

## Ceramic Insulated Finned Strip Heaters

### CSF3 Series

- Rugged, Durable Construction
- Stainless Steel Sheath
- Nickel-Plated Steel Fins (Stainless Steel Optional)
- Various Terminations
- Trouble-Free Installation
- Various Sizes in Stock

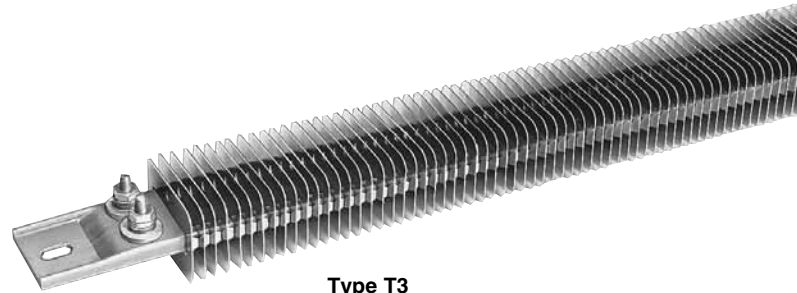
### Typical Applications

- Duct Heating
- Space Heaters
- Drying Ovens
- Food Warmers
- Dehumidifier
- Shrinking Tunnels
- Air Heating
- Heat Curing

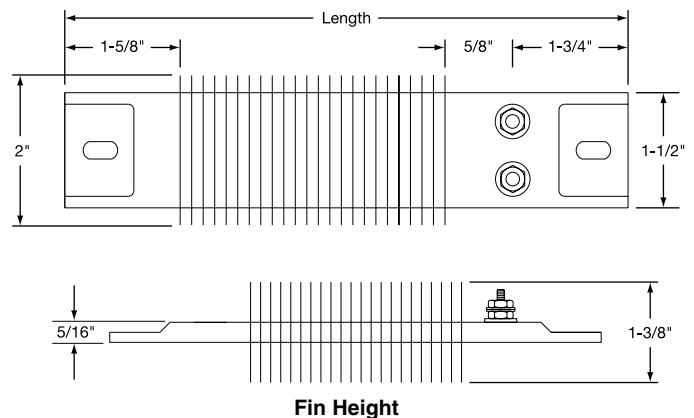
OMEGA® finned strip heaters are extremely efficient and dependable as a heat source for hundreds of industrial and commercial applications. They are used for both forced (mounted in a duct) and natural convection air heating (mounted at the bottom of cabinet type ovens).

The finned strip heater's basic design consists of a helically wound resistance coil placed in a specially designed ceramic insulator. The resistance coil is mechanically connected to the screw terminal for positive connection. Stainless steel rectangular tubing is used to house the heater assembly. All remaining voids are filled with high purity magnesium oxide to increase thermal conductivity and dielectric strength.

Nickel-plated steel fins (stainless steel optional) are mounted to the rectangular tubing. The fins have been specially designed to provide maximum surface contact for good heat



Type T3



dissipation into the finned cross sections, thus resulting in rapid heat transfer to the air.

OMEGA finned strip heaters are manufactured in a full line of standard sizes, electrical ratings and terminations, or can be made to your specifications.

## Specifications and Tolerances

If tighter tolerances are required consult OMEGA.

### Performance Ratings

**Maximum Sheath Temperature:** 650°C (1200°F)

**Maximum Watt Density:**

Still Air	Max Watt/cm <sup>2</sup>	Max Watt/in <sup>2</sup>
Up to 149°C (300°F)	3.1	20
149 to 316°C (300 to 600°F)	2.5	16
316 to 427°C (600 to 800°F)	1.6	10
Moving Air	Max Watt/cm <sup>2</sup>	Max Watt/in <sup>2</sup>
At 3 m/sec, up to 93°C (600/minute, up to 200°F)	6.2	40
At 3 m/sec, up to 204°C (600/minute, up to 400°F)	4.7	30
At 3 m/sec, up to 316°C (600/minute, up to 600°F)	3.1	20

### Electrical Specifications

**Maximum Voltage:** 480 Vac (when applicable)

**Maximum Amperage:** 25 A

**Resistance Tolerance:** 10%, -5%

**Wattage Tolerance:** 5%, -10%

### Material Specifications and Physical Sizes

**Sheath:** 304 stainless steel

**Fins:** Nickel plated steel (stainless steel optional)

**Screw Terminals:** Stainless steel 10-32 UNF threads

**Width Including Fins:** 51 mm (2")

**Height Including Fins:** 35 mm (1 3/8")

**Length Tolerance:** Up to 0.61 m (24")  $\pm 1/16$ ", over 0.61 m (24")  $\pm 1/8$ "

**Mounting Slot Size:** Standard 8 x 13 mm (5/16 x 1/2")

**Slot Size For Secondary Insulating Bushing:** 13 x 16 mm (1/2 x 5/8") for 300V and above

## Secondary Insulating Bushings

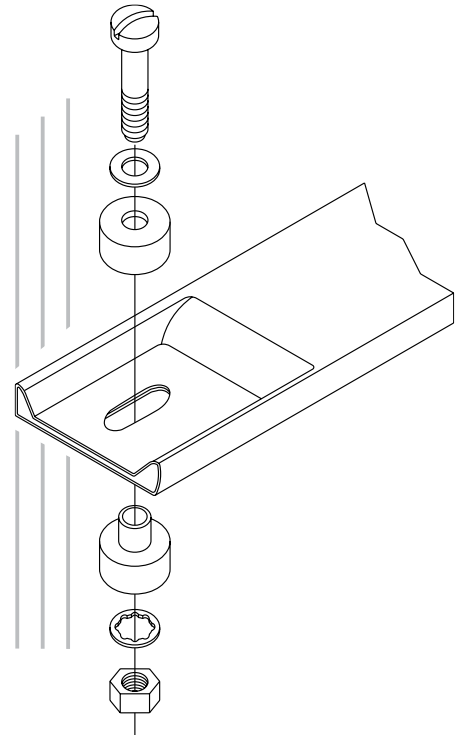
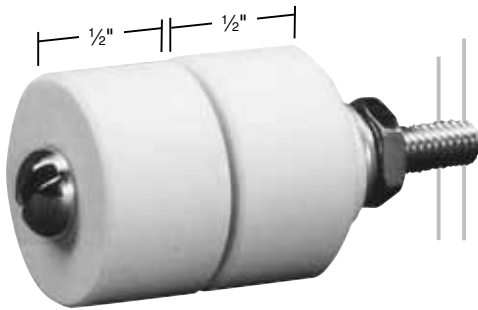
Secondary insulating ceramic bushings increase the effective space between the heater and grounded surface for electrical clearance at high voltages. They must be used on the mounting tabs when the finned heater is connected in series or in direct line voltage above 300V.

When insulating bushings are required, a 13 x 16 ( $\frac{1}{2} \times \frac{5}{8}$ ) slot is substituted for the standard slot size 8 x 13 mm ( $\frac{5}{16} \times \frac{1}{2}$ ).

### Insulating Bushing Assembly

**Model Number: CERR-1001**

**Note:** Two assemblies are required for each heater.



**CAUTION:** When using secondary insulating bushings, the heater must be guarded to avoid any accidental contact. The guard must be electrically isolated from the heater and must be properly grounded.

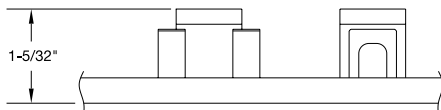
## Ceramic Covers for Insulating Screw Terminals

### Igloo™ Ceramic Covers

Igloo ceramic terminal covers consist of two individual ceramic parts. With a tight-fitting cap and a solid base, an Igloo cover will fully insulate any standard 10-32 terminal lug used for electrical wiring hookups.

Igloo covers can be assembled on all channel strip and finned strip heaters with Type T1 and Type T4 screw terminals. Mica strip heaters with screw terminals that have a minimum center to center distance of 22 mm ( $\frac{7}{8}$ ) can also be assembled with Igloo covers.

Three different types of Igloo bases are available for your wiring convenience. Double port in-line, double port 90° and single port.



**Type C6**  
Double Port In-Line  
Model Number:  
CER-101-104



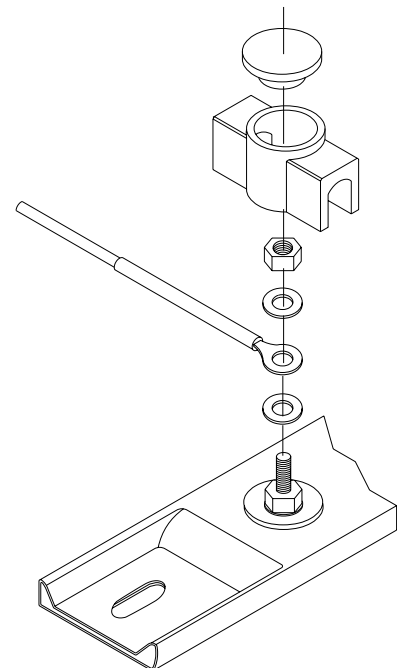
**Type C7**  
Double Port 90°  
Model Number:  
CER-101-106



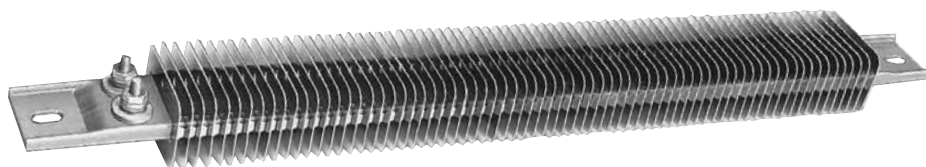
**Type C8**  
Single Port  
Model Number:  
CER-101-107



**Ceramic Cap**  
Thread 10-32  
Model Number:  
CER-102-101



## Finned Strip Heaters—T3 Termination



**To Order Visit [omega.com/csf3](http://omega.com/csf3) for Pricing and Details**

Model No.		Length		Watts	Watt Density	
120V	240V	mm	inch		Watt/cm <sup>2</sup>	Watt/in <sup>2</sup>
CSF00001	CSF00002	266.7	10½	500	3	21
CSF00003	CSF00004	266.7	10½	725	5	31
CSF00005	—	304.8	12	500	3	17
—	CSF00007	304.8	12	650	3	23
CSF00008	CSF00009	304.8	12	900	5	31
CSF00010	CSF00011	355.6	14	750	3	21
CSF00012	CSF00013	355.6	14	1100	5	31
CSF00014	CSF00015	387.4	15¼	1250	5	31
CSF00016	CSF00017	454.0	17⅞	1550	5	31
CSF00018	CSF00019	495.3	19½	1700	5	31
CSF00024	CSF00025	533.4	21	1900	5	31
—	CSF00026	603.3	23¾	2200	5	31
—	CSF00027	647.7	25½	2400	5	32
—	CSF00028	679.5	26¾	2500	5	30
—	CSF00031	774.7	30½	2800	5	30
—	CSF00033	850.9	33½	3150	5	30
—	CSF00034	911.2	35⅞	3450	5	31
—	CSF00036	1079.5	42½	4150	5	31

**Ordering Example:** CSF00005, 500 watt, 120 Vac, finned strip heater.

### Custom Engineered/Manufactured Heaters

An electric heater can be very application specific; for sizes and ratings not listed, OMEGA will design and manufacture a finned strip heater to meet your requirements.

#### Please Specify the Following:

- Type of Application
- Termination Type
- Length
- Secondary Bushings (see page 2)
- Wattage
- Igloo™ Ceramic Terminal Covers
- Voltage



Type C – Terminal Box and Type P – High Temperature Quick Disconnect Plug are available. Visit [omega.com](http://omega.com)