# TII LIGHTNING AND POWER
# SURGE SHIELD™

# FOR

# PERSONAL COMPUTERS,
## HOME ENTERTAINMENT SYSTEMS,
## APPLIANCES AND ELECTRICAL EQUIPMENT

Over the years the use of Personal Computers (PCs) has proliferated and become part of our daily lives. The original concept of the PC was to provide a tool for word processing, spread sheets and to be used in the scientific world. With the advent of Internet and E-mail, the PC has become a very important staple in our daily lives.

Consider the consequences: your PC is damaged and the valuable data from years of hard work is not accessible anymore. A lightning surge in the vicinity or transients generated by power outages; a utility power factor correcting capacitor bank switching, home appliance switching, etc., can wipe away the memory of your PC, eliminating files and programs. . When this happens the hard drive, modem, network interface card and/or PC main board may also be damaged, without hope of repair or recovery of the lost files and programs.

This damage can be averted by using the proper surge protection system which diverts transients and surge energy away from the PC and to a ground. There are many surge protection products available on the market today that claim greatest protection capabilities. Have we looked at them carefully to sort out best from the rest?

A typical Personal Computer system consists of a Central Processing Unit (CPU), monitor, keyboard, mouse, scanner, printer and modem. AC power is used for powering up the various components of the PC system. Generally a standard telephone line is utilized to connect the modem to the PC. Higher speed internet access PC systems may use a cable or DSL modem powered by AC and signal pipeline through twisted copper wire or cable connection.
Whatever the configuration of the PC system, AC power is needed to keep the system running. A good AC surge protection system is essential for the protection of the equipment.
The surge protector should have the following qualities:

- Sufficient surge handling capability that it can divert up to and beyond the maximum level of surges that can be present at the point of deployment.

- Lets through very little residual surge energy to the connected equipment.

- Reliable surge protection present whether the PC is turned on or not.

- Provide an indication that surge protection and ground connection is present that in case of a surge activity it will divert the surge energy to ground.

The majority of today's PCs access the Internet. Communication with the Internet requires a plain old telephone line, digital subscriber line or a cable connection.. Telephone line surge protection devices are mandated by National Electrical Code requirements and is always installed at the point of entry of telephone service to the premises. In many cases the primary telephone line surge protection device is located on the opposite side of the house from where the AC power enters. These two systems have separate grounds. PC DSL modem and dial up modem have a built in lower breakdown voltage secondary protector. In case of a transient impressed on the telephone line, the lower clamping voltage secondary protector pulls in all the surge energy towards itself, leaving the primary protector without any activity. This results in damage to the computer interface that connects to the telephone/DSL line.

The grounding path also plays an important part. For that reason, the protection circuits need to be bonded together. If the power

system ground and telephone secondary protection grounds are not bonded together, high energy transients can send dangerous levels of ground loop currents through the computer system, causing severe damage to the PC systems.

PC systems using high speed internet access through cable modem or DSL modems need surge protection for the interface between the output of the modem and the communications port on the computer. If left unprotected, surge transients may go through the lower voltage high speed communications port instead of the input side of the broadband modems, damaging the broadband modem as well as the PC.

The PCs need a system approach for proper surge protection. All interface points between the computer system and the peripherals need to be adequately surge protected as well as bonded together. This has been comprehensively achieved by the The TII Power and Lightning Surge Shield. This system has state of the art surge protection circuits for AC, Telephone/DSL line, Coax Cable and the high speed communication port of the computer bonded together, so that ground loop currents are minimized and the least amount of surge energy is able to reach the sensitive circuitry of the PC system.

The patented design of the TII Lightning and Power Surge Shield ensures superior surge protection of the PC systems with suitable placement of AC power outlets. The step-down transformers or low voltage converters of the personal computer peripherals can be used without covering adjacent outlets enabling the user to utilize all outlets on the TII Lightning and Power Surge Shield. The AC power surge protection circuitry is designed to eliminate leakage current that normally is the main reason the failure of Metal Oxide Varistors. This failure can be catastrophic.

The TII Lightning and Power Surge Shield for PCs uses circuitry, which, in addition to superior AC protection, is transparent to the data transmission over the power lines. This is the only device of its kind on the market to have surge protection and data transmission transparency.

The TII Lightning and Power Surge Shield protects the telephone line with solid state surge protection which utilizes six diodes to steer the surge through a single protection element. This solid state protection element is able to divert the surge energy to ground in a few nano-seconds. Because of the circuit design, the data transmission takes place without any degradation.

PC systems using cable modem for Internet access are also well protected by the TII Lightning and Power Surge Shield. The coax protector used in this protection system is transparent to the broadband signals over the coax cable. The product utilizes a unique in-line coax gas discharge tube as a protection element. This tube provides excellent impedance match with 75 ohm coax cable. Surge protection of this inline coax gas tube is superior to standard coax surge protectors. This protection circuitry is suitable for the surge protection of the satellite systems due to its broadband transmission capability.

In addition, the TII Lightning and Power Surge Shield provides surge protection for the low voltage, high speed network access so the output from the external modem connected to the CPU interface will not be damaged due to transients. The protection circuitry used for the data line protection also consists of steering diodes and solid state protection elements. With the excellent transmission characteristics, this product is

able to provide no degradation signal transmission and surge protection.

The TII Lightning and Power Surge Shield is equally suitable for home entertainment systems. These systems are expensive and should not be used without proper surge protection. The power and lightning surge protection system covers all interface points of any home entertainment system.

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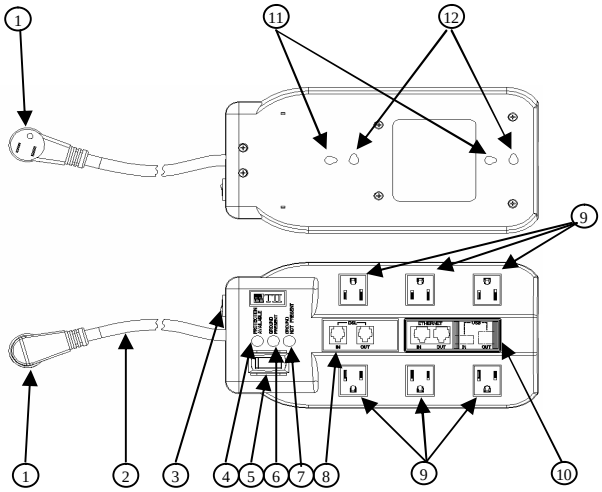


1. Three pin polarized AC plug with 90 degree orientation
2. Power chord of 3ft length to keep ground path to a minimum
3. Fifteen Ampere rated circuit breaker – disconnects power when unit is overloaded
4. Power available green color indicator shows that AC power is present
5. Lighted AC power on/off Switch.
6. Ground present green color indicator shows that unit has been connected to an outlet that has ground connection.
7. Ground not present red color indicator shows that either unit has no ground or there is problem with the wiring of the outlet where TII 435 has been plugged into.
8. DSL/Telephone secondary protection marked input and output RJ 11 jack. Incoming DSL/Telephone service is connected to the input jack.
9. Six 15 Ampere rated AC power outlet for Personal Computer, Monitor, Scanner, Printer and other 120 volt devices.
10. Ethernet/USB protection circuit. Connect only one type of connection
11. Vertical mounting holes
12. Horizontal mounting holes