CITEL

Reliability in Surge Protection

Surge Protection

AC & DC Power

Photovoltaic

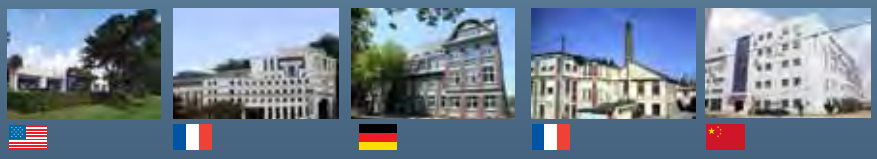
Coaxial

Telecom

Gas Discharge Tubes

www.citel.us

CITEL



Established in 1937, CITEL is the global leader in the development and production of Surge Protective Devices (SPD's). CITEL is also the oldest manufacturer in the world of Gas Discharge Tubes (GDT's).

- **Regional locations in USA, Germany, France, China, Russia, and India**
- **Distributors in over 70 countries**
- **High impulse test laboratory (100 kA @10/350µs)**

CITEL's goal is to develop world class surge protection technology in order to provide maximum performance and reliability.

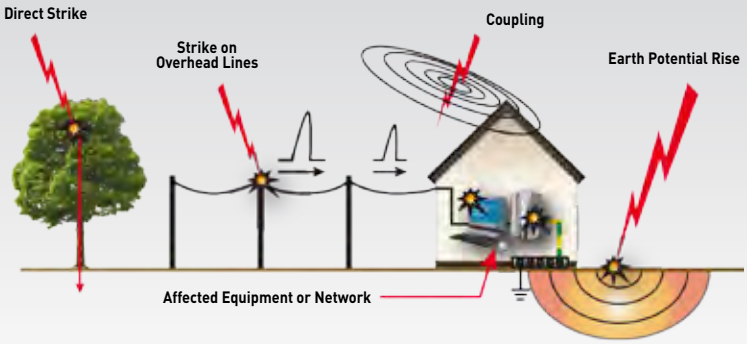
Our Objective: Protect Your Equipment Against Overvoltages

Mainly caused by lightning, transient overvoltages can cause detrimental consequences on all networks (AC, DC, Telecom, Data, Coaxial). These surges may lead to network disturbances, downtime, loss of data, and even the destruction of sensitive equipment.

Benefits of Surge Protection:

- Increases productivity
- Limits costly disruptions of service
- Increases the life duration of your equipment
- Improves the quality of service
- Lowers your overall cost of operation

Examples of Transient Overvoltages



Surge Protective Devices (SPD's)

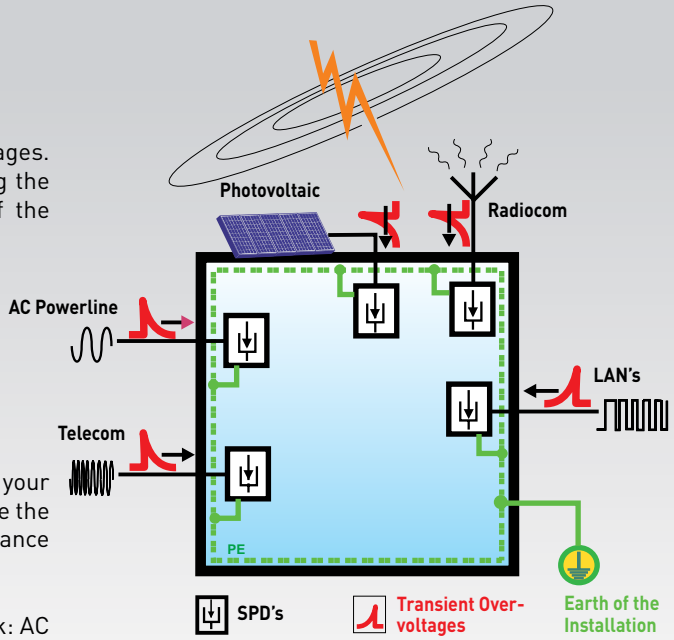
SPD's are the efficient solution to protect against transient overvoltages. The goal and sole purpose of an SPD is to protect equipment by limiting the overvoltages to a level in compliance with the electrical withstand of the equipment that is being protected.

The SPD Must:

- **Provide the lowest possible residual voltage**
- **Provide the appropriate discharge capacity relative to the risk**
- **Prevent operational disturbances**

Protect **your** equipment by selecting the appropriate surge protectors for your specific application. Easy to use and install, CITEL surge protectors provide the protection that you need and have been designed and engineered in compliance with the main international standards, including UL.

CITEL provides a wide range of surge protectors adapted to every network: AC power, DC power, Telecom, Data and Coaxial .



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AC & DC Surge Protectors

DS Range

- Full range of AC & DC surge protection
- Designed in compliance with UL 1449 3rd Edition
- DIN Rail mounting design with pluggable modules
- Discharge current: Imax up to 140 kA - Iimp up to 25 kA
- Configurations to support all operating voltages
- Safety disconnection and remote signalling

DS surge protectors use MOV or VG Technology. VG technology is a CITEL patented hybrid of MOV and GSG technologies. This combination provides high discharge current capability with a low residual voltage. VG Technology also provides zero working current and zero follow current, greatly increasing the life expectancy of the SPD's.

DS250VG-120

DS74R-230

DS44S-120/G

DS220-12DC

Hard Wired AC Surge Protectors

CITEL offers a line of surge protectors for the single and three phase AC networks connected to sensitive equipment. These products are available in various formats including:

Hard-wired units in NEMA enclosure (M & MDS series)

- UL 1449 3rd Edition listed
- Ranging from 50-200k Imax
- Available with fault indication
- Optional integrated disconnect
- Application: Service entrance or panel protection

MDS

M50

Hard-wired units single-phase (MSB, MLP)

- UL 1449 3rd Edition listed or recognized
- Hybrid MOV and GSG technology
- Series or parallel configurations
- Configurations with power + data protection
- Application: Point of use, LED lighting

MLP

MSB

Surge Protectors for Photovoltaic Systems

DS PV Range

DS-PV surge protectors have been designed to efficiently protect PV inverters and operate safely on the PV networks. They are available for Type 1 & 4 CA for Type 2 applications, and for all the main DC voltages.

- UL Type 1 CA and Type 4 DC surge protectors
- MOV only and VG Technology configurations
- Available voltages: 500, 600, 800, 1,000 and 1,500 Vdc
- Safety disconnection and remote signalling
- Application: DC side of Inverter or combiner box

DS60VGPVS

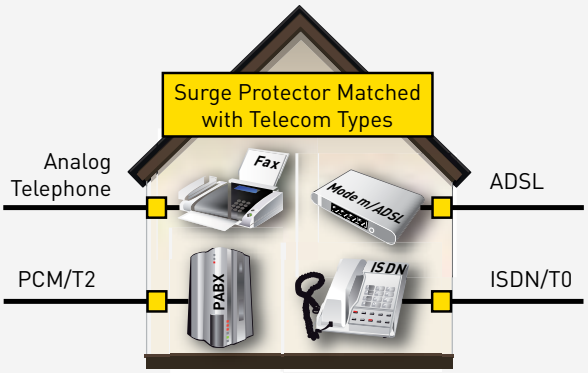
DS50VGPVS

DS50PVS

Telecom Surge Protectors

A comprehensive range of surge protectors for the most common transmission types.

- Quick response time (less than 1 ns)
- Incorporates gas tube for high discharge current capability
- Fail-safe behavior in case of catastrophic event
- Mounting: on telecom MDF, wall, DIN Rail
- Applications: PSTN, ISDN, ADSL, HDSL, PCM/T2




DLA


DLA2

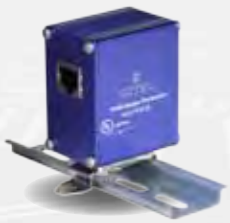

B180


B480

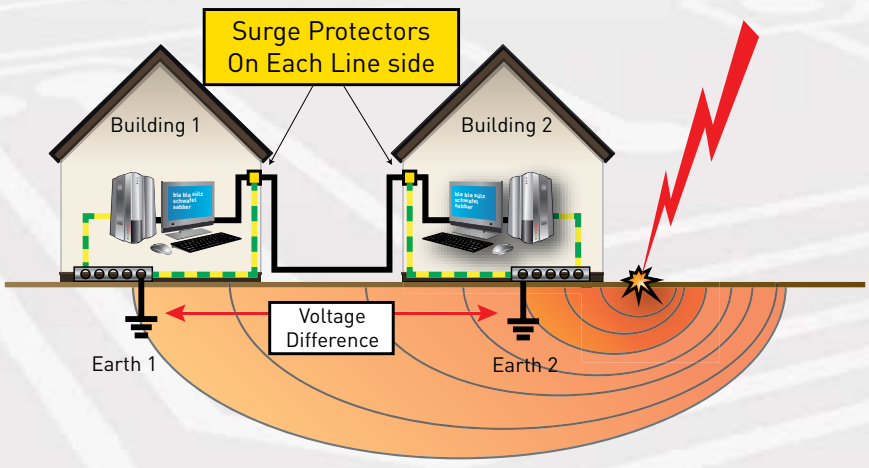

MJ6-1T

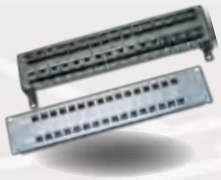
Dataline Surge Protectors

- Quick response time (less than 1 ns)
- Incorporates gas tube for high discharge current capability
- Low voltage line and high bitrate configurations (up to 1000 Mbits/s)
- Connectors: RJ45, Sub-D, Coaxial
- Applications: Ethernet Cat 5E, Cat 6, PoE, RS422, Fieldbus
- MSP Series: All-in-one security camera surge protector


MJ8-POE


CMJ8




RAK

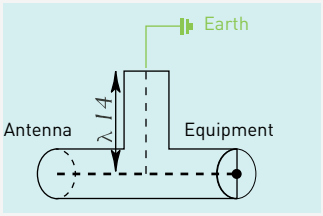

DIN-BNC-HD


MSP-VM

Coaxial Surge Protectors

CITEL offers several surge protection solutions for coaxial lines:

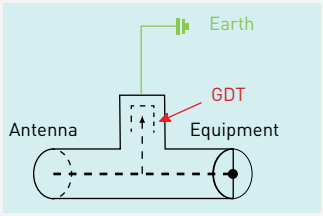
Quarter Wave: PRC Series



- "Filtering" operation
- 0.5 up to 6 GHz
- Imax: 100 kA
- Residual Voltage: < 10 V
- Eliminates DC power on coaxial cable
- Protection does not degrade over time

The PRC range provides a very high protection level due to its very low residual voltage, and its "quarter-wave" technology is maintenance-free. The PRC protectors should not be used on coaxial cable with DC power injection. The operating frequency must be carefully considered in the selection process.

Gas Tube: P8AX Series



- "Sparkover" operation
- DC up to 6 GHz
- Imax: 20 kA
- Residual Voltage < 300 V
- Robust GDT ensures extended lifetime

The use of a dedicated gas tube allows for a very wide bandwith of protection. Due to very low insertion loss and excellent VSWR, these units can be used on all kinds of coaxial lines, even lines incorporating DC power injection. The internal gas tube is replaceable, allowing for easy maintenance.

CX Series

- 2 Options: Gas discharge Tube (CXP) or GDT + Diodes (CXC)
- Very low insertion loss
- Bandwidth up to 1000 MHz
- Imax: 10 kA (8/20µs)
- Applications: Security cameras /CATV /Coaxial receivers
- DC block models available

Gas Discharge Tubes (GDT's)

Gas discharge tubes are passive components used to protect telephone exchanges and telecom terminal equipment against overvoltages. They come in 2 or 3-electrode versions and are available with a variety of discharge capabilities and sparkover voltages.

Characteristics	Rating
DC Sparkover Voltage (100 V/s)	75V, 90V, 150V, 230V, 350V, 500V, 600V, 800V, 1,400V, 2,500V, 3,500V
Tolerance	+/-15% and +/-20%
Impulse Sparkover Voltage (1 kV/µs)	<550V, <700V, 900V, <1200V, <2,000V, <2,500V, <3,500V
Insulation Resistance	> 10 Gohm
Capacitance	0.7 to 10 pF
Holdover Voltage	>60V, >72V, >80V
Discharge Current 8/20µs	2,5kA, 5kA, 10kA, 20 kA, >100kA
AC Discharge Current	2.5A, 5A, 10A, 20 A, 100A

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