TPD
transient protection design™

Residential Reference Guide

Protect Breaker Panels

Count the number of breaker panels (service entrance and sub-panels) inside & outside the structure. Use the TPX-1S240-F-100 as a starting point for each panel/location. This includes generator panels. The TPX-1S240-F-100 has a weatherproof enclosure to be installed indoors or outdoors.

Are these panels surface mounted or flush mounted? For flush mount panel locations, order the flush mount kit TPX-FMK45 for each unit that needs to be flush mounted.

Install on a spare 20 or 30 amp two pole breaker where possible, or wire directly to the electrical system without circuit interrupt. The TPX-1S240-F-100 is internally fused, so it can be safely wired to the electrical system if no spare breaker is available. Panel amperage is not a factor.

Protect Lighting Panels

Count the number of lighting panels.

Do your lighting panels have breakers or individual modules fed from a breaker panel?

If your lighting panel has breakers, use the TPX-1P120-F-CW to protect the entire lighting panel with one unit.

If your lighting panel has individual modules protect the breaker panel that feeds it with the TPX-1S240-F-100.

Protect Landscape Lighting Dimming Modules

Count the number of individual 120V circuits feeding landscape lighting modules. Protect the individual 120V landscape lighting lines that could be damaged by lightning from outside the structure.

For 120V 15 amp circuits, use TK-LT120-15A-DIN2.

For 120V 20 amp circuits, use TK-LT120-20A-DIN2.

Protect Landscape Lighting Transformers

Do you want to protect the transformer, the breaker panels, and the dimming module feeding the transformer?

For the protection of the breaker panel inside the home or building, a TPX-1S240-F-100 should be installed on that breaker panel. This will protect a lighting transformer from any surge originating upstream from the breaker panel or from any equipment fed by that breaker panel.

To protect the transformer itself from lightning in the field, place the surge protection on the outputs of the transformer. Protect your transformer outputs by using the TPD-DM24-15A.

Protect Cable Entry Internet & TV

Count the number of coaxial cable lines entering the structure.

Count the number of coaxial cable lines leaving the structure and going to other parts of the property or campus.

A TPD-Cable should be placed on all entering and exiting coaxial cable lines to maintain proper grounding and equipment protection inside each building. Visually inspect cable entry to see if the cable line is landed outside or inside the building and if it is bonded to the electrical system ground. Being connected to an earthing electrode that is not connected to the electrical system ground is a potential problem for electronics and should be documented and corrected. Often we find that the contractor installed an earthing electrode (ground rod) and did not bond it to the electrical system ground.

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Protect Network Wires Coming From Cable Modem

We have heard countless stories from dealers of cable companies eliminating cable surge protectors whether they were working or not. If this can happen to your installation and in high lightning locations, we recommend additional protection for the network by installing the TPD-CAT6 on the ethernet wire from the cable company modem.

Protect Outdoor Speaker Pathways Back to Amplifiers

Count the number of outdoor speakers/channels that leave the structure and their max wattage per channel.
Use TPD-AmpPro-250 for two-channel protection on all systems under 250 watts per channel.
Use TPD-AmpPro-1000 for two-channel protection on all systems under 1000 watts per channel.
Use TPD-AmpPro-4000 for the strongest and best protecting one channel protection unit with a maximum of 4000 watts per channel.

Protect Outdoor POE Camera Pathways Back to Network

Count the number of outdoor cameras to protect potential pathways returning into network switches and equipment.
Use TPD-CAT6-POE on each outdoor camera pathway to protect the networking equipment inside the building.
Best protection practices teach us to always isolate cameras from metal or remote earth connections. When security is a concern, such as in hospitals and parking garages, a TPD-CAT6-POE should be installed at the camera end. The TPD-CAT6-POE must be housed inside a weatherproof enclosure and grounded back to the head end electrical ground. It is sometimes not cost-effective to protect the remote camera without planning for an enclosure to be mounted at the camera to house the surge protector and adding a grounding wire to run to each camera surge protection. This is why isolation of the remote camera from metal/earth is so important. When we say remote, we mean separate from the building. When a camera is damaged, there is a more significant chance that the event is coming from the earth and through what the camera is mounted on rather than riding the wiring down to the camera.

Protect Network Wires That Enter or Leave Structure

Count the number of network wires that enter or leave the structure.
One TPD-CAT6 should be installed on any network wire as it leaves one structure. Then another TPD-CAT6 should be installed as it enters the second structure to maintain proper grounding and protection of the equipment inside each structure.

Protect Gates

Install a TPX-1S240-F-100 inside the structure on the breaker panel feeding the gate. This will protect the electronics in the structure from surges coming in on the gate feed. If your gate has a breaker panel install the TPX-1S240-F-100 at the gate panel.
Is your gate powered by an individual circuit coming from the nearest structure?
If so, is the breaker 30 amp or less? Confirm this is a 120V circuit and 30 amp or less, and use the TK-LT120-30A-DIN2 at the gate to protect the electronics and motors at the gate cabinet.
Are you communicating with the gate over a copper wire?
If so, you can protect either the gate end or the structure end, depending on what you want to protect and where you have room to install surge protectors.
For network wiring, install the TPD-CAT6 at both the house and gate end.
Install the TPD-CAT6-POE in front of the network switch feeding the POE camera for POE cameras at the gate.
Install the TPD-24LIT4 in front of the gate sensing system for driveways and sensor protection.

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Protect Pools

Does your pool equipment have a breaker panel or disconnect?

If your pool equipment has a breaker panel, install the TPX-1S240-F-100 on the pool panel to protect the pool pump equipment and all electronics fed from this breaker panel.

Are you communicating with the pool equipment over copper wire?

If so, you can protect either or both the pool end and the structure end depending on what you want to protect and where you have room to install surge protectors.

For 4 wire 24V hardwired terminals, use TPD-24SLP4.

For DB9 connection, use TPD-DB9.

Protect Access Control

To protect entire breaker panels from incoming and cross circuit transients, install the TPX-1S240-F-100 at the breaker panel feeding access control equipment.

To protect an individual 120V 20 amp circuit feeding a control panel circuit, install the TK-LT120-20A-DIN2 at or near the equipment you wish to protect. Because of the exposed terminals, this unit will require an enclosure for the unit to be mounted inside.

Install the TPD-10SLP6 on RS232/422 hardwired door or card readers.

Install the TPD-15SLP6 on RS485 hardwired door or card readers.

Install the TPD-DB9 on RS232/422/485 using DB9 connections.

Install the TPD-Cat6-POE on IP readers and cameras.

Install the TPD-Cat6 on an ethernet cable or switch.

Protect HVAC

Always protect breaker panels feeding HVAC equipment with the TPX-1S240-F-100.

Install the TPD-24SLP8 on low voltage wires from the outdoor unit in high exposure areas and when thermostats have suffered damage. The trick to protecting thermostats is not protecting the wires going to each thermostat but protecting the wires coming from outside before they get to your air handlers and/or before they get into your thermostat system.

We saw the failure of 24 Crestron thermostats in one location out of 32 total. They had five outdoor units. The solution was five TPD-24SLP8 units placed at each air handler. This protected all 32 thermostats.

Protect Mini-Split

Always protect breaker panels feeding mini-splits with the TPX-1S240-F-100. Your mini-split warranty may require a surge protection device to be installed to get the full value from your included product warranty.

For the best possible surge protection and for moderate to high lightning areas, install the TPX-1S240-F-100 at the disconnect feeding the mini-split.

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Protect Satellite

Count the number of coaxial satellite lines entering the structure.

Install the TPD-SAT1 on each incoming satellite line. Count the number of coaxial satellite lines leaving the structure and going to other parts of the property or campus. Install the TPD-SAT1 on each outgoing satellite line. A TPD-SAT1 should also be installed on satellite coaxial cable lines as they enter remote structures to maintain proper grounding and equipment protection inside each building. Visually inspect satellite entry to see if the satellite coaxial line is landed outside or inside the building and if it is bonded & grounded to the electrical system. Being connected to an earthing electrode that is not connected to the electrical system is a potential problem for electronics and should be documented and fixed. Often we find that the contractor installed an earthing electrode (ground rod) and did not bond it to the electrical system.

Protect Generator & ATS

A structure should first be protected from both utility power surges and spikes and surges/dirty power from a generator (especially on startup). This is accomplished by installing the TPX-1S240-F-100 on each panel in the structure. This includes service entrance and emergency panels directly fed by the generator. Whether the surge is coming from outside the structure or from other equipment inside the structure, the best place to install the suppressors/shock absorbers is on each breaker panel.

For the best possible protection at the automatic transfer switch, use the TPX-1S240-F-100. When someone purchases a generator, they should want to ensure the system's brain is protected. This unit will also give the entire structure an additional layer of protection while safeguarding the transfer switch and generator circuitry.

Install and ground surge protection on any and all lines that communicate with other structures and outdoor equipment on the property.

Count the number of wires that go to and communicate with equipment in other structures.

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