



CITEL

SURGE PROTECTION

FOR

Data Centers



citel.us

CITEL, the global solutions provider.



Since 1937, Citel has been an innovator in the field of Surge Protection. Today, Citel is a global leader in the development of reliable and adapted Surge Mitigation Solutions for critical applications.

Citel is unique as a manufacturer of Surge Protective Components (SPCs), Surge Protective Devices (SPDs) and coordinated protection systems.

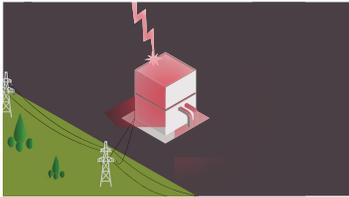
- Over 1 billion lines protected
- Local support in over 200 countries
- High current R&D laboratories at your disposal

THREAT

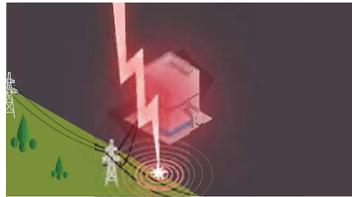
\$26B in Losses due to Power Surges

Today's increased reliance on very sensitive electronics and processes make surge protection an important discussion topic in order to avoid catastrophic business losses. The Insurance Institute for Business & Home Safety study found that \$26 billion dollars was lost due to non-lightning power surges. In addition, there are about 25 million lightning strikes in the US each year that cause between \$650M to \$1B in losses according to the Insurance Information Institute, State Farm©.

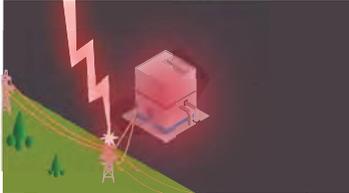
1. Direct Strike



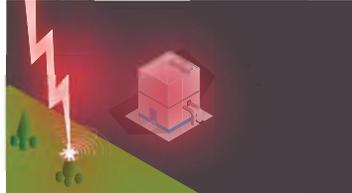
2. Earth Potential rise



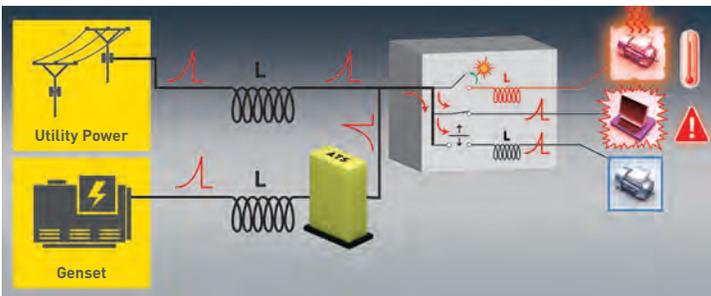
3. Strike on overhead lines



4. Coupling



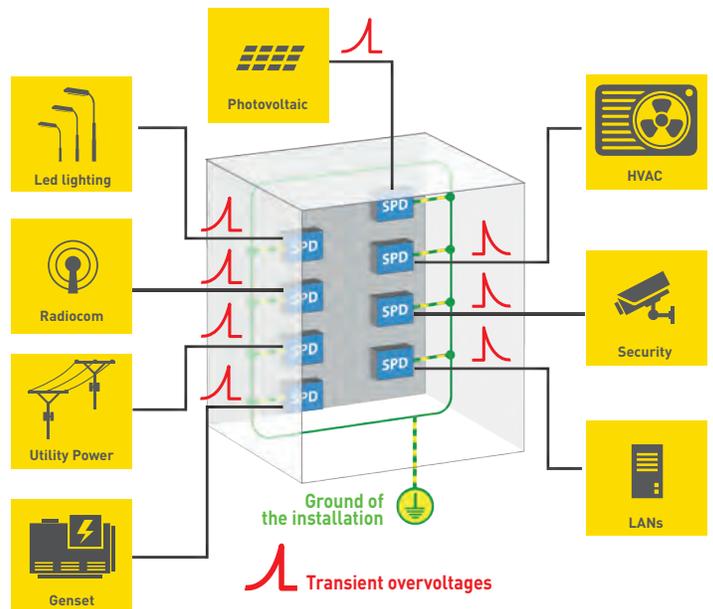
5. Switching



SOLUTION

Global Surge Mitigation Concept

Our philosophy is simple – determine your risk and evaluate every line (power or signal) for vulnerabilities. We call this "The Box Concept." It works equally well for a single piece of equipment or an entire facility. Once you have determined your "boxes", it is simple to develop a coordinated protection scheme to eliminate all threats from lightning and switching surges.



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

COMMON DATA CENTER APPLICATIONS

As the technology for data storage and management systems becomes more sophisticated, the risk of destruction caused by lightning strikes and power line disturbances becomes more evident. Mission critical power generation systems must deploy a coordinated system of surge protective devices (SPDs) to ensure continuous operation.

Power Distribution

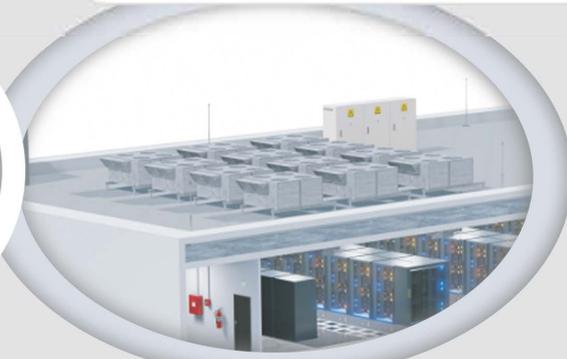


- Main Service Entrance
- Switchboard and Switchgear
- Power Distribution Unit (PDU)
- Remote Power Panel (RPP)
- Genset/Back-up Generator
- Automatic Transfer Switch (ATS)
- Photovoltaic (PV) Equipment
- Battery Energy Storage System (BESS)



Switchboard

HVAC & Cooling



- Chiller
- Immersion Cooler
- Dehumidifier
- Direct-to-Chip (DTC) Cooling
- In-Row Cooling
- Computer Room Air Conditioning (CRAC)
- Computer Room Air Handler (CRAH)



Chiller

Security & Access Control



- Fire Detection
- Fire Suppression
- Security Camera
- Intrusion Detection System (IDS)
- RFID Reader
- Network Door Controller
- Biometric Recognition



Security Camera

Data & Communication Networks

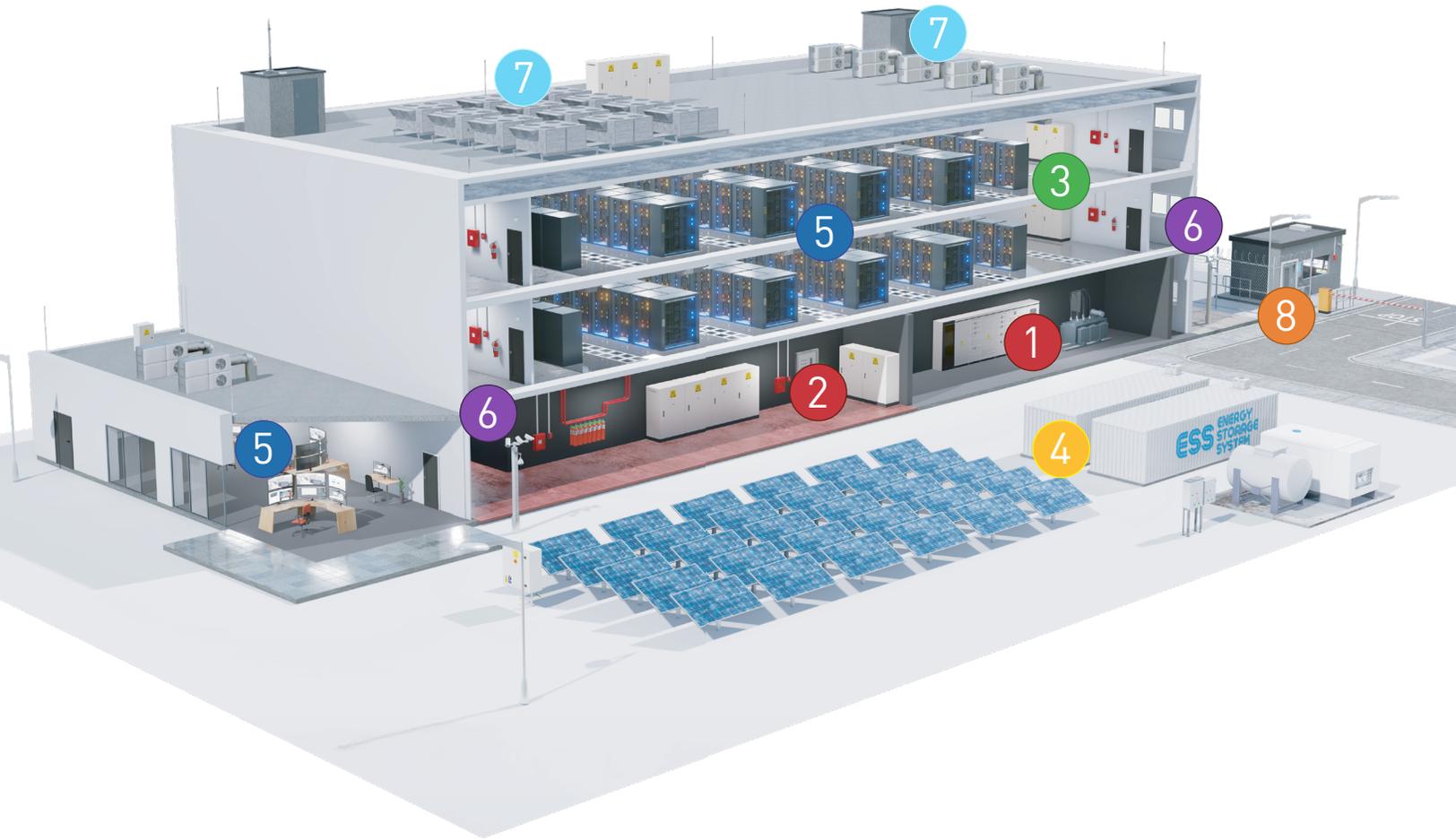


- Ethernet LAN Network
- Transmission Array
- Wireless Radio
- Ethernet Switch
- Rack Server



Rack Server

COORDINATED PROTECTION STRATEGY



Description/Location/Model

Main Service Entrance	1	MDS750E	POE Switch	5	RAK Series
Switchboard	2	MDS-BPKIT	Security Camera	6	LAN-POE-10G
PDU / RPP	3	DS70US	HVAC	7	MS200
Inverters	4	DS50PVUS	Access Control	8	DS220S

RECOMMENDED PRODUCTS (TECHNICAL CHARACTERISTICS)

AC Power



Product	MDS750E	MDS600-BPKIT	MS200	DS70US
Application	Main Service Entrance	Switchboard		PDU/RPP/Security Systems
Voltage(s)-(AC)	240, 277, 480	240, 277, 480		120, 240, 277, 480
Phase	3D, 3Y	3D, 3Y		1S, 2T, 3D, 3Y
In (8/20 μ s)-kA	20	20	20	20
Imax total-kA	750	600	440	225
UL 1449 5th Edition	Listed Type 1	Listed Type 1	Listed Type 1	Listed Type 1

DC Power



Product	DS50VGPVS	DS50PVUS	DS240S	DS220S/DS230S
Application	Photovoltaic	Energy Storage	High Voltage DC	Power Supplies
Voltage(s)-(DC)	500, 1000, 1500	500, 600, 1000, 1500	up to 350	12, 24, 48
In (8/20 μ s)-kA	10	10	20	10
Imax total-kA	60	40	80	40, 60
SCCR-kA	50	100	n/a	n/a
UL 1449 5th Edition	Listed Type 1CA	Listed Type 1	Recognized Type 4CA	Recognized Type 4CA

Communication



Product	MJ8-POE	RAK	LAN-POE-10G	P8AX
Application	Indoor Gigabit Ethernet & POE	Indoor Gigabit Ethernet & POE	Outdoor 10 Gigabit Ethernet & POE	Coaxial/RF
Connection	RJ45	RJ45	RJ45	N, F, BNC, SMA, TNC
Uc (Vdc)	60	8	60	up to 400
Imax/line-kA	2	1	2	20
Imax total-kA	16	1	16	20
Up	<20V	<20V	<20V	<100V
UL Standard	497B	497B	497B (pending)	497E



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