



# Thermal Edge Inc.

TEMPERATURE CONTROL SOLUTIONS FOR ELECTRICAL ENCLOSURES

## User & Technical Manual

### Filter Fan Package

Plastic & Metal Series

*Rev 1.4*



## CAUTION

Read Manual Before Installation.  
For Questions, Please Call Thermal Edge Inc. at  
(888)-580-0202

*To Be Professionally Installed Only*



**Title:** FFP, Filter Fan Package User & Technical Manual

**Department:** Engineering

**Objective:** To provide important information for maintenance, diagnostics and advance operations of the Thermal Edge Plastic & Metal Series Filter Fan Packages.

**Revision History:**

| Rev | Date     | Owner       | Description of Changes  |
|-----|----------|-------------|---|
| 1.0 | 01-08-10 | G. Gonzalez | New Format Initial Release                                      |
| 1.1 | 12-28-11 | G. Gonzalez | Update Unit Specifications add RPM data and update 24VDC models |
| 1.2 | 04-03-14 | B. Slotnick | Update email address  |
| 1.3 | 01-12-18 | B. Slotnick | Update installation instructions                                |
| 1.4 | 10-01-18 | B. Slotnick | Update warranty & unit specifications                           |

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## TABLE OF CONTENTS

|   |    |
|---|----|
| Overview                                      | 4  |
| Inspecting the Equipment                      | 4  |
| Unpacking the Filter Fan Package              | 4  |
| Unit Label                                    | 5  |
| Operation                                     | 5  |
| Preliminary Testing                           | 5  |
| Mounting the Filter Fan Package               | 6  |
| Unit Specifications                           | 7  |
| Options                                       | 8  |
| Preventative Maintenance                      | 8  |
| Field Serviceable Parts                       | 9  |
| Safety Information                            | 9  |
| Troubleshooting Guide                         | 9  |
| Physical Dimensions                           | 10 |
| Electrical Schematic                          | 13 |
| Warranty Information                          | 14 |
| Return Material Authorization (RMA) Procedure | 15 |



## Overview

Thank you for your purchase of the Thermal Edge Filter Fan Package. Our filter fan package equipment is carefully designed to cool the air in electronic component enclosures. Thermal Edge has designed filter fan packages for all types of electronic equipment enclosures providing capacity from 131 CFM to 750 CFM.

This manual will guide you through the installation, maintenance, diagnostics and advance operations of the Plastic & Metal Series Filter Fan Packages. This manual contains important information for the end-user who installs, maintains and/or operates the Filter Fan Package.

### Technical Support

By Phone: 972-580-0200 / 888-580-0202

*(Monday – Friday, 7:30 am – 5:00 pm Central Time)*

By Email: [support@thermal-edge.com](mailto:support@thermal-edge.com)

Our goal is to have continuous improvement for both our equipment and our documentation. We rely upon and appreciate your feedback to help us achieve our goal. Our technical support team is glad to work with you if you require additional technical information not provided in this manual.

## Inspecting the Equipment

Thermal Edge Filter Fan Package equipment is designed, manufactured and packed to prevent damage from normal handling, shock and vibration during shipment. It is necessary to inspect your equipment upon receipt to insure that there is no visual or hidden damage.

All physical damage to packing or signs of damage to the equipment must be noted on the freight bill of lading. Packages must be opened after receipt and inspected for any visual or concealed damage to the equipment and to verify proper count and order fulfillment. Delivery with other freight on top, damaged or wet should be refused.

## Unpacking the Filter Fan Package

If the unit is to be transported after initial unpacking, place filter fan package back in original packing to prevent damage.



For shipment by UPS or freight carrier, repack as received.

**Note:** Shipping without proper packing material will void the warranty.



## Unit Label

Each filter fan package has a unit label, be sure to record the data from the label to the template below and keep this information in a safe place for warranty and ordering parts. To prevent damage to equipment, electrical panel and wiring, and to prevent personal injury, assure that the power source is compatible with the equipment before operating.

|   |                                     |  |
|---|-------------------------------------|--|
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| <b>Thermal Edge Inc.</b>  |                                     | www.thermal-edge.com   |
|   |                                     | orders@thermal-edge.com  |
| <b>FFP Model No.</b>  | <b>Volts -</b> <input type="text"/> | <b>Serial Number</b>   |
|  |                                     |  |
| <input type="text"/>  |                                     | <input type="text"/>   |

## Operation

Thermal Edge Filter Fan Packages will lower the temperature inside an enclosure to ensure its proper operational temperature. Our filter fan packages, when sized properly, will provide cooling to a temperature higher than the ambient temperature.

Thermal Edge Filter Fan Packages operate by pressurizing the enclosure with ambient air, thus extracting hot air via exhaust side filter.

**Note:** Reverse air flow may be requested as an optional feature to operate as a depressurized system.

## Preliminary Testing

Before mounting the filter fan package to the enclosure, test for proper operation. Follow the steps below prior to installation.



### WARNINGS

Check the unit label to assure the electric power available to the filter fan package is the proper voltage and phase. Check the electric power source for proper ground wire and neutral wire installation per 2011 NEC. Assure that the electric power is protected by a circuit protection device;

- Plug the unit's power cord into your source, fan should start.
- Disconnect power source.



## Mounting the Filter Fan Package

Using the template supplied, determine where the filter fan is to be mounted and assure that all required cuts and holes will not interfere with or damage the enclosure or its contents. Assure that there is a 5" clearance between walls/obstructions and the filter fan package to insure that there is adequate, unrestricted air flow supply. Restricted air flow will affect the filter fan's performance.

Once proper mounting placement is determined, turn the enclosure equipment off, if possible. Drill and cut the holes as indicated on the mounting template. Note that some plastic filter fans snap into the cutout and do not require screw holes. Be cautious not to let any cutting debris fall into the enclosure. Use supplied mounting screws, or snap the base into the cutout, to install unit to your enclosure.

Ensure that the power supplied is compatible with the filter fan's power requirements. Properly attach the unit's power cord \*1 to a circuit that meets the equipment requirements and provide a circuit protection device based on the Unit Specifications section of this manual.



### CAUTION

If mounting the filter fan package to the enclosure door, confirm with the enclosure manufacturer that the door's hinges will support the filter fan's added weight (see equipment specifications). Insure that when the door is fully open that the enclosure will not topple over due to the off-center load.

\*1 *Note:* Plastic Series Filter Fan Packages do not include power cord, they are provided with power plug with 24" wire leads.



## Unit Specifications

The following table provides electrical specifications for the Thermal Edge Plastic & Metal Series Filter Fan Packages.

### Plastic & Metal Series

Standard Maximum Ambient: 158°F (70°C)

| Model              | Operating Voltage Range | Voltage Frequency (Hz) | Inrush Current (Start Up Current) (Amps) | Loading Current (Running Current) (Amps) | SCCR (Short Circuit Current Rating) (Amps) | Recommended Circuit Protection Device Rating (Amps) * | Free Air Free Flow (CFM) | Fan Speed (RPM) |
|--------------------|-------------------------|------------------------|--|--|--|---|--------------------------|-----------------|
| PFFP-080-120       | 104 – 130 VAC           | 50/60                  | 0.55                                     | 0.11                                     | *2   | 1.00  | 75                       | 2900            |
| PFFP-080-230       | 207 – 253 VAC           | 50/60                  | 0.30                                     | 0.06                                     | *2   | 0.75  | 75                       | 2900            |
| PFFP-080-D24       | 22 – 26 VDC             | N/A                    | 0.75                                     | 0.19                                     | *2   | 1.00  | 89                       | 2200            |
| P or M FFP-100-120 | 104 – 130 VAC           | 50/60                  | 0.95                                     | 0.17 / 0.18                              | *2   | 2.00  | 131                      | 3300            |
| P or M FFP-100-230 | 207 – 253 VAC           | 50/60                  | 0.60                                     | 0.10 / 0.11                              | *2   | 1.00  | 131                      | 3300            |
| P or M FFP-100-D24 | 22 – 26 VDC             | N/A                    | 0.90                                     | 0.23                                     | *2   | 1.25  | 90                       | 3300            |
| P or M FFP-200-120 | 104 – 130 VAC           | 50/60                  | 2.00                                     | 0.35 / 0.40                              | *2   | 3.00  | 300                      | 3300            |
| P or M FFP-200-230 | 207 – 253 VAC           | 50/60                  | 1.15                                     | 0.20 / 0.22                              | *2   | 2.00  | 300                      | 3300            |
| P or M FFP-200-D24 | 22 – 26 VDC             | N/A                    | 8.4                                      | 2.1                                      | *2   | 10.00   | 300                      | 3900            |
| PFFP-390-120       | 104 – 130 VAC           | 50/60                  | 2.85                                     | 0.51 / 0.54                              | *2   | 4.00  | 393                      | 3300            |
| PFFP-390-230       | 207 – 253 VAC           | 50/60                  | 1.80                                     | 0.30 / 0.33                              | *2   | 3.00  | 393                      | 3300            |
| PFFP-390-D24       | 22 – 26 VDC             | N/A                    | 2.70                                     | 0.69                                     | *2   | 3.00  | 270                      | 3300            |
| P or M FFP-500-120 | 104 – 130 VAC           | 50/60                  | 3.00                                     | 0.50 / 0.58                              | *2   | 5.00  | 850                      | 2700            |
| P or M FFP-500-230 | 207 – 253 VAC           | 50/60                  | 1.50                                     | 0.25 / 0.30                              | *2   | 3.00  | 850                      | 2700            |

\* Fast Acting Fuses with the following electrical characteristics are recommended. Do not use Extremely Fast Acting Fuse.

| % of Ampere Rating | Opening Time   |
|--------------------|----------------|
| 100 %              | None           |
| 135 %              | 60min Maximum  |
| 200 %              | 120sec Maximum |

\*2 SCCR rating is based on the SCCR rating for the circuit protection device installed in the panel / enclosure per UL50 & UL508a to protect the AC unit. Typically 10KA for Fast Acting Fuses.

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## Options

The Thermal Edge Plastic & Metal Series Filter Fan Packages may be ordered with the following options. Review the list below for the specifications and functions of the option(s) that apply to your unit.

### NEMA 3R Rain Shrouds

We offer a rain shroud that converts our filter fan packages to a NEMA 3R rating.

### Custom Paint

Metal fan packages may be ordered with any customer paint color.

### Reverse Air Flow

Equipment may be ordered with reversed air flow configuration to operate as a depressurize system.

## Preventative Maintenance

Filter fan packages may require regular filter replacement depending on the environmental conditions. Restriction to the flow of air will degrade the performance of the equipment, reduce cooling and can damage the fans. Restricted air flow due to neglecting a dirty filter may cause fan to overheat. Continuous operation in this condition will eventually damage the equipment and void the warranty.

Refer to Field Serviceable Parts section in this manual for details on parts that can be changed to help increase the life of the filter fan package.

### Filter

Replacement filters are readily available at Thermal Edge; a good preventative maintenance schedule is crucial to insure filter fan package optimal performance.

### Fans

Thermal Edge Filter Fan Packages use high efficiency, long life, sealed ball bearing fans engineered for optimum performance that require no maintenance. Fans are removable and employ plug-in electrical connections.





### Field Serviceable Parts

Thermal Edge carefully designs and selects components with the maximum life expectancy. Due to OEM manufacturing tolerances, poor unit maintenance or extreme operating conditions, components may fail before their maximum life expectancy. The table below lists parts that are serviceable in the field by an Air Conditioner Technician.

| Part Description              | Thermal Edge Part #  |
|-------------------------------|--|
| FFP-080 Series 12 Pack Filter | 44210  |
| FFP-100 Series 12 Pack Filter | 44211 / 44207 (Plastic / Metal)                            |
| FFP-200 Series 12 Pack Filter | 44212 / 44208 (Plastic / Metal)                            |
| FFP-390 Series 12 Pack Filter | 44213  |
| FFP-500 Series 12 Pack Filter | 44214 / 44209 (Plastic / Metal)                            |
| FFP-080 Fans                  | 120VAC = 41006-1-1 , 230VAC = 41006-2-1, 24VDC = 41006-3-1 |
| FFP-100 Fans                  | 120VAC = 41004-1-1, 230VAC = 41004-2-1, 24VDC = 41003-3-1  |
| FFP-200 Fans                  | 120VAC = 41025-1-1, 230VAC = 41025-2-1, 24VDC = 41010-5-1  |
| FFP-390 Fans                  | 120VAC = 41004-1-1, 230VAC = 41004-2-1, 24VDC = 41003-3-1  |
| FFP-500 Fans                  | 120VAC = 41045-1-1, 230VAC = 41045-2-1                     |

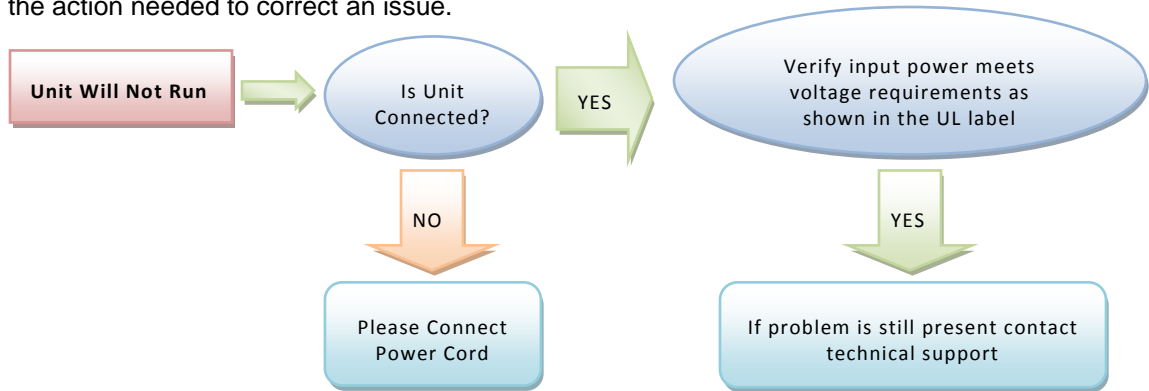
### Safety Information

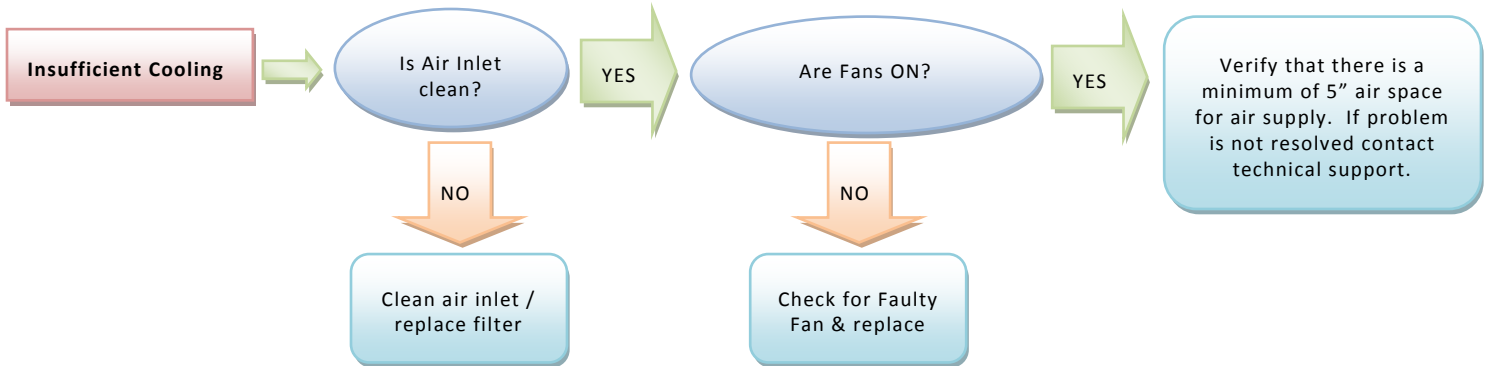
Unit is carefully designed to restrict access to movable parts to minimize any potential injury. This filter fan package has been tested by UL to meet the safety requirements of the UL508/508A specification. When working with the Thermal Edge Filter Fan Package always verify proper voltage is applied to unit as specified in the UL label of the filter fan package. In the event of a field service repair disconnect power from unit. It is always recommended to use a licensed Air Conditioner Technician for internal diagnostics and repairs issues.

Contact Thermal Edge technical support for further details on opening the unit and troubleshooting tips.

### Troubleshooting Guide

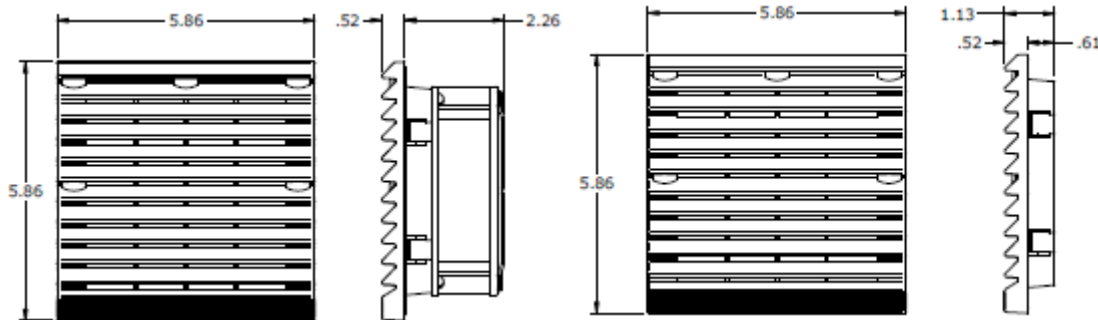
The following guide provides a flow chart to identify a problem, determine the root cause and identify the action needed to correct an issue.



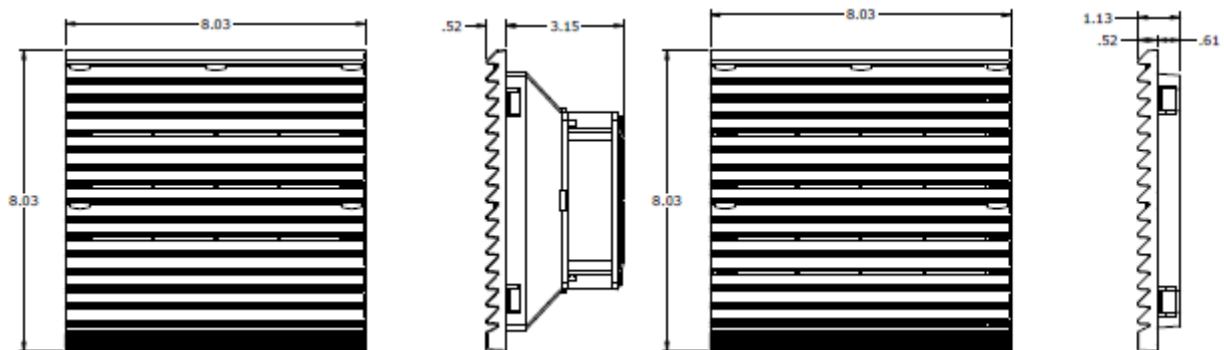


### Physical Dimensions

#### PFFP-080

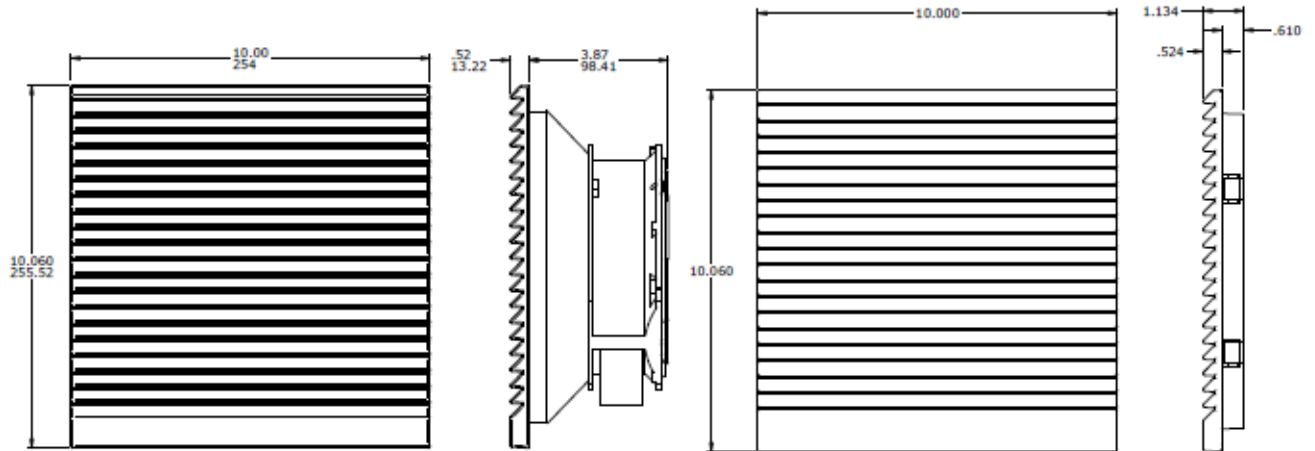


#### PFFP-100

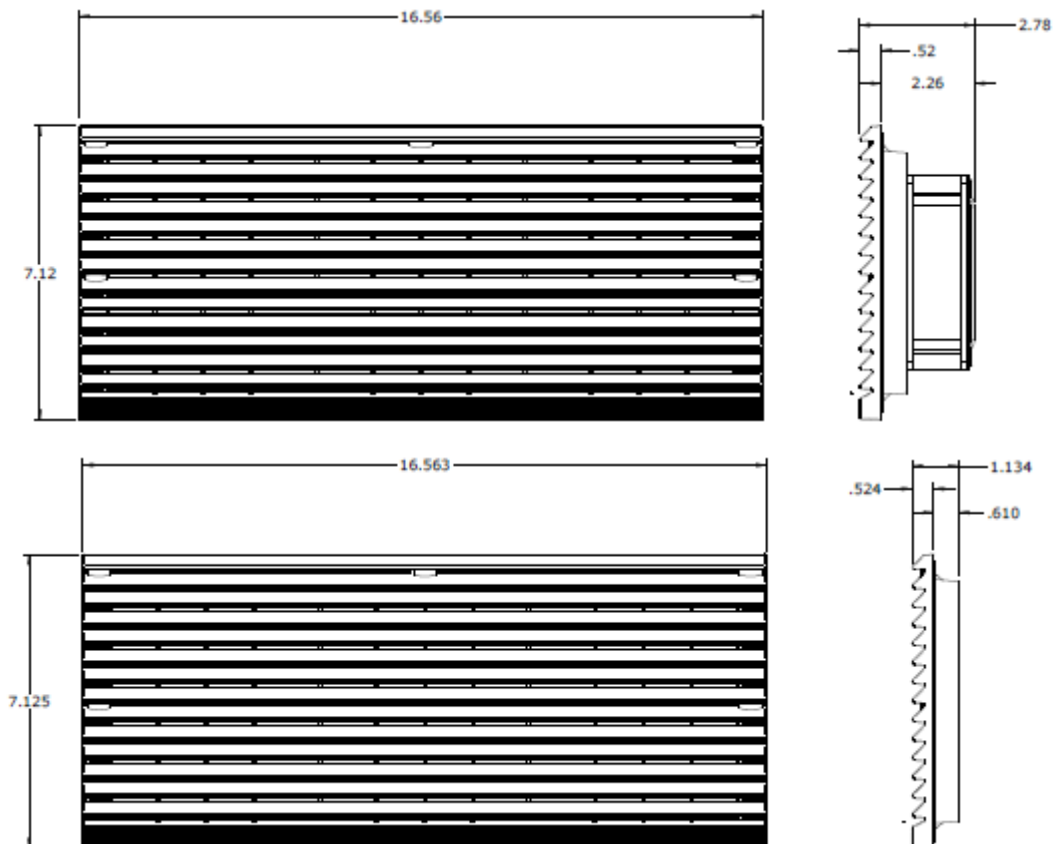




**PFFP-200**

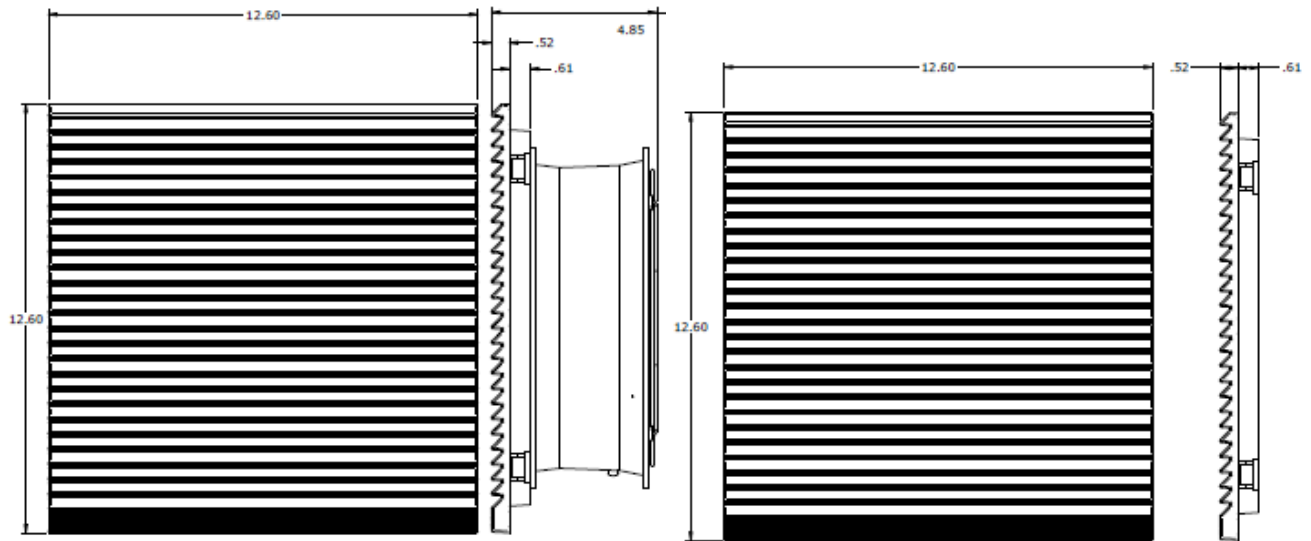


**PFFP-390**

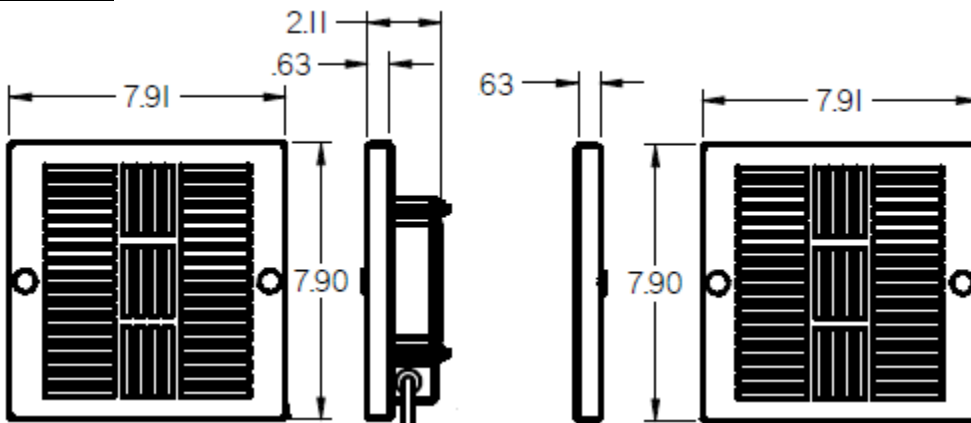




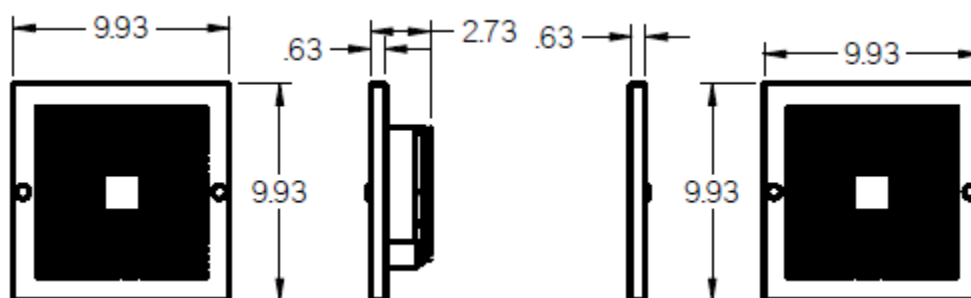
**PFFP-500**



**MFFP-100**

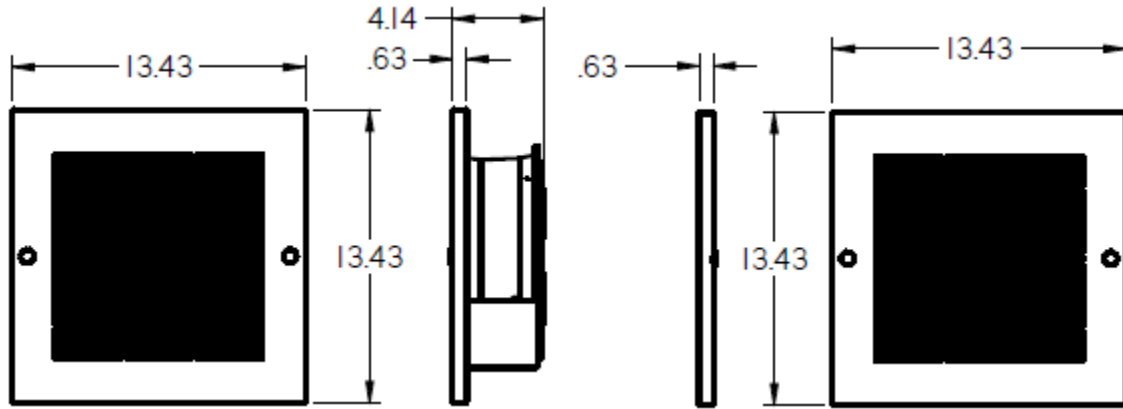


**MFFP-200**



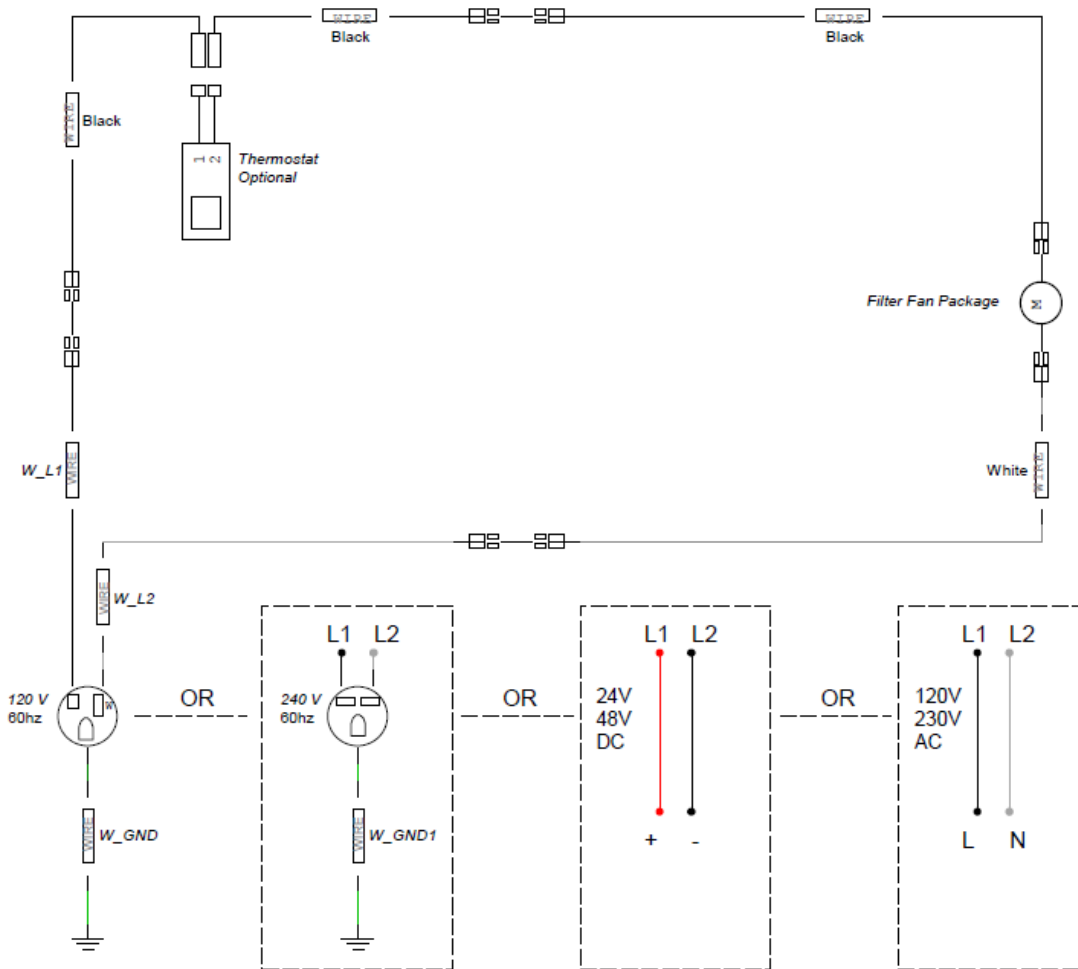


MFFP-500



**Electrical Schematics**

System Schematic



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## Warranty Information

Thermal Edge products are warranted to be free of defects in workmanship, materials and components. The warranty period applies from date of shipment for five years. Replacement components have a one year warranty period.

The above warranty applies when the equipment is operated under the following conditions:

- Ambient temperature not in excess of performance rating in normal atmosphere or as stated on product nameplate
- Voltage variation within limits stated in User & Technical Manual
- Frequency variation no greater than  $\pm 3\text{Hz}$  from nameplate rating
- Compliance to all other installation, maintenance and operating instructions, as supplied

Thermal Edge cannot assume responsibility for misapplication of its products or the erroneous selection of an inappropriate product by a non-authorized Thermal Edge representative. Our applications engineers will gladly assist in the selection of the proper product provided all required details of the application are furnished.

Thermal Edge assumes no liability beyond the repair or replacement of its own product. This Warranty does not cover:

- Labor or reimbursement of labor for evaluation, removal, installation, repair, or cost of any warranted part, except at the Thermal Edge factory in Dallas, Texas
- Use of equipment for other than its designed purpose or operating conditions
- Operation in harsh, oily, corrosive or other abnormal environmental conditions, without the proper filtration, sealing, protective coatings and/or weather protection
- Damage to system resulting from continuous operation with dirty or clogged air intake or improper or negligent maintenance
- Customer modification or abuse
- Shipping damage or other accident
- Repair or service by unauthorized personnel.

Thermal Edge must be notified of a claim in writing not later than fourteen (14) days from the date when buyer has become aware of such occurrence, or immediately, when the defect is such that it may cause damage.

Claims for shipping damage are the responsibility of the Consignee. Timely claims must be filed with the freight carrier.

The purchaser assumes the responsibility of grounding the unit and installing it in accordance with local electrical and safety codes, as well as the 2008 National Electric Code (NEC) and OSHA.

THIS WARRANTY CONSTITUTES THE ENTIRE WARRANTY WITH RESPECT TO THE PRODUCT AND IS IN LIEU OF ALL OTHERS, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY AND WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND IN NO EVENT IS THERMAL EDGE RESPONSIBLE FOR ANY CONSEQUENTIAL DAMAGES OF ANY NATURE WHATSOEVER.

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## Return Material Authorization (RMA) Procedure

All returns require a Return Material Authorization (RMA) number for warranty or non-warranty repair, rotation of stock, damage or any other reason.



### **IMPORTANT**

Returns without an RMA number will be refused and returned. Improper packaging may void warranty. Collect shipments will be refused. Returns received after 60days will be refused and RMA will be canceled.

Please be ready to provide:

- Purchase Order Number & Date
- Product Description & Reason for Request
- Model Number & Serial Number
- Customer name and contact info (email, phone number and address)
- Shipping method

Pack unit in suitable packing for shipment, preferably the original packaging if available.

- If suitable packing is not available, arrange for packaging to be shipped to you.
- Clearly mark the RMA number on the box.
- Customer will pay all freight charges.

### Out of Warranty Repair

If your Thermal Edge Filter Fan Package is out of warranty and requires repair, simply call Thermal Edge Customer Service at (888)-580-0202 for an RMA number. Customer Service will help you determine what repairs or parts are needed and, if possible, an estimate of the cost.

After the unit is received and diagnosed, you will receive a cost estimate on the work and parts needed. The repairs and test process may uncover other issues of which you will be informed and given quotes for the work needed.



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