



Thermal Management Products & Accessories for Enclosures



Photo: STEGO International Headquarters in Germany

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Since 1980, STEGO has been developing and manufacturing innovative products for heating, cooling, and temperature and humidity control of electronic enclosures. These products are renowned for reliability, longevity, simplicity of use, and high quality.

Headquartered in Germany, STEGO expanded its manufacturing and sales efforts in the mid-1990's with the opening of facilities in the U.S. and France. STEGO has since opened offices in the U.K., Scandinavia, Spain, Brazil, Poland, Italy, the Czech Republic and Austria, furthering its worldwide presence and commitment to technical support for its customers.

STEGO offers a wide range of products in various sizes and specifications to meet almost any need, and the majority conform to UL and CE standards.

- PRODUCTS:**
- **PTC based enclosure heaters**
 - **Fan heaters with PTC and resistance heating elements**
 - **Temperature and humidity controls**
 - **Explosion-proof heaters and thermostats for hazardous areas**
 - **Air-flow monitors**
 - **Filter fans and exhaust filters**
 - **Enclosure lights and other accessories**

With this broad range of products offered, STEGO is assisting customers in a variety of industries with their applications.

- INDUSTRIES:**
- **Electrical and electronic control systems**
 - **Telecommunications systems**
 - **Traffic control systems**
 - **Parking control systems**
 - **Ticket dispensing machines**
 - **Automatic Teller Machines (ATMs)**
 - **Power generation including Wind and Solar**



Magnetic reed switch contact

Wide range of application

Small size

Easy to install

The airflow monitor is designed to indicate either the loss of air movement (NC) of any fan or that air flow is present (NO). The contact detects air movement regardless of direction of air. Its simple mechanical operation makes it a viable alternative to electronic monitoring systems.

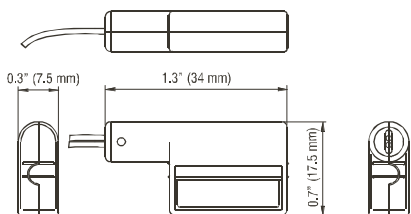
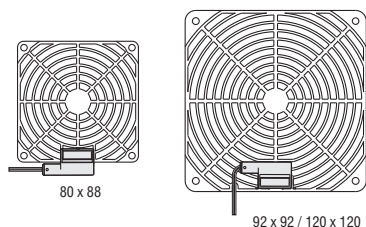


Technical Data

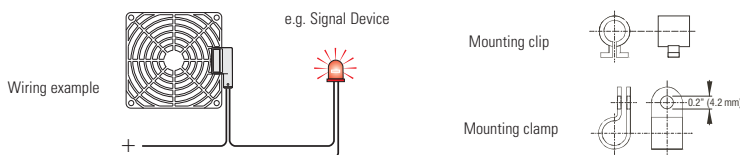
Application:

The LC 013 is used as a signal contact to monitor fans or filter fans. It can be connected to monitoring systems or can directly switch alarm devices, such as LED's or signal lamps. Loads with capacities exceeding the indicated switching capacity must be switched via a relay, e.g. electronic relay SM 010. The airflow monitor with NC contact closes upon loss of air movement, indicating fan failure (e.g. red signal lamp). The NO contact closes when fan is in operation and indicates fan is operating correctly.

Contact type	reed / magnet contact
Normally Closed (NC)	switch contact open when air is flowing
Normally Open (NO)	switch contact closed when air is flowing
Max. switching voltage	NC: 240VDC (UL), 240V AC/DC (VDE) / NO: 60VDC
Max. switching current	NC: DC 500mA / NO: DC 170mA
Max. switching capacity	10W (resistive load)
Switching threshold of airflow velocity	> 8.2 ft/sec (2.5m/s) - hysteresis: approx. 3.3 ft/sec (1m/s)
Max. airflow velocity	165 ft/sec (50m/s)
Contact resistance	< 370mΩ (with wire)
Max. air humidity	70% RH (not condensing)
Service life	> 100,000 cycles
Connection	2 x single strand AWG 26, length 19.7" (500mm), tip of stranded wire stripped 5mm and tinned (NC: black, NO: blue)
Housing	plastic, UL 94HB, black
Mounting	mounting clamp or mounting clip, also available integrated in fingerguard (LCF 013) - see table
Mounting position	bidirectional tab perpendicular to airflow
Operating temperature	-4 to +122°F (-20 to +50°C)
Storage temperature	-4 to +176°F (-20 to +80°C)
Protection type	IP20
Approvals	UL File No. E250507, VDE



Note: The product of switching voltage and switching current must not exceed 10W. The max. voltage and max. current must not be exceeded, not even short-term (voltage/current peaks). The resulting voltage and current peaks of inductive or capacitive loads must be restricted by a contact protection circuit.



Installation notes:

1. The airflow monitor must not be installed in the impact range of permanent magnets or ferrous metals in order to avoid possible interference problems.
2. A suitable distance from electromagnetic fields, e.g. generated by transformers, motors, etc., must be maintained in order to avoid possible interference problems. Interferences must be checked with an oscillograph and the mounting position of the airflow monitor should be adjusted if necessary.
3. Avoid installing the airflow monitors in areas where air pockets or turbulence can be expected.
4. Ambient air with a high dust content should be avoided.

As there are many different conditions of use, suitability of this product must be assessed by the end user in its final application.

Description	Part No. (NC)	Part No. (NO)	Dimensions	Weight (approx.)
LC 013 Airflow Monitor with mounting clamp and mounting clip	01300.0-00	01300.1-00	1.3 x 0.7 x 0.3" (34 x 17.5 x 7.5mm)	0.2 oz. (5g)
	01301.0-00	01301.1-00	3.15 x 3.46 x 0.4" (80 x 88 x 10.5mm)	0.7 oz. (20g)
LCF 013 Airflow Monitor integrated in plastic fingerguard	01302.0-00	01302.1-00	3.6 x 3.6 x 0.4" (92 x 92 x 10mm)	0.7 oz. (20g)
	01303.0-00	01303.1-00	4.7 x 4.7 x 0.4" (120 x 120 x 10mm)	1.1 oz. (30g)

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



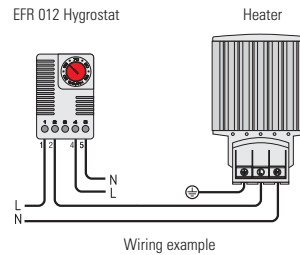
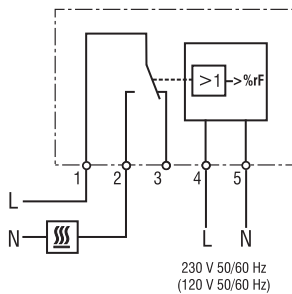
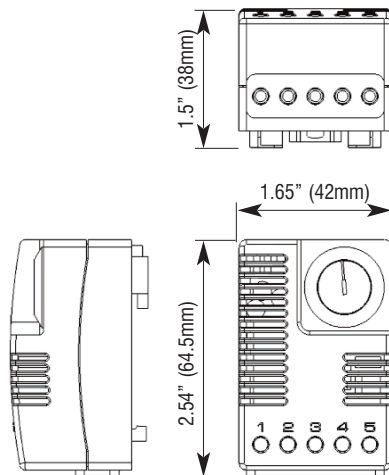
- Adjustable & pre-set relative humidity setpoints**
- Compact design**
- High switching capacity**
- Optical function display (LED)**
- DIN rail mountable**

The EFR 012 electronic hygrostat senses the relative humidity in an enclosure and turns on a heater at the set point, helping prevent the formation of condensation in the enclosure. The integrated LED is lit when the connected device is in operation.



Technical Data

Switching difference	5% RH ($\pm 1\%$ tolerance) - at 77°F (25°C) and 50% RH
Reaction time	approx. 5 seconds
Contact type	SPDT / change-over contact (relay)
Service life	> 100,000 cycles
Max. switching capacity (relay output)	8A resistive / 1.6A inductive @ 120VAC 8A resistive / 1.6A inductive @ 240VAC 4A @ 24VDC
EMC	acc. to EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
Connection	5-pole terminal, clamping torque 0.5Nm max.: solid wire - AWG 14 max. (2.5mm ²) stranded wire (with wire end ferrule) - AWG 16 max. (1.5mm ²)
Housing	plastic, UL 94V-0, light grey
Mounting	clip for 35mm DIN rail, EN 60 715
Mounting position	vertical
Operating temperature	+32 to +140°F (0 to +60°C)
Storage temperature	-4 to +176°F (-20 to +80°C)
Max. storage humidity	90% RH (non-condensing)
Dimensions	2.54 x 1.65 x 1.5" (64.5 x 42 x 38mm)
Weight	approx. 2.3 oz. (65g)
Protection type	IP20



Part No.	Operating voltage	Setting range	Approvals
01245.0-00	230VAC	40 to 90% RH	UL & VDE intended
01245.9-00	120VAC	65% RH pre-set	UL intended
01246.0-00	230VAC	40 to 90% RH	UL & VDE intended
01246.9-00	120VAC	65% RH pre-set	UL intended

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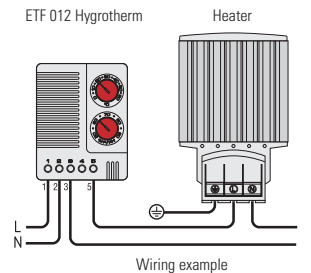
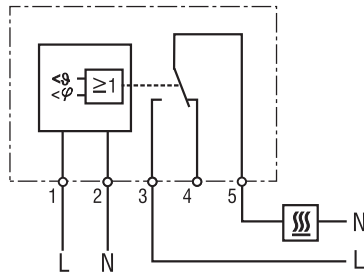
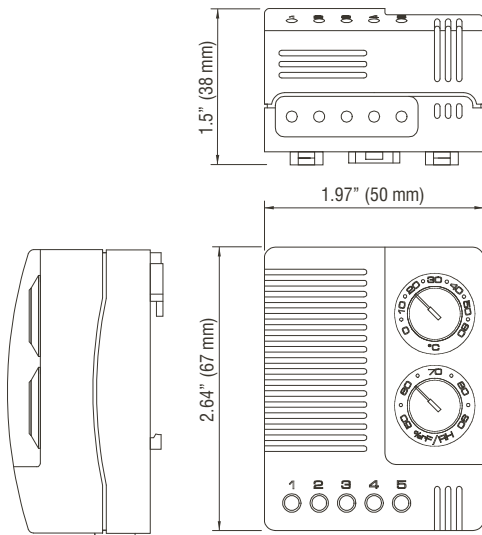
- Efficient temperature & humidity control**
- Wide adjustment ranges**
- High switching capacity**
- Optical function displays (LED)**
- DIN rail mountable**

The ETF 012 senses the ambient temperature and relative air humidity. Depending on which contact combination is chosen, it then turns on or off a connected device if either the temperature is below, or the humidity above the set point. The integrated LED in each adjustment knob is lit when indicating the active function.



Technical Data

Switching difference - temperature	3.6°F (2K) ± 1K tolerance - at 77°F (25°C) and 50% RH
Switching difference - humidity	4% RH ± 1% tolerance - at 77°F (25°C) and 50% RH
Response time - humidity	approx. 5 sec.
Contact type	SPDT / change-over contact (relay)
Contact resistance	< 10mΩ
Service life	NC: > 50,000 cycles NO: > 100,000 cycles
Max. switching capacity	NC: 6A resistive / 1A inductive @ 120VAC NO: 8A resistive / 1.6A inductive @ 120VAC NC: 6A resistive / 1A inductive @ 240VAC NO: 8A resistive / 1.6A inductive @ 240 VAC 4A @ 24VDC
EMC	acc. to EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
Connection	5-pole terminal, clamping torque 0.5Nm max.: solid wire - AWG 14 max. (2.5mm ²) stranded wire (with wire end ferrule) - AWG 16 max. (1.5mm ²)
Housing	plastic, UL 94V-0, light grey
Mounting	clip for 35mm DIN rail, EN 60 715
Mounting position	vertical
Operating temperature	+32 to +140°F (0 to +60°C)
Storage temperature	-4 to +176°F (-20 to +80°C)
Dimensions	3.0 x 2.4 x 1.7" (77 x 60 x 43mm)
Weight	approx. 7 oz. (200g)
Protection type	IP20



Part No.	Operating voltage	Setting range - temperature	Setting range - humidity	Approvals
01230.0-00	230VAC, 50/60Hz	0 to 60°C	50 to 90% RH	UL File No. E164102, VDE
01230.9-00	120VAC, 50/60Hz	32 to 140°F	50 to 90% RH	UL File No. E164102
01230.9-01	120VAC, 50/60Hz	0 to 60°C	50 to 90% RH	UL File No. E164102

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Efficient condensation control

Adjustable relative humidity range

High switching capacity

DIN rail mountable

The MFR 012 electromechanical thermostat is designed to control the relative humidity inside enclosures. When connected to an enclosure heater (dehumidifier), it will energize the heater at the humidity set point in order to raise the dew point. This helps prevent damage and malfunction of electronic components caused by condensation and corrosion.¹⁾

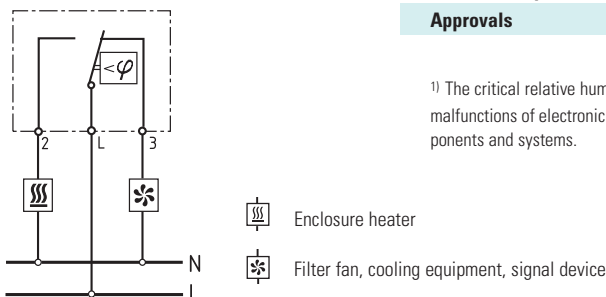
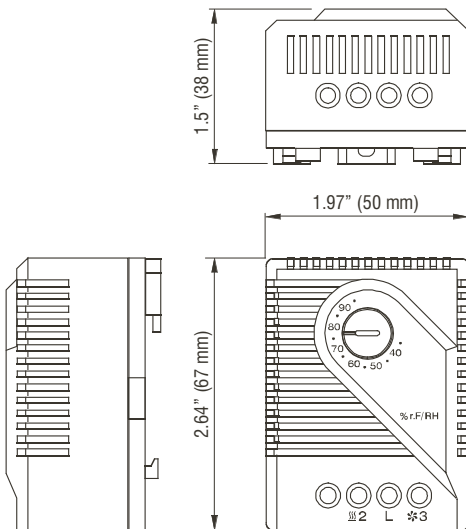
The MFR 012 can also be used to control cooling fans, warning lights or other devices.



Technical Data

Switching difference	4% RH (± 3% tolerance) - at 50% RH
Permissible air velocity	50 ft/sec (15m/s)
Contact type	SPDT / change-over contact
Contact resistance	< 10mΩ
Service life	> 100,000 cycles
Min. Switching capacity	100mA @ AC/DC 20V
Max. Switching capacity	5A resistive / 1A inductive @ 250VAC DC 20W
EMC	acc. to EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
Connection	3-pole terminal, clamping torque 0.5Nm max.: solid wire - AWG 14 max. (2.5mm ²) stranded wire (with wire end ferrule) - AWG 16 max. (1.5mm ²)
Housing	plastic, UL 94V-0, light grey
Mounting	clip for 35mm DIN rail, EN 60 715
Mounting position	vertical
Operating temperature	+32 to +140°F (0 to +60°C)
Storage temperature	-4 to +176°F (-20 to +80°C)
Dimensions	2.64 x 1.97 x 1.5" (67 x 50 x 38mm)
Weight	approx. 2 oz. (60g)
Protection type	IP20
Approvals	UL File No. 164102

¹⁾ The critical relative humidity level for most components is 65%. Above 65% RH, condensation can form and cause malfunctions of electronic equipment. Long term, this can lead to corrosion and permanent damage of electronic components and systems.



Part No.	Setting range
01220.0-00	35 to 95% RH

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Compact design

Fixed setpoints

Color coded modules

DIN rail mountable

Tamperproof (Pre-set) Thermostat FTO 011

NC / opens on temperature rise (**red** module housing) - for regulating heaters or for switching signal devices when temperature has fallen below the minimum value.

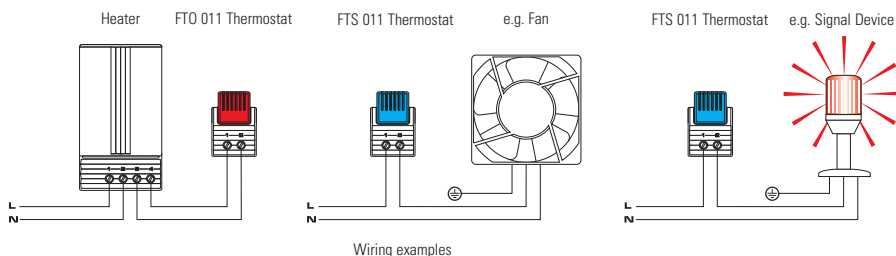
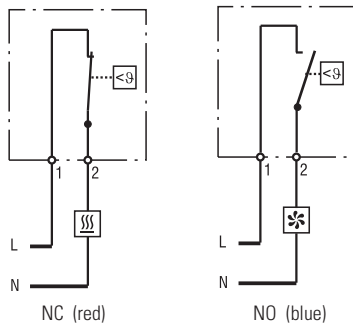
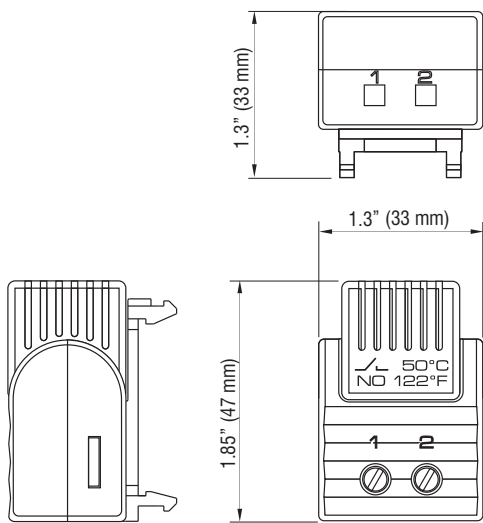
Tamperproof (Pre-set) Thermostat FTS 011

NO / closes on temperature rise (**blue** module housing) - for regulating filter fans, heat exchangers, cooling devices or for switching signal devices when temperature limit has been exceeded.



Technical Data

Sensor element	thermostatic bimetal
Contact type	snap-action contact
Contact resistance	< 20mΩ
Service life	> 100,000 cycles
Max. switching capacity	10A resistive / 2A inductive @ 120VAC 5A resistive / 1.6A inductive @ 240VAC DC 30W
Max. inrush current	AC 10A
EMC	acc. to EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
Connection	2-pole terminal for AWG 14 max. (2.5mm ²), torque 0.8Nm max.
Housing	plastic, UL 94V-0, light grey
Mounting	clip for 35mm DIN rail, EN 60 715
Mounting position	vertical
Operating temperature	-4 to +176°F (-20 to +80°C)
Storage temperature	-49 to +176°F (-45 to +80°C)
Dimensions	1.85 x 1.3 x 1.3" (47 x 33 x 33mm)
Weight	approx. 0.8 oz. (23g)
Protection type	IP20
Approvals	UL File No. E164102, VDE



Part No.	Contact	Switch-off temperature	Switch-on temperature
01160.0-00	NC - open on rise	59°F / 15°C (± 9°F / 5K tolerance)	41°F / 5°C (± 9°F / 5K tolerance)
01160.0-01	NC - open on rise	77°F / 25°C (± 9°F / 5K tolerance)	59°F / 15°C (± 9°F / 5K tolerance)
		Switch-on temperature	Switch-off temperature
01161.0-00	NO - close on rise	122°F / 50°C (± 11°F / 6K tolerance)	104°F / 40°C (± 12.6°F / 7K tolerance)
01161.0-01	NO - close on rise	140°F / 60°C (± 11°F / 6K tolerance)	122°F / 50°C (± 12.6°F / 7K tolerance)
01161.0-02	NO - close on rise	95°F / 35°C (± 11°F / 6K tolerance)	77°F / 25°C (± 12.6°F / 7K tolerance)

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Compact design

Wide adjustment range

Color coded temperature dials

DIN rail mountable

Thermostat NC (normally closed)

Thermostat opens on temperature rise - for regulating heaters or for switching signal devices. Comes with **red** temperature dial.

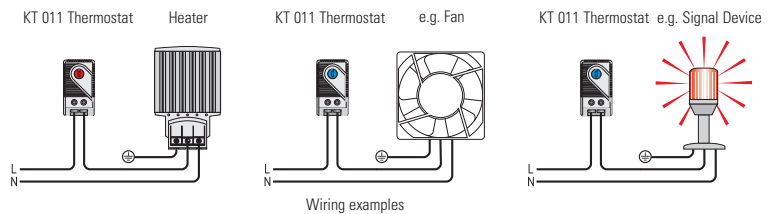
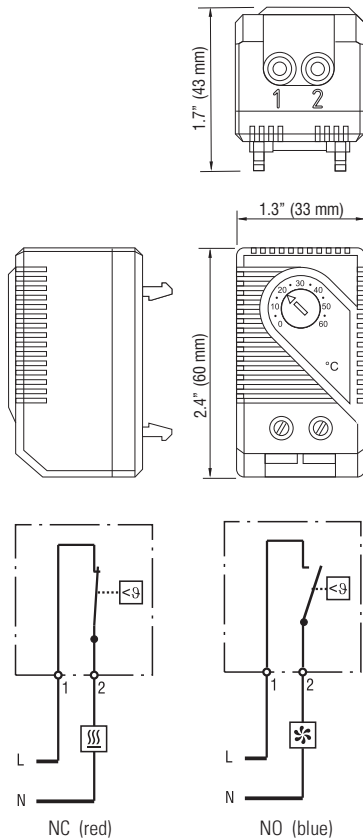
Thermostat NO (normally open)

Thermostat closes on temperature rise - for regulating filter fans and heat exchangers or for switching signal devices. Comes with **blue** temperature dial.



Technical Data

Switching difference	12.6°F ± 7°F tolerance (7K ± 4K)
Sensor element	thermostatic bimetal
Contact type	snap-action contact
Contact resistance	< 10mΩ
Service life	> 100,000 cycles
Max. switching capacity	15A resistive / 2A inductive @ 120VAC 10A resistive / 2A inductive @ 250VAC DC 30W
Minimum load	20mA (all voltages)
EMC	acc. to EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
Connection	2-pole terminal, clamping torque 0.5Nm max.: solid wire - AWG 14 max. (2.5mm ²) stranded wire (with wire end ferrule) - AWG 16 (1.5mm ²)
Housing	plastic, UL 94V-0, light grey
Mounting	clip for 35mm DIN rail, EN 60 715 (or for Exhaust Filter EF 118 Series)
Mounting position	vertical
Operating / Storage temperature	-49 to +176°F (-45 to +80°C)
Dimensions	2.4 x 1.3 x 1.7" (60 x 33 x 43mm)
Weight	approx. 1.4 oz. (40g)
Protection type	IP20



Setting range	Part No. (NC)	Part No. (NO)	Approvals
+32 to +140°F	01140.9-00	01141.9-00	UL File No. E164102, CSA
0 to +60°C	01146.9-00	01147.9-00	UL File No. E164102, CSA
-10 to +50°C	01142.0-00	N/A	UL File No. E164102, CSA, VDE
+10 to +70°C	N/A	01149.9-00	UL File No. E164102, CSA
-15 to +45°C	01157.0-00	01156.0-00	UL File No. E164102, CSA
+20 to +80°C	01159.0-00	01158.0-00	UL File No. E164102, CSA, VDE

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NC / NO or NO / NO in one unit

Fixed setpoints

Color coded modules

DIN rail mountable

Two thermostats in one housing:

Tamperproof (Pre-set) Thermostat - NC

Opens on temperature rise (red module housing) - for regulating heaters or for switching signal devices when temperature has fallen below the minimum value.

Tamperproof (Pre-set) Thermostat - NO

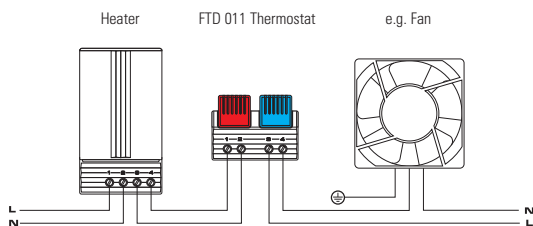
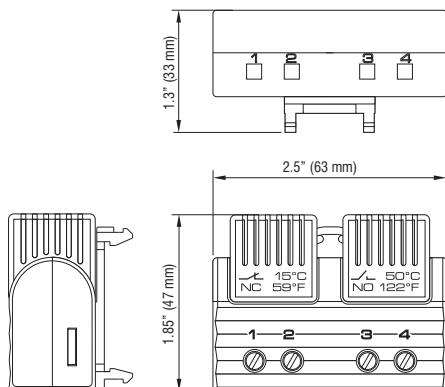
Closes on temperature rise (blue module housing) - for regulating filter fans, heat exchangers, cooling devices or for switching signal devices when temperature limit has been exceeded.

Heaters and cooling equipment can be switched independently from each other with a temperature offset as opposed to the usual SPDT/change-over contact.



Technical Data

Sensor element	thermostatic bimetal
Contact type	snap-action contact
Contact resistance	< 20mΩ
Service life	> 100,000 cycles
Max. switching capacity	10A resistive / 2A inductive @ 120VAC 5A resistive / 1.6A inductive @ 240VAC
Max. inrush current	DC 30W AC 10A
EMC	acc. to EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
Connection	4-pole terminal for AWG 14 max. (2.5mm ²), torque 0.8Nm max.
Housing	plastic according to UL 94V-0, light grey
Mounting	clip for 35mm DIN rail, EN 60 715
Mounting position	vertical
Operating temperature	-4 to +176°F (-20 to +80°C)
Storage temperature	-49 to +176°F (-45 to +80°C)
Dimensions	1.85 x 2.5 x 1.3" (47 x 63 x 33mm)
Weight	approx. 14.1 oz. (40g)
Protection type	IP20
Approvals	UL File No. E164102, VDE



Wiring examples

Part No.	NC - open on rise		NO - close on rise	
	Switch-off temperature	Switch-on temperature	Switch-on temperature	Switch-off temperature
01163.0-00	59°F / 15°C (± 9°F / 5K tolerance)	41°F / 5°C (± 9°F / 5K tolerance)	122°F / 50°C (± 11°F / 6K tolerance)	104°F / 40°C (± 12.6°F / 7K tolerance)
01163.0-01	77°F / 25°C (± 9°F / 5K tolerance)	59°F / 15°C (± 9°F / 5K tolerance)	140°F / 60°C (± 11°F / 6K tolerance)	122°F / 50°C (± 12.6°F / 7K tolerance)
01163.0-02	59°F / 15°C (± 9°F / 5K tolerance)	41°F / 5°C (± 9°F / 5K tolerance)	95°F / 35°C (± 11°F / 6K tolerance)	77°F / 25°C (± 12.6°F / 7K tolerance)
01163.0-03	77°F / 25°C (± 9°F / 5K tolerance)	59°F / 15°C (± 9°F / 5K tolerance)	122°F / 50°C (± 11°F / 6K tolerance)	104°F / 40°C (± 12.6°F / 7K tolerance)
Part No.	NO - close on rise		NO - close on rise	
	Switch-on temperature	Switch-off temperature	Switch-on temperature	Switch-off temperature
01164.0-00	122°F / 50°C (± 11°F / 6K tolerance)	104°F / 40°C (± 12.6°F / 7K tolerance)	140°F / 60°C (± 11°F / 6K tolerance)	122°F / 50°C (± 12.6°F / 7K tolerance)

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



- NC / NO or NO / NO in one unit**
- Separate adjustable temperatures**
- Color coded temperature dials**
- DIN rail mountable**

The ZR 011 houses two separate thermostats, allowing the independent control of heating and cooling or other equipment.

Thermostat NC (normally closed):

Thermostat opens at temperature rise - for regulating heaters or for switching signal devices. Comes with **red** temperature dial.

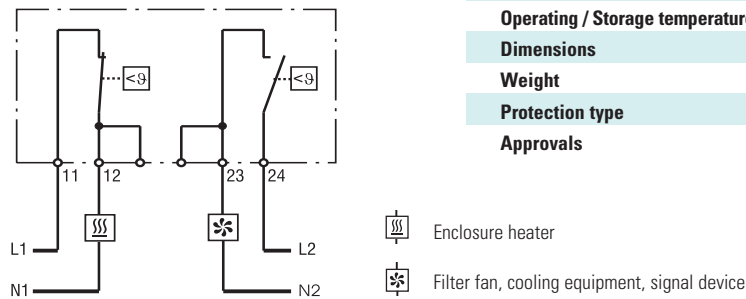
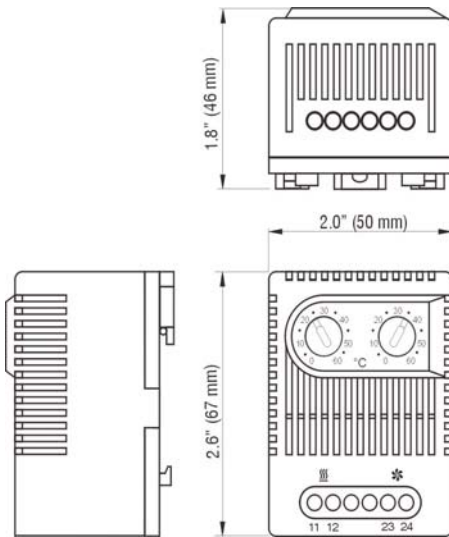
Thermostat NO (normally open):

Thermostat closes at temperature rise - for regulating filter fans and heat exchangers or for switching signal devices. Comes with **blue** temperature dial.



Technical Data

Switching difference	12.6°F ± 7°F tolerance (7K ± 4K tolerance)
Sensor element	thermostatic bimetal
Contact type	snap-action contact
Contact resistance	< 10mΩ
Service life	> 100,000 cycles
Max. switching capacity	NC: 10A resistive / 2A inductive at 250VAC NO: 5A resistive / 2A inductive @ 250VAC
EMC	DC 30W acc. to EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
Connection	4-pole terminal, clamping torque 0.5Nm max.: solid wire - AWG 14 max. (2.5mm ²) stranded wire (with wire end ferrule) - AWG 16 max. (1.5mm ²)
Housing	plastic, UL 94V-0, light grey
Mounting	clip for 35mm DIN rail, EN 60 715
Mounting position	vertical
Operating / Storage temperature	-49 to +176°F (-45 to +80°C)
Dimensions	2.6 x 2.0 x 1.8" (67 x 50 x 46mm)
Weight	approx. 3.2 oz. (90g)
Protection type	IP20
Approvals	UL File No. E164102, CSA



Part No.	Setting Range		Setting Range	
01172.0-00	NC - open on rise	0 to +60°C	NO - close on rise	0 to +60°C
01172.0-01	NC - open on rise	+32 to +140°F	NO - close on rise	+32 to +140°F
01175.0-00	NC - open on rise	-10 to +50°C	NO - close on rise	+20 to +80°C
01175.0-01	NC - open on rise	14 to +122°F	NO - close on rise	+68 to +176°F
01176.0-00	NO - close on rise	0 to +60°C	NO - close on rise	0 to +60°C
01176.0-01	NO - close on rise	+32 to +140°F	NO - close on rise	+32 to +140°F

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



- Wide adjustment range**
- High switching capacity**
- SPDT (Change-over) contact**
- DIN rail mountable**

The FZK 011 mechanical thermostat is used for controlling heating and cooling equipment, filter fans or signal devices where a higher degree of sensing accuracy is required. An integrated resistor (RF) can be connected to improve the switch temperature difference.¹⁾

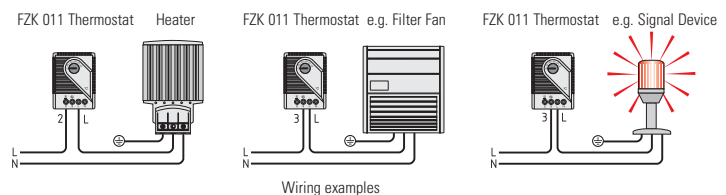
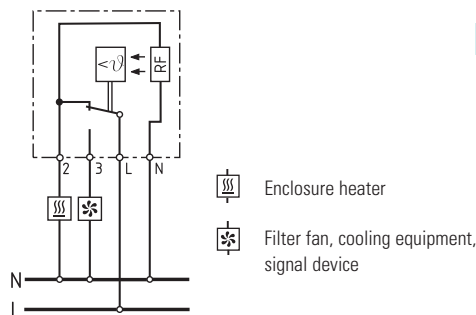
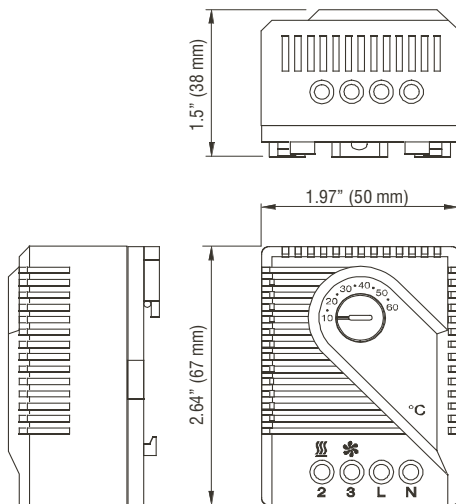
The thermostat registers the surrounding air and can switch both inductive and resistive loads via snap-action contact.



Technical Data

Switching difference	approx. 7°F (4K), ± 2.7°F (1.5K) tolerance ¹⁾
Sensor element	thermostatic bimetal
Contact type	SPDT / change-over contact
Contact resistance	< 10mΩ
Service life	> 100,000 cycles
Max. switching capacity, NC	10A resistive / 4A inductive @ 120VAC 10A resistive / 4A inductive @ 250VAC DC 30W
Max. switching capacity, NO	5A resistive / 2A inductive @ 120VAC 5A resistive / 2A inductive @ 250VAC DC 30W
EMC	acc. to EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
Connection	4-pole terminal, clamping torque 0.5Nm max.: solid wire - AWG 14 max. (2.5mm ²) stranded wire (with wire end ferrule) - AWG 16 max. (1.5mm ²)
Housing	plastic, UL 94V-0, light grey
Mounting	clip for 35mm DIN rail, EN 60 715
Mounting position	vertical
Operating temperature	-4 to +176°F (-20 to +80°C)
Storage temperature	-49 to +176°F (-45 to +80°C)
Dimensions	2.64 x 1.97 x 1.5" (67 x 50 x 38mm)
Weight	approx. 3.5 oz. (100g)
Protection type	IP20

¹⁾ Connecting terminal "N" (RF heating resistor) causes the thermal feedback to work, reducing the switch temperature difference to approx. 1°F (0.5K).



Part No.	Operating voltage ²⁾	Setting range	Approvals
01170.0-00	230VAC	5 to 60°C	UL File No. E164102
01170.0-01	230VAC	40 to 140°F	UL File No. E164102
01170.9-00	120VAC	40 to 140°F	UL File No. E164102
01170.9-01	120VAC	5 to 60°C	UL File No. E164102

²⁾ Voltage only needs to be specified if the optional use of the RF resistor is desired.

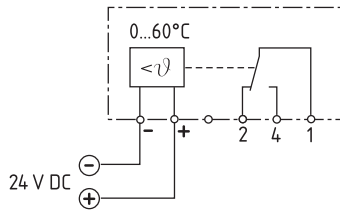
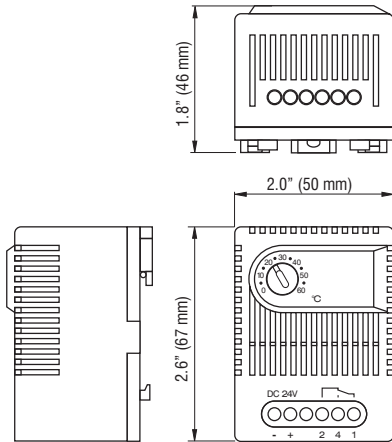
Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



- 16 Amp DC switching capacity**
- Low hysteresis**
- Wide adjustment range**
- DIN rail mountable**

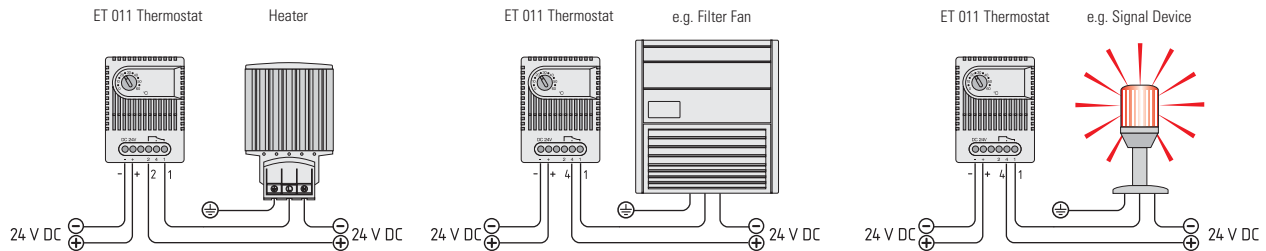
The ET 011 is an electronic thermostat for regulating high performance DC 24V equipment. Heating or cooling equipment, as well as signal devices, can be switched via the SPDT (change-over) contact.

A relatively small hysteresis sets the ET 011 Thermostat apart from less accurate mechanical thermostats.



Technical Data

Switching difference	approx. 5.4°F (3K)
Sensor element	PTC
Contact type	SPDT / change-over contact
Contact resistance	< 10mΩ
Service life	> 100,000 cycles
Max. switching capacity	16A @ 28VDC
EMC	acc. to EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
Connection	5-pole terminal, clamping torque 0.5Nm max.: solid wire - AWG 14 max. (2.5mm ²) stranded wire (with wire end ferrule) - AWG 16 max. (1.5mm ²)
Housing	plastic, UL 94V-0, light grey
Mounting	clip for 35mm DIN rail, EN 60 715
Mounting position	vertical
Operating temperature	+32 to +140°F (0 to +60°C)
Storage temperature	-49 to +176°F (-45 to +80°C)
Dimensions	2.6 x 2.0 x 1.8" (67 x 50 x 46mm)
Weight	approx. 2.8 oz. (80g)
Protection type	IP20



Wiring examples

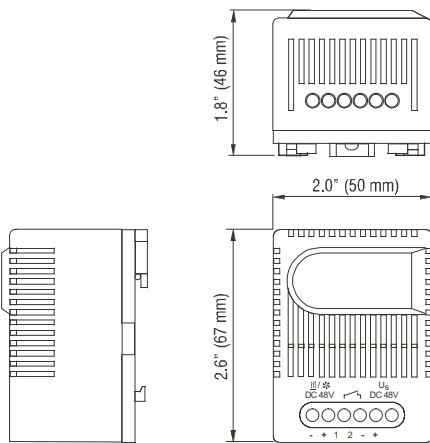
Part No.	Operating voltage	Setting range
01190.0-00	24VDC (20-28VDC)	0 to 60°C
01190.0-01	24VDC (20-28VDC)	32 to 140°F

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



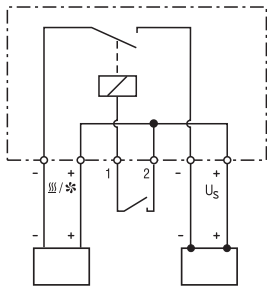
- 16 Amp DC switching capacity**
- Variety of applications**
- Compact design**
- DIN rail mountable**

The SM 010 Electronic Relay is used for switching high powered DC operated equipment, such as heaters, up to 16 amps. A separate conventional switch contact is used as controller (e.g. thermostat, hygrostat). The electronic relay is available in 24VDC and 48VDC versions.

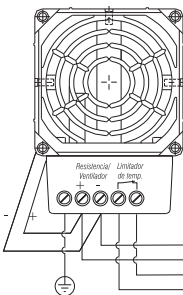


Technical Data

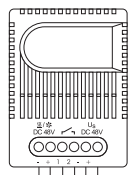
Contact type	NO - normally open (Relay/MOSFET)
Contact resistance	< 10mΩ
Service life	> 100,000 cycles
EMC	acc. to EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
Connection	6-pole terminal, clamping torque 0.5Nm max.: solid wire - AWG 14 max. (2.5mm ²) stranded wire (with wire end ferrule) - AWG 16 (1.5mm ²)
Housing	plastic, UL 94V-0, light grey
Mounting	clip for 35mm DIN rail, EN 60 715
Mounting position	vertical
Operating / Storage temperature	-49 to +158°F (-45 to +70°C)
Dimensions	2.6 x 2.0 x 1.8" (67 x 50 x 46mm)
Weight	approx. 3.0 oz. (85g)
Protection type	IP20
Approvals	VDE intended



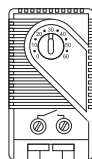
Load, e.g. heater, cooling device with temperature limiter



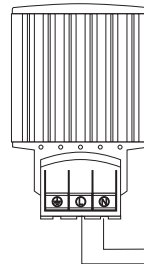
SM 010 Electronic relay



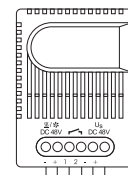
Control contact, e.g. thermostat, hygrostat, or pressure regulator



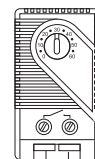
Load, e.g. heater, cooling device without temperature limiter



SM 010 Electronic relay



Control contact, e.g. thermostat, hygrostat, or pressure regulator



Wiring examples

Part No.	Operating voltage	Max. Switching capacity
01000.0-00	48VDC (38-56VDC)	16A @ 56VDC
01001.0-00	24VDC (20-28VDC)	16A @ 28VDC

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



- Compact design**
- Fixed temperature setpoints**
- High switching capacity**
- DIN rail mountable**

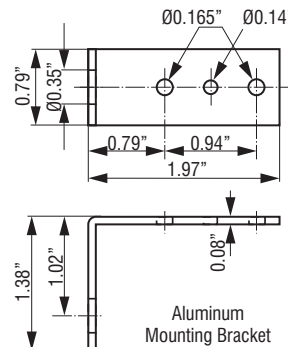
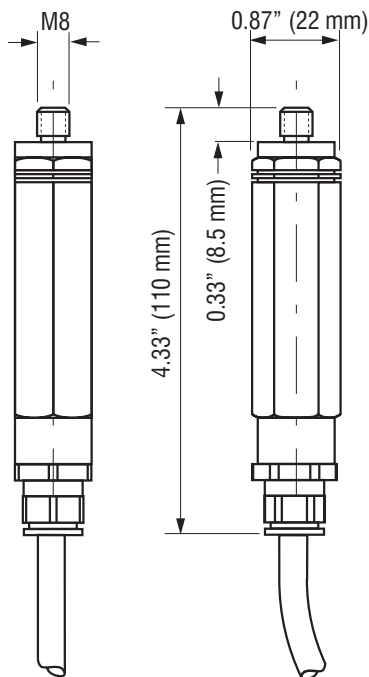
The design of the REx 011 thermostat ensures high accuracy, small switching difference (hysteresis) and a long service life.

Because of the high switching capacity of the thermostat, heaters can usually be directly connected and switched without the need for additional relays.



Technical Data

Explosion proof according to EN	LCIE (Laboratoire Central des Industries Electriques)
Conformity certificate	01 ATEX 6074/02, LCIE N°06 ATEX Q8011, IECEx LCI 07. 0021
Sensor element	thermostatic bimetal
Contact type	opens on temperature rise
Service life	> 100,000 cycles
Max. switching capacity	4A resistive / 1A inductive @ 250VAC
Connection	Si HF - JZ 3 x AWG 18 (0.75mm ²), length 3.3 ft (1m)
Housing	aluminum, black anodized
Mounting	mounting bracket with M8 nut and clip for 35mm DIN rail
Mounting position	variable
Operating temperature	-4 to +104°F (-20 to +40°C)
Storage temperature	-49 to +158°F (-45 to +70°C)
Weight	approx. 7 oz. (200g)
Protection class	I (grounded)
Protection type	IP65



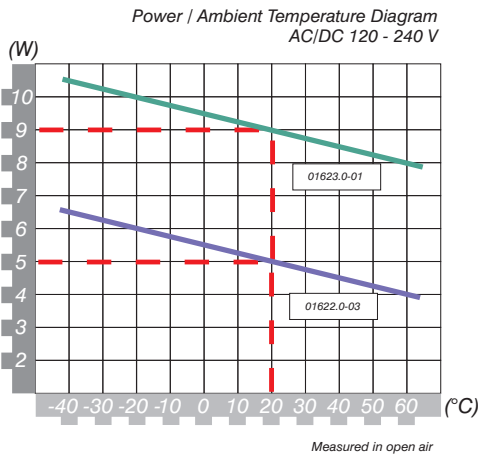
Part No.	Ex protection type	Switch-off temperature	Switching difference
01180.0-00	II 2 G D - EEx d IIC T6 IP6x T85°C	59°F ± 7°F tolerance (15°C ± 4K tolerance)	7°F ± 2°F tolerance (4K ± 1K tolerance)
01181.0-00	II 2 G D - EEx d IIC T6 IP6x T85°C	77°F ± 7°F tolerance (25°C ± 4K tolerance)	7°F ± 2°F tolerance (4K ± 1K tolerance)

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- Compact size**
- Wide voltage range**
- Heating power adjusts to ambient temperature**
- Energy saving**

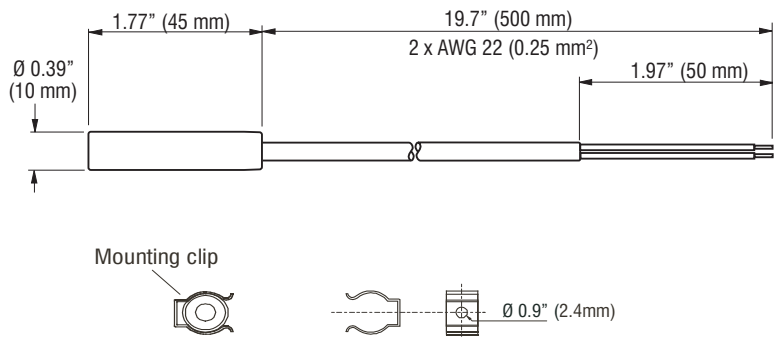
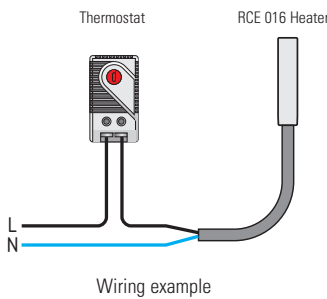
The RCE 016 small heaters have been designed to prevent condensation and to ensure a minimum operating temperature in small enclosures.



Technical Data

Operating voltage*	see table below
Heating element	PTC resistor - temperature limiting
Heater body	aluminum, anodized
Insulation	PTFE / Kapton
Mounting	2 pressure clips included (mounting screws not included)
Mounting position	variable
Operating / Storage temperature	-49 to +158°F (-45 to +70°C)
Protection class	II (double insulated)
Protection type	IP32

*Operating with voltages below 140V AC/DC reduces heating performance by approx. 10%.



Part No.	Heating capacity ¹⁾	Operating voltage	Max. current (inrush)	Surface temperature (approx.) ¹⁾	Weight (approx.)	Approvals
01622.0-03	5W	AC/DC 120-250V	2.0A	329°F (165°C)	0.7 oz. (20g)	UL File No. E150057, VDE
01623.0-01	9W	AC/DC 120-250V	2.5A	347°F (175°C)	0.7 oz. (20g)	UL File No. E150057, VDE
01624.0-03	5W	AC/DC 12-30V	5.8A	284°F (140°C)	0.7 oz. (20g)	UL File No. E150057
01625.0-02	9W	AC/DC 12-30V	2.4A	360°F (182°C)	0.7 oz. (20g)	UL File No. E150057

¹⁾ at 68°F (20°C) ambient temperature

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- Compact size**
- Wide voltage range**
- Heating power adjusts to ambient temperature**
- Energy saving**

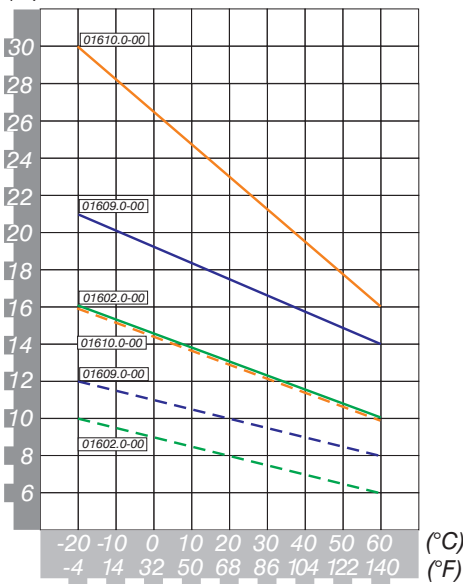
The RC 016 small heaters are designed to prevent condensation and to ensure a minimum operating temperature in small enclosures.



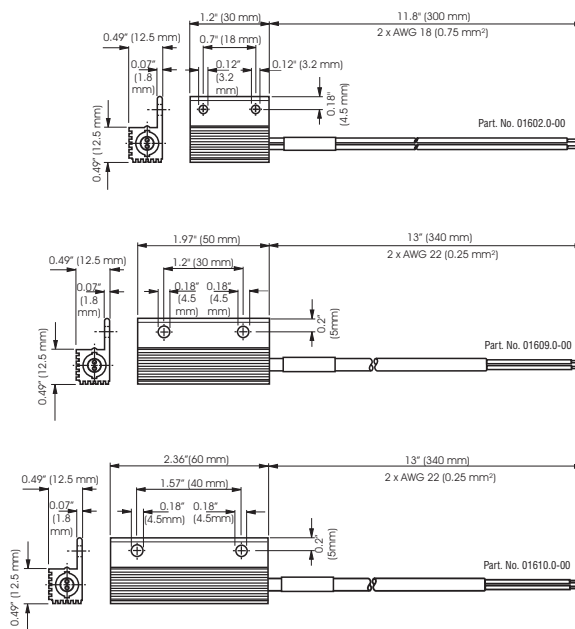
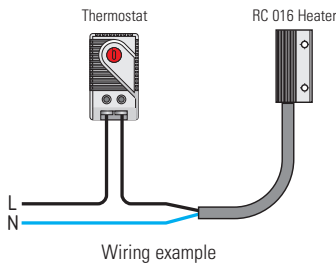
Technical Data

Operating voltage	see table below
Heating element	PTC resistor - temperature limiting
Heater body	aluminum, anodized
Insulation	PTFE / Kapton
Mounting	screw (mounting screws not included)
Mounting position	variable
Operating / Storage temperature	-49 to +158°F (-45 to +70°C)
Protection class	II (double insulated)
Protection type	IP32

Heating Power in Relation to Ambient Temperature
AC/DC 120 - 240 V



--- : measured in open air
 — : measured with heater mounted on 100 x 100 x 2 mm (4 x 4 x 0.08") aluminum plate



Part No.	Heating capacity ¹⁾	Operating voltage	Max. current (inrush)	Surface temperature (approx.) ¹⁾	Weight (approx.)	Approvals
01602.0-00	8W	AC/DC 120-240V	2.0A	302°F (150°C)	0.7 oz. (20g)	UL File No. E150057, VDE
01602.0-03	8W	AC/DC 12-30V	3.7A	273°F (134°C)	0.7 oz. (20g)	UL File No. E150057
01609.0-00	10W	AC/DC 120-240V	2.5A	311°F (155°C)	1.0 oz. (30g)	UL File No. E150057, VDE
01609.0-01	10W	AC/DC 12-30V	5.7A	270°F (132°C)	1.0 oz. (30g)	UL File No. E150057
01610.0-00	13W	AC/DC 120-240V	3.0A	338°F (170°C)	1.4 oz. (40g)	UL File No. E150057, VDE
01610.0-01	13W	AC/DC 12-30V	10.0A	298°F (148°C)	1.4 oz. (40g)	UL File No. E150057

¹⁾ at 68°F (20°C) ambient temperature

²⁾ operating with voltages below 140V AC/DC reduces heating performance by approx. 10% (min. 110V, max 265V).

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Low surface temperature

Compact size

Wide voltage range

Double insulated protection

DIN rail mountable

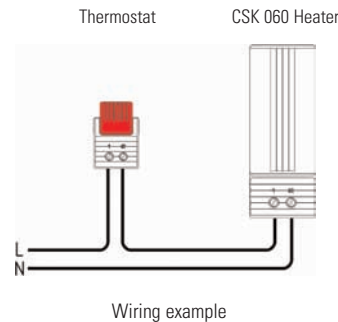
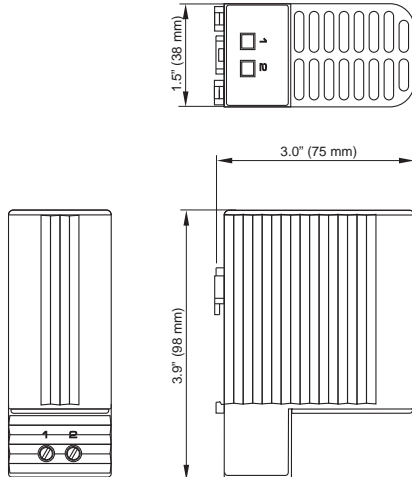
The CSK 060 is a touch-safe heater for use in enclosures. The design of the heater utilizes natural convection which results in a circulating current of warm air. The surface temperatures on the accessible side surfaces of the housing are minimized as a result of the heater design.



Technical Data

Heating capacity	see table
Heating element	PTC resistor - temperature limiting
Surface temperature	< 176°F (80°C), except upper protective grill
Connection	4-pole terminal AWG 14 max (2.5mm ²), torque 0.8Nm max.
Mounting	clip for 35mm DIN rail, EN 60 715
Housing	plastic, UL 94V-0, black
Mounting position	vertical
Operating temperature	-4 to +158°F (-20 to +70°C)
Storage temperature	-49 to +158°F (-45 to +70°C)
Protection class	II (double insulated)
Protection type	IP20
Approvals	UL File No. E150057, VDE
Note	other voltages available upon request

*Operating with voltages below 140VAC reduces heating performance by approx. 10%.



Part No.	Heating capacity ¹⁾	Operating voltage	Max. current (inrush)	Dimensions	Weight (approx.)
06030.0-00	20W	AC/DC 120-240V	2.5A	3.9 x 3.0 x 1.5" (98 x 75 x 38mm)	10.6 oz. (300g)
06040.0-00	10W	AC/DC 120-240V	1.0A	3.9 x 3.0 x 1.5" (98 x 75 x 38mm)	7.1 oz. (200g)
06040.1-00	10W	AC/DC 12-30V	8A	3.9 x 3.0 x 1.5" (98 x 75 x 38mm)	7.1 oz. (200g)

¹⁾ at 68°F (20°C) ambient temperature

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



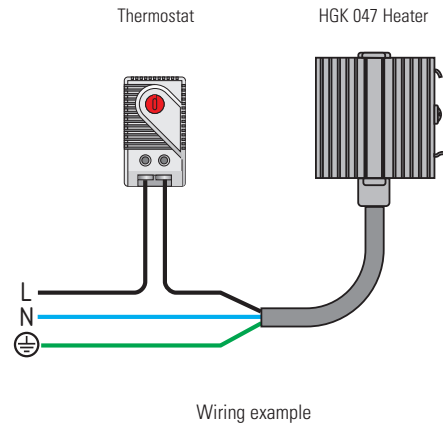
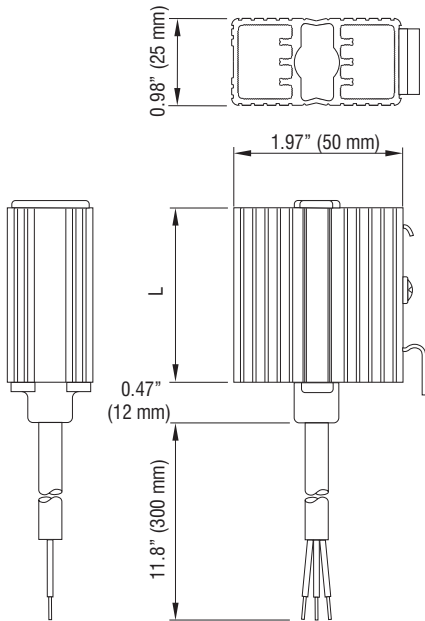
- Compact size**
- Wide voltage range**
- Heating power adjusts to ambient temperature**
- DIN rail mountable**

The HGK 047 heaters are used in enclosures to maintain minimum operating temperatures and to help prevent failure of electronic components caused by condensation and corrosion.



Technical Data

Operating voltage	see table below
Heating element	PTC resistor - temperature limiting
Heater body	extruded aluminum profile, anodized
Connection	3 x AWG 20 (0.5mm ²), 12" (300mm) length
Mounting	clip for 35mm DIN rail, EN 60 715
Mounting position	vertical
Operating / Storage temperature	-49 to +158°F (-45 to +70°C)
Protection class	I (grounded)
Protection type	IP54



Part No.	Heating capacity ¹⁾	Operating voltage ²⁾	Max. current (inrush)	Length (L)	Weight (approx.)	Approvals
04700.0-00	10W	AC/DC 140-240V	1.0A	1.97" (50mm)	3.5 oz. (100g)	VDE
04701.0-00	20W	AC/DC 140-240V	2.5A	2.36" (60mm)	7.1 oz. (200g)	VDE
04702.0-00	30W	AC/DC 140-240V	3.0A	2.76" (70mm)	7.1 oz. (200g)	VDE
04700.9-00	10W	AC/DC 110-120V	1.0A	1.97" (50mm)	3.5 oz. (100g)	UL File No. E150057
04701.9-00	20W	AC/DC 110-120V	1.5A	2.76" (70mm)	7.1 oz. (200g)	UL File No. E150057
04702.9-00	30W	AC/DC 110-120V	1.5A	3.94" (100mm)	7.1 oz. (200g)	UL File No. E150057

¹⁾ at 68°F (20°C) ambient temperature

²⁾ operating with voltages below 140V AC/DC reduces heating performance by approx. 10% (min. 110V, max 265V).

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Low surface temperature

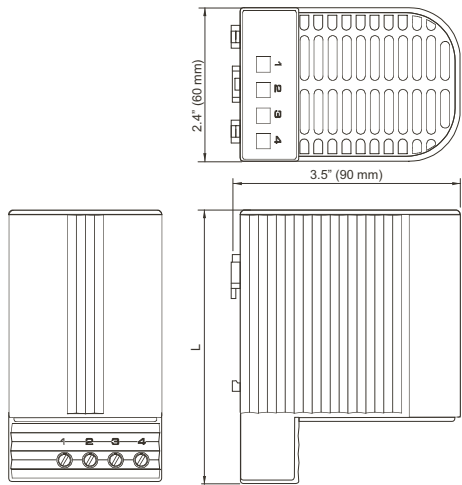
Compact size

Wide voltage range

Double insulated protection

DIN rail mountable

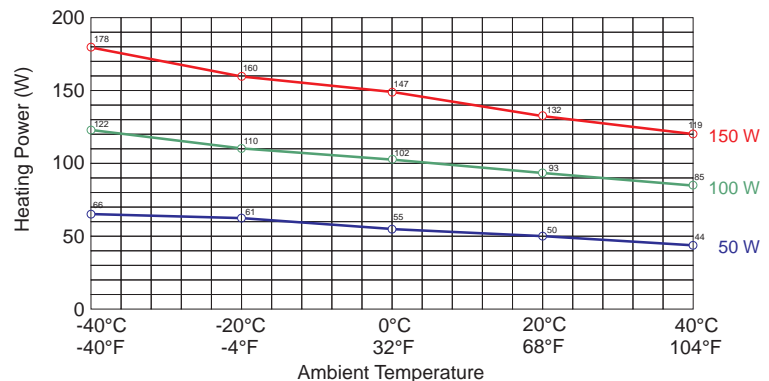
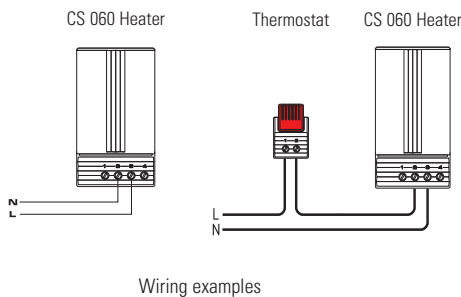
The CS 060 is a touch-safe heater for use in enclosures. The design of the heater utilizes natural convection which results in a circulating current of warm air. The surface temperatures on the accessible side surfaces of the housing are minimized as a result of the heater design. The CS 060 is also available in a version with a plug-in thermostat requiring no additional wiring (CSF 060).



Technical Data

Operating voltage	120-240VAC* (min. 110V, max. 265V)
Heating capacity	see table
Heating element	PTC resistor - temperature limiting
Surface temperature	< 176°F (80°C), except upper protective grill
Connection	4-pole terminal AWG 14 max (2.5mm ²), torque 0.8Nm max.
Housing	plastic, UL 94V-0, black
Mounting	clip for 35mm DIN rail, EN 60 715
Mounting position	vertical
Operating / Storage temperature	-4 to +158°F (-20 to +70°C) / -49 to +158°F (-45 to +70°C)
Protection class / Protection type	II (double insulated) / IP20
Approvals	UL File No. E150057, VDE
Note	other voltages available upon request

*Operating with voltages below 140V AC/DC reduces heating performance by approx. 10%.



Part No.	Heating capacity ¹⁾	Max. current (inrush)	Air outlet temperature ²⁾	Dimensions	Weight (approx.)
06000.0-00	50W	2.5A	187°F (86°C)	4.3 x 2.4 x 3.5" (110 x 60 x 90mm)	290g
06010.0-00	100W	4.5A	248°F (120°C)	4.3 x 2.4 x 3.5" (110 x 60 x 90mm)	300g
06020.0-00	150W	8A	293°F (145°C)	5.9 x 2.4 x 3.5" (150 x 60 x 90mm)	440g

¹⁾ see Heating capacity / Ambient temperature diagram

²⁾ measured 2" (50mm) above protective grill

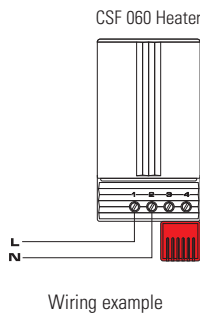
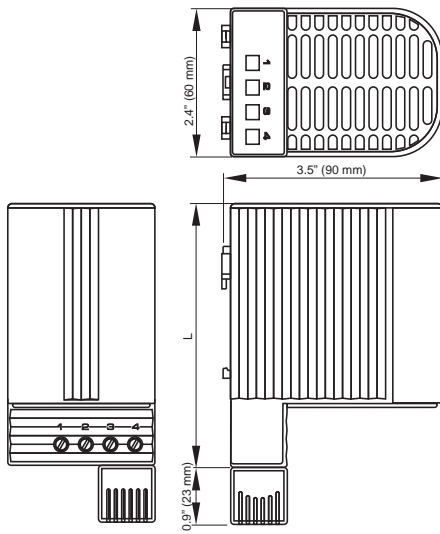
³⁾ tolerance of ± 5K

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



- Low surface temperature**
- Integrated thermostat**
- Compact size**
- Wide voltage range**
- Double insulated protection**
- DIN rail mountable**

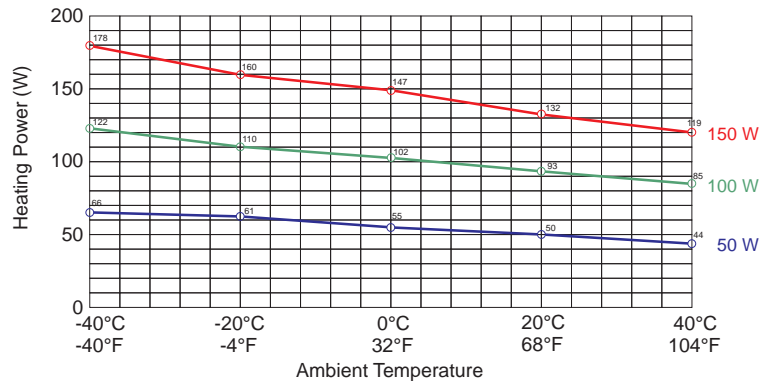
The CSF 060 is a touch-safe heater for use in enclosures. The design of the heater utilizes natural convection which results in a circulating current of warm air. The surface temperatures on the accessible side surfaces of the housing are minimized as a result of the heater design. This model with plug-in thermostat does not require additional wiring. The CSF 060 is also available in a version without thermostat (CS 060).



Technical Data

Operating voltage	120-240VAC* (min. 110V, max. 265V)
Heating capacity	see table
Heating element	PTC resistor - temperature limiting
Surface temperature	< 176°F (80°C), except upper protective grill
Connection	4-pole terminal AWG 14 max (2.5mm ²), torque 0.8Nm max.
Housing	plastic, UL 94V-0, black
Mounting	clip for 35mm DIN rail, EN 60 715
Mounting position	vertical
Operating / Storage temperature	-4 to +158°F (-20 to +70°C) / -49 to +158°F (-45 to +70°C)
Protection class	II (double insulated)
Protection type	IP 20
Approvals	UL File No. E150057, VDE

*Operating with voltages below 140VAC reduces heating performance by approx. 10%.



Part No.	Heating capacity ¹⁾	Max. current (inrush)	Air outlet temperature ²⁾	Switch-off temperature ³⁾	Switch-on temperature ³⁾	Dimensions	Weight (approx.)
06001.0-00	50W	2.5A	187°F (86°C)	59°F (15°C)	41°F (5°C)	5.2 x 2.4 x 3.5" (133 x 60 x 90mm)	10.6 oz. (300g)
06002.0-00	50W	2.5A	187°F (86°C)	77°F (25°C)	59°F (15°C)	5.2 x 2.4 x 3.5" (133 x 60 x 90mm)	10.6 oz. (300g)
06011.0-00	100W	4.5A	248°F (120°C)	59°F (15°C)	41°F (5°C)	5.2 x 2.4 x 3.5" (133 x 60 x 90mm)	10.9 oz. (310g)
06012.0-00	100W	4.5A	248°F (120°C)	77°F (25°C)	59°F (15°C)	5.2 x 2.4 x 3.5" (133 x 60 x 90mm)	10.9 oz. (310g)
06021.0-00	150W	8.0A	293°F (145°C)	59°F (15°C)	41°F (5°C)	6.8 x 2.4 x 3.5" (173 x 60 x 90mm)	15.5 oz. (440g)
06022.0-00	150W	8.0A	293°F (145°C)	77°F (25°C)	59°F (15°C)	6.8 x 2.4 x 3.5" (173 x 60 x 90mm)	15.5 oz. (440g)

¹⁾ see Heating capacity / Ambient temperature diagram

²⁾ measured 2" (50mm) above protective grill

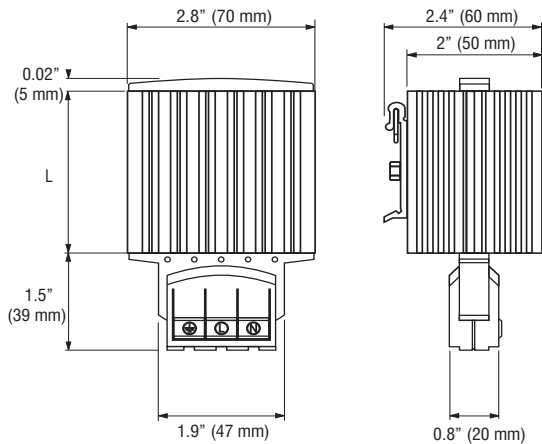
³⁾ tolerance of ± 5K

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



- Compact size**
- Wide voltage range**
- Heating power adjusts to ambient temperature**
- Cage clamp connectors for quick & easy wiring**
- DIN rail mountable**

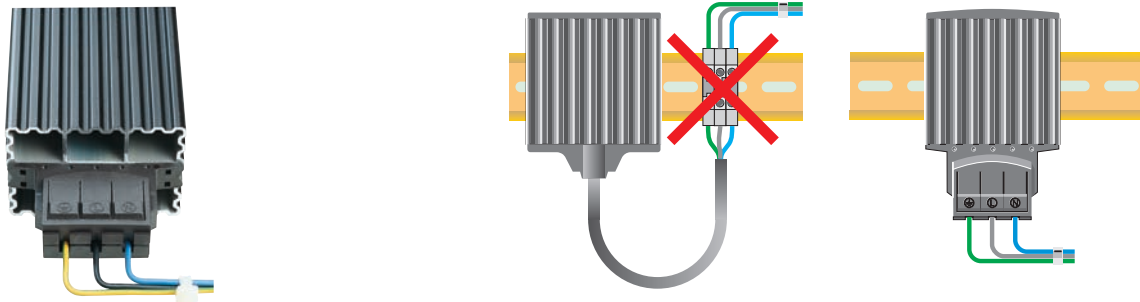
These heaters are used in enclosures where damage from condensation must be prevented, or where the temperature must be maintained above a minimum value. The aluminum profile heater body design has a chimney effect to distribute heat evenly. The cage clamp connectors save time and simplify installation.



Technical Data

Operating voltage	120-240V AC/DC* (min. 110V, max. 265V)
Heating element	PTC resistor - temperature limiting
Heater body	extruded aluminum profile, anodized
Connection	3 cage clamps for solid wire AWG 20-14 (0.5-2.5mm ²), and stranded wire AWG 20-16 (0.5-1.5mm ²) with wire end ferrule
Connection casing	plastic, UL 94V-0, black
Mounting	clip for 35mm DIN rail, EN 60 715
Mounting position	vertical
Operating / Storage temperature	-49 to +158°F (-45 to +70°C)
Protection class	I (grounded)
Protection type	IP20
Approvals	UL File No. E150057, VDE
Note	other voltages available upon request

*Operating with voltages below 140V AC/DC reduces heating performance by approx. 10%.



Part No.	Heating capacity ¹⁾	Max. current (inrush)	Length (L)	Weight (approx.)
14000.0-00	15W	1.5A	2.6" (65mm)	10.6 oz. (300g)
14001.0-00	30W	3.0A	2.6" (65mm)	10.6 oz. (300g)
14003.0-00	45W	3.5A	2.6" (65mm)	10.6 oz. (300g)
14005.0-00	60W	2.5A	5.5" (140mm)	14.1 oz. (400g)
14006.0-00	75W	4.0A	5.5" (140mm)	17.6 oz. (500g)
14007.0-00	100W	4.5A	5.5" (140mm)	17.6 oz. (500g)
14008.0-00	150W	9.0A	8.7" (220mm)	24.7 oz. (700g)

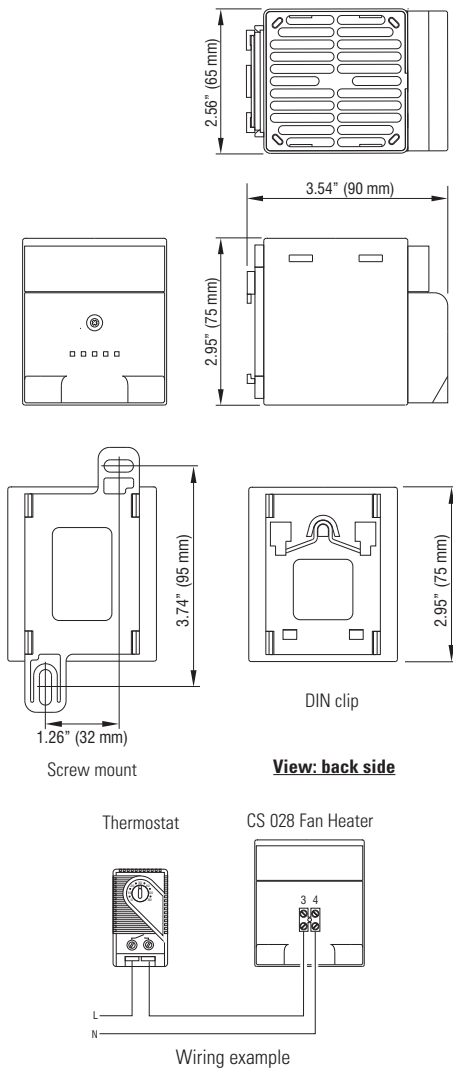
¹⁾ at 68°F (20°C) ambient temperature

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



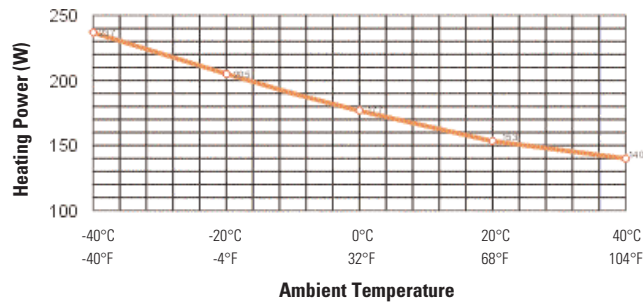
- Compact size**
- Quiet operation**
- Heating power adjusts to ambient temperature**
- DIN rail or screw mount available**

The CS 028 fan heater prevents formation of condensation and provides an evenly distributed interior air temperature in enclosures. The heater is connected using the internal terminal connectors. The surface temperatures on the accessible side surfaces of the housing are minimized as a result of the heater design. The CS 028's small size make it ideal for use in enclosures where space is at a premium.



Technical Data

Heating element	PTC resistor - temperature limiting
Max. current (inrush)	2A @ 230VAC, 5A @ 120VAC
Surface temperature	max. 122°F (50°C) at housing, 212°F (100°C) at top grill; measured at 68°F (20°C) ambient temperature
Axial fan, ball bearing	service life 40,000h at 104°F (40°C)
Air flow, free blowing	approx. 8 cfm (13.8 m³/h)
Connection	2-pole terminal AWG 14 max. (2.5mm²), torque 0.8Nm max.
Mounting	clip for 35mm DIN rail, EN 60 715 or screw mount
Housing	plastic, UL 94V-0, black
Weight	approx. 10.6 oz. (300g)
Mounting position	vertical
Operating / Storage temperature	-49 to +158°F (-45 to +70°C)
Protection class	II (double insulated)
Protection type	IP20
Note	other voltages available upon request



Part No.	Heating capacity ¹⁾	Operating voltage	Dimensions	Mounting	Approvals
02800.0-00	150W	230VAC, 50/60Hz	2.95 x 2.56 x 3.54" (75 x 65 x 90mm)	DIN clip	UL submitted, VDE
02800.0-01	150W	230VAC, 50/60Hz	4.49 x 2.56 x 3.54" (114 x 65 x 90mm)	Screw mount	UL submitted, VDE
02800.9-00	150W	120VAC, 50/60Hz	2.95 x 2.56 x 3.54" (75 x 65 x 90mm)	DIN clip	UL submitted
02800.9-01	150W	120VAC, 50/60Hz	4.49 x 2.56 x 3.54" (114 x 65 x 90mm)	Screw mount	UL submitted

¹⁾ at 68°F (20°C) ambient temperature

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



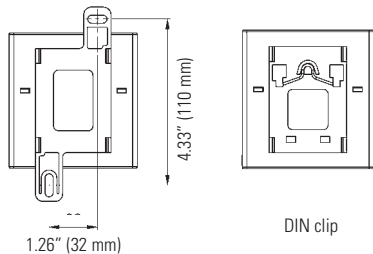
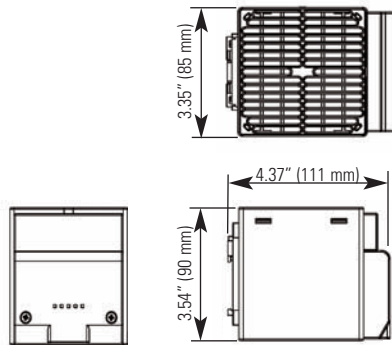
- Compact size**
- Quiet operation**
- Heating power adjusts to ambient temperature**
- DIN rail or screw mount available**

The CSL 028 fan heater prevents formation of condensation and provides an evenly distributed interior air temperature in enclosures. The heater is connected using the internal terminal connectors. The surface temperatures on the accessible side surfaces of the housing are minimized as a result of the heater design. The CSL 028's small size make it ideal for use in enclosures where space is at a premium.



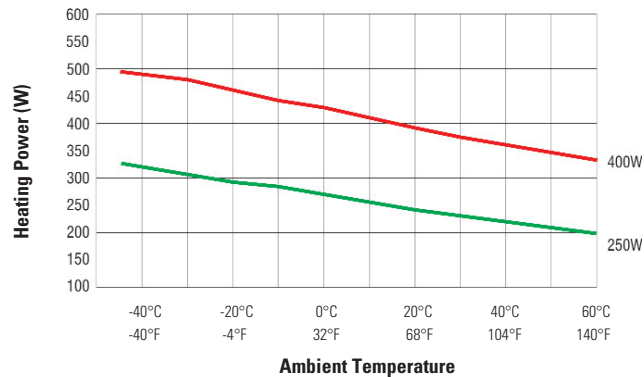
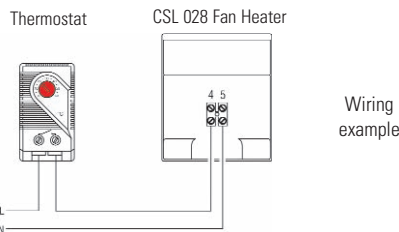
Technical Data

Heating element	PTC resistor - temperature limiting
Surface temperature	250W: max. 122°F (50°C) except upper protective grill 400W: max. 149°F (65°C) except upper protective grill measured at 68°F (20°C) ambient temperature
Axial fan, ball bearing	service life 40,000h at 104°F (40°C)
Air flow, free blowing	32 cfm (54 m³/h) at 120 VAC; 26 cfm (45 m³/h) at 230VAC
Connection	2-pole terminal AWG 14 max. (2.5mm²) with strain relief, screw torque 0.8Nm max.
Mounting	clip for 35mm DIN rail, EN 60 715 or screw mount
Housing	plastic, UL 94V-0, black
Weight	approx. 17.6 oz. (500g)
Mounting position	vertical
Operating / Storage temperature	-49 to +158°F (-45 to +70°C)
Protection class	II (double insulated)
Protection type	IP20



Screw mount

View: back side



Part No.	Heating capacity ¹⁾	Operating voltage	Max. current (inrush)	Dimensions	Mounting	Approvals
02810.0-00	400W	230VAC, 50/60Hz	15A	3.54 x 3.35 x 4.37" (90 x 65 x 111mm)	DIN clip	UL submitted, VDE
02810.0-01	400W	230VAC, 50/60Hz	15A	5.08 x 3.35 x 4.37" (129 x 65 x 111mm)	Screw mount	UL submitted, VDE
02810.9-00	400W	120VAC, 50/60Hz	9A	3.54 x 3.35 x 4.37" (90 x 65 x 111mm)	DIN clip	UL submitted
02810.9-01	400W	120VAC, 50/60Hz	9A	5.08 x 3.35 x 4.37" (129 x 65 x 111mm)	Screw mount	UL submitted
02811.0-00	250W	230VAC, 50/60Hz	9A	3.54 x 3.35 x 4.37" (90 x 65 x 111mm)	DIN clip	UL submitted, VDE
02811.0-01	250W	230VAC, 50/60Hz	9A	5.08 x 3.35 x 4.37" (129 x 65 x 111mm)	Screw mount	UL submitted, VDE
02811.9-00	250W	120VAC, 50/60Hz	6A	3.54 x 3.35 x 4.37" (90 x 65 x 111mm)	DIN clip	UL submitted
02811.9-01	250W	120VAC, 50/60Hz	6A	5.08 x 3.35 x 4.37" (129 x 65 x 111mm)	Screw mount	UL submitted

¹⁾ at 68°F (20°C) ambient temperature

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



Shown: 100W - HVL 031 Fan Heater

- Compact size**
- Flat design**
- Built-in overheat protection**
- 3-side DIN rail mountable**

The compact HVL 031 high-performance fan heater prevents formation of condensation and provides an evenly distributed interior air temperature in enclosures. For large OEM use, this fan heater can also be provided without the fan, in which case the OEM/customer must provide a fan which meets the minimum airflow requirements.



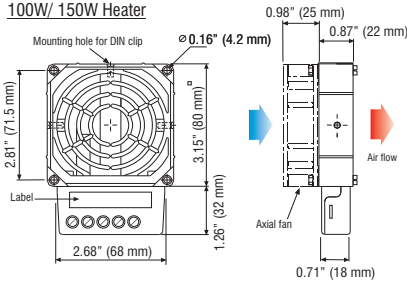
Important! Heater must be operated together with a fan. Operating without a fan creates the danger of overheating.



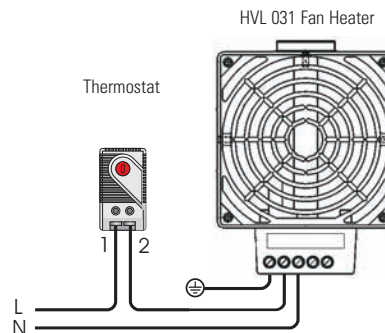
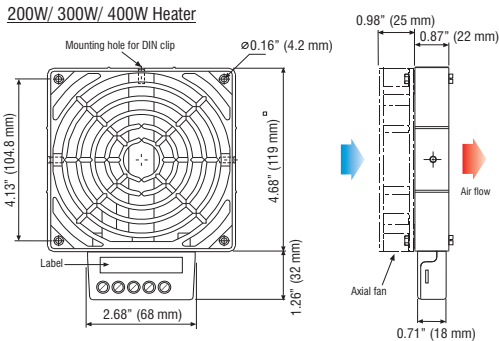
Technical Data

Heating element	high performance cartridge
Overheat protection	built-in temperature limiter
Heater body	die-cast aluminum, glass bead finish
Connection	3-pole terminal AWG 14 max. (2.5mm ²), torque 0.8Nm max..
Connection housing	plastic, UL 94V-0, black
Mounting	clip for 35mm DIN rail, EN 60 715
Mounting position	horizontal
Operating / Storage temperature	-49 to +158°F (-45 to +70°C)
Protection class / Protection type	I (grounded) / IP20
Axial fan, ball bearing	service life 50,000h at 77°F (25°C)
Air flow, free blowing	see table below
Axial fan connection	2-pole terminal AWG 14 max. (2.5mm ²), terminals L2/N2
Approvals	UL File No. E187294 (all), VDE (230VAC only)

100W/ 150W Heater



200W/ 300W/ 400W Heater



Part No. - 120VAC	Part No. - 230VAC	Heating capacity	Min. airflow (free blowing)	Dimensions (as mounted)	Weight (approx.)
03102.9-00	03102.0-00	100W	20 cfm (35m ³ /h)	1.85 x 3.15 x 4.41" (47 x 80 x 112mm)	1.3 lbs. (600g)
03103.9-00	03103.0-00	150W	20 cfm (35m ³ /h)	1.85 x 3.15 x 4.41" (47 x 80 x 112mm)	1.3 lbs. (600g)
03113.9-00	03113.0-00	200W	63 cfm (108m ³ /h)	1.85 x 4.68 x 5.94" (47 x 119 x 151mm)	2.0 lbs. (900g)
03114.9-00	03114.0-00	300W	63 cfm (108m ³ /h)	1.85 x 4.68 x 5.94" (47 x 119 x 151mm)	2.0 lbs. (900g)
03115.9-00	03115.0-00	400W	63 cfm (108m ³ /h)	1.85 x 4.68 x 5.94" (47 x 119 x 151mm)	2.0 lbs. (900g)

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



- Compact size**
- Built-in overheat protection**
- Long service life**
- DIN rail mountable**

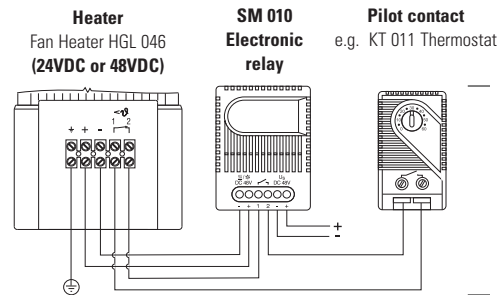
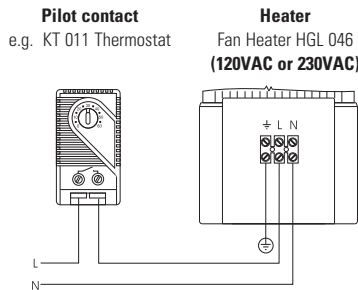
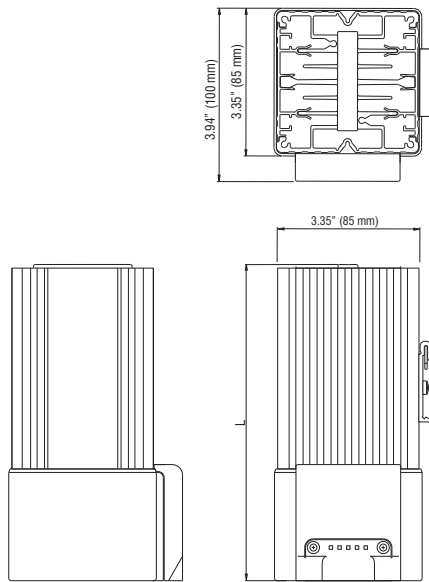
The compact HGL 046 fan heater prevents formation of condensation. The integrated high performance axial fan provides forced air circulation and so guarantees an even temperature in enclosures. The heater is wired using the internal terminal connectors.



Technical Data

Heating element	resistance - micanite
Overheat protection	built-in temperature limiter
Heater body	extruded aluminum, anodized
Surface temperature	400W heater - max. 167°F (75°C)
Axial fan, ball bearing	service life 50,000h at 77°F (25°C)
Air flow, free blowing	AC: 26 cfm (45m³/h) - 50Hz; 32 cfm (54m³/h) - 60Hz DC: 32 cfm (54m³/h)
Connection	3-pole terminal AWG 16 max. (1.5mm²) with strain relief, clamping torque 0.8Nm max.
Connection housing	plastic, UL 94V-0, black
Mounting	clip for 35mm DIN rail, EN 60 715
Mounting position	vertical
Operating / Storage temperature	-49 to +158°F (-45 to +70°C)
Protection class	I (grounded)
Protection type	IP20

Note: In the case of **24VDC** and **48VDC**, the fan heater must be switched via a relay. For this application, the SM 010 Electronic Relay (Part No. 01000.0-00 or 01001.0-00) is recommended.



Part No.	Heating capacity	Operating voltage	Length (L)	Weight (approx.)	Approvals
04640.0-00	250W	230VAC, 50/60Hz	7.2" (182mm)	2.4 lbs. (1.1kg)	UL File No. E150057, VDE
04641.0-00	400W	230VAC, 50/60Hz	8.7" (222mm)	3.1 lbs. (1.4kg)	UL File No. E150057, VDE
04640.9-00	250W	120VAC, 50/60Hz	7.2" (182mm)	2.4 lbs. (1.1kg)	UL File No. E150057, VDE
04641.9-00	400W	120VAC, 50/60Hz	8.7" (222mm)	3.1 lbs. (1.4kg)	UL File No. E150057, VDE
04640.1-00	250W	24VDC	7.2" (182mm)	2.4 lbs. (1.1kg)	-
04640.2-00	250W	48VDC	7.2" (182mm)	2.4 lbs. (1.1kg)	-
04641.2-00	400W	48VDC	8.7" (222mm)	3.1 lbs. (1.4kg)	-

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



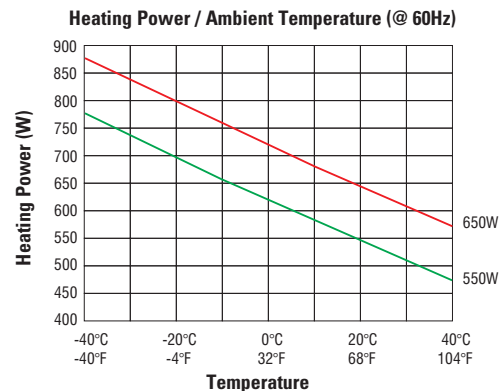
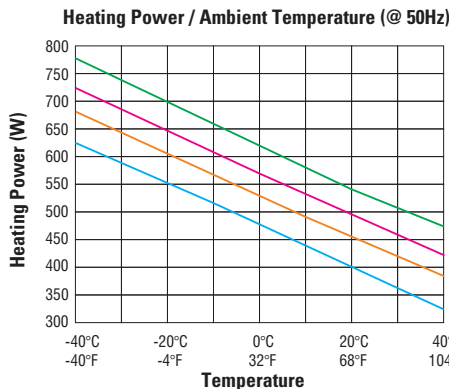
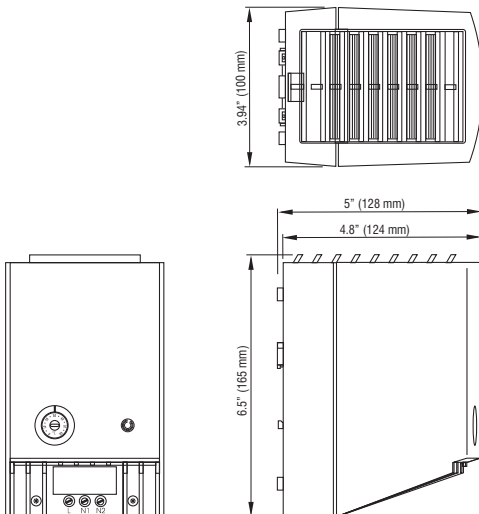
- Compact fan heater**
- Heating power adjusts to ambient temperature**
- Integrated adjustable thermostat**
- Built-in overheat protection**
- DIN rail mountable**

Semiconductor fan heaters prevent the formation of condensation and ensure an even temperature in enclosures. The integrated thermostat is used to set the desired temperature.



Technical Data

Heating element	PTC resistor - temperature limiting
Overheat protection	built-in temperature limiter
Axial fan, ball bearing	service life 50,000h at 77°F (25°C)
Air flow, free blowing	see table below
Connection	2-pole terminal AWG 14 max. (2.5mm ²), torque 0.8Nm max..
Housing	plastic, UL 94V-0, light grey
Function control light	LED
Mounting	clip for 35mm DIN rail, EN 60 715
Mounting position	vertical
Operating / Storage temperature	+32 to +140°F (0 to +60°C) / -49 to +158°F (-45 to +70°C)
Dimensions	6.5 x 3.94 x 5.0" (165 x 100 x 128mm)
Protection class	II (double insulated)
Protection type	IP20
Approvals	UL File No. E204590



Part No.	Heating capacity ¹⁾ (@ 50Hz)	Heating capacity ¹⁾ (@ 60Hz)	Operating voltage	Max. current (inrush)	Air flow, free blowing	Thermostat setting range	Weight (approx.)
02700.0-00	475W	550W	220-240VAC	11.0A	20 cfm (35m ³ /h)	0 to 60°C	2.0 lbs. (0.9kg)
02701.0-00	550W	650W	220-240VAC	13.0A	26 cfm (45m ³ /h)	0 to 60°C	2.4 lbs (1.10kg)
02700.9-00	400W	550W	100-120VAC	14.0A	20 cfm (35m ³ /h)	32 to 140°F	2.0 lbs. (0.9kg)
02701.9-00	510W	650W	100-120VAC	15.0A	26 cfm (45m ³ /h)	32 to 140°F	2.4 lbs (1.10kg)

¹⁾ at 68°F (20°C) ambient temperature

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



Compact design

Built-in overheat protection

Integrated adjustable thermostat or fixed hygrostat

Double insulated plastic housing

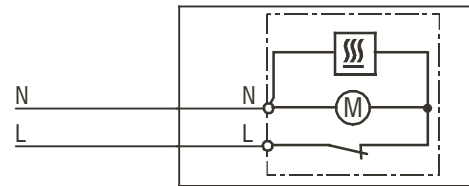
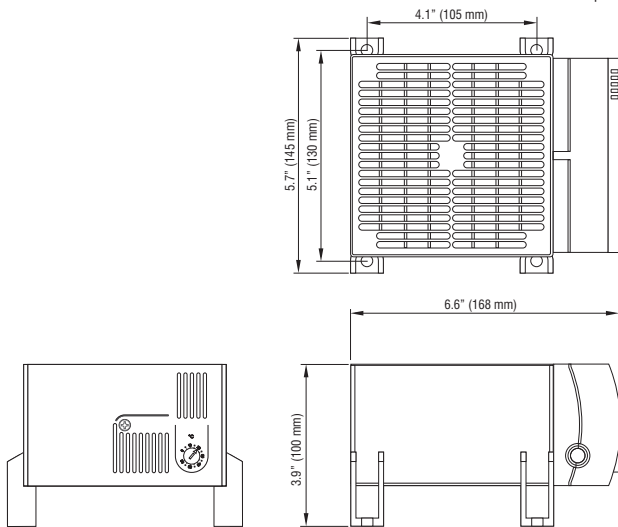
The compact CR 030 high performance fan heater prevents formation of condensation and provides an evenly distributed interior air temperature in enclosures. This fan heater is available with an integrated thermostat for temperature control or a pre-set hygrostat for humidity control. The CR 030 was designed as a stationary unit for the bottom of the enclosure. For panel or DIN rail mount, the CR 130 fan heater is recommended.



Technical Data

Heating element	high performance cartridge
Overheat protection	built-in temperature limiter
Heater body	extruded aluminum
Axial fan, ball bearing	service life 50,000h at 77°F (25°C)
Air flow, free blowing	94 cfm (160m³/h)
Connection	2-pole terminal AWG 16 max. (1.5mm²) with strain relief, clamping torque 0.8Nm max.
Housing	plastic, UL 94V-0, black
Mounting	M5 screws (not included)
Mounting position	horizontal
Operating* / Storage temperature	-49 to +158°F (-45 to +70°C)
Dimensions	3.9 x 5.7 x 6.6" (100 x 145 x 168mm)
Weight	approx. 3.1 lbs. (1.4kg)
Protection class	II (double insulated)
Protection type	IP20

* Operating temperature of heater with integrated hygrostat: +32 to +140°F (0 to +60°C)



Wiring diagram

Part No.	Heating capacity	Operating voltage	Setting range	Approvals
03051.0-00	950W	230VAC, 50/60Hz	0 to 60°C	UL File No. E234324, VDE
03051.0-02	950W	230VAC, 50/60Hz	65% RH, factory-set	UL File No. E234324, VDE
03059.9-00	950W	120VAC, 50/60Hz	32 to 140°F	UL File No. E234324
03059.9-02	950W	120VAC, 50/60Hz	none (no integrated controls)	UL File No. E234324

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



- Compact design**
- Built-in overheat protection**
- Integrated adjustable thermostat or fixed hygrostat**
- Double insulated plastic housing**
- Panel or DIN rail mounting**

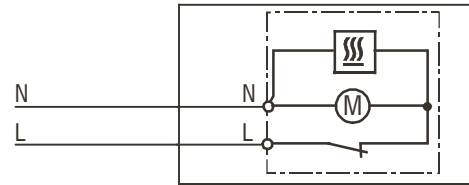
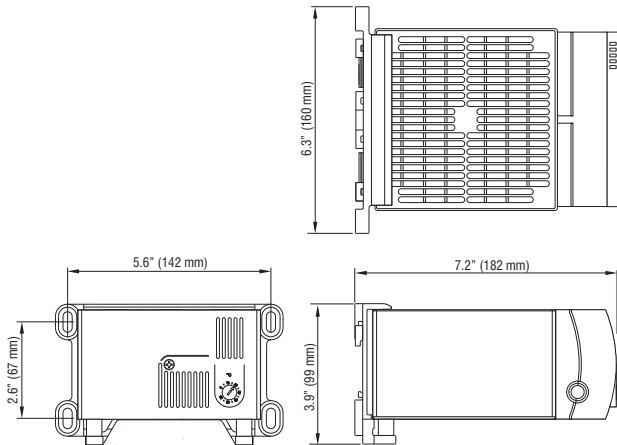
The compact CR 130 high performance fan heater prevents formation of condensation and provides an evenly distributed interior air temperature in enclosures. This fan heater is available with an integrated thermostat for temperature control or a pre-set hygrostat for humidity control. The CR 130 was designed as a stationary unit for panel or DIN rail mounting. For foot mounting on the bottom of an enclosure, the CR 030 fan heater is recommended.



Technical Data

Heating element	high performance cartridge
Overheat protection	built-in temperature limiter
Heater body	extruded aluminum
Axial fan, ball bearing	service life 50,000h at 77°F (25°C)
Air flow, free blowing	94 cfm (160m³/h)
Connection	2-pole terminal AWG 16 max. (1.5mm²) with strain relief, clamping torque 0.8Nm max.
Housing	plastic, UL 94V-0, black
Mounting	clip for 35mm DIN rail, EN 60 715 or M6 screws (not included)
Mounting position	horizontal
Operating* / Storage temperature	-49 to +158°F (-45 to +70°C)
Dimensions	3.9 x 6.3 x 7.2" (99 x 160 x 182mm)
Weight	approx. 3.1 lbs. (1.4kg)
Protection class	II (double insulated)
Protection type	IP20

* Operating temperature of heater with integrated hygrostat: +32 to +140°F (0 to +60°C)



Wiring diagram

Part No.	Heating capacity	Operating voltage	Setting range	Approvals
13051.0-00	950W	230VAC, 50/60Hz	0 to 60°C	UL File No. E234324, VDE
13051.0-02	950W	230VAC, 50/60Hz	65% RH, factory-set	UL File No. E234324, VDE
13059.9-00	950W	120VAC, 50/60Hz	32 to 140°F	UL File No. E234324
13059.9-02	950W	120VAC, 50/60Hz	none (no integrated controls)	UL File No. E234324

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



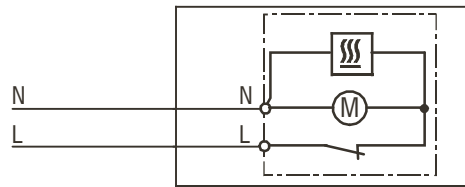
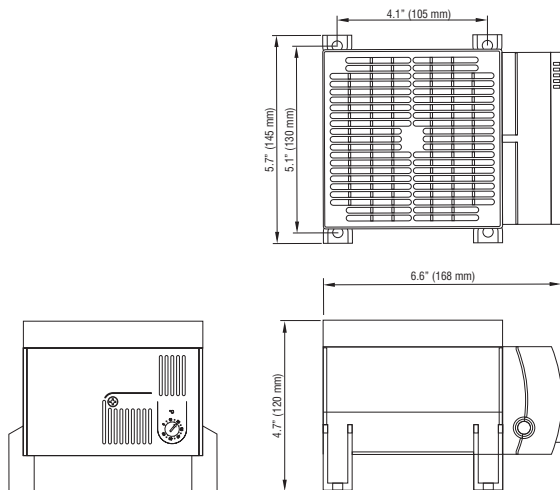
- Compact design**
- Built-in overheat protection**
- Integrated adjustable thermostat (optional)**
- Double insulated plastic housing**

The compact CS 030 high performance fan heater prevents formation of condensation and provides an evenly distributed interior air temperature in enclosures. This fan heater is available with an optional integrated thermostat for temperature control. The CS 030 was designed as a stationary unit for the bottom of the enclosure. For panel or DIN rail mount, the CS 130 fan heater is recommended.



Technical Data

Heating element	PTC resistor - temperature limiting
Overheat protection	built-in temperature limiter
Axial fan, ball bearing	service life 50,000h at 77°F (25°C)
Air flow, free blowing	94 cfm (160m³/h)
Connection	2-pole terminal AWG 16 max. (1.5mm²) with strain relief, clamping torque 0.8Nm max.
Housing	plastic, UL 94V-0, black
Mounting	M5 screws (not included)
Mounting position	horizontal
Operating / Storage temperature	-49 to +158°F (-45 to +70°C)
Dimensions	4.7 x 5.7 x 6.6" (120 x 145 x 168mm)
Weight	approx. 2.6 lbs. (1.2kg)
Protection class	II (double insulated)
Protection type	IP20



Wiring diagram

Part No.	Heating capacity ¹⁾	Operating voltage	Max. current (inrush)	Setting range	Approvals
03060.0-00	1200W	230VAC, 50/60Hz	13.0A	0 to 60°C	UL File No. E150057, VDE
03060.0-01	1200W	230VAC, 50/60Hz	13.0A	none (no integrated controls)	UL File No. E150057, VDE
03060.9-00	1200W	120VAC, 50/60Hz	16.0A	32 to 140°F	UL File No. E150057
03060.9-01	1200W	120VAC, 50/60Hz	16.0A	none (no integrated controls)	UL File No. E150057

¹⁾ at 68°F (20°C) ambient temperature

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



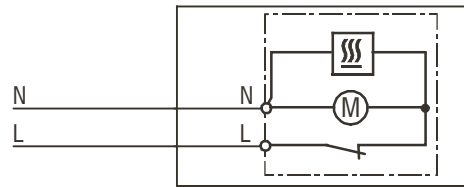
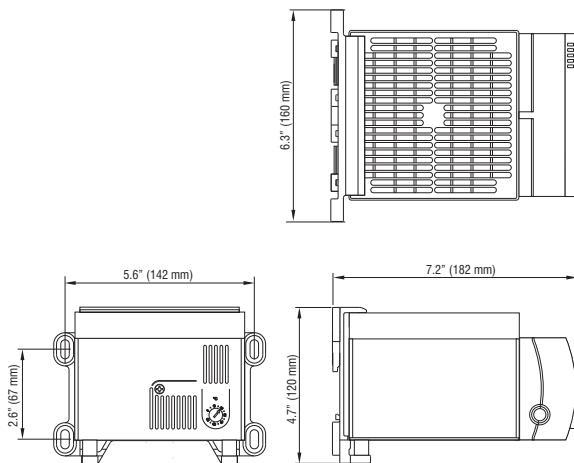
- Compact design**
- Built-in overheat protection**
- Integrated adjustable thermostat (optional)**
- Double insulated plastic housing**
- Panel or DIN rail mounting**

The compact CS 130 high performance fan heater prevents formation of condensation and provides an evenly distributed interior air temperature in enclosures. This fan heater is available with an optional integrated thermostat for temperature control. The CS 130 was designed as a stationary unit for panel or DIN rail mounting. For foot mounting on the bottom of an enclosure, the CS 030 fan heater is recommended.



Technical Data

Heating element	PTC resistor - temperature limiting
Overheat protection	built-in temperature limiter
Axial fan, ball bearing	service life 50,000h at 77°F (25°C)
Air flow, free blowing	94 cfm (160m ³ /h)
Connection	2-pole terminal AWG 16 max. (1.5mm ²) with strain relief, clamping torque 0.8Nm max.
Housing	plastic, UL 94V-0, black
Mounting	clip for 35mm DIN rail, EN 60 715 or M6 screws (not included)
Mounting position	horizontal
Operating / Storage temperature	-49 to +158°F (-45 to +70°C)
Dimensions	4.7 x 6.3 x 7.2" (120 x 160 x 182mm)
Weight	approx. 2.6 lbs. (1.2kg)
Protection class	II (double insulated)
Protection type	IP20



Wiring diagram

Part No.	Heating capacity ¹⁾	Operating voltage	Max. current (inrush)	Setting range	Approvals
13060.0-00	1200W	230VAC, 50/60Hz	13.0A	0 to 60°C	UL File No. E150057, VDE
13060.0-01	1200W	230VAC, 50/60Hz	13.0A	none (no integrated controls)	UL File No. E150057, VDE
13060.9-00	1200W	120VAC, 50/60Hz	16.0A	32 to 140°F	UL File No. E150057
13060.9-01	1200W	120VAC, 50/60Hz	16.0A	none (no integrated controls)	UL File No. E150057

¹⁾ at 68°F (20°C) ambient temperature

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



Large convection surface

Maintenance free

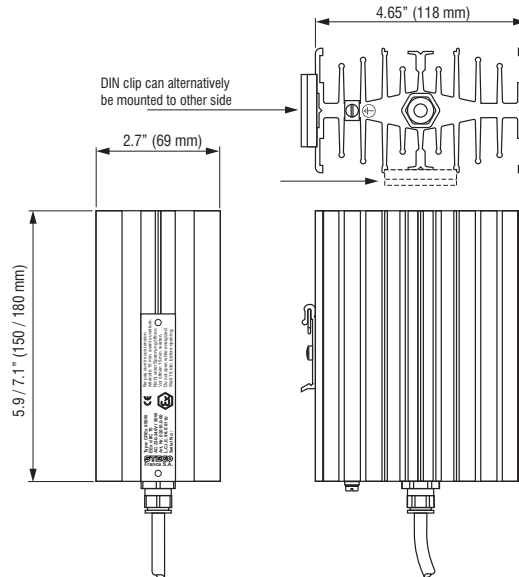
DIN rail mountable

The CREx 020 convection heaters are used in areas with explosion hazard to maintain minimum operating temperatures to help prevent failure of electronic components caused by condensation and corrosion.



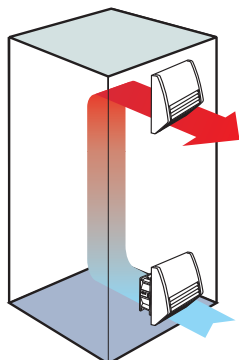
Technical Data

Explosion protection according to EN	LCIE (Laboratoire Central des Industries Electriques)
Conformity certificate	01 ATEX 6073/03, LCIE N°06 ATEX Q8011, IECEx LCI 07. 0021
Heating element	high performance cartridge
Heater body	aluminum profile, black anodized
Connection	Si HF - JZ 3 x AWG 18 (0.75mm ²), length 3.3 ft (1m)
Connection PE	4mm ²
Mounting	clip for 35mm DIN rail, EN 60 715
Mounting position	vertical
Operating temperature	--4 to +104°F (-20 to +40°C)
Storage temperature	-49 to +158°F (-45 to +70°C)
Protection class	I (grounded)
Protection type	IP65



Part No.	Operating voltage	Heating capacity	Ex protection type	Surface temperature	Length (L)	Weight (approx.)
02010.0-00	230-240VAC	50W	II 2 GD - EEx d IIC T5 IP6x T100°C	212°F (100°C)	5.9" (150mm)	2.9 lbs. (1.3kg)
02010.0-01	110-120VAC	50W	II 2 GD - EEx d IIC T5 IP6x T100°C	212°F (100°C)	5.9" (150mm)	2.9 lbs. (1.3kg)
02011.0-00	230-240VAC	100W	II 2 GD - EEx d IIC T4 IP6x T135°C	275°F (135°C)	7.1" (180mm)	3.3 lbs. (1.5kg)
02011.0-01	110-120VAC	100W	II 2 GD - EEx d IIC T4 IP6x T135°C	275°F (135°C)	7.1" (180mm)	3.3 lbs. (1.5kg)

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



Enclosure ventilation using a filter fan and exhaust filter

Special features

- The **self-adhesive seal** of the mounting frame prevents dust and water from entering the cabinet.
- **Functional design** of the intake and exhaust fan hoods very effectively prevents direct infiltration of falling water and dust. The advantage is that the filter mat does not rapidly become contaminated with dirt and therefore does not need to be exchanged as often.
- The **air channelling** makes the filter fan particularly quiet in operation.
- All filter fan models are also available with **integrated airflow monitor**.
- The **direction of air flow can easily be switched** by reversing the axial fan.
- EMC versions and other voltages are available upon request.

- **Very low noise**
- **Minimal mounting depth**
- **Functional design**
- **Time-saving installation**
- **Weather proof and UV resistant**

Filter fans are used to provide an optimum climate in enclosures. The interior temperature of an enclosure can be reduced by channelling cooler filtered outside air into the enclosure thus expelling heated internal air. The resulting air flow prevents formation of localized heat pockets and protects the electronic components from overheating. The plastic used for the hood of this filter fan series is highly weather proof, as well as impact and UV light resistant.



Technical Data

Axial fan, ball bearing	service life min. 50,000h at 77°F (25°C) and 65% RH aluminum fan body, plastic rotor
Connection	2 wires w/ cage clamps, AWG 14 (2.5mm ²), length 4" (100mm)
Housing (filter fan and exhaust filter)	Plastic, UL 94V-0, light grey
Hood (filter fan and exhaust filter)	Plastic, UL 94V-0, light grey; weather proof and UV light resistant according to UL 746C (f1)
Mounting frame	with double-sided industrial adhesive for mounting to the outside of enclosure; certain operating circumstances may make the additional use of screws necessary; cut-out template included
Filter media rating	G4 acc. to DIN EN 779, filtering degree 94%
Filter material	synthetic fiber with progressive construction, temperature resistant to 212°F, self-extinguishing class F1; moisture resistant to 100% RH, reusable - can be cleaned by washing or vacuuming
Operating / Storage temperature	-49 to +158°F (-45 to +70°C)
Protection class	I (grounded)
Protection type	IP54*

*Using fine filter media type F5 increases the protection type to IP55, but reduces the air volume

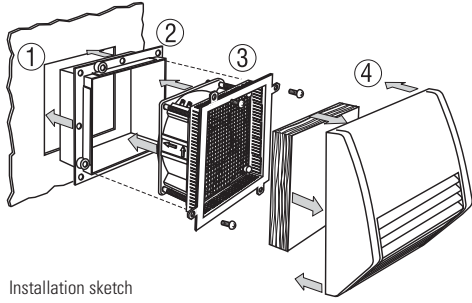
Part No.	Operating voltage	Air volume, free blowing	Air volume with exhaust filter	Power consumption	Average noise level (DIN EN ISO 4871)	Mounting depth	Enclosure cut-out	Weight (approx.)	Approvals
01800.0-00	230VAC, 50Hz ¹⁾	12 cfm (21m ³ /h)	9 cfm (16m ³ /h)	13W	31dB (A)	1.8" (45mm)	3.8 x 3.8"	1.3 lbs. (0.60kg)	UL File No. E234324, VDE
01800.0-01	120VAC, 60Hz	14 cfm (24m ³ /h)	11 cfm (18m ³ /h)	13W	31dB (A)	1.8" (45mm)	3.8 x 3.8"	1.3 lbs. (0.60kg)	UL File No. E234324
01801.0-00	230VAC, 50Hz ¹⁾	32 cfm (55m ³ /h)	25 cfm (42m ³ /h)	15W	40dB (A)	2.3" (58mm)	4.9 x 4.9"	2.2 lbs. (1.0kg)	UL File No. E234324, VDE
01801.0-01	120VAC, 60Hz	37 cfm (63m ³ /h)	28 cfm (48m ³ /h)	15W	40dB (A)	2.3" (58mm)	4.9 x 4.9"	2.2 lbs. (1.0kg)	UL File No. E234324
01802.0-00	230VAC, 50Hz ¹⁾	60 cfm (102m ³ /h)	40 cfm (68m ³ /h)	15W	39dB (A)	3.4" (86mm)	6.9 x 6.9"	2.9 lbs. (1.30kg)	UL File No. E234324, VDE
01802.0-01	120VAC, 60Hz	69 cfm (117m ³ /h)	46 cfm (78m ³ /h)	15W	39dB (A)	3.4" (86mm)	6.9 x 6.9"	2.9 lbs. (1.30kg)	UL File No. E234324

¹⁾ air volume increases by 15% when operating 230VAC filter fans at 60Hz

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.

Time-saving assembly and maintenance

STEGO's filter fans are easily installed by one person **from outside** the cabinet.

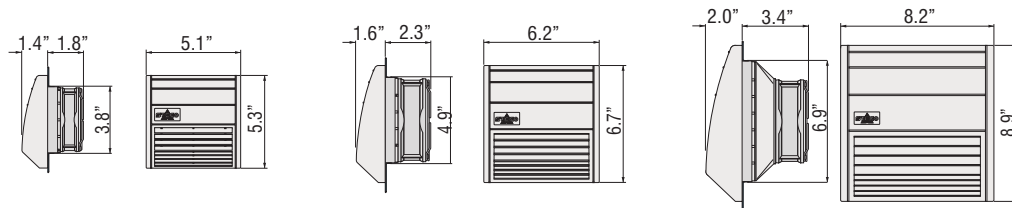


Installation sketch

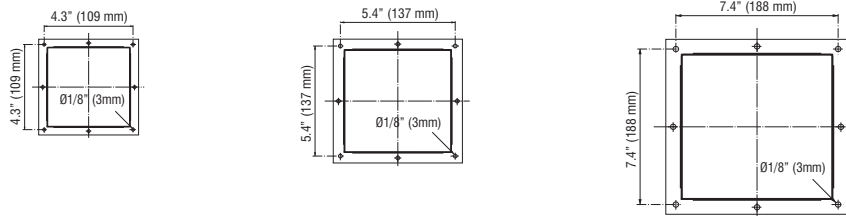
- 1.) Make cut-out in the cabinet wall. The cut edge of the cabinet opening should be free of dirt, filings and grease. A template for the enclosure cut-out is included with the filter fan.
- 2.) Remove protective film from the sealing strips on the mounting frame. Press mounting frame into the cabinet opening. The frame stays permanently in the cabinet.
- 3.) Electrically connect the axial fan using the cage clamp connectors. Push the unit into the mounting frame. Affix using screws if necessary.
- 4.) Insert the filter mat in the hood. Clip on. Finished.

To change the filter mat, simply remove the filter hood, insert the new mat and snap the hood back again. No tools are required. Maintenance of the fan can easily be performed without removing the mounting frame (2).

Dimensional Drawing



Drilling template for mounting frame



EF 118 Exhaust Filter

Part No.	Mounting depth	Enclosure cut-out	Weight (approx.)	Filter mat	Protection type	Approvals
11800.0-00	0.6" (16mm)	3.8 x 3.8"	0.6 lbs. (0.30kg)	G4 acc. to DIN EN 779, filtering degree 94%	IP54*	UL File No. E234324
11801.0-00	0.6" (16mm)	4.9 x 4.9"	0.8 lbs. (0.40kg)	G4 acc. to DIN EN 779, filtering degree 94%	IP54*	UL File No. E234324
11802.0-00	0.6" (16mm)	6.9 x 6.9"	1.3 lbs. (0.60kg)	G4 acc. to DIN EN 779, filtering degree 94%	IP54*	UL File No. E234324

*using fine filter mats type F5 increases the protection type to IP55, but reduces the air volume.

FM 086 / FFM 086 Filter Mats

Filter mat	3.5 x 3.5" (89 x 89mm)	4.6 x 4.6" (118 x 118mm)	6.6 x 6.6" (168 x 168mm)
G4 (1 packing unit = 3 pcs.)	Part No. 08600.0-00	Part No. 08601.0-00	Part No. 08602.0-00
F5 (1 packing unit = 3 pcs.)	Part No. 08603.0-00	Part No. 08604.0-00	Part No. 08605.0-00

FFLC 218 Filter Fan with Airflow Monitor (Normally Closed)



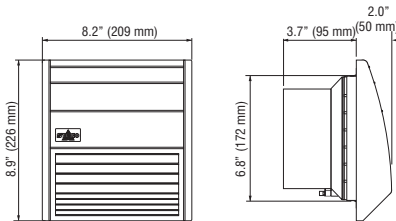
Airflow monitor integrated in finger guard of filter fan (Part No. 21800.0-00 shown)

For technical data regarding the integrated Airflow Monitor, please see LC 013/LCF 013 (Normally Closed, Normally Open)

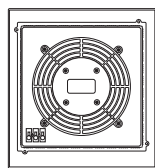
Part No.	Operating voltage	Air volume, free blowing	Air volume with exhaust filter	Power consumption	Average noise level (DIN EN ISO 4871)	Depth in enclosure	Enclosure cut-out	Weight (approx.)
21800.0-00	230VAC, 50Hz ¹⁾	12 cfm (21m ³ /h)	9 cfm (16m ³ /h)	13W	31dB (A)	1.8" (45mm)	3.8 x 3.8"	1.3 lbs. (0.60kg)
21800.0-01	120VAC, 60Hz	14 cfm (24m ³ /h)	11 cfm (18m ³ /h)	13W	31dB (A)	1.8" (45mm)	3.8 x 3.8"	1.3 lbs. (0.60kg)
21801.0-00	230VAC, 50Hz ¹⁾	32 cfm (55m ³ /h)	25 cfm (42m ³ /h)	15W	40dB (A)	2.3" (58mm)	4.9 x 4.9"	2.2 lbs. (1.0kg)
21801.0-01	120VAC, 60Hz	37 cfm (63m ³ /h)	28 cfm (48m ³ /h)	15W	40dB (A)	2.3" (58mm)	4.9 x 4.9"	2.2 lbs. (1.0kg)
21802.0-00	230VAC, 50Hz ¹⁾	60 cfm (102m ³ /h)	40 cfm (68m ³ /h)	15W	39dB (A)	3.4" (86mm)	6.9 x 6.9"	2.9 lbs. (1.30kg)
21802.0-01	120VAC, 60Hz	69 cfm (117m ³ /h)	46 cfm (78m ³ /h)	15W	39dB (A)	3.4" (86mm)	6.9 x 6.9"	2.9 lbs. (1.30kg)

¹⁾ air volume increases by 15% when operating 230VAC filter fans at 60Hz

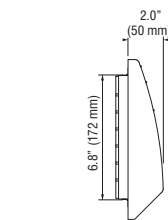
Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



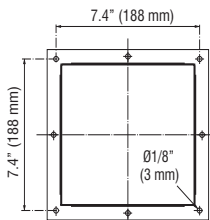
Filter Fan



View from rear



Exhaust Filter



Airflow monitor integrated in finger guard of filter fan (Part No. 21804.0-00 shown)

Drilling template for mounting frame

FF 018 Filter Fan

Part No.	Operating voltage	Air volume, free blowing	Air volume with exhaust filter	Power consumption	Average noise level (DIN EN ISO 4871)	Mounting depth	Enclosure cut-out	Weight (approx.)	Approvals
01804.0-00	230VAC, 50Hz ¹⁾	118 cfm (200m ³ /h)	74 cfm (125m ³ /h)	45W	52dB (A)	3.7" (95mm)	6.9 x 6.9"	3.7 lbs. (1.70kg)	UL File No. E234324
01804.0-01	120VAC, 60Hz	136 cfm (230m ³ /h)	84 cfm (143m ³ /h)	39W	52dB (A)	3.7" (95mm)	6.9 x 6.9"	3.7 lbs. (1.70kg)	UL File No. E234324

¹⁾ air volume increases by 15% when operating 230VAC filter fans at 60Hz

EF 118 Exhaust Filter

Part. No.	Mounting depth	Enclosure cut-out	Weight (approx.)	Filter mat	Protection type	Approvals
11802.0-00	0.6" (16mm)	6.9 x 6.9"	1.3 lbs. (0.60kg)	G4 acc. to DIN EN 779, filtering degree 94%	IP54*	UL File No. E234324

*using fine filter mats type F5 increases the protection type to IP55, but reduces the air volume.

FM 086 / FFM 086 Filter Mats

Filter mat	6.6 x 6.6" (168 x 168mm)
G4 (1 packing unit = 3 pcs.)	Part No. 08602.0-00
F5 (1 packing unit = 3 pcs.)	Part No. 08605.0-00

FFLC 218 Filter Fan with Airflow Monitor (Normally Closed)

For technical data regarding the integrated Airflow Monitor, see LC 013/LCF 013 data sheet

Part No.	Operating voltage	Air volume, free blowing	Air volume with exhaust filter	Power consumption	Average noise level (DIN EN ISO 4871)	Mounting depth	Enclosure cut-out	Weight (approx.)
21804.0-00	230VAC, 50Hz ¹⁾	118 cfm (200m ³ /h)	74 cfm (125m ³ /h)	45W	52dB (A)	3.7" (95mm)	6.9 x 6.9"	3.7 lbs. (1.70kg)
21804.0-01	120VAC, 60Hz	136 cfm (230m ³ /h)	84 cfm (143m ³ /h)	39W	52dB (A)	3.7" (95mm)	6.9 x 6.9"	3.7 lbs. (1.70kg)

¹⁾ air volume increases by 15% when operating 230VAC filter fans at 60Hz

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.

- High air volume**
- Functional design**
- Time-saving installation**
- Weather proof and UV resistant**

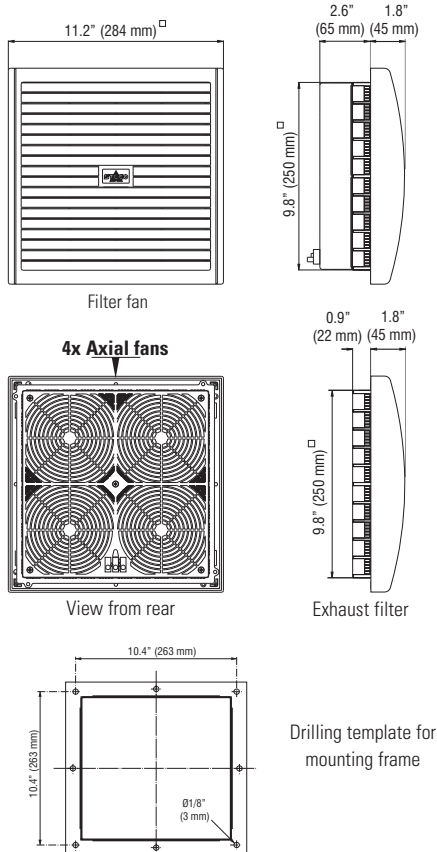
Filter fans are used to provide an optimum climate in enclosures. The interior temperature of an enclosure can be reduced by channelling cooler filtered outside air into the enclosure thus expelling heated internal air. The resulting air flow prevents formation of localized heat pockets and protects the electronic components from overheating. The plastic used for the hood of this filter fan series is highly weather proof, as well as impact and UV light resistant.



Technical Data

Axial fan, ball bearing	service life min. 50,000h at 77°F (25°C) and 65% RH aluminum fan body, metal rotor
Connection	3-pole clamp, AWG 14 (2.5mm ²), clamping torque 0.8Nm max.
Housing (filter fan and exhaust filter)	Plastic, UL 94V-0, light grey
Hood (filter fan and exhaust filter)	Plastic, UL 94V-0, light grey;
Mounting frame	weather proof and UV light resistant according to UL 746C (f1) with double-sided industrial adhesive for mounting to the outside of enclosure; certain operating circumstances may make the additional use of screws necessary; cut-out template included
Filter media rating	G4 acc. to DIN EN 779, filtering degree 94%
Filter material	synthetic fiber with progressive construction, temperature resistant to 212°F, self-extinguishing class F1; moisture resistant to 100% RH, reusable - can be cleaned by washing or vacuuming
Operating / Storage temperature	-49 to +158°F (-45 to +70°C)
Protection class	I (grounded)
Protection type	IP54*

*Using fine filter media type F5 increases the protection type to IP55, but reduces the air volume



- Minimal mounting depth**
- High air volume**
- Functional design**
- Time-saving installation**
- Weather proof and UV resistant**

Filter fans are used to provide an optimum climate in enclosures. The interior temperature of an enclosure can be reduced by channelling cooler filtered outside air into the enclosure thus expelling heated internal air. The resulting air flow prevents formation of localized heat pockets and protects the electronic components from overheating. **Four integrated axial fans** provide a particularly high and uniform air circulation which contributes to higher reliability. The plastic used for the hood of this filter fan series is highly weather proof and UV light resistant.



Technical Data

Axial fan, ball bearing	service life min. 50,000h at 77°F (25°C) and 65% RH aluminum fan body, plastic rotor
Connection	3-pole clamp, AWG 14 (2.5mm ²), clamping torque 0.8Nm max.
Housing (filter fan and exhaust filter)	Plastic, UL 94V-0, light grey
Hood (filter fan and exhaust filter)	Plastic, UL 94V-0, light grey; weather proof and UV light resistant according to UL 746C (f1)
Mounting frame	with double-sided industrial adhesive for mounting to the outside of enclosure; certain operating circumstances may make the additional use of screws necessary; cut-out template included
Filter media rating	G4 acc. to DIN EN 779, filtering degree 94%
Filter material	synthetic fiber with progressive construction, temperature resistant to 212°F, self-extinguishing class F1; moisture resistant to 100% RH, reusable - can be cleaned by washing or vacuuming
Operating / Storage temperature	-49 to +158°F (-45 to +70°C)
Protection class	I (grounded)
Protection type	IP54*

*Using fine filter media type F5 increases the protection type to IP55, but reduces the air volume
Note: EMC versions and other voltages are available upon request

FF 018 Filter Fan

Part No.	Operating voltage	Air volume, free blowing	Air volume with exhaust filter	Power consumption	Average noise level (DIN EN ISO 4871)	Mounting depth	Enclosure cut-out	Weight (approx.)	Approvals
01803.0-00	230VAC, 50Hz ¹⁾	177 cfm (300m ³ /h)	135 cfm (230m ³ /h)	60W	53dB (A)	2.6" (65mm)	9.8 x 9.8"	7.3 lbs. (3.30kg)	UL File No. E234324
01803.0-01	120VAC, 60Hz	202 cfm (345m ³ /h)	156 cfm (265m ³ /h)	60W	53dB (A)	2.6" (65mm)	9.8 x 9.8"	7.3 lbs. (3.30kg)	UL File No. E234324

¹⁾ air volume increases by 15% when operating 230VAC filter fans at 60Hz

EF 118 Exhaust Filter

Part No.	Mounting depth	Enclosure cut-out	Weight (approx.)	Filter mat	Protection type
11803.0-00	0.9" (22mm)	9.8 x 9.8"	2.2 lbs. (1.0kg)	G4 acc. to DIN EN 779, filtering degree 94%	IP54*

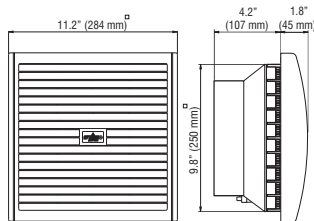
*using fine filter mats type F5 increases the protection type to IP55, but reduces the air volume.

FM 086 / FFM 086 Filter Mats

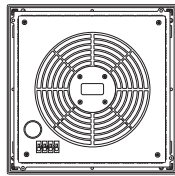
Filter mat	9.7 x 9.7" (247 x 247mm)
G4 (1 packing unit = 3 pcs.)	Part No. 08608.0-00
F5 (1 packing unit = 3 pcs.)	Part No. 08609.0-00

For technical data regarding the integrated Airflow Monitor, please see LC 013/LCF 013 (Normally Closed, Normally Open)

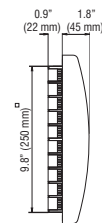
Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



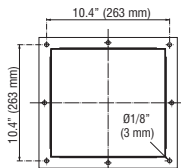
Filter fan



View from rear



Exhaust filter



Drilling template for mounting frame



Airflow monitor integrated in finger guard of filter fan (Part No. 21805.0-00 shown)

- High air volume**
- Functional design**
- Time-saving installation**
- Weather proof and UV resistant**



Technical Data

Axial fan, ball bearing	service life min. 50,000h at 77°F (25°C) and 65% RH aluminum fan body, metal rotor
Connection	3-pole clamp, AWG 14 (2.5mm ²), clamping torque 0.8Nm max.
Housing (filter fan and exhaust filter)	Plastic, UL 94V-0, light grey
Hood (filter fan and exhaust filter)	Plastic, UL 94V-0, light grey; weather proof and UV light resistant according to UL 746C (f1)
Mounting frame	with double-sided industrial adhesive for mounting to the outside of enclosure; certain operating circumstances may make the additional use of screws necessary; cut-out template included
Filter media rating	G4 acc. to DIN EN 779, filtering degree 94%
Filter material	synthetic fiber with progressive construction, temperature resistant to 212°F, self-extinguishing class F1; moisture resistant to 100% RH, reusable - can be cleaned by washing or vacuuming
Operating / Storage temperature	-49 to +158°F (-45 to +70°C)
Protection class	I (grounded)
Protection type	IP54*

*Using fine filter media type F5 increases the protection type to IP55, but reduces the air volume

FF 018 Filter Fan

Part No.	Operating voltage	Air volume, free blowing	Air volume with exhaust filter	Power consumption	Average noise level (DIN EN ISO 4871)	Mounting depth	Enclosure cut-out	Weight (approx.)	Approvals
01805.0-00	230VAC, 50Hz ¹⁾	324 cfm (550m ³ /h)	177 cfm (300m ³ /h)	64W	52dB (A)	4.2" (107mm)	9.8 x 9.8"	5.9 lbs. (2.70kg)	UL File No. E234324
01805.0-01	120VAC, 60Hz	373 cfm (633m ³ /h)	203 cfm (345m ³ /h)	85W	52dB (A)	4.2" (107mm)	9.8 x 9.8"	5.9 lbs. (2.70kg)	UL File No. E234324

¹⁾ air volume increases by 15% when operating 230VAC filter fans at 60Hz

EF 118 Exhaust Filter

Part No.	Mounting depth	Enclosure cut-out	Weight (approx.)	Filter mat	Protection type
11803.0-00	0.9" (22mm)	9.8 x 9.8"	2.2 lbs. (1.0kg)	G4 acc. to DIN EN 779, filtering degree 94%	IP54*

*using fine filter mats type F5 increases the protection type to IP55, but reduces the air volume.

FM 086 / FFM 086 Filter Mats

Filter mat	9.7 x 9.7" (247 x 247mm)
G4 (1 packing unit = 3 pcs.)	Part No. 08608.0-00
F5 (1 packing unit = 3 pcs.)	Part No. 08609.0-00

FFLC 218 Filter Fan with Airflow Monitor (Normally Closed)

For technical data regarding the integrated Airflow Monitor, see LC 013/LCF 013 data sheet

Part No.	Operating voltage	Air volume, free blowing	Air volume with exhaust filter	Power consumption	Average noise level (DIN EN ISO 4871)	Mounting depth	Enclosure cut-out	Weight (approx.)
21805.0-00	230VAC, 50Hz ¹⁾	324 cfm (550m ³ /h)	177 cfm (300m ³ /h)	64W	52dB (A)	4.2" (107mm)	9.8 x 9.8"	5.9 lbs. (2.70kg)
21805.0-01	120VAC, 60Hz	373 cfm (633m ³ /h)	203 cfm (345m ³ /h)	85W	52dB (A)	4.2" (107mm)	9.8 x 9.8"	5.9 lbs. (2.70kg)

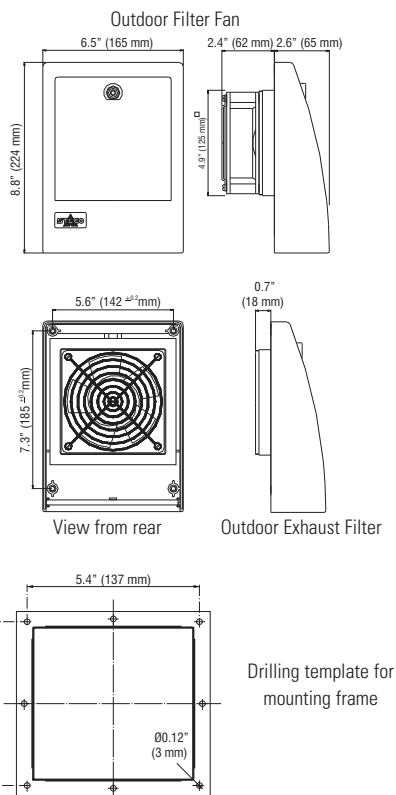
¹⁾ air volume increases by 15% when operating 230VAC filter fans at 60Hz

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



- Quick and easy filter change**
- Lockable outer door**
- Impact resistant**
- Weather proof and UV resistant**

This filter fan can be used in outdoor enclosures where warm air has to be dissipated. To clean and exchange the filter mat, it is only necessary to open the lockable door of the outdoor hood eliminating the need to allow interior access to the enclosure. A protection type of IP55 is achieved due to the special design of the hood and the use of fine filter mats. The plastic casing is impact resistant, highly weather proof and resistant to UV light.



Technical Data	
Axial fan, ball bearing	service life min. 50,000h at 77°F (25°C) and 65% RH aluminum fan body, plastic rotor
Connection	2 wires w/ cage clamps, AWG 14 (2.5mm ²), length 4" (100mm)
Filter fan and exhaust filter housing	high impact ASA plastic, light grey burning behavior according to UL 94H-B; high resistance to weather and UV light
Mounting frame	with double-sided industrial adhesive for mounting to the outside of enclosure; certain operating circumstances may make the additional use of screws necessary; cut-out template included
Filter media rating	F5 acc. to DIN EN 779, filtering degree 98%
Filter material	synthetic fiber with progressive construction, temperature resistant to 212°F, self-extinguishing class F1; moisture resistant to 100% RH
Operating / Storage temperature	-49 to +158°F (-45 to +70°C)
Protection class	I (grounded)
Protection type	IP55

Note: EMC version and other voltages are available upon request

The hood is attached permanently to the enclosure from the inside using provided screws. Filter mats can be easily changed from outside the enclosure through the lockable door in the hood.

FF 018 Outdoor Filter Fan

Part No.	Operating voltage	Air volume, free blowing	Power consumption	Average noise level (DIN EN ISO 4871)	Mounting depth	Enclosure cut-out	Weight (approx.)	Approvals
01821.0-00	230VAC, 50Hz ¹⁾	12 cfm (20m ³ /h)	15W	40dB (A)	2.4" (62mm)	4.9 x 4.9"	2.6 lbs. (1.20kg)	UL File No. E234324
01821.0-02	120VAC, 60Hz	14 cfm (23m ³ /h)	15W	40dB (A)	2.4" (62mm)	4.9 x 4.9"	2.6 lbs. (1.20kg)	UL File No. E234324

¹⁾ air volume increases by 15% when operating 230VAC filter fans at 60Hz

EF 118 Exit Filter

Part No.	Mounting depth	Enclosure cut-out	Weight (approx.)	Filter mat	Protection type
11821.0-00	0.6" (16mm)	4.9 x 4.9"	1.6 lbs. (0.60kg)	F5 acc. to DIN EN 779, filtering degree 98%	IP55

FFM 086 Filter Mats

Filter mat	4.6 x 4.6" (118 x 118mm)
F5 (1 packing unit = 3 pcs.)	Part No. 08604.0-00

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



- Very low noise**
- Minimal mounting depth**
- High air volume**
- Uniform air circulation**
- High reliability**
- Time-saving installation**

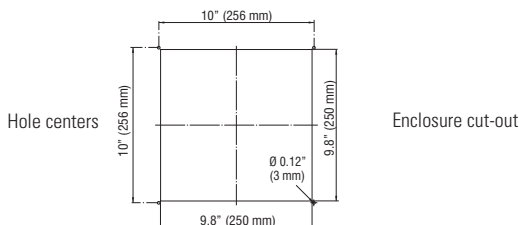
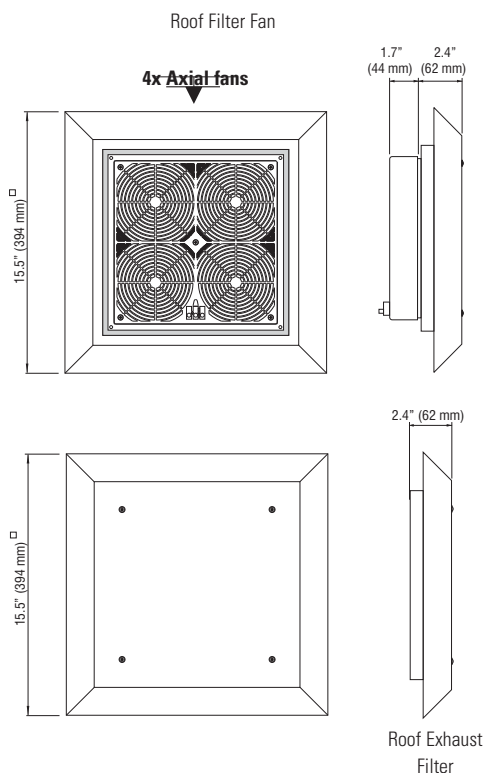
Roof filter fans and roof exhaust filters are used in enclosures from which warm air must be diverted due to increased heat development. The ready-to-connect and low-noise roof filter fan is used to expel warm air from within the enclosure. Alternatively, the roof exhaust filter provides passive ventilation. The RFF 018 series utilizes **four small axial fans** instead of one large one, improving reliability and maintaining continuous operations even if one of the fans should fail.



Technical Data

Axial fans, ball bearing	service life min. 50,000h at 77°F (25°C) and 65% RH aluminum fan body, plastic rotor
Connection	3-pole clamp, AWG 14 (2.5mm ²), clamping torque 0.8Nm max.
Housing	plastic, UL 94V-0 / lacquered steel sheet, light grey
Filter mat	G3 acc. to DIN EN 779, filtering degree 85%
Filter material	synthetic fiber with progressive construction, temperature resistant to 100°C, self-extinguishing class F1; moisture resistant to 100% RH, reusable - can be cleaned by washing or vacuuming
Operating / Storage temperature	49 to +158°F (-45 to +70°C)
Protection class	I (grounded)
Protection type	IP43 (with G3 filter mat) / IP33 (without filter mat)
Approvals	UL File No. E234324

Important note: For reasons of pressure compensation, the roof filter fan must always be operated in combination with another filter fan (e.g. Part No. 01803.0-00) or a passive intake filter (e.g. Part No. 11803.0-00).



RFF 018 Roof Filter Fan

Part No.	Operating voltage	Air volume, free blowing (w/ G3 filter mat)	Air volume, free blowing (w/out filter mat)	Power consumption	Average noise level (DIN EN ISO 4871)	Mounting depth	Enclosure cut-out	Weight (approx.)
01850.0-00	230VAC, 50Hz ¹⁾	206 cfm (350m ³ /h)	294 cfm (500m ³ /h)	60W	55db (A)	1.7" (44mm)	9.8 x 9.8"	9.7 lbs. (4.40kg)
01851.0-00	120VAC, 60Hz	237 cfm (402m ³ /h)	338 cfm (575m ³ /h)	60W	55db (A)	1.7" (44mm)	9.8 x 9.8"	9.7 lbs. (4.40kg)

¹⁾ air volume increases by 15% when operating 230VAC filter fans at 60Hz

REF 118 Roof Exit Filter

Part No.	Mounting depth	Enclosure cut-out	Weight (approx.)	Filter mat	Protection type
11850.0-00	none	9.8 x 9.8"	4.4 lbs. (2.0kg)	G3 acc. to DIN EN 779, filtering degree 85%	IP43 (w/ G3 filter mat)

FM 086 Filter Mats

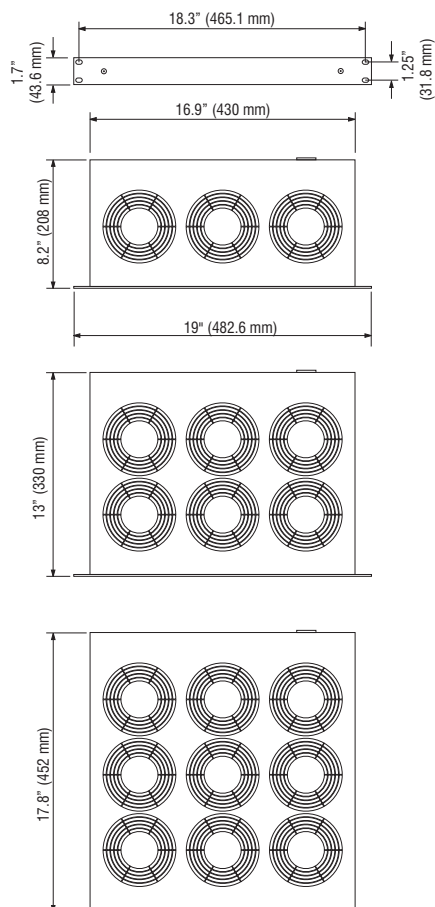
Filter mat	11.1 x 11.1" (282 x 282 mm)
G3 (1 packing unit = 3 pcs.)	Part No. 08613.0-00

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



- High air volume**
- Long service life**
- Easy installation and connection**
- Function control light**
- Optional integrated thermostat**

The LE 019 is a compact high performance fan tray for forced circulation of air in enclosures and for cooling of 19" rack mount applications. Natural convection is improved and the formation of hot zones is prevented. Also available with integrated thermostat (see photo).



Technical Data

Axial fans, ball bearing	service life 50,000h at 25°C (65% RH) fan body aluminium, rotor plastic
Material	front panel aluminium, bright anodised casing steel sheet, electrogalvanized
Optical indicator	integrated in front panel
Connection	power inlet on rear of casing, plug included (no cable)
Mounting position	horizontal (direction of air upward)
Operating / Storage temperature	-45 to +70°C (-49 to +158°F)
Protection type	IP20
Protection class	I (grounded)
Approvals	UL File No. E234324

Note

The use of a thermostat, whether integrated or external, is recommended.

When using a fan tray with integrated thermostat, an additional thermostat (e.g. KT 011 Part No. 01141.0-00) may be used if it is desired to switch a signal device should the enclosure interior temperature rise above a set limit (e.g. in case of fan failure).

For models without integrated thermostat, the use of a dual thermostat (e.g. ZR 011 Part No. 01176.0-00) provides the same overheat protection, i.e. one thermostat to control the fan tray operation, one thermostat for a signal device.

Part No.	Model	No. of fans	Operating voltage	Air flow, free blowing	Power consumption	Average noise level (DIN EN ISO 4871)	Speed (rpm ⁻¹)	Static pressure	Weight (approx.)
01930.0-00	w/out thermostat	3	230VAC, 50Hz ¹⁾	286 cfm (486m ³ /h)	45W	55 db (A)	2600 min ⁻¹ (50Hz)	74Pa	6.6 lbs. (3.00kg)
01930.1-00	w/ thermostat (0 to 60°C)	3	230VAC, 50Hz ¹⁾	286 cfm (486m ³ /h)	45W	55 db (A)	2600 min ⁻¹ (50Hz)	74Pa	7.5 lbs. (3.40kg)
01931.0-00	w/out thermostat	3	120VAC, 60Hz	339 cfm (576m ³ /h)	45W	55 db (A)	2900 min ⁻¹ (60Hz)	88Pa	6.6 lbs. (3.00kg)
01931.1-00	w/ thermostat (0 to 60°C)	3	120VAC, 60Hz	339 cfm (576m ³ /h)	45W	55 db (A)	2900 min ⁻¹ (60Hz)	88Pa	7.5 lbs. (3.40kg)
01940.0-00	w/out thermostat	6	230VAC, 50Hz ¹⁾	572 cfm (972m ³ /h)	90W	57 db (A)	2600 min ⁻¹ (50Hz)	74Pa	11.7 lbs. (5.30kg)
01940.1-00	w/ thermostat (0 to 60°C)	6	230VAC, 50Hz ¹⁾	572 cfm (972m ³ /h)	90W	57 db (A)	2600 min ⁻¹ (50Hz)	74Pa	12.5 lbs. (5.70kg)
01941.0-00	w/out thermostat	6	120VAC, 60Hz	678 cfm (1152m ³ /h)	90W	57 db (A)	2900 min ⁻¹ (60Hz)	88Pa	11.7 lbs. (5.30kg)
01941.1-00	w/ thermostat (0 to 60°C)	6	120VAC, 60Hz	678 cfm (1152m ³ /h)	90W	57 db (A)	2900 min ⁻¹ (60Hz)	88Pa	12.5 lbs. (5.70kg)
01950.0-00	w/out thermostat	9	230VAC, 50Hz ¹⁾	858 cfm (1458m ³ /h)	135W	58 db (A)	2600 min ⁻¹ (50Hz)	74Pa	17.2 lbs. (7.80kg)
01950.1-00	w/ thermostat (0 to 60°C)	9	230VAC, 50Hz ¹⁾	858 cfm (1458m ³ /h)	135W	58 db (A)	2600 min ⁻¹ (50Hz)	74Pa	17.4 lbs. (7.90kg)
01951.0-00	w/out thermostat	9	120VAC, 60Hz	1017 cfm (1728m ³ /h)	135W	58 db (A)	2900 min ⁻¹ (60Hz)	88Pa	17.2 lbs. (7.80kg)
01951.1-00	w/ thermostat (0 to 60°C)	9	120VAC, 60Hz	1017 cfm (1728m ³ /h)	135W	58 db (A)	2900 min ⁻¹ (60Hz)	88Pa	17.4 lbs. (7.90kg)

¹⁾ air volume increases by 15% when operating 230VAC filter fans at 60Hz

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



High degree of protection

Semipermeable membrane

Easy to install

Pressure differentials in a hermetically sealed enclosure are a result of the heat generated by electrical and electronic components in the enclosure, as well as the fluctuation of the outside temperature. In the case of negative pressure or vacuum, for example, dust and humidity can be absorbed through the door seal and can enter the enclosure.

The DA 284 Pressure Compensation Device provides a protected enclosure environment for valuable and crucial components with a **UL 4X** rated degree of protection. A semipermeable membrane inside the device allows air and humidity to leave the enclosure. In the opposite direction, it only allows dry air into the enclosure while not allowing humidity and dust from the outside to enter.

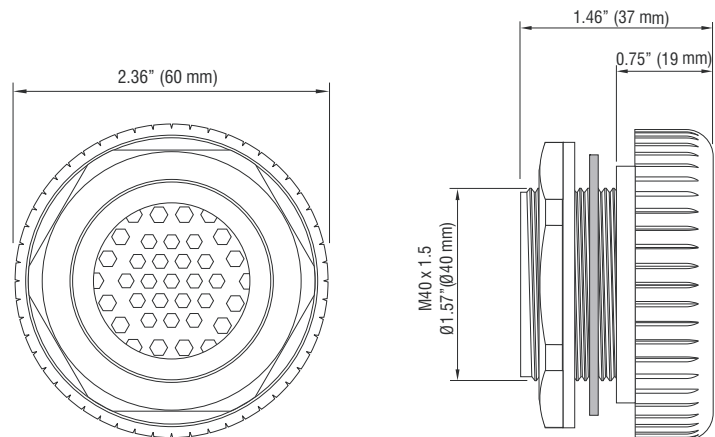


Technical Data

Mounting	thread M40 x 1.5 with nut
Depth in enclosure	approx. 0.6" (16mm)
Material	plastic, PA66, light grey
Sealing	NBR gasket
Filter	semipermeable membrane
Air permeability	1200 liters/hr at a pressure difference of min. 70mbar
Operating/storage temperature	-49 to +158°F (-45 to 70°C)
Dimensions	Ø 2.36" x 1.46" (Ø 60 x 37mm)
Protection type	see below
Agency approvals	UL File No. 234342
Environmental rating	Type 1, 4 and 4X

Installation

A hole with a diameter of 1.6 inches (40+0.5mm) is required for mounting. Make sure that the sealing gasket is placed on the outer side of the enclosure. For optimal pressure compensation, it is recommended to use two devices on opposite sides towards the top of the enclosure.



Part No.	Protection type	1 packing unit	Weight (approx.)
28400.0-00	IP66 (EN 60529) / IPX9K (EN 40050-9)	2 pieces	3.2 oz. (90g)
28400.0-01	IP66 (EN 60529) / IPX9K (EN 40050-9)	1 piece	1.6 oz. (45g)

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



High degree of protection

Semipermeable membrane

Corrosion resistant

Easy to install

Pressure differentials in a hermetically sealed enclosure are a result of the heat generated by electrical and electronic components in the enclosure, as well as the fluctuation of the outside temperature. In the case of negative pressure or vacuum, for example, dust and humidity can be absorbed through the door seal and can enter the enclosure.

The DA 284S **Stainless Steel** Pressure Compensation Device provides a protected enclosure environment for valuable and crucial components with an **IP66** rated degree of protection. A semipermeable membrane inside the device allows air and humidity to leave the enclosure. In the opposite direction, it only allows dry air into the enclosure while not allowing humidity and dust from the outside to enter.

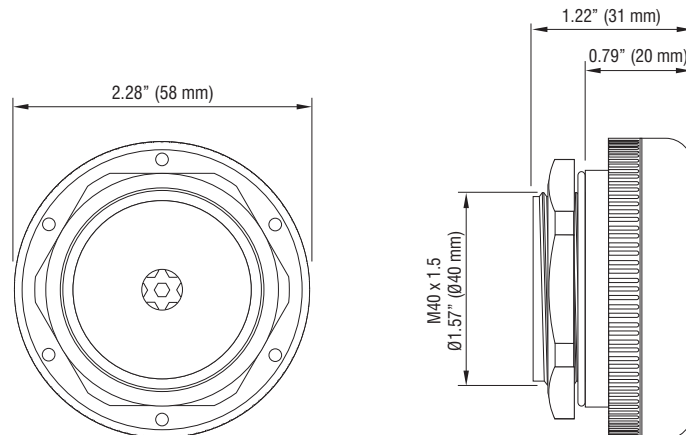


Technical Data

Mounting	thread M40 x 1.5 with nut
Depth in enclosure	approx. 0.35" (9mm)
Material	stainless steel V2A (DIN 1.4404 / AISI 316L)
Sealing	NBR gasket
Filter	semipermeable membrane
Air permeability	1200 liters/hr at a pressure difference of min. 70mbar
Operating/storage temperature	-49 to +176°F (-45 to 80°C)
Dimensions	Ø 2.28" x 1.22" (Ø 58 x 31mm)
Protection type	see below

Installation

A hole with a diameter of 1.6 inches (40+0.5mm) is required for mounting. Make sure that the sealing gasket is placed on the outer side of the enclosure. For optimal pressure compensation, it is recommended to use two devices on opposite sides towards the top of the enclosure.



Part No.	Protection type	1 packing unit	Weight (approx.)
28401.0-00	IP66 (EN 60529) / IPX9K (EN 40050-9)	1 piece	5.6 oz. (160g)

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



High degree of protection

Easy to install

It has become more and more important to provide a protected enclosure environment for valuable and crucial electrical and electronic components. In a tightly closed enclosure, pressure differentials can occur during extreme temperature variations, such as day/night operation. When this occurs, the risk of dust and humidity being absorbed into the control panel increased dramatically. The specialty designed pressure compensation plug DA 084 permits a controlled change in pressure. It can be installed easily in any enclosure. Because of the pressure compensation plug's high degree of protection (IP45), the protection type of the enclosure will not be affected.

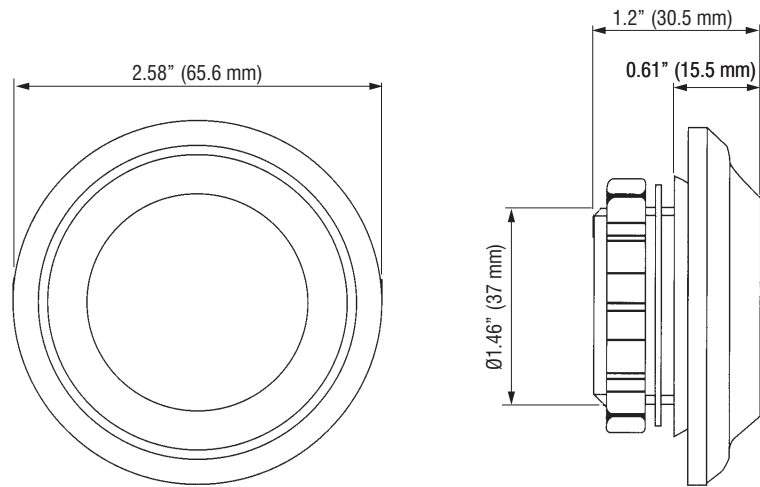


Technical Data

Mounting	PG 29 thread with union nut
Material	plastic, UL 94V-0
Air Interface	Approx. 2.8 in ² (7 cm ²)
Operating/storage temperature	-49 to +158°F (-45 to 70°C)
Dimensions	Ø 2.58" x 1.2" (Ø 65.5 x 30.5mm)

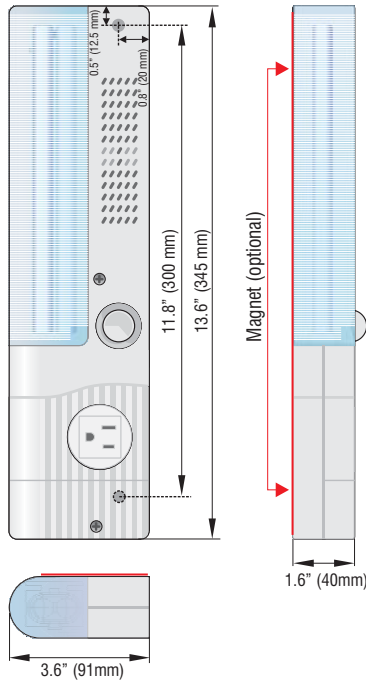
Installation

A hole with a diameter of 1.46" (37mm) is required for mounting. Make sure that the sealing gasket is placed on the outer side panel of the enclosure. For optimal pressure compensation, it is recommended to use two devices on opposite sides towards the top of the enclosures.



Part No.	Protection type	Weight (approx.)
08400.9-00	IP45	1.1 oz. (31g)

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



- Compact design**
- Electronic ballast**
- Optional integrated receptacle**
- Screw or magnet mount**
- Long-life energy saving lamp**
- On/off switch or motion sensor**

The SL 025 light was designed to fit in tight spaces in enclosures. It features an optional integrated receptacle so that electrical devices (e.g. power tools) can be easily plugged in when needed. The standard light can be screw mounted in a variety of positions, or the light can be fitted with an available magnet mount. The motion sensor version was designed to eliminate the need for a door switch.



Technical Data

Power consumption	11W (~ 75W incandescent bulb)
Luminosity	900Lm
Lamp type	compact fluorescent, 2G7 base, electronic ballast
Service life	10,000 hrs.
Switch (for light only)	on/off switch or PIR motion sensor ¹⁾
Connection	3-pole terminal AWG 16 max. (1.5mm ²) with strain relief only (cable not included), clamping torque 0.8Nm max.
Housing	plastic, UL 94V-0, light grey
Mounting	M5 screws (not included), 11.8" (300mm) hole distance or optional attached magnet (see part nos. below)
Operating temperature	-4 to +122°F (-20 to +50°C)
Storage temperature	-49 to +158°F (-45 to +70°C)
Dimensions	13.6 x 3.6 x 1.6" (345 x 91 x 40mm)
Weight	approx. 0.9 lbs. (400g), 1.3 lbs (600g) with magnet
Protection type	IP20
Note	24VDC to 48VDC available upon request

¹⁾ The Passive Infrared (PIR) motion sensor detects the motion of the enclosure door being opened and automatically turns on the light. The sensor is factory pre-set to turn the light off 6 minutes after all motion ceases. The motion sensor does not detect movement through glass, allowing for installation in enclosures with glass doors.

Part No. with On/Off Switch	Part No. with Motion Sensor	Model	Operating Voltage	Receptacle	Rec. max. current	Protection class	Approvals
02520.0-00	02520.0-03	without magnet	230VAC, 50/60Hz		16.0A	I (grounded)	VDE
02520.1-00	02520.1-03	with magnet	230VAC, 50/60Hz		16.0A	I (grounded)	VDE
02521.0-00	02521.0-03	without magnet	230VAC, 50/60Hz		16.0A	I (grounded)	VDE
02521.1-00	02521.1-03	with magnet	230VAC, 50/60Hz		16.0A	I (grounded)	VDE
02522.0-00	02522.0-03	without magnet	230VAC, 50/60Hz		10.0A	I (grounded)	VDE
02522.1-00	02522.1-03	with magnet	230VAC, 50/60Hz		10.0A	I (grounded)	VDE
02523.0-00	02523.0-03	without magnet	230VAC, 50/60Hz		13.0A	I (grounded)	VDE
02523.1-00	02523.1-03	with magnet	230VAC, 50/60Hz		13.0A	I (grounded)	VDE
02524.0-01	02524.0-04	without magnet	120VAC, 50/60Hz		15.0A	I (grounded)	UL File No. E234324
02524.1-01	02524.1-04	with magnet	120VAC, 50/60Hz		15.0A	I (grounded)	UL File No. E234324
02527.0-00	02527.0-04	without magnet	230VAC, 50/60Hz		-	II (double insulated)	UL File No. E234324, VDE
02527.1-00	02527.1-04	with magnet	230VAC, 50/60Hz		-	II (double insulated)	UL File No. E234324, VDE
02527.0-10	02527.0-12	without magnet	120VAC, 50/60Hz		-	II (double insulated)	UL File No. E234324
02527.1-10	02527.1-12	with magnet	120VAC, 50/60Hz		-	II (double insulated)	UL File No. E234324

Specifications are subject to change without notice. Suitability of this product for its intended use and any associated risks must be determined by the end customer/ buyer in its final application.



- Compact design**
- Electronic ballast**
- Optional integrated receptacle**
- Long-life energy saving lamp**
- On/off switch**

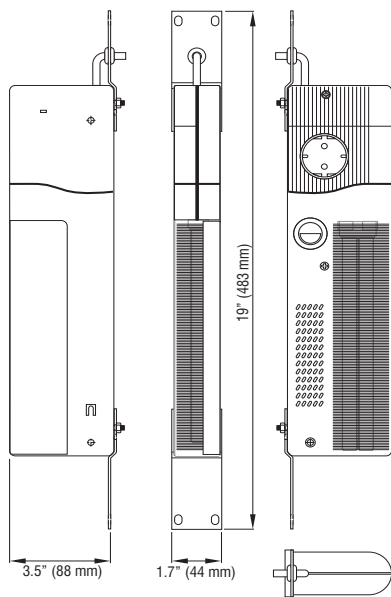
This SL 025 light is suitable for 19" rack mounting, e.g. for keyboards. Because of the flat design of the light, only one rack unit in height ("1U") is needed. Additionally, it is fitted with a reflector which serves as a glare shield, thereby illuminating the area below the light only.

The light also features an optional integrated receptacle, allowing for the use of additional electrical devices, such as power tools.



Technical Data

Power consumption	11W (~ 75W incandescent bulb)
Luminosity	900Lm
Lamp type	compact fluorescent, 2G7 base, electronic ballast
Service life	10,000 hrs.
Switch (for light only)	on/off switch
Connection	3-pole terminal AWG 16 max. (1.5mm ²) with strain relief only (cable not included), clamping torque 0.8Nm max.
Housing	plastic, UL 94V-0, light grey
Mounting	max. M6 screws (not included)
Mounting bracket	aluminum, with cable bushing
Operating temperature	-4 to +122°F (-20 to +50°C)
Storage temperature	-49 to +158°F (-45 to +70°C)
Dimensions	lamp - 13.6 x 3.6 x 1.6" (345 x 91 x 40mm), total length - 19"
Weight	approx. 1.1 lbs. (500g)
Protection type	IP20
Note	24VDC to 48VDC available upon request



Note: electrical cable not included

Part No.	Operating Voltage	Receptacle	Receptacle max. current	Protection class	Approvals
02520.0-02	230VAC, 50/60Hz	Germany/Russia	16.0A	I (grounded)	VDE
02521.0-02	230VAC, 50/60Hz	France/Poland	16.0A	I (grounded)	VDE
02522.0-02	230VAC, 50/60Hz	Switzerland	10.0A	I (grounded)	VDE
02523.0-02	230VAC, 50/60Hz	UK/Ireland	13.0A	I (grounded)	VDE
02524.0-05	120VAC, 50/60Hz	USA/Canada	15.0A	I (grounded)	UL File No. E234324
02527.0-02	230VAC, 50/60Hz	none	-	II (double insulated)	UL File No. E234324, VDE
02527.0-11	120VAC, 50/60Hz	none	-	II (double insulated)	UL File No. E234324

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Magnet or DIN rail mounting

Energy-saving lamp

Integrated receptacle

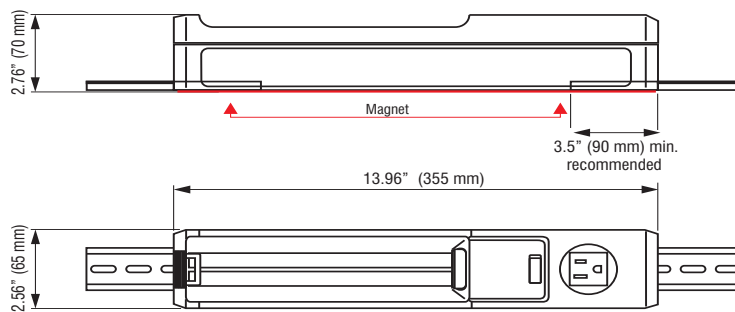
On/off switch

The compact KL 025 light was designed for use in industrial enclosures and control cabinets. A strong magnet allows simple and quick installation and flexibility for various mounting positions. The light also features an optional integrated receptacle so that electrical devices can easily be plugged in when needed.



Technical Data

Power consumption	see table below
Luminosity	900 Lm
Lamp type	compact fluorescent, G23 base, electronic ballast
Service life	5,000 hrs.
Switch	on/off switch (for light only)
Connection	3-pole terminal AWG 14 max. (2.5mm ²) with strain relief only (cable not included), clamping torque 0.8Nm max.
Housing	plastic, light grey
Mounting	magnet mounting or on 35mm DIN rail, EN 60 715
Operating temperature	-4 to +122°F (-20 to +50°C)
Storage temperature	-49 to +158°F (-45 to +70°C)
Dimensions	13.98 x 2.56 x 2.76" (355 x 65 x 70mm)
Weight	approx. 2.2 lbs (1.0kg)
Protection type	IP20



Drawing shows mounting on two 7 inch long pieces of 35mm DIN rail.

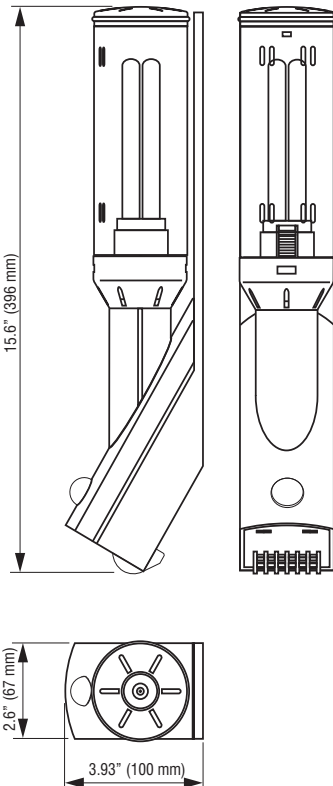
Part No.	Operating Voltage	Receptacle	Power consumption	Receptacle Max. Current	Protection class	Approvals
02500.0-14	230VAC, 50Hz	Germany	11W (~ 75W incandescent bulb)	16A	I (grounded)	VDE
02500.0-21	120VAC, 60Hz	none	9W (~ 60W incandescent bulb)	-	II (double insulated)	-
02505.9-02	120VAC, 60Hz	USA/Canada	9W (~ 60W incandescent bulb)	15A	I (grounded)	-

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Light with on/off switch

Light with motion sensor



Versatile – base lamp or hand lamp

Long-life energy saving lamp

On/off switch or motion sensor

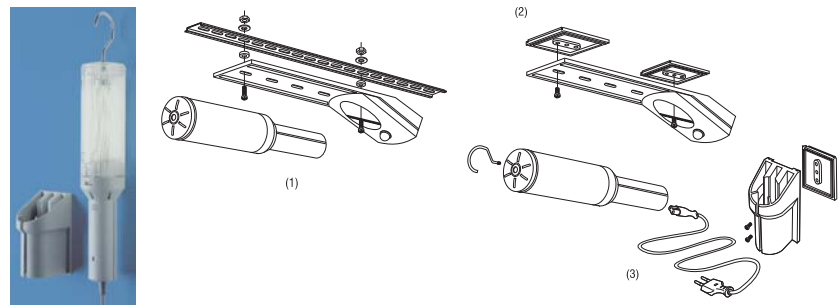
The DL 026 dual light is available with on/off switch or motion sensor (the motion sensor version was designed to eliminate the need for a door switch). The lamp is removable from its base and, with the use of an optional additional power cord, can be used as a hand lamp. This versatile light was also designed to include a variety of mounting options.



Technical Data

Power consumption	20W (~ 100W incandescent bulb)
Luminosity	1000Lm
Lamp type	compact fluorescent, E27 base, electronic ballast
Service life	10,000 hrs.
Switch	on/off push switch or PIR motion sensor ¹⁾
Connection	6-pole terminal, AWG 14 max (2.5 mm ²) - torque 0.5Nm max. for hard wiring of 1 light or 2 lights in parallel
Housing	plastic, UL 94V-0, light grey
Standard mounting (included)	screw mounting on 35mm DIN rail or sheet metal
Optional mounting	with self-adhesive or magnet mounting plates (see below)
Mounting position	variable
Operating temperature	-4 to +122°F (-20 to +50°C)
Storage temperature	-49 to +158°F (-45 to +70°C)
Weight	approx. 1.3 lbs. (600g)
Protection class	II (double insulated)
Protection type	IP20
Accessories	see below

¹⁾ The Passive Infrared (PIR) motion sensor detects the motion of the enclosure door being opened and automatically turns on the light. The sensor is factory pre-set to turn the light off 3 minutes after all motion ceases. The motion sensor does not detect movement through glass, allowing for installation in enclosures with glass doors.



- (1) Standard screw mounting to DIN rail
- (2) 2 self-adhesive (Part No. 09515.0-00) or magnet (Part No. 09516.0-00) mounting plates
- (3) Self-adhesive light holder with hook and 6 ft. power cord (230VAC - Part No. 03410.0-00, 120VAC - Part No. 03411.0-00). By using the holder/power cord kit, the light can be used as a hand lamp.

Part No.	Operating voltage	Switch type
02600.0-00	230VAC, 50/60Hz	on/off
02600.9-00	120VAC, 50/60Hz	on/off
02601.0-00	230VAC, 50/60Hz	motion sensor
02601.9-00	120VAC, 50/60Hz	motion sensor

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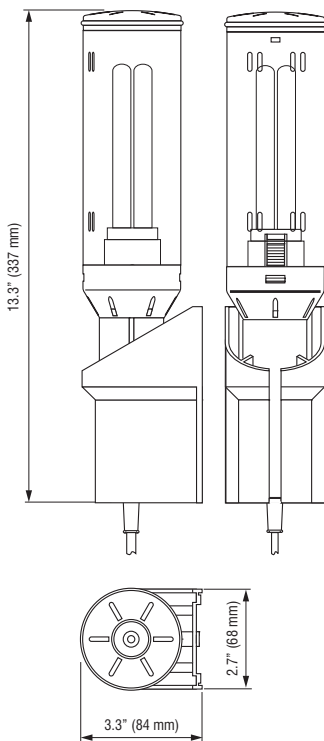
Long-life energy saving lamp

Wall-mount lamp holder



Technical Data

Power consumption	20W (~ 100W incandescent bulb)
Luminosity	1000Lm
Lamp type	compact fluorescent, E27 base, electronic ballast
Service life	10,000 hrs.
Connection	integrated power cable (6 ft.) with US or Euro plug
Housing	plastic, UL 94V-0, light grey
Mounting	screws or self-adhesive mounting plate (included)
Mounting position	variable
Operating temperature	-4 to +122°F (-20 to +50°C)
Storage temperature	-49 to +158°F (-45 to +70°C)
Weight	approx. 1.3 lbs. (600g)
Protection class	II (double insulated)
Protection type	IP20



Part No.	Operating voltage	Plug type
02610.0-00	230VAC, 50/60Hz	Euro
02610.9-00	120VAC, 50/60Hz	US

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Quick connections

Available with or without fuse

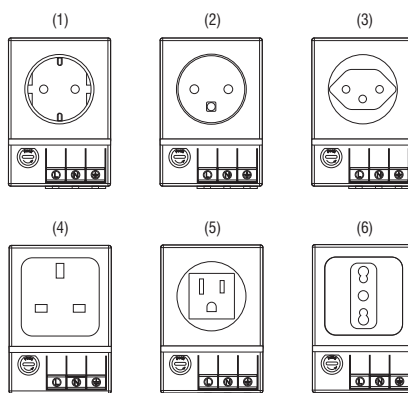
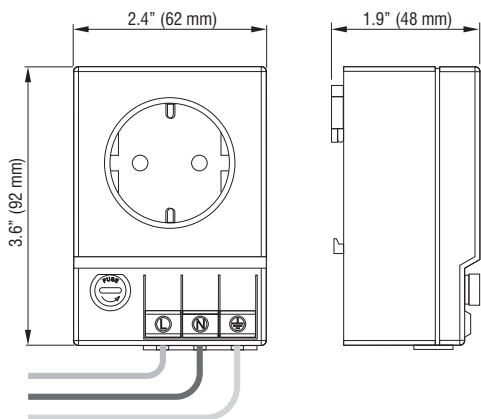
DIN rail mountable

The DIN rail mounted electrical receptacle can be quickly fitted and connected in enclosures allowing the use of auxiliary products such as hand lamps and power tools. The unit is available with and without fuse, and in many world outlet standards.



Technical Data

Connection	3 cage clamps for solid and stranded wire AWG 20-14 (0.5-2.5mm ²)
Housing	plastic, UL94 V-0, light grey
Mounting	clip for 35mm DIN rail, EN 60 715
Mounting position	vertical
Operating / Storage temperature	-49 to +158°F (-45 to 70°C)
Dimensions	3.6 x 2.4 x 1.9" (92 x 62 x 48mm)
Weight	approx. 7.1 oz. (200g)
Protection class	I (grounded)
Protection type	IP20



Part No.	Operating Voltage max.	Socket	Model	Nominal Current	Approvals
03500.0-00	250VAC	Germany/Russia (1)	with fuse*	6.3A	-
03500.0-01	250VAC	Germany/Russia (1)	without fuse	16.0A	-
03501.0-00	250VAC	France/Poland (2)	with fuse*	6.3A	-
03501.0-01	250VAC	France/Poland (2)	without fuse	16.0A	-
03502.0-00	250VAC	Switzerland (3)	with fuse*	6.3A	-
03502.0-01	250VAC	Switzerland (3)	without fuse	10.0A	-
03503.0-00	250VAC	UK/Ireland (4)	with fuse*	6.3A	-
03503.0-01	250VAC	UK/Ireland (4)	without fuse	13.0A	-
03504.0-00	125VAC	USA/Canada (5)	with fuse*	6.3A	UL File No. E222026
03504.0-01	125VAC	USA/Canada (5)	without fuse	15.0A	UL File No. E222026
03505.0-00	250VAC	Italy (6)	with fuse*	6.3A	-
03505.0-01	250VAC	Italy (6)	without fuse	16.0A	-

* fuse Ø 5 x 20 mm

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STEGOFIX is a small aid specially designed to make mounting of smaller DIN rail mountable components easier. It can be used whenever the installation of a DIN rail is impractical, or when there is not enough space left in an enclosure.

Because of its industrial grade self-adhesive it can be installed much easier and quicker than a conventional DIN rail, without the effort of hole drilling and screw mounting. This is especially practical for subsequent changes or additions in an already equipped enclosure.

STEGOFIX can hold components up to 1.1 lbs in weight. Some of the many applications include the mounting of timing relays, series terminals, thermostats, cable channels and even small heaters. In addition, DIN rails can be mounted simply by using several STEGOFIX units.

If the weight of attached components exceeds the load limit, or if a more secure mounting is desired, (e.g. on rough surfaces), it can also be screw-mounted. All that is necessary to install STEGOFIX is a smooth and clean surface. The initial adhesive power is 40%, and after 24 hours, it has its full holding power of 1.1 lbs.



Technical Data

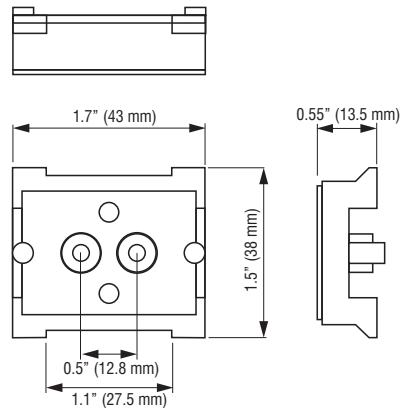
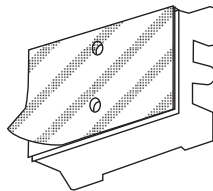
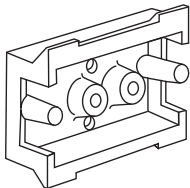
Load	1.1 lbs. (500g) after a 24 hour waiting period*
Mounting	self-adhesive (non-aging, high-performance adhesive strip)
Material	plastic UL 94V-0, black
Hole pattern	0.5" distance, Ø 0.14" (12.8mm; Ø 3.6mm)
Operating / Storage temperature	-49 to +158°F (-45 to 70°C)
Dimensions	1.7 x 1.5 x 0.55" (43 x 38 x 14mm)

*depending on the conditions of use (e.g. surface condition, size of the device to be mounted, etc.) higher loads were achieved.

Installation

STEGOFIX can only be mounted on smooth surfaces, e.g. metals, lacquered surfaces and plastics (except polyethylene, polypropylene and rubber). The surfaces must be dry and free from dust, oil, separating agents and other contamination.

Application examples



Part No.	1 packing unit	Weight (approx.)
09510.0-01	5 pieces	2.1 oz. (60g) total / 0.42 oz. (12g) per piece

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Variety of uses

Locking door

High impact resistance

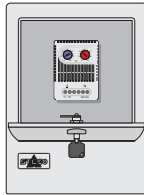
Weather resistant

The access door on the multi-purpose protective cover is equipped with a lock enabling easy access while providing security from unauthorized persons. The cover utilizes a labyrinth seal for protection against dirt and moisture, and the unit is permanently attached to the enclosure from the inside.

Application examples



Protection for ventilation openings (i.e. pressure compensation)



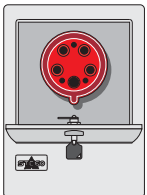
As a cover for thermostats and regulators



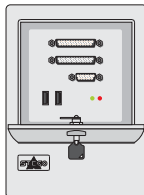
As a tamper-proof cover for electronic input devices



Protection for electronic locks and security system keypads



Protection for power outlets

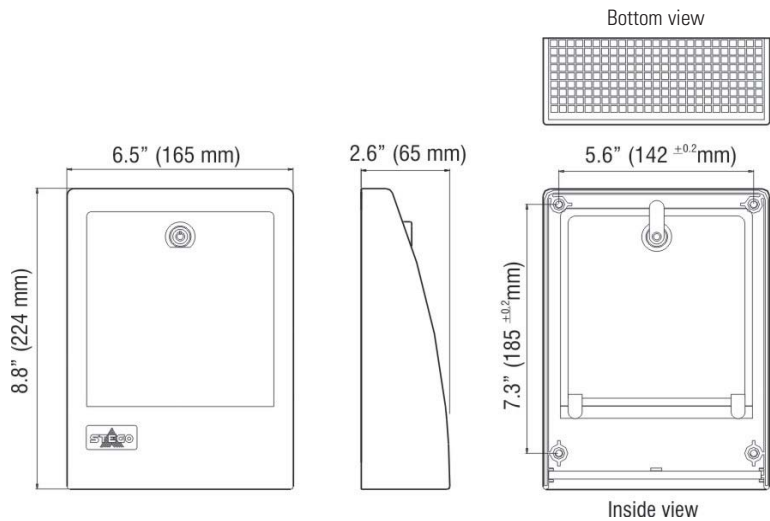


Cover and protection for data interfaces



Technical Data

Housing	High impact ASA plastic, light grey burning behavior according to UL 94H-B; high resistance to weather and UV light
Operating / Storage temperature	-49 to +158°F (-45 to +70°C)
Dimensions	8.8 x 6.5 x 2.6" (224 x 165 x 65mm)
Protection type	IP20



Part No.	Weight
08611.0-00	approx. 0.9 lbs. (0.4kg)

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