



Tower Top DC Surge Protection

Tech Note



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Tower Top DC Surge Protection

The deployment of radios, that send and receive data over fiber and are powered by a pair of DC power cables, has been growing year over year. Transtector brought tower top DC surge protection to the market long before the installation method became as prevalent as it is today. As early pioneers of surge protection devices (SPDs) for DC/fiber radios, Transtector has witnessed the growth of this type of deployment go beyond network carriers to include WISPs, military, and industrial applications, as well as, other industries and markets.

The radio OEMs, installers and end users turn to Transtector, known for over 50+ years of experience protecting sensitive electronics. They are asking the question; How do I protect my tower top DC/Fiber fed radios from transients and surges that populate on the DC power pair and cause damage, degradation and interruption.

Transtector has the answers. But before we provide the solution, let's define the problem.

What is a surge event?

- Surges are short duration events (microseconds)
- Surges can **damage, degrade, or destroy** electronic equipment
- Surges can interrupt, delay and corrupt signal transmissions
- Every piece of equipment is designed to operate at specific nominal levels
- SPDs eliminate those surge events that are above the nominal level
- It is important that surge protectors turn as close to the nominal voltage as possible

Surges can compromise the DC power cables going up a tower in three ways:

- Nearby lightning event induces energy onto the cable
- Direct strike to a structure and energy couples onto the cable
- A lightning event energizes the earth around the equipment

To protect against these three dangers, Transtector recommends:

- SPDs should be installed on both ends of a DC pair going up to a radio
- Repetitive capabilities are vital
- SAD, silicon avalanche diodes provide the lowest turn on and best repetitive technology
- Under extreme power quality events, SPDs will sacrifice protecting expensive electronics

Apply protection on the correct modes of protection:

- DC surge protection on both (+) to ground and (-) to ground are critical
- Protection across the + to – (line to line) is a good approach for grounded DC systems
- Apply SPDs at the incoming AC power source, either at the panel, in the panel or on the outlet
- There are two types of DC Systems: (1) Both the post and return float from the ground and (2) either the pos or return is bonded to the ground

Transtector recommends these solutions for optimal protection of radio equipment at your site:

DC Protection



Product SKU	Product Description
1000-1405	CPX DC Defender, 48-5 indoor SPD
1000-1464	CPX DC Defender, 24 indoor SPD
1101-1137	CPX wall mount 4 unit
1000-864	I2R 48V DC SASD module 5KA, Din rail SPD
1101-680	DRDC 24, Din rail mount SPD
1101-861	DRDC 48, Din rail mount SPD
1101-1110	DC Defender, 48-5, Outdoor SPD
1101-1110-KT	DC Defender with bracket, Outdoor SPD
1101-1027	DCOD 48V DC outdoor SPD for larger wires.

AC Protection



Product SKU	Product Description
1104-29-001	SLN 120 outlet protection
I2R75K	Din rail mounted AC SPD
SP50240RS	120/240 AC panel mounted SPD

Transtector also carries a full line of DC Distribution solutions:

DC Distribution



Product SKU	Product Description
DCIPS1B-S-00-B6	DC Integrated Power System, 1RU, 30A/20A/15A/10A Load Breakers
DCIPS1-1200	1,200W Rectifier Module for DCIPS1 System
DCIPS2B-S-00-B11	DC Integrated Power System, 2RU, 63A/2x25A/2x16A Load Breakers
DCIPS2-3000	3,000W Rectifier Module for DCIPS2 System
DCPDU1B-S-X8-150	DC PDU, 1U, single-feed, 48/24VDC, 150A, 8 breaker positions
DCPDU1B-S-X16-150	DC PDU, 1U, single-feed, 48/24VDC, 150A, 16 breaker positions
DCPDU2B-D-2X10-450	DC PDU, 2U, dual-feed, 48/24VDC, 450A/feed, 10 breaker positions ea bus
DCPDU2B-S-X20-450	DC PDU, 2U, single-feed, 48/24VDC, 450A, 20 breaker positions
DCPDU1B-D-2X8-150	DC PDU, 1U, dual-feed, 48/24VDC, 150A/feed, 8 breaker positions ea bus

For more information on DC tower top surge protection solutions, contact us at +1 208 635 6400 or visit Transtector.com.