FLASH TECHNOLOGY

FLASH TECHNOLOGY
OVP
OVP-RADAR

Overvoltage Protection System
Reference Manual
Part Number F7910190

SERIAL NUMBER

Flash Technology, 332 Nichol Mill Lane, Franklin, TN 37067
www.flashtechnology.com
(615) 261-2000

Front Matter

Abstract

This manual contains information and instructions for installing, operating and maintaining the Flash Technology OVP (Overvoltage Protection) System.

Copyright

Trademark Acknowledgements

Disclaimer

Warranty

Flash Technology warrants all components, under normal operating conditions, for 5 years.

Personnel Hazard Warning

Dangerous Voltages

Dangerous line voltages reside in certain locations in this equipment. Although Flash Technology has incorporated every practical safety precaution, exercise extreme caution at all times when you expose circuits and components, and when you operate, maintain, or service this equipment.

Avoid Touching Live Circuits

Avoid touching any component or any part of the circuitry while the equipment is operating. Do not change components or make adjustments inside the equipment with power on.

Do Not Depend on Interlocks

Never depend on interlocks alone to remove unsafe voltages. Always check circuits with a voltmeter after turning the circuit breakers off. Under no circumstances remove or alter the wiring or interlock switches.

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Section 1 – Introduction

Introduction

Flash Technology's Overvoltage Protection System, hereafter referred to as OVP, is a high surge current handling device rated up to 40kA 8/20µS. It is designed for in-line installation between a Flash Technology FTS 370i beacon and the supply interface located in the nacelle of wind turbines. The OVP provides protection from direct and indirect effects of surge related damage to the host equipment.

Two versions of the OVP product are available. The OVP product provides protection for the AC power conductors and the FTS 370i Alarm Dry Contact conductors. The OVP-RADAR product additionally provides protection for the FTS 370i Radar Control Inputs.

An internal view of the OVP unit is shown on the front cover and an internal wiring diagram is shown in Figure 2-1. An internal view of the OVP-RADAR unit is shown in Figure 2-2 and an internal wiring diagram is shown in Figure 2-3.

Input and output power connections are provided by a terminal block located centrally in the OVP's enclosure. Mounted on the right side of the terminal block and shown in Figure 1-1 is an AC Power surge suppressor assembly for supply power (120-230V AC). A window in the top right corner of the left module indicates the status of the surge suppressor. During normal operation, the window will appear dark. If the surge suppressor fails, the window will turn red visually indicating that the surge suppressor assembly should be replaced.

A DC surge suppressor, located on the left side of the terminal block and shown in Figure 1-2, provides protection for the FTS 370i Alarm dry contact monitoring connections and Radar Control Input connections (OVP-RADAR model only).

Specifications

Physical

Dimensions H x W x D (millimeters)
7.45" x 7.29" x 4.93"
(189.2 x 185.2 x 125.2)
Weight (kilograms) - 3.6 lbs. (1.6)

Protection

AC Supply – 40kA 8/20µS max.
DC Signals – 20kA 8/20µS max.

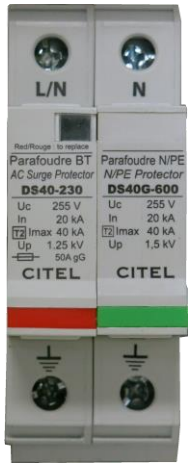


Figure 1-1 – AC Power Surge Suppressor Assembly

Figure 1-2 – DC Surge Suppressor (OVP on left, OVP-RADAR on right)

Section 2 – Mounting and Installation

Unpacking

Inspect shipping cartons for signs of damage before opening them. Check package contents against the packing list and inspect each item for visible damage. Report damage claims promptly to the freight handler.

Installation

WARNING!

Read the warning on Page iii now. Disconnect primary power before opening enclosures.

Recommended Tools

Flash Technology recommends the following tools for installation and maintenance:

- Tools for securing mounting hardware
- 1/8" non-flared flat blade screw driver
- #2 Phillips® head screwdriver
- Long-nose pliers
- Wire Strippers
- Digital volt-ohm meter
- Level
- Cable Ties
- Camera (for documentation)

OVP Access

The cover is hinged and secured with captive screws. Loosen the screws and swing the cover open for internal access.

Mounting

The OVP enclosure mounting outline and dimensions are shown in Figure 2-4. Ensure that adequate space exists around the equipment for access during installation, maintenance and servicing. Mounting hardware is not provided unless it is ordered as part of an installation kit.

Connection

Input

Input AC line connections are made at "L1", "L2", and "GND" located on TB1. Connect 120-230 VAC power to the lower set of terminals located on TB1 (L1, L2, and GND) as shown in Figure 2-1 (Figure 2-3 for OVP-RADAR).

The terminal block uses spring-cage contacts to provide rugged, trouble-free connections which are vibration-proof and gas-tight, thus providing long-term stability. The conductor contact force is determined by the spring tension and so is independent of the user tightening torque as with screw type terminals.

To install a wire, follow these steps:

1. Strip the insulation, exposing 0.4 inch (10 mm) or more of conductor.
2. Insert a standard 1/8" width flat-tipped screwdriver into the rectangular slot and push. This causes the spring clip to open.
3. Insert the conductor fully into the round terminal compartment and then remove the screwdriver. The conductor automatically makes contact.
4. Check that contact is made to the conductor metal and not the insulation.

Auxiliary connections are made at the lower terminals of the DC Surge Suppressor located on left side of TB1 as shown in Figure 2-1 (Figure 2-3 for OVP-RADAR).

Output

The AC line connections to the FTS 370i are made at "L1", "L2", and "GND" located on TB1. Following the methods described previously in steps 1 - 4 connect the output power to the upper set of terminals located on TB1 (L1, L2, and GND) as shown in Figure 2-1 (Figure 2-3 for OVP-RADAR).

Auxiliary connections between the OVP and the FTS 370i are made at the uppermost terminals of the DC Surge Suppressor located on the left side of TB1 as shown in Figure 2-1 (Figure 2-3 for OVP-RADAR).

Site Ground

Connect an 8 AWG wire (min.) to the ground lug as shown in Figure 2-1 (Figure 2-3 for OVP-RADAR).

Cable Strain Reliefs

Once all internal electrical connections have been made, ensure that the cable strain relief's dome nuts are tightened to secure cables and prevent moisture intrusion. Secure the enclosure's door, once all work is completed, by tightening the captive screws.

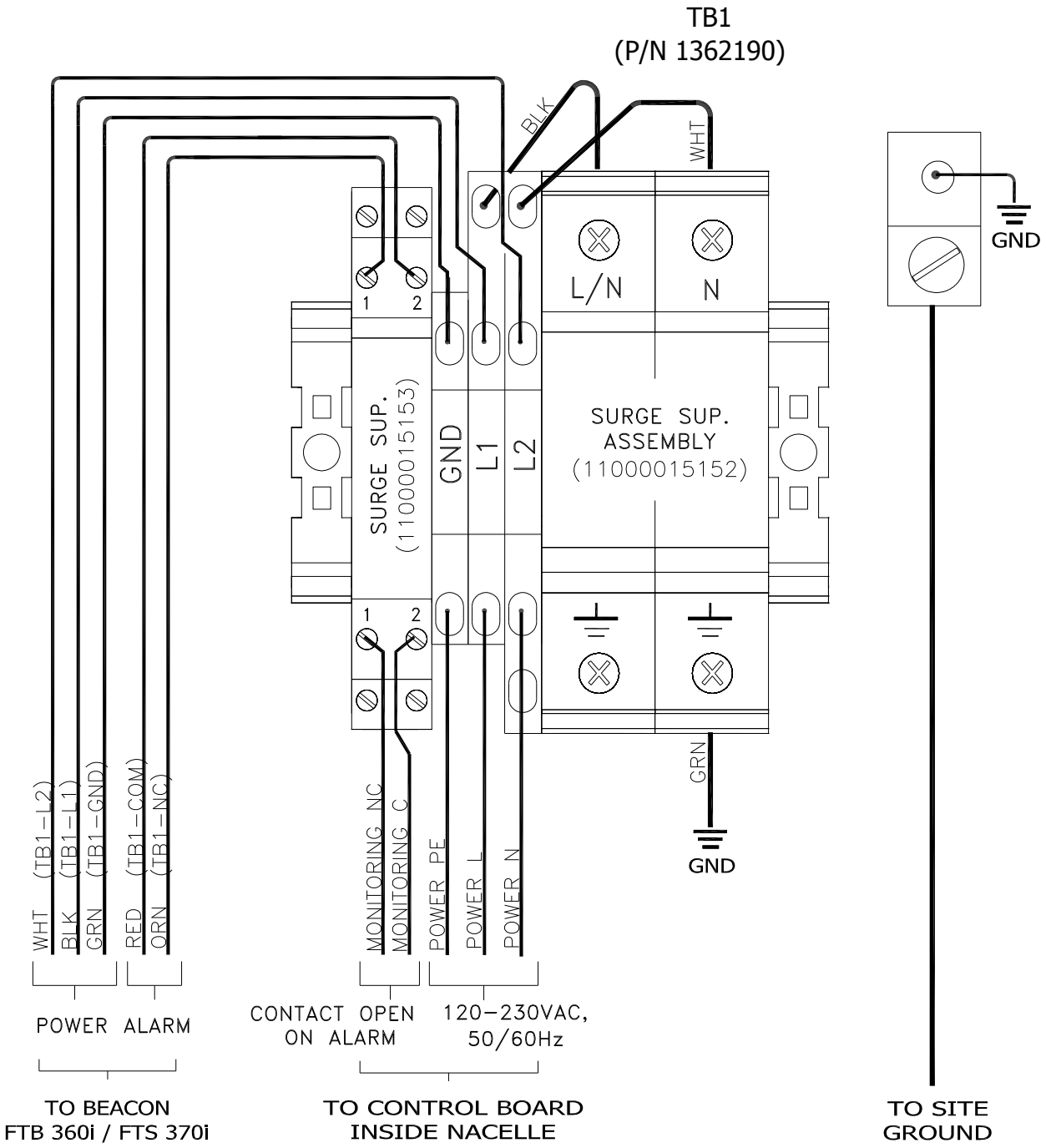


Figure 2-1 – OVP Internal Wiring

Figure 2-2 – OVP-RADAR Internal View

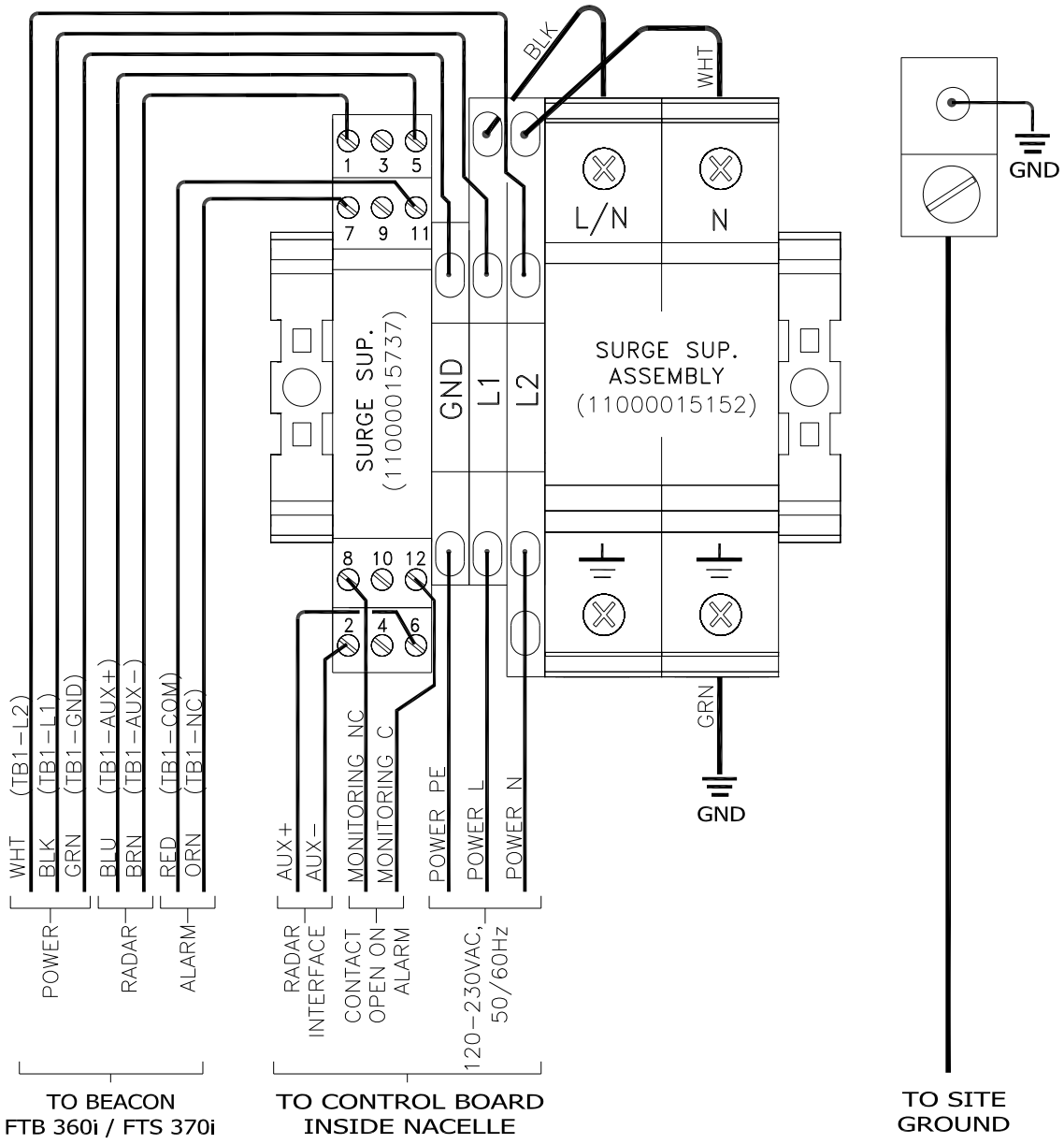
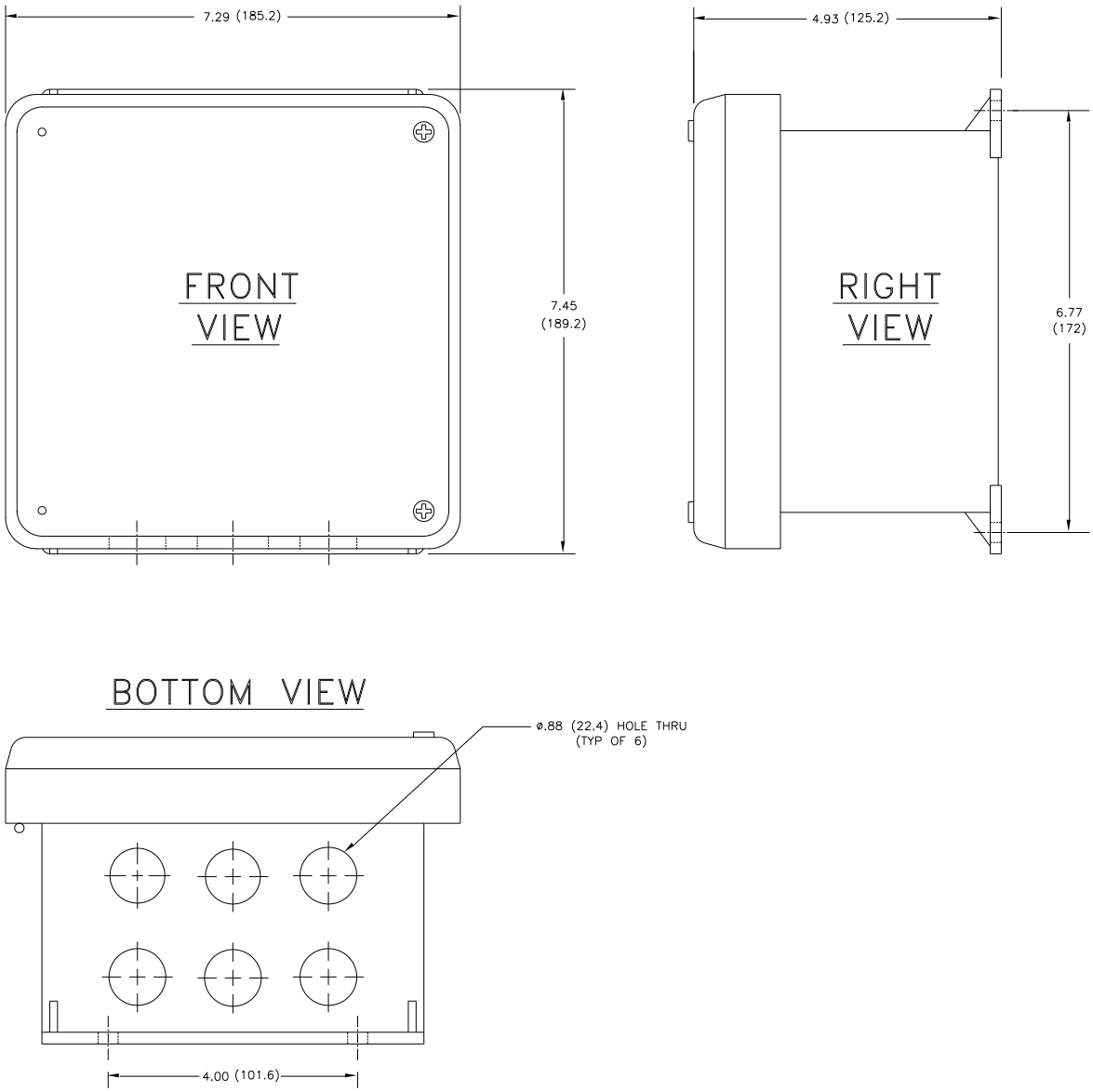


Figure 2-3 – OVP-RADAR Internal Wiring



Note: All dimensions are in inches (millimeters).

Figure 2-4 – Enclosure Mounting Footprint

Section 3 – Maintenance and Troubleshooting

Safety

Warning!

Read the warning on Page iii now. Disconnect primary power before opening enclosures.

Work safely, as follows:

1. Remove rings and watches before opening the equipment.
2. Remove the component or connect the test instruments.
3. Replace the component.
4. Apply power to the equipment and test the system.
5. Shut off power to the equipment and disconnect the test equipment.

Preventive Maintenance

Carry out the following inspection and cleaning procedures at least once a year:

1. Verify that moisture has not accidentally entered the equipment through gaskets or seals, or collected inside as condensation.
2. Check terminal blocks corrosion or arcing. Clean or replace any component that shows evidence of high-voltage damage.
3. Check all electrical connections for tightness and verify the absence of corrosion or electrical arcing.

AC Power Surge Suppressor Assembly

(PN 11000015152)

Module Removal

Loosen the screws and swing the cover open for internal access. Pull up on the module to remove it from the holder. Repeat for the second module.

> **Note:** The supply power surge suppressor assembly consists of two modules. Failure of the surge suppressor assembly requires replacement of both modules and is supplied as one part (PN 11000015152).

Reinstall

Align the module with the slots in the base. Push down on the surge suppressor module until it is seated in the holder. Swing the cover to the closed position and tighten the screws. Apply power to the system and verify that it operates correctly. If not, recheck all connections.

Assembly Removal

Loosen the screws and swing the cover open for internal access. Disconnect the wires at the L/N and the Ground positions. Insert a flat blade screwdriver into the slot below the Ground position and push the handle toward the terminal block to release the surge suppressor assembly.

Reinstall

Position the L/N end of the surge suppressor over the DIN rail first. Insert a flat blade screwdriver into the slot below the Ground position and push the handle toward the terminal block. Push down on the surge suppressor assembly and remove

the screwdriver. Verify that the surge suppressor is firmly attached to the DIN rail. Reconnect the wires to the surge suppressor. Swing the cover to the closed position and tighten the screws. Apply power to the system and verify that it operates correctly. If not, recheck all connections.

DC Surge Suppressor

(PN 11000015153 for OVP
PN 11000015737 for OVP-RADAR)

Module Removal

Loosen the screws and swing the cover open for internal access. Pull up on the module to remove it from the holder.

Reinstall

Align the module with the slots in the base. Push down on the surge suppressor module until it is seated in the holder. Swing the cover to the closed position and tighten the screws. Apply power to the system and verify that it operates correctly. If not, recheck all connections.

Assembly Removal

Loosen the screws and swing the cover open for internal access. Disconnect the wires from the upper and lower terminals of the surge suppressor. Insert a flat blade screwdriver into the slot at the base of the assembly and push the handle toward the terminal block to release the surge suppressor assembly.

Reinstall

Position the upper end of the surge suppressor over the DIN rail first. Insert a flat blade screwdriver into the slot at the base of the assembly and push the handle toward the terminal block. Push down on the surge suppressor assembly and remove the screwdriver. Verify that the surge suppressor is firmly attached to the DIN rail. Reconnect the wires to the surge suppressor. Swing the cover to the closed position and tighten the screws. Apply power to the system and verify that it operates correctly. If not, recheck all connections.

Section 4 – Recommended Spare & Replaceable Parts

Customer Service

Customer Service: (800) 821-5825

Telephone: (615) 261-2000

Facsimile: (615) 261-2600

Shipping Address:

Flash Technology
332 Nichol Mill Lane
Franklin, TN 37067

Ordering Parts

To order spare or replacement parts, contact customer service at 1-800-821-5825.

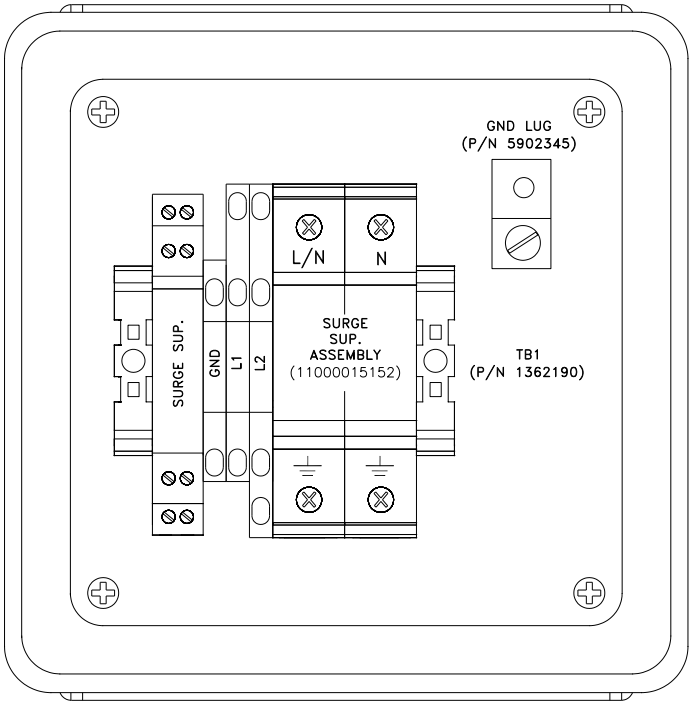


Figure 4-1 – OVP Component Locations

Table 4-1 – Major Replaceable Parts

Description	Part Number
AC POWER SURGE SUPPRESSOR ASSEMBLY	11000015152
DC SURGE SUPPRESSOR (OVP)	11000015153
DC SURGE SUPPRESSOR (OVP-RADAR)	11000015737
GROUND LUG	5902345
OVP (COMPLETE UNIT)	1390190
OVP-RADAR (COMPLETE UNIT)	1390191

Return Material Authorization (RMA) Policy

IF A PRODUCT PURCHASED FROM FLASH TECHNOLOGY MUST BE RETURNED FOR ANY REASON (SUBJECT TO THE WARRANTY POLICY), PLEASE FOLLOW THE PROCEDURE BELOW:

Note: An RMA number must be requested from Flash Technology prior to shipment of any product. No returned product will be processed without an RMA number. This number will be the only reference necessary for returning and obtaining information on the product's progress. Failure to follow the below procedure may result in additional charges and delays. Avoid unnecessary screening and evaluation by contacting Technical Support prior to returning material.

1. **To initiate an RMA: Call Flash Technology's National Operations Center (NOC) at (800-821-5825) to receive technical assistance and a Service Notification number. The following information is required before a Service Notification number can be generated:**
   - Site Name/Number / FCC Registration number/ Call Letters or Airport Designator
   - Site Owner (provide all that apply – owner, agent or subcontractor)
   - Contractor Name
   - Contractor Company
   - Point of Contact Information: Name, Phone Number, Email Address, Fax Number and Cell Phone (or alternate phone number)
   - Product's Serial Number
   - Product's Model Number or part number
   - Service Notification Number (if previously given)
   - Reason for call, with a full description of the reported issue

2. **The Service Notification number will then serve as a precursor to receiving an RMA number if it is determined that the product or equipment should be returned. To expedite the RMA process please provide:**
   - Return shipping method
   - Shipping Address
   - Bill to Address
   - Any additional information to assist in resolving the issue or problem

3. **Product within the Warranty Time Period**
   a. If to be returned for repair;
      - RMA # is generated
      - Once product is received and diagnosed;
        - Covered under warranty – product is repaired or replaced
        - Not covered under warranty – quote is sent to the customer for a bench fee of **$350 plus parts** for repair
          - If the customer does not want the product repaired, a **$50 test fee** is charged before being returned

   b. If advance replacement;
      - Purchase order may be required before the advance replacement order is created
      - RMA # is generated and the advance replacement order is created
      - Once product is received and diagnosed;
        - Covered under warranty – credit given back if PO received
        - Not covered under warranty – credit **will not** be applied to PO

- Flash Technology has sole discretion in determining warranty claims. Flash Technology reserves the right to invoice for parts advanced if the associated failed parts are not returned within 15 days of issue or if product received is diagnosed to be non-warranty.
- Advance replacements will be shipped ground unless the customer provides alternative shipping methods.

4. **Product outside the Warranty Time Period**
   a. For Xenon System board repair; a purchase order is required at time of request for a RMA # for a standard **$350 repair bench fee**
      - RMA # is generated with the PO attached
      - If the board is deemed non-repairable after diagnosis, the customer is notified. If the customer purchases a new board, the repair bench fee is waived. If the customer does not buy a new board, a **$50 test fee** is charged before being returned or scrapped.

   b. For all other products; no purchase order is required to return the product for diagnosis
      - RMA # is generated
      - Once product is diagnosed, quote is sent to the customer for a bench fee of **$350 plus parts** for repair
      - Once the purchase order is received, the product will be repaired and returned
        - If the customer does not want the product repaired, a **$50 test fee** is charged before being returned or scrapped.

5. **After receiving the Flash Technology RMA number, please adhere to the following packaging guidelines:**
   • All returned products should be packaged in a way to prevent damage in transit. Adequate packing should be provided taking into account the method of shipment.
   Note: Flash Technology will not be responsible for damaged items if product is not returned in appropriate packaging.

6. **All packages should clearly display the RMA number on the outside of all RMA shipping containers. RMA products (exact items and quantity) should be returned to:**
   Flash Technology
   Attn: RMA #XXX
   332 Nichol Mill Lane
   Franklin, TN 37067

7. **All RMA numbers:**
   • Are valid for 30 days. Products received after 30 days may result in extra screening and delays.
   • Must have all required information provided before an RMA number is assigned.