Your guide to...

AVIVA Insurance

Surge protection

You work hard to build and maintain your business. That's why it's important to ensure you're protected from all potential losses – especially when they're beyond your control.

Protecting your business from power disturbances should be part of your overall business protection plan – regardless of the size of your operation.

Understanding the risks and following the proactive steps provided in this guide can help you improve the operational reliability of your electronic equipment, reduce costly repairs, and prevent loss of data and downtime.

Power disturbances

Having a basic understanding of the different types of power disturbances and their causes is helpful when developing a prevention plan specific to your business.

Circuit switching
Circuit switching surges occur when there's a sudden change to an electrical circuit as a result of equipment use, changes in utility power supply or damaged power lines.

Surges
A surge is a short-term increase in voltage, which can damage delicate electronic components and insulation in motors causing immediate failure or reducing their operating life. Small power surges may happen several times a day as a result of electrical devices starting up or shutting down and diverting electricity to and from other appliances on your premises or adjacent premises.

Spikes
A spike is a short, instantaneous increase in voltage, reaching as high as several thousand volts. A spike may cause catastrophic damage to electronic components and data.

Sags or Brownouts
A sag or brownout is a short-term decrease in voltage which may lead to tripped computers, system crashes and loss of data.

Sags and brownouts can affect transformers, light ballasts and electric motors, causing them to run hot, which reduces their operating life span and efficiency.

Blackouts
A blackout is a sudden and total loss of utility power. If power is not restored correctly after a blackout, voltages exceeding several times the primary power level may be generated which can create a power spike.

Lightning
Lightning is the most disruptive cause of power surges. Damage can occur from a direct lightning strike or an induced surge (a strike occurring somewhere away from the electrical system). An induced lightning surge on overhead electrical distribution wires can deliver as much as 100,000 volts. Lightning surges can also enter buildings via other metal conductors like water lines, telephone lines, unshielded CAT cable or TV cables.

Staying grounded

Your first defense against electrical power is proper grounding equipment, which provides a direct, controlled and low-impedence path for an electrical current to return to earth ground.

Electricity will generally follow the path of least resistance, so a single, continuous ground connecting all building systems to a common

point is the best way to protect your business against electrical disturbances.

Grounding methods are best developed in consultation with a qualified contractor, consulting engineering firm and your local utility as it's a complex process.

Surge protection devices

There are many types of surge protection devices available varying in both price and effectiveness.

Before you install your device, ensure it's compatible with the equipment you need to protect.

An effective way to protect against voltage increases is by connecting a Transient Voltage Surge Suppressor (TVSS) to your critical equipment.

The suppressor is activated when a preset voltage is reached, absorbing part of the surge energy and diverting it to ground. It acts like a sponge, soaking up the energy of the surge and dissipating it harmlessly. The suppressor is then automatically reset and ready to handle the next surge.

It's also important to protect electric motors. Install the surge protection as close as possible to the motor terminals – or within the starters or supply switchgear if they are within 100 feet of the motor.

Building surge protection

Type 1 Surge protection devices (SPD) are designed for installation between the meter and the distribution panel.

Type 2 SPDs are designed for installation after the main disconnect.

These devices often fit into a circuit breaker space in the panel. If you have sub panels throughout the building, each could be fitted with one.

Electronic equipment can be protected by standalone units connected to the building power, often in the form of a power bar/with battery backup.

Telephone lines, computer cabling, and coaxial cables (Cable TV, exterior TV antenna, radio communications antennas) also need proper grounding, and surge/ lightning protection.

Specialized protection devices are available through telecommunication equipment suppliers.

Note that fuses, circuit breakers or protective relays are generally much too slow to provide sufficient protection.

Your surge protection checklist

- ✓Inspect your entire system network regularly to ensure electrical systems are maintained and in good working order.
- ✓Consult experts to determine the best level of protection for your business.
- ✓Conduct a risk assessment of all critical equipment.
- ✓Ensure all equipment is properly grounded.
- ✓Install surge protection for building systems and individual equipment.
- ✓Ensure your surge protector meets the UL/ULC standard 1449. Look for a label indicating it is UL listed as a Transient Surge Voltage Suppressor. The label will also show the "Voltage Protection Rating" of the unit.
- ✓Revisit your protection plan regularly, and whenever you add, upgrade or move equipment.
- ✓Replace existing protective devices with newer ones as protection technology and codes change.

For further information on this topic, please contact your independent insurance broker.

Visit www.avivacanada.com/riskmanagement for more Your guide to... information sheets on other loss control topics.

Printed and published by Aviva Canada Inc., Website: **www.avivacanada.com**