DPS

Diversified Power Solutions

25 Years of Engineering & Service Excellence

HOW CAN WE HELP YOU?

800.862.4377

Introducing the VSS20

Field Problems

Electrical equipment located in subdivisions and other field areas is subject to varying electrical issues as well as application issues.

Electrical Issues

When electrical equipment is field located, it can be affected by a variety of different electrical problems. The most prevalent are surges and line drop events.

Surges are due to many factors. While most people directly relate surges to lightning and storms, they can come from many different sources as well. Power grid switching and protective circuit operation are much more common and actually cause the majority of the field damage incidents.

Another common problem occurs when high voltage electric distribution wires fall, exposing field equipment to voltage many times larger than it is designed for. This is called a “line drop” event.

Neither of these common power problems is addressed by most TVSS or UPS systems.

Application Issues

In addition to electrical problems, space within the field cabinets is at a premium. Any power protection equipment must be compact enough to fit into restricted cabinet space. To compound this problem, field cabinets can have different voltages (120 Volt or 240 Volt) and thus have different receptacle configurations.

Power protection equipment needs to be available for different voltages as well as different plug configurations.

Design Criteria

The VSS20 series field protector was designed to meet these varying field issues and protect field equipment from unusual electrical problems. The VSS20 includes quality surge protection and line drop overvoltage protection in a compact container. The VSS20 also protects multiple voltages with just one product.

Another major design criterion was to make the VSS20 rugged and reliable. Cable TV systems require reliability from any power product, and the VSS20 was designed to alleviate these weak failure points. Under catastrophic conditions, the VSS20 will sacrifice itself to protect downstream equipment.

What about “Off the Shelf” Units?

Existing suppressors don’t meet design requirements. There are none available that have line drop protection, and none available with Universal Voltage (can use either 120 Volt or 240 Volt). Most existing suppressors are home “power strip” type devices with thin plastic cases. They are designed for indoor use only and are not rugged or durable enough for field conditions.

There is no "off the shelf" choice.

Enter the VSS20 series

Designed to meet ALL the requirements

The VSS20 includes tough internal circuitry designed for reliability. It features a quality multi-stage surge protection design. It uses rugged current-limiting fuses to prevent line drop damage.

The VSS20 comes in a rugged sealed plastic case that withstands abuse. The VSS20 can be dropped from 4 foot heights and will not be damaged.

It is compact and flexible. Various plug configurations are available.

Internal Reliability

VSS20 contains special circuitry designed to keep power flowing and protect field equipment. It is rated for 20 amp loads but can be used on 15 amp circuits. The VSS20 can be used on either 120 Volt or 240 Volt for true universal application.

The VSS20 includes dual mechanical & soldered connections on the board for reliability under extreme conditions. It comes with heavy industrial input/output cords and connectors

Line Drop Protection

VSS20 contains special internal current-limiting fuses

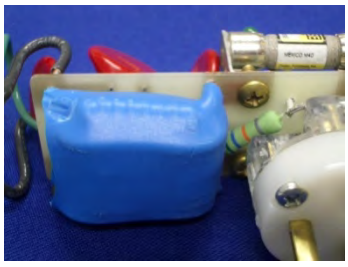
Dual current-limiting fuses are on both input conductors so line drop events cannot damage your equipment. These fuses are capable of interrupting 200,000 amps of short circuit current. During overvoltage events, where high voltage utility lines come into contact with lower voltage lines, the fuses limit short circuit current and prevent damage to field equipment downstream.

There is a line drop fuse on each conductor for the simple reason that over voltages can be applied to the neutral conductor as well as the power conductors. The VSS20 protects against both conditions.

Quality Multi-Stage Surge Protection

VSS20 uses our Patented X-coil multi-stage surge suppression circuitry. Here's how the system works:

The first-stage Surge Elements remove most incoming surge energy. These are high energy TMOV devices that route incoming surge energy back to where it came from. But even the best MOV devices are not perfect and some energy can get through.



The exclusive X-Coil design (US Patent #7,085,115 B2) prevents surge energy from entering the last stage by blocking and dispersing energy that gets through the first stage. This provides high frequency filtering yet at the same time passes normal power current along without overheating. Similar induction coils with ferrite cores get hot during normal operation from hysteresis losses. The X-Coil advantage is that such losses are small so it does not overheat.

The final filter stage surge elements remove any remaining surge energy that

makes it through the X-Coil.

Unlike most surge devices, the VSS20 uses special surge elements. Most suppressors use standard metal oxide varistors (MOVs) and must be separately fused to prevent thermal runaway. The VSS20 uses special TMOV metal oxide varistors which have excellent clamping voltage and include a built in thermal disconnect. This ensures that in the rare event of failure, the TMOV disconnects from the circuit without damage

By protecting all incoming conductors and not allowing first stage TMOVS to connect to ground, there is no "backdoor" path through ground. Most multi-stage suppressors do not protect against back door surges that divert through ground around their induction coils. The VSS20 design eliminates potential backdoor surges.

Rugged Case

VSS20 Case is a heavy duty cable pull box

Rather than use a thin plastic molded housing, the VSS20 uses a standard heavy plastic, non-conductive, pull box. Because of the rugged case, the VSS20 is drop proof: survives 4 foot drop onto concrete floors with NO damage. This means shipping and traveling damage is minimal simply due to the rugged design.

In addition the case has liquid tight end fittings and a sealed top to prevent moisture damage. The VSS20 can be installed in humid conditions and will remain reliable.

The VSS20 case is certainly strong, but it's also compact. It is designed to fit into tight locations and can be installed side by side in a quad wall box receptacle, for example.

More Flexibility

VSS20 available to fit your plug configuration with flexible cord lengths

The input and output cords allow flexibility in tight spaces and they can be ordered in different lengths. The input cord is 3" long standard and the output cord length is 12" standard, but either can be ordered to fit your application.

The VSS20 is available with any NEMA plug configuration for 120 or 240 Volt single phase use. The standard configurations are either a 5-15 Plug & Receptacle in/out or a 6-20 plug & receptacle in/out. Additionally, the VSS20 can be ordered with either a straight or a 90 degree input plug.

How Well Does it Perform?

Customer Quote:

"This past week, Tampa Electric (TECO) was working on power lines in Oldsmar Florida. Somehow, in the process of their work they managed to drop one of their live 7,200-Volt lines to the ground. Directly below where they were working, we (Bright House Networks) had two power supply cabinets. The high voltage line made a direct bull's-eye to our equipment. As the Power line hit the ground it did not immediately blow its fuse. The line bounced around on the ground throwing sparks and fire everywhere and made contact with our cabinets several times. Each time it hit the power supply cabinets; it instantly melted holes and energized the equipment with thousands of volts and hundreds of Amps. (See pictures below)

These pictures only show a small part of the overall damage to our Cabinets. When I arrived at the location and saw the damage to the exterior of the cabinets, I figured that everything inside was toast.

Thankfully, I was wrong.
Throughout the entire ordeal our power supply equipment continued to operate keeping the cable system online. Our power supplies did switch over to standby mode once the power company's fuse finally opened and commercial power was lost to our equipment. During this event the cable system never failed to keep operating.

Each of our power supply units was protected by Diversified Power's VSS20 surge protectors. The only damage to any of the electronic equipment was one of the Surge Protector units was burnt up as you can see in the picture. Had the equipment not been protected by the surge protectors, there is a high likelihood that all three Power supply unit would have been destroyed, costing the company thousands of dollars

Throughout the entire ordeal our power supply equipment continued to operate keeping the cable system online."

"We put a few VSS20 units on our most troublesome sites. They worked great and eliminated the problems. Based on that, we put VSS20BH units on ALL of our sites."

Designed & Tested in our 200,000 amp Surge Lab

To insure reliability and performance, the VSS20 has been designed to handle high current surges. Part of that process is testing its performance in our own surge lab. Product safety and reliability are two areas where we will NOT compromise our high standards. To support this, housed at our headquarters is a custom designed state-of-the-art test lab. The facility is used to assure performance integrity on power quality products.

The controlled testing environment also allows simulation of a range of voltage and current scenarios. DPS test standards meet or exceed the industry accepted performance standards for surge protection devices.

Surge generator equipment capable of creating impulses with peak amplitude greater than 10,000 amps is not available on the market. Such generators must be designed and constructed by each test facility.

Therefore, we designed and constructed a unique high energy surge generator that can create 200,000 peak impulse amps at a charge voltage of 10 kV maximum. The wave shaping network does this using the standard 8 microsecond by 20 microsecond current waveform.

Impulse testing using our high current generator is measured using precision calibrated impulse current transformers and precision high voltage dividers.

In other words, we make ***sure*** it works.

Multi-Stage High Energy Surge Suppression

Circuitry that absorbs and reroutes surge energy to ground or, in the event of catastrophic surge, completely disconnects power.
Multi-stage TSS provides absolute lowest clamping voltage
Let through voltage at 6 kV and 3,000 Amp peak- 500 Volts
Thermal disconnects for fire safety
Patented X-Coil design (US #7,085,115 B2)
Dual Voltage- either 120 V or 240 V operation
20 amp rated

Line Drop Overvoltage Protection

Special Internal Current Limiting Fuses- stops current due to high voltage line drop
Rated for 200,000 amp symmetrical fault current
Surge durable up to 40,000 amps peak surge current
Heavy duty- for long reliable life in field conditions

Compact and Easy to Install

Small size- less than 1 1/4 ” tall
Cord connected for easy installation
Special 6-15 plugs insure use on correct circuits
1 year warranty on parts and labor

Model Number Description:

VSS20 - 9 - 6 -18 - 620