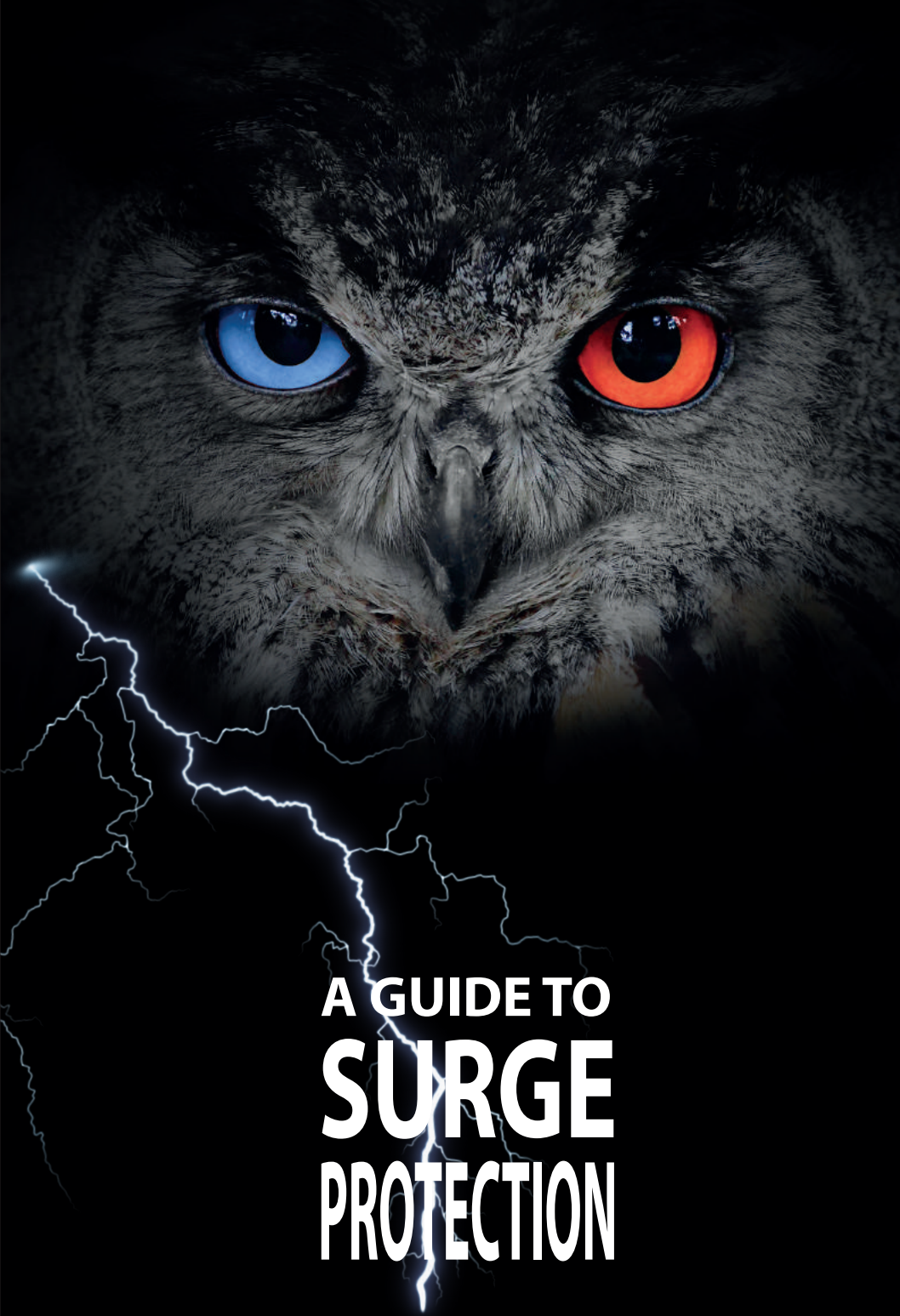


CPNI CUDIS



A GUIDE TO
SURGE
PROTECTION

KNOW YOUR SURGE PROTECTION

A Surge Protection Device (SPD) in most cases uses a Metal Oxide Varistor (MOV) as a means to provide a path to ground / earth.

Under normal conditions the MOV is a high impedance component and will not draw any current. When subjected to a surge, the MOV quickly becomes low impedance and opens up a path to earth to shunt the surge away from other circuits on the installation. MOV's have a very quick response time, therefore the path to ground will be open before the surge can affect any other circuits.

SELECTING SPD's

When selecting an SPD, several points should be considered.

- Earthing Arrangement (TN-C-S, TN-S or TT) and number of conductors. In a TT arrangement, due to the high impedance live-earth fault loop, it requires a differential protection device.
- Exposure to Atmospheric Surges, need Type I surge protection. Use a lightning strike density map to determine whether the installation is in a region at high risk of thunderstorms.
- Voltage withstand rating of equipment being protected. The device should be selected so that the Voltage Protection Level (Up) is compatible with the equipment the device is protecting. Items of electronic equipment are typically in Surge category I and will withstand up to 1.5kV. Generally as the discharge capacity of the SPD increases, so does the Voltage Protection Level, hence why sensitive devices may need a dedicated Type II or Type III with a lower Up rating (less than 1.5kV), no more than 10m away.

SPD RATINGS

- I_{imp} - Impulse Current (kA)
Maximum current that a Type I (10/350 μ s waveform) protection device can withstand.
- I_{max} - Maximum Discharge Current (kA)
Maximum current that a Type II (8/20 μ s waveform) protection device can withstand, a surge of this magnitude will likely degrade the MOV to end of life, causing the indicator to turn red.
- I_n - Nominal Current (kA)
Peak current that a Type II protective device can withstand, multiple times, without ending the life of the product.
- U_p - Voltage Protection Level / Let Through Voltage (kV)
Maximum voltage that can pass through an installation without activating the surge protection device.
- U_c - Maximum Continuous Operating Voltage (V)
Maximum effective voltage that can be applied to the terminals of the protection device.

THREAT FROM DIRECT STRIKE



Lightning Protection System Fitted?

NO

Industrial / 3 Phase Application

Type I & Type II at Incoming Supply Main Panel

Type II at Distribution Boards greater than 10M away

Type III at Sensitive Equipment / Equipment greater than 10M away

Small Commercial / Residential

Type I & Type II at Consumer Unit

Type III at Sensitive Equipment / Equipment greater than 10M away

THREAT FROM INDIRECT STRIKE



Overhead Supply or High Flash Density Region?

NO

Industrial / 3 Phase Application

Type I + II Combined at Incoming Supply Main Panel

Type II at Distribution Boards greater than 10M away

Type III at Sensitive Equipment / Equipment greater than 10M away

Small Commercial / Residential

Type I + II Combined at Consumer Unit

Type III at Sensitive Equipment / Equipment greater than 10M away

Industrial / 3 Phase Application

Type II at Incoming Supply Main Panel

Type II at Distribution Boards greater than 10M away

Small Commercial / Residential

Type II at Consumer Unit

Type III at Sensitive Equipment / Equipment greater than 10M away

CUDIS SURGE PROTECTION DEVICES RANGE

TYPE I

Has the highest discharge capacity, designed for use in incoming power supply panels where the installation has an External Lightning Protection System fitted. Must be accompanied by a downstream Type II surge protection device.



SPD-C1 RANGE

TYPE I + II Combined

Has a high discharge capacity, for use in incoming power supply panels / consumer units where the risk of lightning strike is high. With the added protection of a Type II device.



SPD-C1+2 RANGE

TYPE II

Designed for use in distribution boards located downstream of Type I surge protection devices or in the incoming power supply panel / consumer unit in areas with low exposure to lightning strikes.



SPD-C2 RANGE

TYPE III

Designed for use in addition to Type II surge protection devices, to be installed downstream to protect sensitive electronic devices or equipment located greater than 10m away from the Type II device.



CPN-BLACKBOX



SURGE PROTECTION DEVICES

Call us now for all your Surge Protection requirements

Pre-Wired Fully Loaded Surge Boards

Lumo® H-I Dual RCD Boards
with Surge Protection



Surge Retrofit
4 Way Boards



Lumo® RCBO Loaded Boards
with Surge Protection



More Surge Protection Devices
Type I, Type II & Type III,
Single Phase, Three Phase and Neutral available



WHAT ARE SURGES AND HOW ARE THEY PRODUCED?

Surges or transients are short duration increases in voltage measured between two or more conductors. These potentially harmful voltages can be induced into a building from a direct lightning strike or from a ground strike in the vicinity.

Surges can also come from equipment connected directly to the electrical supply, such as DNO's (District Network Operator) transformer switching or from a large load on the installation itself such as drive motors, lifts, refrigeration and air conditioning equipment.

WHAT THE REGULATIONS SAY

443.4 OVERVOLTAGE CONTROL

Protection against transient overvoltages shall be provided where the consequence caused by overvoltage could:

- (i) result in serious injury to, or loss of, human life, or
- (ii) result in interruption of public services and / or damage to cultural heritage, or
- (iii) result in interruption of commercial or industrial activity, or
- (iv) affect a large number of co-located individuals.

For all other cases, a risk assessment according to Regulation 443.5 shall be performed in order to determine if protection against transient overvoltages is required. If the risk assessment is not performed, the electrical installation shall be provided with protection against transient overvoltages, except for single dwelling units where the total value of the installation and equipment therein does not justify such protection.

534.4.1 SPD TYPES AND LOCATION

534.4.1.1 Where SPDs are required:

- (i) SPDs installed at the origin of the electrical installation shall be Type I or Type II.
- (ii) SPDs installed close to sensitive equipment to further protect against switching transients originating within the building shall be Type II or Type III.

