Outdoor Utility Enclosure

The **DXE-UE-1P** is a weather-resistant, high impact thermoplastic enclosure which is ideal for outdoor mounting of all types of lightning suppressors and other equipment. Its weather-tight design protects the inside components against rain and directed water spray. The thermoplastic housing and wire entrance grommet materials used in the enclosure are fire retardant, UV stabilized and resists degradation from environmental contaminants, chemical fertilizers and insecticide sprays. The housing can be painted with latex or oil base paints.

Included with the **DXE-UE-1P**:

- Weather-tight 12 ¼" x 12" x 5 ¼" Enclosure
- Plated #8 x 1 ½ Wood Screws (3)
- Four plastic mounting plate spacers
- 8" x 9.5" 6061-T6 Aluminum Mounting Plate with Stainless mounting screws
- Four weather-tight coax feed through couplers
- Drilling Template

Because this enclosure has many potential applications, no holes have been drilled in the enclosure or the aluminum mounting plate. The drilling template should be used to drill the mounting holes in the aluminum plate to match the corner mounting bosses in the enclosure. Four Stainless self-tapping screws are included to secure the mounting plate to the enclosure.

A typical application is shown in **Figure 1**. Two coaxial lightning suppressors and one telephone line protector are mounted to the aluminum mounting plate. A copper ground strap is bonded to the plate and runs to the Single Point Ground system.
**Installation**

The UE-1P can be mounted on exterior walls covered with wood, aluminum or vinyl siding or in the mortar joints of a brick or block wall. Use the three point mounting points with the plated 1 1/2 inch Philips screws. If you are mounting to masonry, install masonry anchors in the mortar joints and use the appropriate screws. Toggle bolts or other specialty anchors may be needed depending on the mounting surface. If necessary, the enclosure can be mounted on a pipe or post with strap clamps. DX Engineering has Stainless clamps in a variety of sizes. See Figure 2.

Because of the wide variety of applications and configurations, it would be prudent to layout the equipment that will be mounted on the aluminum plate before final mounting of the enclosure. The template on the last page indicates the location of unused mounting piers in the enclosure that may interfere with equipment mounting. These are noted by circles with gray shading with an X through them.

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**Preparing the Aluminum Mounting Plate**

Place the plate on a flat surface. Lay the template on the plate. Using a center punch, carefully mark the center of the corner mounting posts as indicated by the circle with the + inside. **Note:** The holes are not symmetrical. Once drilled, the plate will only mount in the enclosure one way. Drill four 5/32 inch size holes to accommodate the Stainless self tapping screws. Do a trial-fit with the plate in the enclosure before drilling the mounting holes for the suppressors. Take the four plastic spacers, place them over each corner mounting post, lay the plate down on top of the spacers, align the screws and tighten them to 20 in/lbs maximum. You might want to mark the plate to indicate the proper orientation. This will ensure whatever you mount on the plate will fit once the plate is re-mounted in the enclosure.
Remove the plate from the enclosure and lay it on a flat surface. Position the suppressors on the plate where they will be mounted. The coax will come into the bottom of the enclosure, through the built-in gasket, to the antenna side of the suppressor. The equipment side coax will run from the suppressor out the top of the enclosure, through the water-tight couplers. In Figure 1, note the alignment of the coax, suppressors and access holes are in a fairly straight line. Some types of coax are not very flexible and sharp bends should be avoided.

Mark the location of the suppressor mounting holes using a sharp felt tip marker. You can draw an outline of the suppressor on the plate to help locate it after drilling. A 3/16 inch drill bit makes the correct size hole to mount most PolyPhaser suppressors.

**Note:** Before mounting any suppressor, clean the aluminum plate and the mounting tab on the suppressor. The PolyPhaser Copper Cleaning kit (part number PPC-CCK) is highly recommended. It includes cleaning pads and copper joint compound which should be used between the suppressor mounting tab and the plate. This will assure a long-lasting corrosion-free joint. You could also use Penetrox A. (part number DXE-P8A) Do not use star or other washers between the suppressor and the plate.

If you use the coax weather-tight couplers, use a 7/8 inch hole saw, available at most home supply stores, to make the proper size hole in the enclosure. Check the hole alignment with the bottom access holes to make sure the coax or wiring will run in a straight line from bottom to top. The center of the coupler mounting hole should be 1-3/16 inches below the edge of the enclosure with the lid open to avoid interference with the mounting plate or the cover when it is closed. See Figure 3. Insert the coax or other wiring through the top couplers and bottom gaskets before installing connectors.

![Figure 3: Coax Coupler Drilling Dimension](image)

If you intend to use a copper strap to bond the aluminum plate to your Single Point Ground as shown in Figure 1, a bonding strap can be fashioned from a piece of copper bar or heavy strap, available from most home supply stores. Cut the bar or strap wide enough so the mounting holes are on either side of the strap. Drill the appropriate mounting holes in the plate. You can use self-tapping screws to hold the clamp and strap to the plate. You must clean the surfaces and use copper joint compound or Penetrox A between the copper and the aluminum to ensure a long lasting, quality bond between the two dissimilar metals. A slot for the copper strap to go through the enclosure could be made on the bottom, in the plain space between the larger and smaller pre-made openings.
PolyPhaser Lightning Protectors

There are several ways in which your equipment can be damaged via the power line. One is a strike elsewhere on the power line, inducing a surge that travels to your equipment. A strike to your own tower or a coupled surge to the phone line can also damage equipment since the power line can provide an alternate path to ground.

To ensure safety, all inputs and outputs (100s) must not only be protected, but must be bonded together via a common low inductance conductor to a common earth ground. All grounds should be bonded to a single point ground system.

Whether you are protecting power mains, another audio equipment, a CCTV security camera, high-end audio, or your new HDTV monitor, PolyPhaser has the correct protection to suit your application and budget. Using multiple surge suppression technologies, PolyPhaser's patented designs offer superior protection in stand-alone and rackmount designs.

Broadband Coaxial Lightning Protectors, DC Blocked

DX Engineering sells the PolyPhase BSM series of broadband, DC blocked, coaxial lightning protectors for general radio use. PolyPhase Corp. is the world's leading supplier of coaxial lightning protectors. These broadband protectors are for general, single channel use. The lightning protectors are either bulkhead or flat surface (flush) mount. The units use a DC blocked gas tube design that has no DC continuity between the center pins. The protectors appear as a DC open between surge and protected ports and offer the best protection in the industry.

Features:
- Lowest through-surge specifications available
- Multistrike capability
- Low strike-through energy
- Very low 0.1 dB insertion loss

<table>
<thead>
<tr>
<th>Model</th>
<th>Connectors</th>
<th>Female Mounting</th>
<th>Frequency Range</th>
<th>RF Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-IS-50KU-C0</td>
<td>UHF</td>
<td>Range 1.5 to 400 MHz</td>
<td>HF: 2 kW, VHF: 375 W, UHF: 125 W</td>
<td></td>
</tr>
<tr>
<td>PPC-IS-50KV-C0</td>
<td>Type N</td>
<td>Range 1.5 to 400 MHz</td>
<td>HF: 2 kW, VHF: 375 W, UHF: 125 W</td>
<td></td>
</tr>
<tr>
<td>PPC-IS-550KU-C0</td>
<td>UHF</td>
<td>Bulb 1.5 to 2 GHz</td>
<td>HF: 2 kW, VHF: 375 W, UHF: 125 W</td>
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<tr>
<td>PPC-IS-550KV-C0</td>
<td>Type N</td>
<td>Bulb 1.5 to 2 GHz</td>
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<tr>
<td>PPC-IS-550KU-C1</td>
<td>UHF</td>
<td>Bulb 1.5 to 2 GHz</td>
<td>HF: 2 kW, VHF: 375 W, UHF: 125 W</td>
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<tr>
<td>PPC-IS-550KV-C1</td>
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<tr>
<td>PPC-IS-550KU-C3</td>
<td>UHF</td>
<td>Bulb 1.5 to 2 GHz</td>
<td>HF: 2 kW, VHF: 375 W, UHF: 125 W</td>
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<td>PPC-IS-550KV-C3</td>
<td>Type N</td>
<td>Bulb 1.5 to 2 GHz</td>
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Visit www.DXEngineering.com for complete specifications.

Broadband Coaxial Lightning Protectors, Bare-end, DC Passing

Use PolyPhase IS-25BF/B to protect your TV as receive only antennas in line with DX Engineering RFM-SP and RFM-1. The unit is designed to pass DC as well as RF. DC-25BF/B was chosen to complement DX Engineering's line of receive only antennas. It is type F cavities connectors and can pass 250 Vdc for control power at the antenna units.

Features:
- Lowest through-surge specifications available
- Multistrike capability
- Low strike-through energy
- Very low 0.1 dB insertion loss
- 75 ohm impedance

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<tr>
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<th>Frequency Range</th>
<th>RF Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPC-IS-25BF/B</td>
<td>Type F</td>
<td>DC to 50 MHz</td>
<td>Receive only</td>
</tr>
</tbody>
</table>

Visit www.DXEngineering.com for complete specifications.

AC/DC Power Protectors

Protecting your equipment from incoming lightning surge energy is extremely important that the AC/DC surge protector is located at the SPT's entry point.

For AC self-contained equipment, you should use PolyPhase's IS-PM20-BP AC power conditioner at the AC main box. This works on AC main installations that consist of two half a neutral and a ground coming from a single earthed transformer. These are the most common installations.

For AC self-contained equipment, take the surge energy out of the AC/DC line by grounding both the neutral and the AC/DC line. Each neutral is protected and includes a Von Wartenberg circuit breaker in the path to ground. The AC/DC surge protector also includes a dry contact alarm indicator.

Features:
- Surge energy diverted to ground, not to neutral
- Protectors on their own circuit breakers: -20 watt input test power
- Protection mechanisms are replaceable if needed
- Multi-strike surge protection

AC Series

Use the PL-25BF line of protectors in line to protect sensitive equipment. The unit has a standard on/off switch and circuit breaker for added protection. It is capable of handling multiple circuits. Mount the heaviest on the PL-25BF's grounding plate and tie the sieve to your single point ground.

Features:
- Power line extension protector
- Multi-strike capability
- Undercounter mounting
- UL listed/ULT (UL system)
- Circuit breaker included for added protection

Data/Phone Line Lighting Protectors

The typical amateur's ham shack has two mourns for lightning damage than just the one side from the antenna. With most amateurs having a computer with internet access, lightning protection needs to be added to the telephone lines as well. Telephone line protectors are added by the phone company as a first line of defense, but are not always connected to the high current ground or a fast transient response ground system. PolyPhase offers a series of data and telephones when a higher level of protection is required.

Features of the PPC-IS-SPLT lighting protector for 2-wire telephone include:
- Application: Telephones
- Max Operating Current: 2 A
- Turn-Off Time: 2 ms to 2.5 ms
- Resistance: 20 kOhm
- 0.5 dB Breakdown: 250 kV

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AC/DC Power Protectors

Protecting your equipment from incoming lightning surge energy is extremely important that the AC/DC surge protector is located at the SPT's entry point.

First install an AC power circuit protector on the incoming power mains. It is important that this AC circuit protector is located at the SPT's entry point.

Secure the equipment connected to an AC series protector into the SPT. Placing all equipment plugged into the circuit outlet and grounded to the same point allows the equipment to be protected in the same way with no other outlets to a lower potential.

AC Shunt

For AC self-contained equipment, you should use PolyPhase's IS-PM20-BP AC power conditioner at the AC main box. This works on AC main installations that consist of two half a neutral and a ground coming from a single earthed transformer. These are the most common installations.

For AC self-contained equipment, take the surge energy out of the AC/DC line by grounding both the neutral and the AC/DC line. Each neutral is protected and includes a Von Wartenberg circuit breaker in the path to ground. The AC/DC surge protector also includes a dry contact alarm indicator.

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Grounding Parts and Accessories

Single Point Grounding (SPG) is the most important aspect of a grounding scheme and is the key when protecting your equipment from EMP surge and lightning damage. A properly grounded home installation, including the antenna feedwire, will also go a long way to protecting your investment and giving you peace of mind.

Constructing a grounds system may require bonding dissimilar materials. For example, often we need to bond copper striplines from a lower ground system or ground out to a galvanized or aluminum tower. In many cases, the only solution is to use a thermally welded connection, which is expensive and inconvenient. The PFCO-KIT-SPG eliminates this problem by providing a non-conductive, quality bonding connection to dissimilar materials. The PFCO-KIT-SPG is available in a variety of materials and sizes to cover all your needs.

Copper Strips to Copper Ground Rod Clamp

This design bonds a 5/8" ground rod to a copper strip, 1/8" stainless steel hardware included. PFCO-KIT-SPG

Copper Strips to Copper Ground Rod Clamp

Suitable for use with any type of copper ground rod, including stainless steel hardware. The PFCO-KIT-SPG is available in a variety of materials and sizes to cover all your needs.

Utility Enclosure

This weather-resistant, high impact thermoplastic enclosure is perfect for outdoor installations of lighting protectors and other equipment. The enclosure measures 15 1/4 x 12 x 11 3/4 inches and features a removable self-cleaning hinged cover. The utility enclosure includes all mounting hardware, an aluminum plate to mount lighting protectors, a plate mounting hardware, two weather-tight covers, and all necessary tools. The enclosure is available in a variety of materials and sizes to cover all your needs.

Copper Strips to Copper Strips

These strips can be used to connect copper wires together to create a low-resistance ground system. Copper strips have a larger surface area and lower resistance per foot than copper wire, which makes them ideal for grounding purposes. The PFCO-KIT-SPG is available in a variety of materials and sizes to cover all your needs.

Copper Strips to Copper Wire Clamps

These copper wire clamps provide a convenient way to bond copper wire to copper grounding straps. These clamps are made of copper screw and include 1/8" stainless steel hardware. The PFCO-KIT-SPG is available in a variety of materials and sizes to cover all your needs.

Copper Strips to Copper Wire Strips

These strips can be used to connect copper wire to copper wire clamps. These strips are made of copper screw and include 1/8" stainless steel hardware. The PFCO-KIT-SPG is available in a variety of materials and sizes to cover all your needs.

Copper Strips to Copper Ground Rod Clamp

This design bonds a 5/8" ground rod to a copper strip, 1/8" stainless steel hardware included. PFCO-KIT-SPG

Copper Strips to Copper Ground Rod Clamp

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Technical Support
If you have questions about this product, or if you experience difficulties during the installation, contact DX Engineering at (330) 572-3200. You can also e-mail us at DXEngineering@DXEngineering.com.

For best service, please take a few minutes to review this manual before you call.

Warranty
All products manufactured by DX Engineering are warranted to be free from defects in material and workmanship for a period of one (1) year from date of shipment. DX Engineering’s sole obligation under these warranties shall be to issue credit, repair or replace any item or part thereof which is proved to be other than as warranted; no allowance shall be made for any labor charges of Buyer for replacement of parts, adjustment or repairs, or any other work, unless such charges are authorized in advance by DX Engineering.
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The above warranties shall not extend to any products or parts thereof which have been subjected to any misuse or neglect, damaged by accident, rendered defective by reason of improper installation, damaged from severe weather including floods, or abnormal environmental conditions such as prolonged exposure to corrosives or power surges, or by the performance of repairs or alterations outside of our plant, and shall not apply to any goods or parts thereof furnished by Buyer or acquired from others at Buyer’s specifications. In addition, DX Engineering’s warranties do not extend to other equipment and parts manufactured by others except to the extent of the original manufacturer’s warranty to DX Engineering.
The obligations under the foregoing warranties are limited to the precise terms thereof. These warranties provide exclusive remedies, expressly in lieu of all other remedies including claims for special or consequential damages.
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Avoid Drilling in Circles with This Mark (Indicates locations of standoffs)

Mark and Drill 5/32” Holes

Aluminum Plate Drilling Template. Cut-out along line and tape to plate.