DTX120 & DTX240 Series
Surge Protective Device

The DTX120 and DTX240 Series of Surge Protection Devices (SPD) are designed to provide protection to service panels, load centers, or where the SPD is directly connected to the electronic device requiring protection. Maximum protection will only be achieved if the SPD is properly installed. Please carefully read the information below and follow the instructions.

⚠ DANGER **DANGER:** Electrical shock or burn hazard. Installation should only be made by qualified personnel. Failure to lockout electrical power during installation or maintenance can result in severe burns or electrocution. Panel must be de-energized prior to installation or maintenance.

⚠ CAUTION **CAUTION:** Check to make sure system voltages do not exceed the SPD voltage requirement and the correct SPD voltage/model has been selected.

⚠ CAUTION **CAUTION:** This unit must be installed in accordance with the National Electrical Code (ANSI/NFPA-70) and applicable local codes.

⚠ CAUTION **CAUTION:** Ungrounded power systems are inherently unstable and can produce excessively high line-to-ground voltages during certain fault conditions. During these fault conditions, any electrical equipment, including an SPD, may be subjected to voltages which exceed their designed ratings. This information is being provided to the user so that an informed decision can be made before installing any electrical equipment on an ungrounded power system.

NOTICE: Do not cut wires until the SPD is mounted and minimum wire lengths have been verified. All connection leads should be cut to minimum possible lengths; never coil or push aside excess lengths.

Unpacking & Preliminary Inspection
Inspect the entire shipping container for damage or signs of mishandling. Rremove packing materials and further inspect the unit for any obvious shipping damages. If any damage was found and is a result of shipping or handling, immediately file a claim with the shipping company and forward a copy to nVent.

Storage Environment
This SPD should be stored in a clean, dry environment. Storage temperature range is -40°F (-40°C) to +140°F (+60°C). Avoid exposure to high condensation.

PRE-INSTALLATION & INSTALLATION PLANNING

Operating Environment
The DTX120 & DTX240 units use a NEMA 4X enclosure. Flush mount and side mount kits are available as options. Before installing, ensure that your enclosure type and application are appropriate with regard to moisture, dirt, excessive dust, flammable materials or atmospheres, corrosive vapors, etc. This SPD is designed for an ambient range of -40°F (-40°C) to +176°F (+80°C) with a relative humidity of 0% to 95% (non-condensing).

Audible Noise
SPD background noise is negligible or non-existent and does not restrict the location of installation.

WARNING:
1. nVent products shall be installed and used only as indicated in nVent product instruction sheets and training materials. Instruction sheets are available at www.nVent.com and from your nVent customer service representative.
2. nVent products must never be used for a purpose other than the purpose for which they were designed or in a manner that exceeds specified load ratings.
3. All instructions must be completely followed to ensure proper and safe installation and performance.
4. Improper installation, misuse, misapplication or other failure to completely follow nVent's instructions and warnings may cause product malfunction, property damage, serious bodily injury and/or death, and void your warranty.

SAFETY INSTRUCTIONS:
All governing codes and regulations and those required by the job site must be observed.
Always use appropriate safety equipment such as eye protection, hard hat, and gloves as appropriate to the application.

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Lead Lengths & Maximizing SPD Performance
SPDs must be located as close to the circuit as possible to minimize let-through voltage. Use the shortest and straightest possible leads.

Overcurrent Protection
DTX products are either Type 1 or Type 2 UL listed. For Type 1 products, no upstream overcurrent protection is required however it is recommended to utilize the proper sized overcurrent protection based on the amperage rating of the conductor used with respect to NFPA-70. For Type 2 products, overcurrent protection is required and should also follow the recommendations of NFPA-70 and local regulations.

INSTALLATION INSTRUCTIONS

Verify system voltage by measuring L-N, L-G, L-L, and N-G of the system. Confirm that the SPD is correctly rated for the system to which it is to be connected by comparing the measured voltages to the SPD voltage ratings shown on the product side rating label. The measured voltage should match the nominal operating voltage of the product, the maximum continuous operating voltage (MCOV/Uc) specifications must not be exceeded.

Identify proper location for the SPD. Locate the unit as close as physically possible to the panel being protected and as close to the electrical connection as possible so as to avoid excess lead lengths and the need for sharp bends in the wires. Mount top and bottom SPD flanges securely. DTX enclosures are suitable for indoor use with included fittings. For outdoor use and to achieve a NEMA 4X enclosure rating, all conduits and fittings must be rated and installed properly.

Panel must be de-energized prior to installation or maintenance.

Remove lid for wire installation. Remove external screws (4 for DTX120 and 8 for DTX240) using a 1/8" hex drive. Set lid and screws aside during installation of wires.

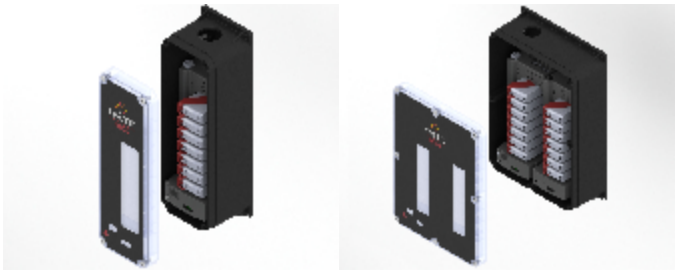

Figure 1: Remove Lid

Connect proper ground. Attach an apprpriately sized grounding conductor (#14 - #6 AWG) to the ground stud in the DTX housing. The housing of the DTX unit is bonded to the grounding terminal for equipment safety ground purposes as per National Electrical Code. The grounding conductor is to be grounded to earth at the service equipment or other acceptable building ground. Attach the grounding conductor to the panel's ground bus for proper operation. Wire length should be minimized to improve performance. There is no minimum wire length requirement.
NOTE: For isolated ground systems, bond the grounding conductor from the DTX unit to the nonisolated equipment ground, not the isolated equipment ground.

Figure 2: Ground Connection

Connect neutral conductor. Terminate an appropriately sized conductor (#14 - #6 AWG) to the Neutral (N) terminal. The wire insulation should be stripped back 0.5 in. before terminating. Tighten set screw to 19.5 in-lb. Wire length should be minimized to improve performance. Connect the neutral conductor of the DTX to the neutral lug on the panel.

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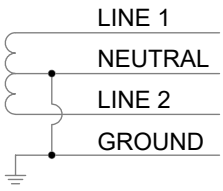
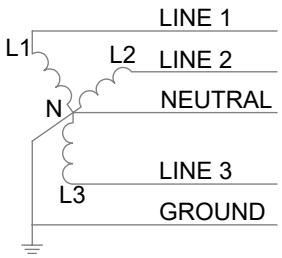
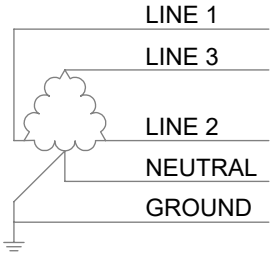
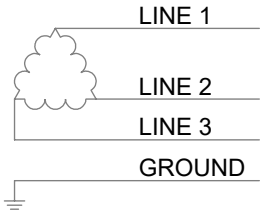
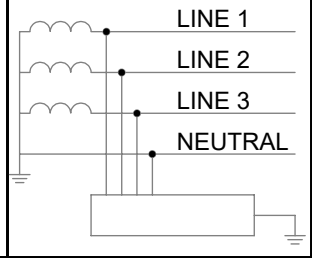
Connect phase conductors. Terminate appropriately sized conductors (#14 - #6 AWG) to the Line (L1, L2, & L3*) terminals. The wire insulation should be stripped back 0.5 in. before terminating. Tighten set screw(s) to 19.5 in-lb. Wire length should be minimized to improve performance. With the POWER OFF, connect each phase lead.

***Note:** For High Leg Delta systems, the L3 terminal is marked with a RED cap. The conductor terminating into this terminal must be connected to the High Leg phase of the power system.

Attach lid and install screws. Torque all screws (4 for DTX120 and 8 for DTX240) to 10 ft-lb (13.5 N-m).

Activate unit. Energize and confirm proper operation of indicators and/or options. If Audible Alarm cycles, de-energize and contact nVent for assistance.

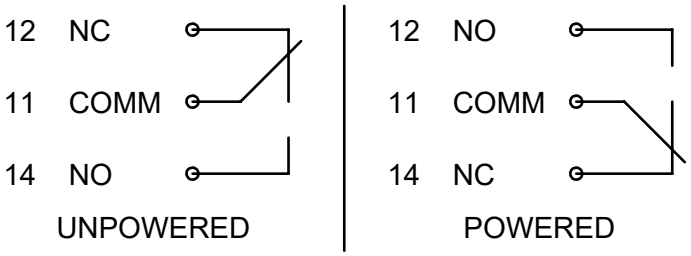
Figure 3: High Leg Identification

SPLIT	WYE	HIGH LEG DELTA	DELTA	TT/TTS
2 PHASES 1 NEUTRAL 1 GROUND	3 PHASES 1 NEUTRAL 1 GROUND	3 PHASES 1 NEUTRAL 1 GROUND	3 PHASES 1 GROUND	3 PHASES 1 NEUTRAL 1 GROUND
				

OPERATION

Remote Alarm Contact

The DTX has a form C contact for remote indication of protection status. Use 28 - 16 AWG wires to connect to the contact terminals. The contacts will change state during end-of-life module conditions.



Audible Alarm

The Audible Alarm will sound upon module end-of-life conditions and phase loss. The Audible Alarm may be silenced by pushing the alarm shut-off button on the outside of the enclosure.

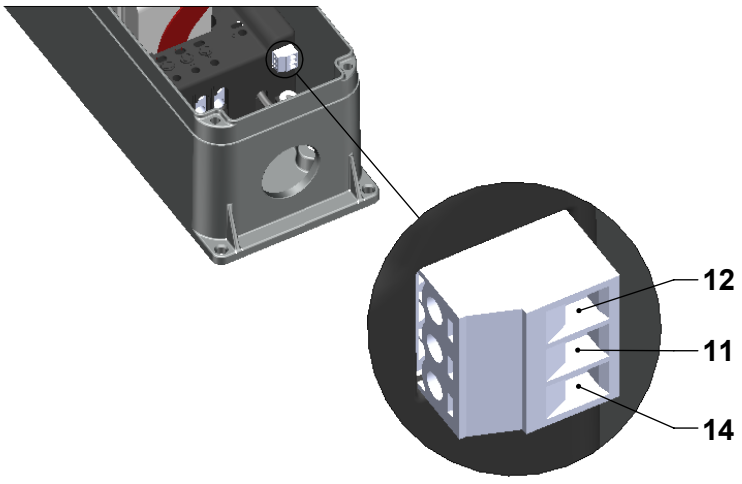


Figure 4: Remote Alarm Contacts

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LED Notification

Each SPD contains two LEDs (one green and one red). When the green LED is illuminated, complete protection is present. Upon module end-of-life conditions or phase loss, the red LED will become illuminated. For diagnostics, refer to Table 1 below.

Green LED	Red LED	Audible	OLED Display	Action
On	Off	Off	Surge/TOV Count	The SPD is operational
Off	Off	Off	Off	No power to the unit
Off	On	On	Phase Loss	Check line voltages
Off	Flashing	Off	Phase Loss	Alarm has been silenced; Check line voltages
Off	On	On	Replace Module(s)	Replace module(s)
Off	Flashing	Off	Replace Module(s)	Alarm has been silenced; Replace module(s)

Table 1: Diagnostics Table for DTX120 & DTX240 Series

Module End-of-Life Condition

Along with the LED notifications, each module has a visual indicator flag that provides feedback on the status of each module. Under normal operation, the flag will be green. Once the module reaches end-of-life, the flag will change to red and the module will need to be replaced. Remove power from the SPD and unfasten the lid using the external screws. Once the lid is removed, use the red lever(s) to lift the module(s) out of place and set the failed module(s) aside. Replace any failed module(s) with the correct module type.

Figure 5: Remove Module(s)

MAINTENANCE

SPDs require minimal maintenance. We recommend periodic inspection and also following any periods of lightning or transient voltage activity. Check the diagnostic and visual indicators and perform the necessary actions as outlined in Table 1. Ensure panel is de-energized prior to performing any maintenance on the unit.

Surge/TOV counter reset. The Surge/TOV counter can be reset by holding down the alarm shut-off button for 60 seconds