TPD™

transient protection design

SURGE PROTECTION

INDUSTRIAL **COMMERCIAL** **RESIDENTIAL**

Eliminate Lock Ups, Glitches And Failures

It is in the customer's best interest to protect their investment in electronic and electrical equipment by understanding equipment reliability and surge protection. This topic is avoided because fully understanding the technologies available and explaining the solutions they provide on a systems level have been difficult until now. Transient Protection Design (TPD) provides you with surge protection products for all your data, audio, video, phone, electrical and grounding needs. TPD also offers design diagrams for easy explanation of how to protect everything. Transient Protection Design is what end users need to reduce their exposure to electronic damage and lockups due to transient surges.

What is an electrical transient or surge?

A transient or surge is an impulse of undesirable electrical energy in the electrical or data system. These events degrade and destroy electronic components. Even small transients (less than 50 volts) can lock up electronics, cause reprogramming issues, and cause glitches/malfunctions to the system.

Where do transients come from?

10% of electrical transients at the breaker panel come from outside the home or facility.

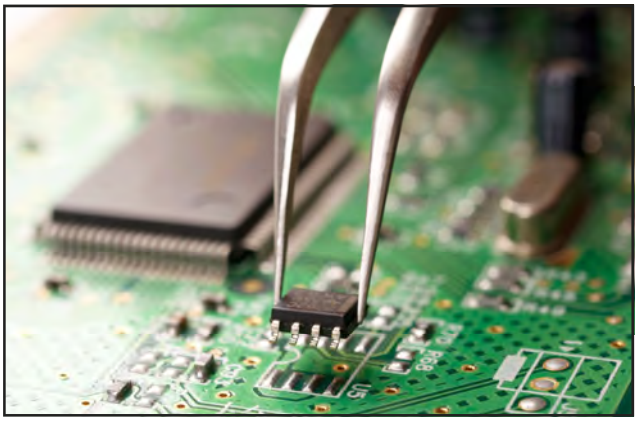
90% of electrical transients at the breaker panel come from within the home or facility when equipment is cycled on and off (such as air conditioners, dish washers, motors, vacuum cleaners etc.), and almost all are less than 1000 volts.

How do transients get into the system?

A majority of transients are generated by equipment inside the home where it migrates to other equipment through your home's wiring. These degrading type transients cause lock ups and glitches and permanent damage over time. Lightning can be much more destructive and enters the home by coupling onto miles of power, phone and cable utility lines. Other times lightning will couple onto copper lines (outdoor speakers, security cameras, satellite lines etc.) around the home when strikes occur at or within 1/4 mile of the home.

How do I safeguard my electrical and data systems?

Protect and extend the life of equipment by protecting against destructive transients in the system with placement of TPD units at the most strategic locations. This means protecting all electrical breaker panels, protecting incoming phone and cable lines, and protecting all other copper wires entering or leaving the home.



The picture to the right is a close up of a computer circuit board. The wire pathways inside the integrated circuits being placed on this board are 10 times smaller than a human hair. A mere 50 volt surge at this level can cause permanent damage and lockups inside this integrated circuit. Over time these wire pathways will blister and fail without adequate surge protection and power filtering. Damage at this level does not show itself immediately but causes glitches and hang ups later on. Information to a computer is like Morse Code in that the computer uses a series of 1's and 0's to read information. Surges degrade circuit board wire traces causing certain pathways inside to generate errors where the computer does not understand the code. The computer sees this as a mistake causing it to lock up. In today's world we have computer chips in nearly everything we use!

Breaker Panel Surge Suppressor with EMI/RFI Filtration

Install on all breaker panels to protect equipment from internal and external surges.

Transient Protection Design EMI/RFI filter absorbs, dissipates and removes harmful transient voltages and noise traveling on AC power circuits at the breaker panel reducing lockups, glitches, reprogramming issues & damage.

Model #	Lifetime Warranty Including Lightning
TK-TTLP-1S240-FL	120/240 Split Phase, 3W+G
TK-TTLP-3Y208-FL	120/208 Three Phase, 4W+G
TK-TTLP-3Y480-FL	277/480 Three Phase, 4W+G

Model #	15 Year Warranty Including Lightning
TPX-1S240-F-100	120/240 Split Phase, 3W+G
TPX-3Y208-F-100	120/208 Three Phase, 4W+G
TPX-3Y480-F-100	277/480 Three Phase, 4W+G

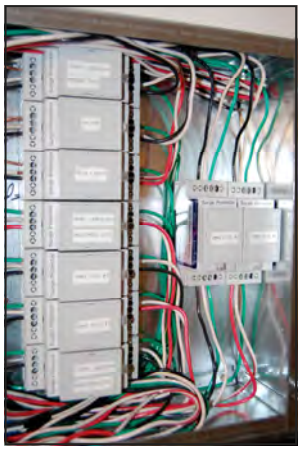
TTLP manufactured by Total Protection Solutions.

See datasheets for additional voltages, flush mount plates and monitoring options.

Individual Circuit Power Filter & Surge Suppressor

Protect Dimming Modules - Landscape Lighting - Pumps - Fountains - Outdoor Circuits

Model #	Description
TPD-DM24-15A	24 volt AC and DC, 15 amp
TPD-DM24-20A	24 volt AC and DC, 20 amp
TK-LT120-15A-DIN2	120 volt AC and DC, 15 amp
TK-LT120-20A-DIN2	120 volt AC and DC, 20 amp
TK-LT120-30A-DIN2	120 volt AC and DC, 30 amp
TK-LT250-15A-DIN2	250 volt AC and DC, 15 amp
TK-LT250-20A-DIN2	250 volt AC and DC, 20 amp
TK-LT250-30A-DIN2	250 volt AC and DC, 30 amp



Above units are 2 wire plus ground.

LT manufactured by Total Protection Solutions

PHONE - Phone Line Surge Suppressor

Protect Phone Systems - Incoming Data Lines

Model #	Description
TPD-PHONE-1	1 pair
TPD-PHONE-2	2 pair
TPD-PHONE-RJ	4 pair RJ45
TPD-PHONE-5	5 pair

Cable & Satellite Protection

Protect incoming and outgoing cable and satellite lines to all buildings.

Model #	Description
TPD-CABLE	5MHz to 1.0GHz, (95VRMS, 135V Peak)
TPD-SAT2	5MHz to 3.0GHz, (35VRMS, 50V Peak)

F Connectors; 2 Way Communication Compatible

Use TPD-SAT2 for satellite radio.

TPD-CABLE

TPD-SAT2
Protects Two Drops

BNC Camera & DVR Protection

Protect DVR & Camera systems

Model #	Description
TPD-CAM-BNC	9V, 500MHz, 100Mbps
TPD-CAM-BNC-S	9V, 500MHz, 100Mbps, Slim Line

BNC Connectors

TPD-CAM-BNC-S

TPD-CAM-BNC

DB9 - RS232 Protection w/ DB9 Connection

Protect Pool Controls & Home Automation Systems

Model #	Description
TPD-DB9	All Pins Protected, 26VDC MAX, 10Mbps Max

DB9 Connector

Speaker & Amplifier Protection

Protect Amplifiers by covering outdoor speaker pathways.

Model #	Description
TPD-AmpPro-250	2 channel distributed audio 250 watts
TPD-AmpPro-1000	2 channel distributed audio 1000 watts

Call for higher wattage units and availability.

Network, Modems, Routers, Switches, NVR & IP Camera Protection

Protect Ethernet Network, IP Cameras and Distributed Video lines.

Model #	Description
TPD-CAT6	7.5V Max, 10Gbps Max
TPD-CAT6-POE	56V Max, 10Gpbs Max

Two Female RJ45 Connectors

Model #	Description
TPD-CAT6-S	7.5V Max, 1Gbps Max
TPD-CAT6-POE-S	56V Max, 1Gbps Max

One Male & One Female RJ45 Connectors

TPD-CAT6-POE

TPD-CAT6-POE-S

RS232/422/485, Microphones, Alarms, Sirens & 4-20mA Protection

Protect all incoming and outgoing communication and data lines.

Available Voltages: 10, 15, 24, 48, 120 & 190V AC and DC

# of Wires: 2, 4, 6, 8, *8-RJ &10 (*RJ45 Connection)

Model #	Description
TPD-10SLP2	10V, 2 Wire
TPD-10SLP4	10V, 4 Wire
TPD-10SLP6	10V, 6 Wire
TPD-10SLP8	10V, 8 Wire
TPD-10SLP8-RJ	10V, 8 Wire RJ45
TPD-10SLP10	10V, 10 Wire

← *Microphones*

← *RS232, RS422*

Model #	Description
TPD-15SLP2	24V, 2 Wire
TPD-15SLP4	24V, 4 Wire
TPD-15SLP6	24V, 6 Wire
TPD-15SLP8	24V, 8 Wire
TPD-15SLP8-RJ	24V, 8 Wire RJ45
TPD-15SLP10	24V, 10 Wire

← *Alarms & Sirens*

← *RS485*

Max Data Rate: 10Mbps

Max Amperage: 500mA

Model #	Description
TPD-24SLP2	24V, 2 Wire
TPD-24SLP4	24V, 4 Wire
TPD-24SLP6	24V, 6 Wire
TPD-24SLP8	24V, 8 Wire
TPD-24SLP8-RJ	24V, 8 Wire RJ45
TPD-24SLP10	24V, 10 Wire

← *Pool, Pump, Thermostats & HVAC Controls*

Model #	Description
TPD-48SLP2	48V, 2 Wire
TPD-48SLP4	48V, 4 Wire
TPD-48SLP6	48V, 6 Wire
TPD-48SLP8	48V, 8 Wire
TPD-48SLP8-RJ	48V, 8 Wire RJ45
TPD-48SLP10	48V, 10 Wire

← *Phone Line Extensions*

TPD - XX SLP YY#

XX Operating Voltage 10, 15, 24, 48, 120, 190

The maximum operating voltage is listed above. Use the lowest voltage possible without going under the system operating voltage.#

TPD - XX SLP YY##

YY Number of Wires 2, 4, 6, 8, 10

The number or wires that need protected. Each unit comes with hard ground connection to ground each unit. Do not connect floating grounds (or shield wires) without first reading installation manual. #

LIT - Lighting System Protection

Protect programmable links and dimming bus lines going to and from processor.

TPD-24LIT24

TPD-24LIT12

TPD-24LIT4

Max Data Rate: 500kbps

Max Amperage: 5A

# of Wires: 4, 12, & 24

Voltages: 24 & 36V AC & DC

Model #	Description
TPD-24LIT24	24V, 24 wire
TPD-24LIT12	24V, 12 wire
TPD-24LIT4	24V, 4 wire

Model #	Description
TPD-36LIT24	36V, 24 wire
TPD-36LIT12	36V, 12 wire
TPD-36LIT4	36V, 4 wire

Programmable links & Dimming Buses

TPD-24LIT24... 24 volt, 24 wire

TPD-24LIT12... 24 volt, 12 wire

TPD-24LIT4... 24 volt, 4 wire

Drive Way Probes

TPD-24LIT4 ... 24 volt, 4 wire

Compact Panel Protection for Space Constraint Applications

Protect gate panels and remote panels from lightning.

Model #	Description
TPX-1S240-CW	120/240 Split Phase, 3W+G 15 Year

Tech Notes

15 Year Warranty Including Lighting

Grounding Block & Din Rail

Model #	Description
TPD-GRD-7	Copper Ground Bar
TPD-DIN-12	Aluminum Din Rail 11 to 12 inch

TPD-DIN-12

TPD-GRD-7

VDIAL - Over/Under Voltage Protection Shut Off With Time Delay

Protect and reset any electronic load from an over or under voltage event!

Model #	Description
TPD-VDIAL	One Plug, Wall Mount Voltage Dial

Smart Outlet Eliminate Lockups

Automatic Shutoff With Reset:

3 to 5 Minutes After Power Returns

Upper Voltage Limit: 140V

Low Voltage Limit: 105V to 90V

Max Load: 20 Amp

Comments

"We were continually losing equipment due to over and under voltage events before we started using the TPD-VDIAL. We are now installing the TPD-VDIAL on all electronic equipment in all homes we work on in this development."

Low Voltage Dial Setting
105V to 90V

On/Off Switch

GLSF - Ground Loop Surge Filter

Protect electronics from ground loop potentials that damage and destroy equipment.

Model #	Description
TPD-GLSF-HW	Ground Loop Surge Filter, Hard Wired
TPD-GLSF-P	Ground Loop Surge Filter, Plug In

Tech Notes

Stops damaging transients from traveling up ground wires and damaging electronic systems.

"We figured out that the pool house had its own utility ground. After a few failures it was obvious that we were experiencing the damage because of the ground system. After installing the TPD Ground Loop Surge Filter all issues in the pool house rack went away. "

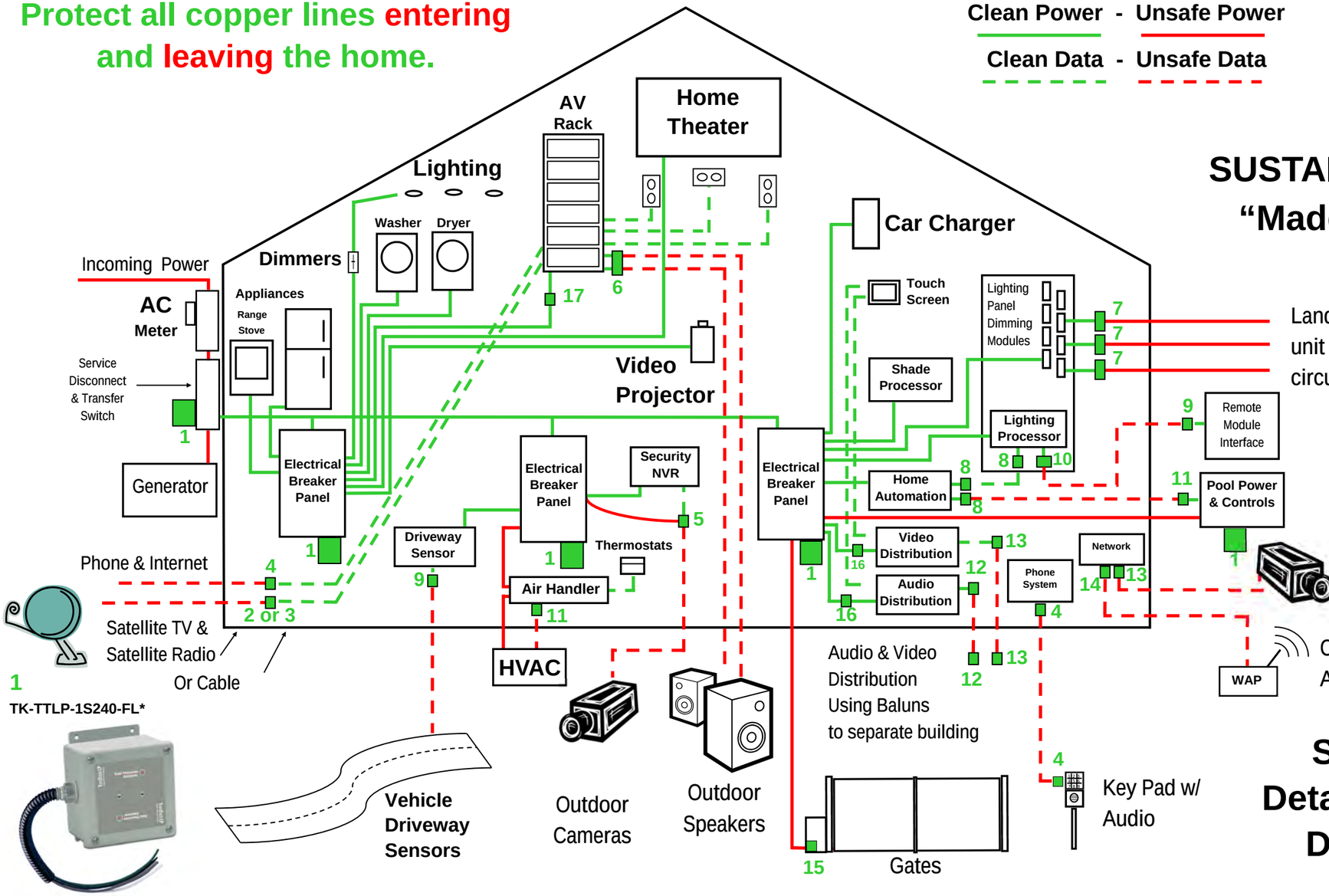
"The DVR was communicating with the gate which is over 500 feet from the house. The gate is powered from the guest house power system. We installed the TPD-CAM-BNC in conjunction with the TPD-GLSF at the DVR. We have not had any problems since install."

Protect all copper lines entering and leaving the home.

Clean Power - Unsafe Power

Clean Data - Unsafe Data

TPD transient protection design™



SUSTAINABILITY!!

"Made In USA"

Landscape Lighting - One unit for each individual circuit leaving the home.

Over / Under Voltage Shutoff

17

TPD-VDIAL

Ground Loop Surge Filter

16

TPD-GLSF-P

1

TK-TTLP-1S240-FL*

15

TPX-1S240-F

See Website For Detailed Application & Design Drawings

2

TPD-SAT2

3

TPD-CABLE

4

TPD-PHONE-RJ

5

TPD-CAM-BNC

6

TPD-AMPPRO

7

TPD-DM24-15A

8

TPD-DB9

9

TPD-24LIT4

10

TPD-24LIT24

11

TPD-24SLP4

12

TPD-10SLP8-RJ

13

TPD-CAT6-POE

14

TPD-CAT6-POE-S

Slim Version For Space Constraint Applications

 For more information go to www.TransientProtectionDesign.com or call 888-281-7856

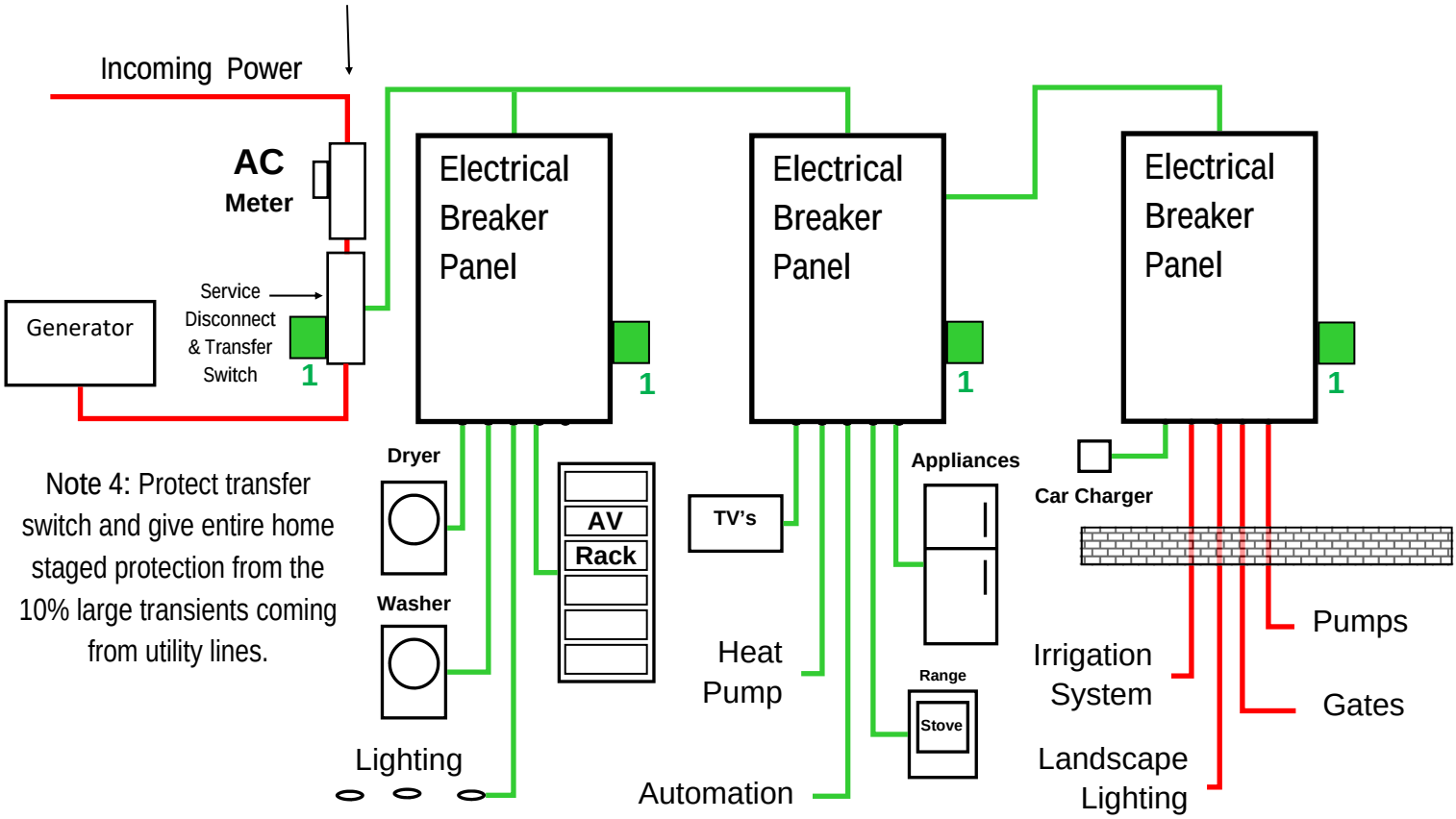
Protect All Breaker Panels

Clean Power - Unsafe Power

Over 90% of damaging surges at the breaker panel are generated by the loads fed by the breaker panel!

Note 1: Only 10% of damaging surges at breaker panels come through the AC meter box!

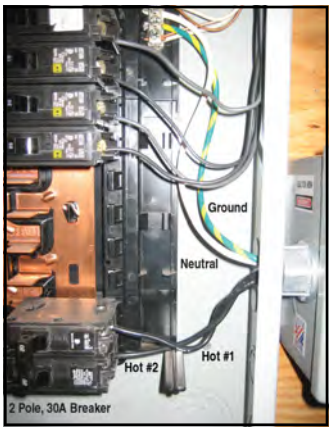
Note 2: Place a TTLP on every panel to protect & filter all connected loads from the 10% externally entering surges in addition to the 90% internally generated surges created when loads fed by the panel turn on and off!



Note 4: Protect transfer switch and give entire home staged protection from the 10% large transients coming from utility lines.

1

TK-TTLP-1S240-FL



Note 3: Some breaker panels have high exposure due to copper wires feeding outside equipment!

Protect Lighting Systems

Clean Power - Unsafe Power **Clean Data - Unsafe Data**

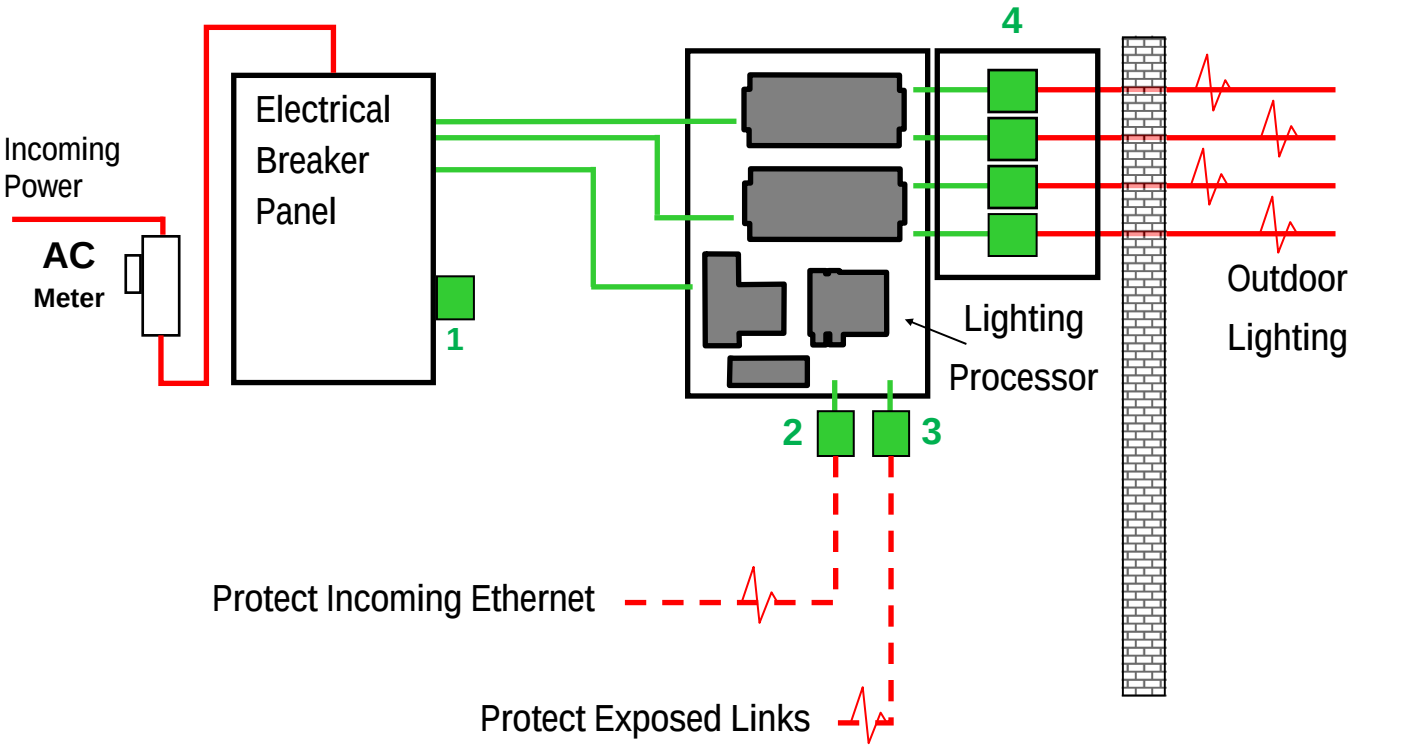
Protect power and all exposed pathways leaving lighting system.

Surge protection for a lighting system is not an accessory it is a necessity. Proper protection of a lighting systems starts by protecting breaker panels along with exposed pathways leaving the building. Additional protection can be applied on larger projects assuring your lighting system has a coordinated protection solution.

Protect breaker panels feeding lighting system.

Protect Landscape Lighting Pathways

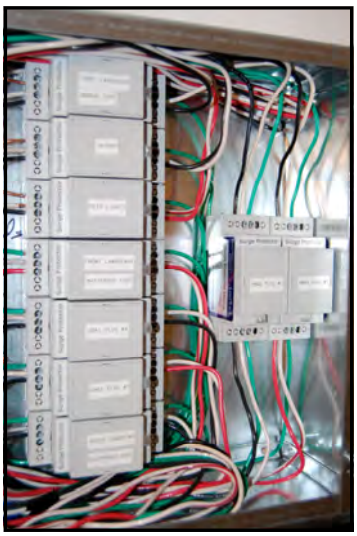
One unit for each line leaving the home.



1 **TK-TTLP-1S240-FL**

2 **TPD-CAT6** **3** **TPD-24LIT4**

4 **TK-LT120-20A-DIN2**



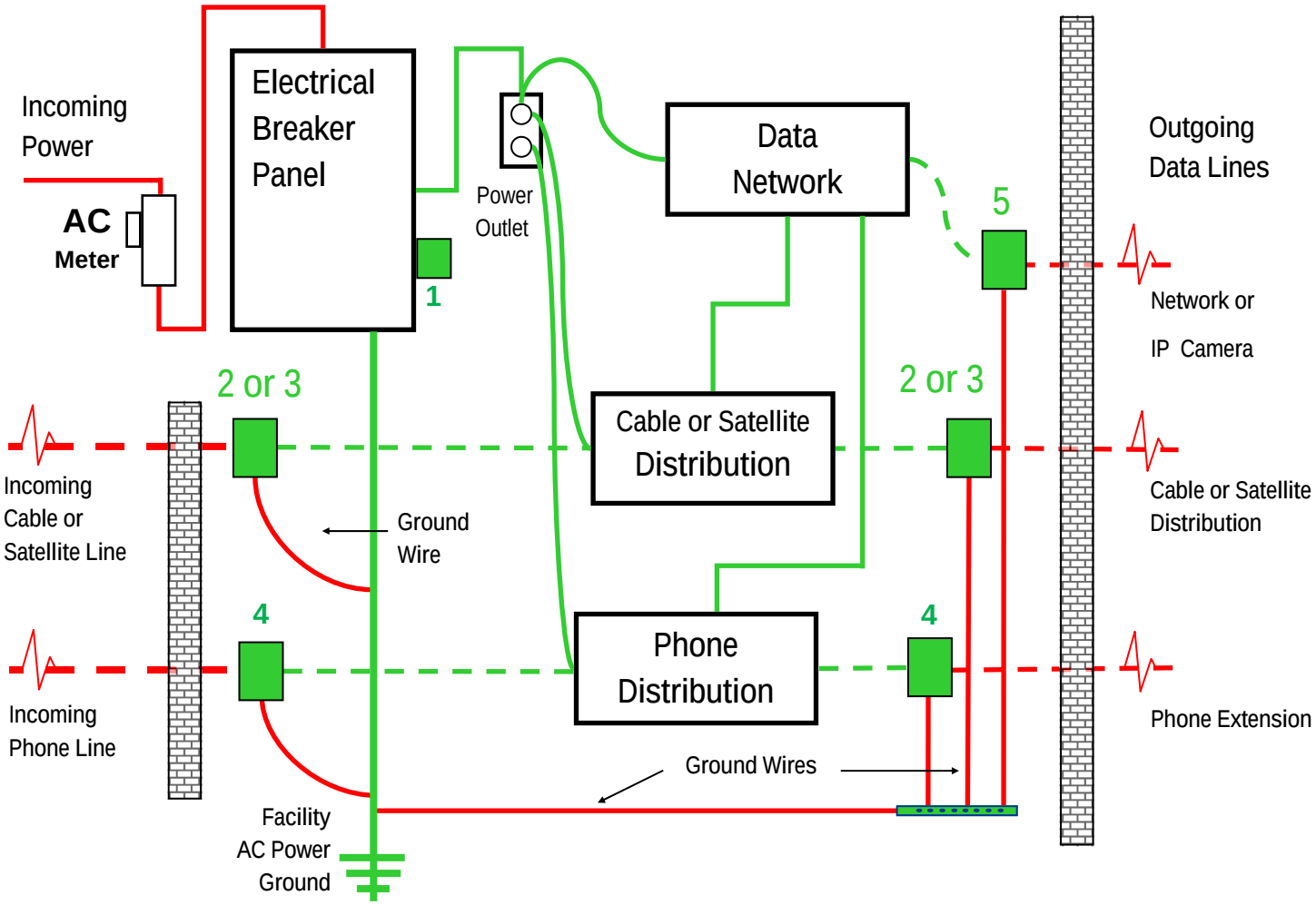
Protect Phone - Cable - Satellite - Ethernet

Clean Power - Unsafe Power **Clean Data - Unsafe Data**

Protect all incoming and outgoing phone, cable, satellite and data lines.

Grounding

By properly installing and grounding TPD surge suppressors you can protect against equipment and property damage as well as the potential for electric shock. Proper grounding of TPD surge suppressors also helps in reducing the build-up of static charges on equipment and establishing a zero voltage reference point to ensure optimum performance of sensitive communications equipment.



1 **TK-TTLP-1S240-FL**

2 **TPD-SAT2**

3 **TPD-CABLE**

4 **TPD-PHONE-RJ**

5 **TPD-CAT6-POE**

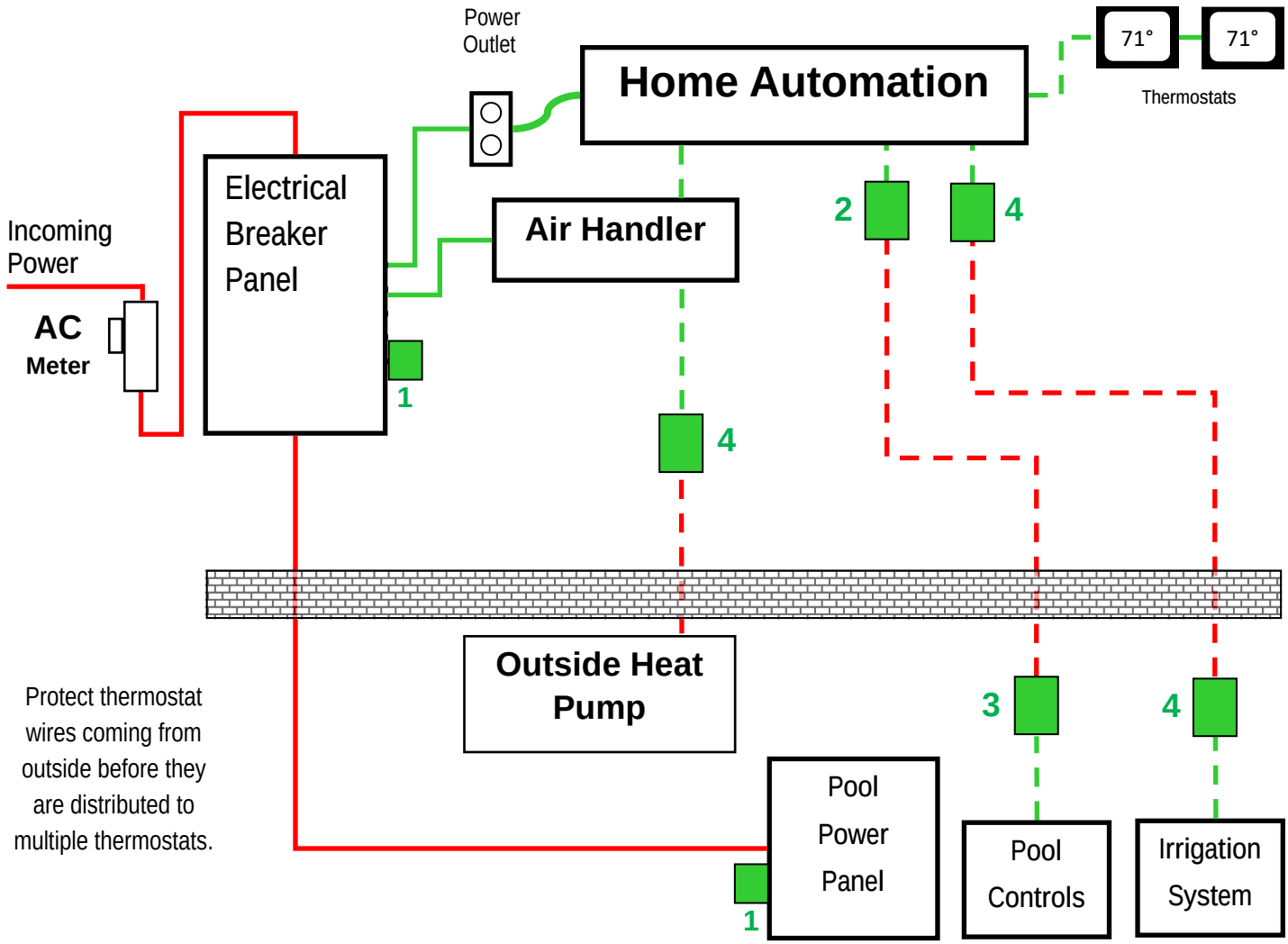
Protect Thermostats - Pool Controls - Irrigation

Clean Power - Unsafe Power **Clean Data - Unsafe Data**

Protect incoming power and all exposed pathways leaving home automation system.

Reduce Liability

Protect home automation systems and reduce liability. Educate customers about protection practices that are recommended by Institute of Electrical and Electronic Engineers, Inc. (IEEE).



Protect thermostat wires coming from outside before they are distributed to multiple thermostats.

1
TK-TTLP-1S240-FL

2
TPD-DB9

3
TPD-24SLP4

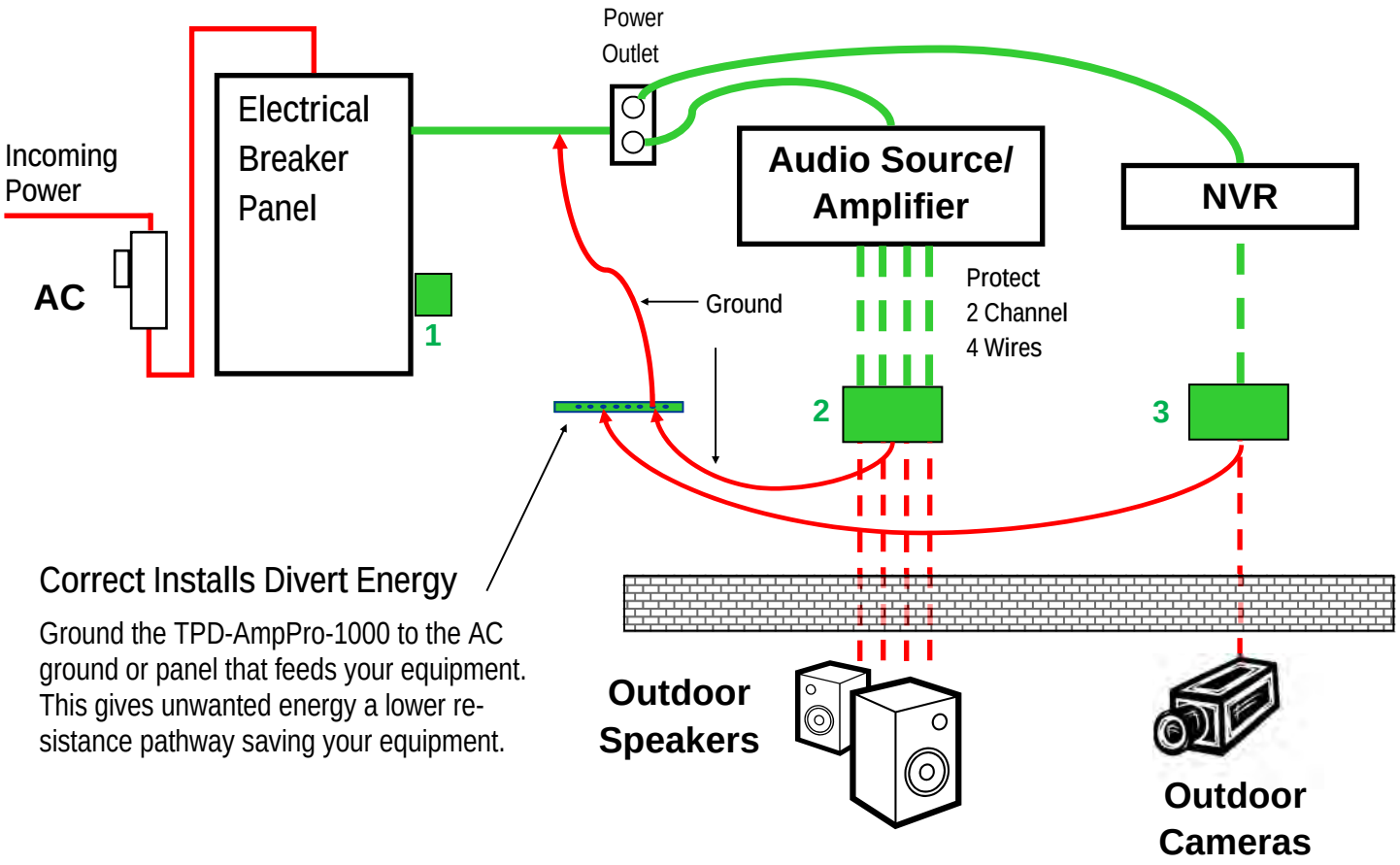
4
TPD-24SLP8-RJ

Protect Amplifiers & Surveillance Systems

Clean Power - Unsafe Power **Clean Data - Unsafe Data**

Protect equipment by diverting unwanted energy towards the breaker panel TTLP surge suppressor & power filter.

AC breaker panel filtration is recommended when using data surge protection. Data protection diverts excess energy from data lines into the power grounding system. By strategically protecting breaker panels with the TTLP, surge events will be equalized and safely contained at the breaker panel.



Correct Installs Divert Energy

Ground the TPD-AmpPro-1000 to the AC ground or panel that feeds your equipment. This gives unwanted energy a lower resistance pathway saving your equipment.

1
TK-TTLP-1S240-FL

2
TPD-AMPPRO-1000

3
TPD-CAT6-POE

Din Rail or Screw Down Mountable

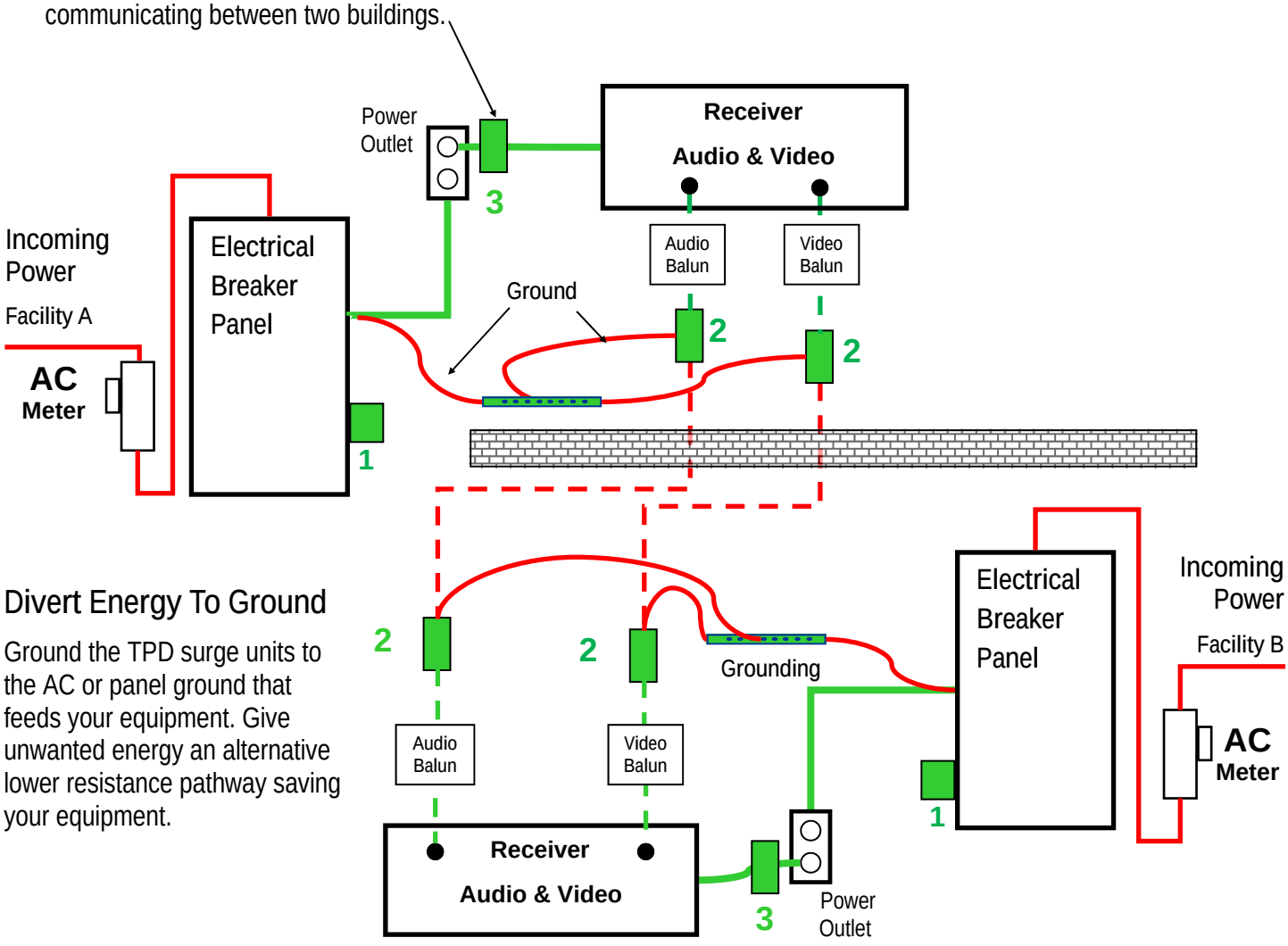
Tabs slide out for screw down mounting.

Protect Audio & Video Systems & Baluns

Clean Power - Unsafe Power **Clean Data - Unsafe Data**

Eliminate damaging ground loop energy by installing the high frequency blocking GLSF (Ground Loop Surge Filter).

Ground Loop Surge Filter Model # TPD-GLSF is recommended when protecting sensitive electronics communicating between two buildings.



1
TK-TTLP-1S240-FL

2
TPD-CAT6

3
TPD-GLSF-P

We Protect Your Investment in Technology

- **Reduce the risk and liability of electrical maintenance and repair costs**
- **Reduce equipment downtime**
- **Extend equipment life**
- **Guard against power surges and lightning damage**

RESIDENTIAL COMMERCIAL INDUSTRIAL

Surge Protection Applications

1 **Breaker Panels**
TK-TTLP-1S240-FL

2 **Satellite & Antennas**
TPD-SAT2

3 **Cable**
TPD-CABLE

4 **Wireless Access Point & Baluns**
TPD-CAT6

5 **Network, Modems, Routers & Switches**
TPD-CAT6-POE

6 **NVR & IP Cameras**
TPD-CAT6-POE

7 **Landscape Lighting, Pumps, Fountains & Gates**
TK-LT120-20A-DIN2

8 **Amplifiers & Outdoor Speakers**
TPD-AmpPro-1000

9 **Remote Module Interface & Drive Way Sensors**
TPD-24LIT4

10 **Lighting Processor Programmable Links**
TPD-24LIT24

11 **RS232, RS422 & Keypads**
TPD-10SLP6

12 **RS485**
TPD-15SLP6

13 **Alarms & Sirens**
TPD-15SLP4

14 **Phone Lines**
TPD-PHONE-RJ

15 **Gates**
TPX-1S240-F or TK-LT120-30A

16 **Microphones**
TPD-10SLP4

17 **Pool Communication**
TPD-24SLP4 or TPD-DB9

18 **Car Charger**
TK-TTLP-1S240-FL