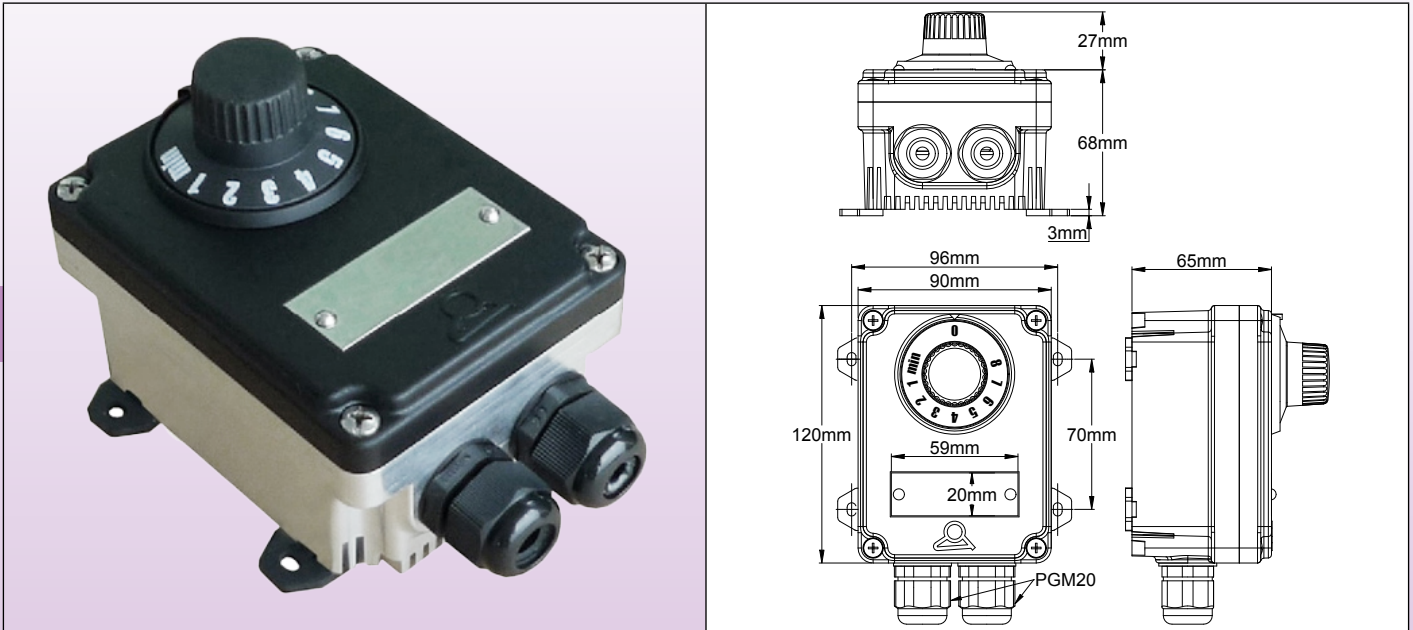
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Cat24-2-8-7

Controls for air heating

Electromechanical energy regulators with IP54 protection housing. Type 3AE



Applications

Cost saver solution for power control of high thermal inertia heating elements (thermal cycling device), used in professional and commercial premises, barns, stables, hen houses, poultry breeding.

Main features

Set point display: knob graduated from min to 8.

Min position provides about 5% of the power, and 8 about 100%, non-linear curve.

Zero position provides full disconnection of line and neutral.

Output: Cyclic open and close of an electrical contact with a cycle time of 20 to 30s for use high thermal inertia heating elements or convection heating. Not to be used on low thermal inertia medium and long infrared emitters.

Electrical rating: 12A 250V

Enclosure: 120 x 70 x 65mm, rear in aluminum with cooling fins, front in black PA66.

Protection class: IP54

Mounting: Wall mounting, with 4 removable legs, 70 x 96mm distance

Internal Connection: 4 ways 6mm², ceramic terminal block. (2 power input terminals, 2 power output terminals). 2 earth terminals.

Cables Input-Output: by 2 cable glands, M20, polyamide.

Residual voltage at off: 0 V

Leakage current at off: 0 mA

Ambient temperature: -20 to +70°C

Insulation Voltage: 1500VAC

Insulation resistance: 50MΩ/500VDC

Important:

- Install this unit in a line with an appropriate circuit breaker.

- Not to be used for electric motor speed control

Main references

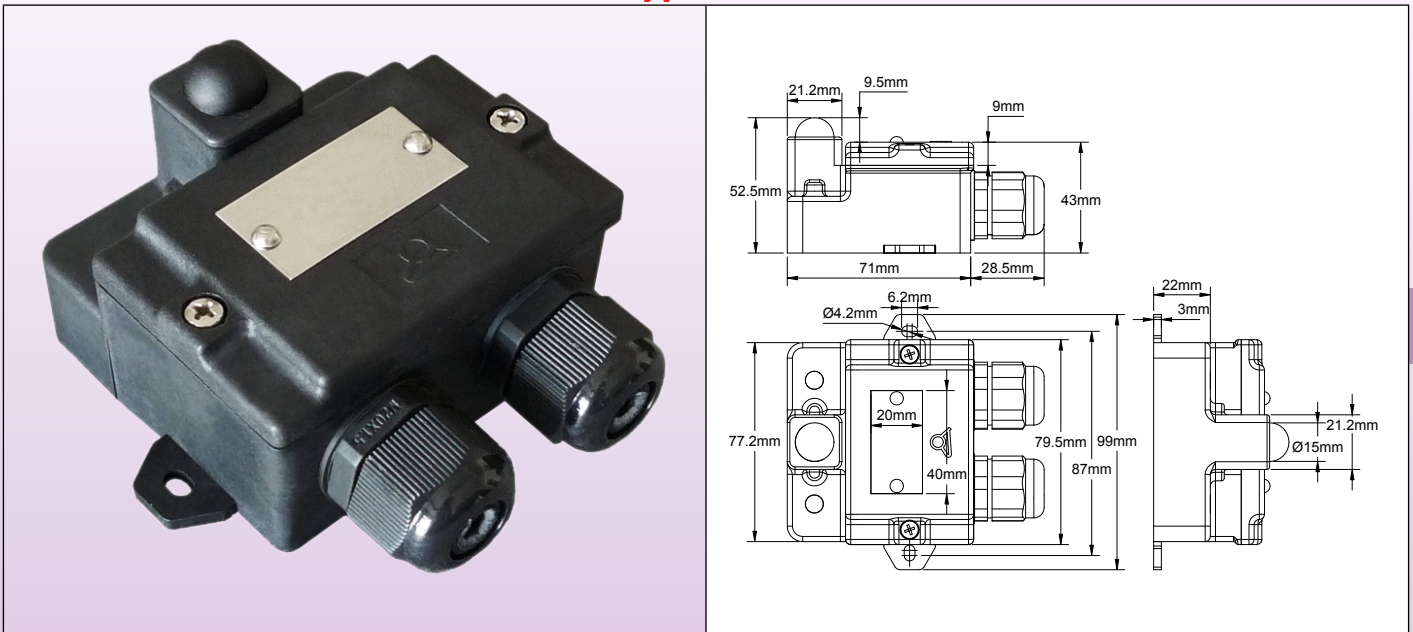
Reference	Voltage	Reference	Voltage
3AER102TF024V	24	3AER101TF230V	230
3AER102TF048V	48	3AER104TF400V	400
3AER105TF110V	110		



Controls for air heating

Fixed setting infrared heating thermostats

Type Y24



Applications

Fixed setting disc thermostat, located inside hemispherical black-body. The disc thermostat senses the heat produced by infrared absorption in the black-body it is located in.

For use in professional and commercial premises, industrial and livestock buildings.

Main features

The correct measurement of the radiated temperature requires installing the device in a location where it is exposed to direct radiation. In these enclosures, the thermostat is thermally insulated from the wall on which it is mounted, and senses the resulting temperature of the absorption by the black body added to the room ambient temperature.

Enclosure: 77.2 x 71 x 52.5mm, black PC-ABS

Protection class: IP65

Mounting: Wall mounting, with 2 removable legs, 87mm distance

Internal Connection: 6 ways 4mm², ceramic terminal block. (2 power input terminals, 2 power output terminals, 2 earth terminals).

Cables Input-Output: by 2 cable glands, M20, polyamide.

Electric rating: 15A 250VAC

Set point temperature: see references table. Other temperatures on request (MOQ apply)

Ambient temperature: -20 to +70°C

Insulation Voltage: 2000VAC

Insulation resistance: 500MΩ/500VDC

Main references

Reference	°C		°F	
	Open temperature	Close temperature	Open temperature	Close temperature
Y24D9J03308CUSV0	33	25	91.4	77
Y24D9Q04511CUSV0	34*	45*	93.2	113
Y24D9J04010CUSV0	40	30	104	86
Y24D9J05010CUSV0	50	40	122	104
Y24D9J05510CUSV0	55	45	131	113
Y24D9J06010CUSV0	60	50	140	122
Y24D9J07010CUSV0	70	60	158	140

* Close on temperature rise contact.

Because of permanent improvement of our products, drawings, descriptions, features used on these data sheets are for guidance only and can be modified without prior advice



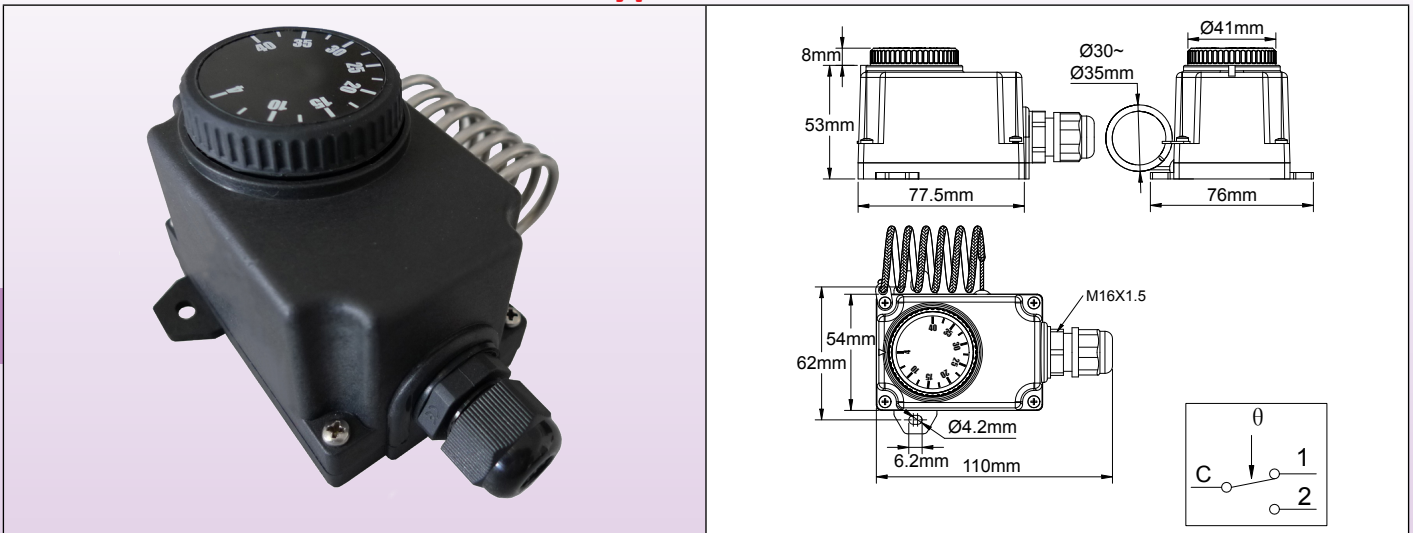
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Cat24-2-8-9

Controls for air heating

Bulb and capillary room thermostat for infrared heating, IP44 enclosure Type 0308H



Applications

These coiled bulb adjustable thermostats have a specially treated bulb to be infra-red sensitive.

The correct measurement of the radiated temperature requires installing the device in a location where it is exposed to direct radiation. In these devices, the thermostat senses the resulting temperature of the infrared absorption by the black bulb added to the room ambient temperature.

Main features

Housing: IP44, 77,5 x 54 x 53 mm, (Knob and cable gland not included), black PC-ABS, UL94V0. High impact and UV resistance. 2 removable wall mounting lugs.

Electrical input: M16 cable gland.

Temperature Adjustment: With °C printed knob.

°F printed knobs available in option

Sensing element: Liquid filled helicoidal bulb, mounted on the side of plastic housing

Adjustment ranges: 4-40°C (40-105°F).

Electrical connections: screw terminals

Mounting: Wall mounting, by two side lugs with holes for dia. 4 mm screws, 62 mm distance.

Contact: SPDT

Electrical rating:

- Open on temperature rise contact (C-1) 16A(2.6) 250VAC
- Close on temperature rise contact (C-2) 6A(0.6) 250VAC
- Electrical life >100.000 cycles.

Main references

°C		°F		Bulb diameter (D, mm)	Bulb length (L, mm)	Differential °C (°F)	Max temperature on bulb °C (°F)
References (°C)	Temperature ranges (°C)	References (°F)	Temperature ranges (°F)				
Y308HA004040AA3J	4-40°C	Y308HA004040AA3K	40-105°F	Dia 3	Dia 35 x 40mm coiled	3±2 (5.5±4)	60 (140)
Y038HA004040AO6J	4-40°C	Y038HA004040AO6K	40-105°F	6	140 straight	3±2 (5.5±4)	60 (140)

Also available with 0-10 printed knob or crescent printed knob

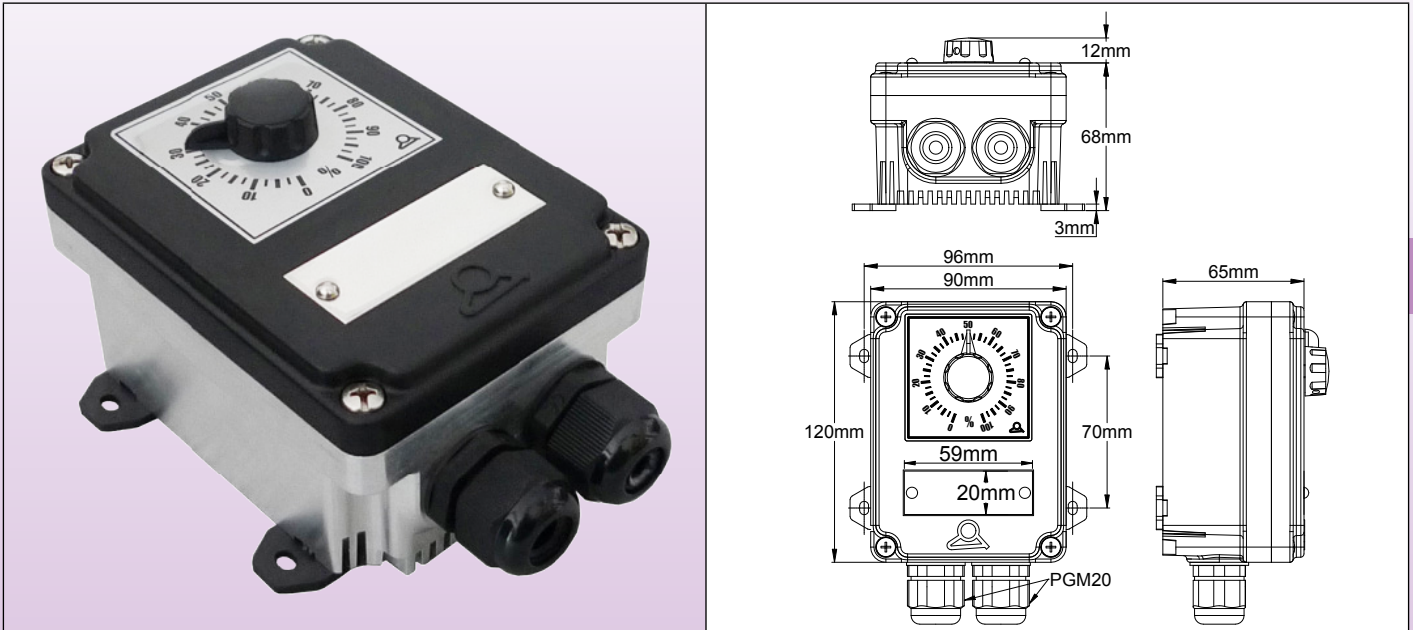
Knob printings

°F Printing	°C Printing	Decimal printing	Crescent printing
40-105°F	4-40°C	0-10	4-40°C



Controls for air heating

Electronic power control for infrared heaters, 10 to 20A. Miniature IP65 housing with built in heat exchanger Type 3AS



Applications

Solid state relay power control, for metering power of infrared emitters between 5% and 100% of their nominal value. For use in professional and commercial premises, industrial and livestock buildings.

Main features

Set point display: potentiometer graduated in % of power.

Output: zero crossing (no radio interferences), with 10ms cycle time, for use on low thermal inertia medium and long infrared emitters.

Enclosure: 120 x 70 x 65mm, rear in aluminum with cooling fins, front in black PA66.

Protection class: IP54

Mounting: Wall mounting, with 4 removable legs, 70 x 96mm distance

Internal Connection: 4 ways 6mm², ceramic terminal block. (2 power input terminals, 2 power output terminals). 2 earth terminals.

Cable Input-Output: by 2 cable glands, M20, polyamide.

Residual voltage at off: ≤ 1.5V

Leakage current at off: ≤ 4mA

Ambient temperature: -20 to +70°C

Insulation Voltage: 2000VAC

Insulation resistance: 500MΩ/500VDC

Important:

- Like all solid state relays, this device dissipates about 0.5% of the power by the Joule effect.
- Install this unit in a line with a power switch and an appropriate circuit breaker.
- Not to be used for electric motor speed control

References

Reference	Max. power	Voltage	Reference	Max. power	Voltage
3ASN30100110	10A	220-240V	3ASN30700110	10A	380-400V
3ASN30100120	20A	220-240V	3ASN30700120	20A	380-400V



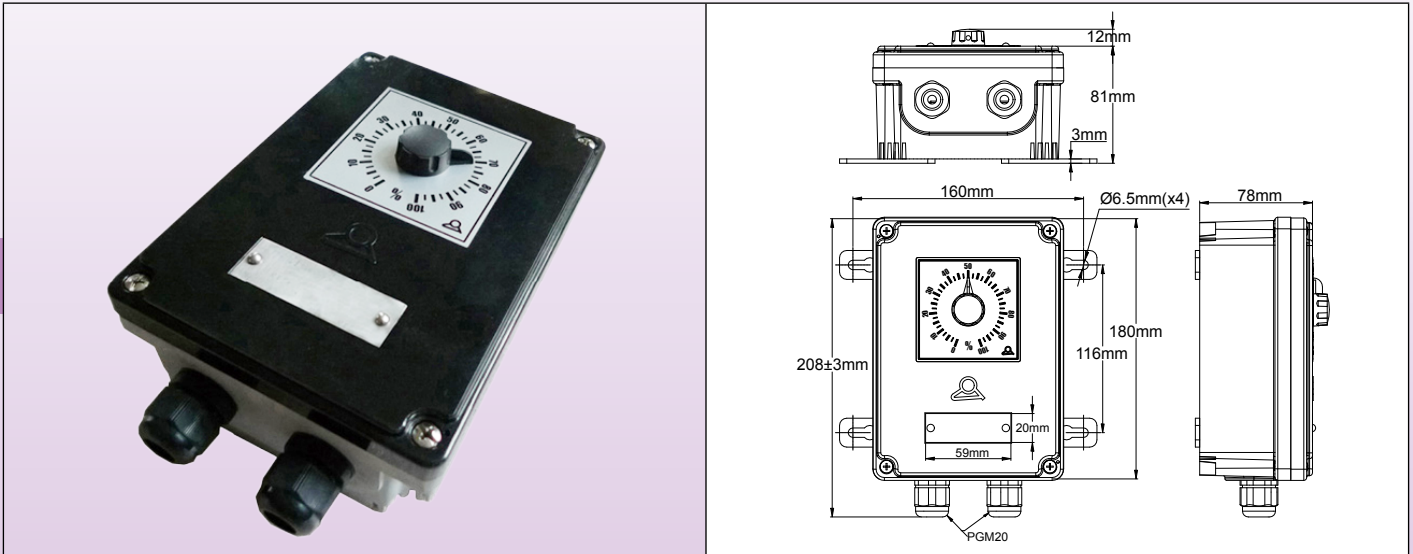
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Cat24-2-8-11

Controls for air heating

Electronic power control for infrared heaters, 25 to 60A. IP65 housing with built in heat exchanger Type 3AY



Applications

Solid state relay power control, for metering power of infrared emitters between 5% and 100% of their nominal value. For use in professional and commercial premises, industrial and livestock buildings.

Main features

Set point display: potentiometer graduated in % of power.

Output: zero crossing, (no radio interference), with 10ms cycle time, for use on low thermal inertia medium and long infrared emitters.

Enclosure: 180x130x78mm, rear in aluminum with cooling fins, front in black PA66.

Protection class: IP65, with waterproof gasket on adjustment potentiometer shaft

Mounting: Wall mounting, with 4 removable legs, 70 x 96mm distance

Internal Connection: 4 ways 6mm², ceramic terminal block. (2 power input terminals, 2 power output terminals). 2 earth terminals.

Cable Input-Output: by 2 cable glands, M20, polyamide.

Overheat protection: built in high limit disc thermostat, automatic reset, opens at 80°C.

2 pole on-off switch: Available on 25A 220-240 models only (does not allow power adjustment between 0 and 20%)

Residual voltage at off: ≤ 1.5V

Leakage current at off: ≤ 4mA

Ambient temperature: -20 to +70°C

Isolation Voltage: 2000VAC

Insulation resistance: 500MΩ/500VDC

Important:

- Like all solid state relays, this device dissipates about 0.5% of the power by the Joule effect.
- Install this unit in a line with a power switch and an appropriate circuit breaker.
- Not to be used for electric motor speed control

Main references

Reference	Max. power	Voltage	Reference	Max. power	Voltage
3AYM30100125*	25A	220-240V	3AYN30700125	25A	380-400V
3AYN30100125	25A	220-240V	3AYN30700140	40A	380-400V
3AYN30100140	40A	220-240V	3AYN30700160	60A	380-400V
3AYN30100160	60A	220-240V			

* Model with 2 pole on-off switch

