



# PRODUCT HANDBOOK 5.0

Novaris

Global Solutions in  
Lightning and Surge Protection



# The Ultimate High Voltage Test

Photographer: Renee Doyle

## Q1 Building - Gold Coast, Queensland AUSTRALIA

Surge Protection Design and Manufacture:

Novaris Pty Ltd

This was the ultimate high voltage test of [The Novaris Systematic Approach](#) to lightning and surge protection.

Lightning strikes are an unpredictable natural phenomenon. However, the way equipment can be protected from lightning strikes is predictable. The 'Novaris Systematic Approach' is a step-by-step solution to lightning and surge protection that can be applied to any application.

1

**Define Boundaries**

Boundaries divide areas of different potential.

2

**Protect Structure**

Novaris supports conventional lightning protection methods.

3

**Install Bonded Earthing System**

A single bonded earthing system within each boundary is essential.

4

**Protect Power Lines**

Protect all power lines crossing protection boundaries.

5

**Protect Signal/Data Lines**

Protect all signal/data lines crossing protection boundaries.

**Novaris offers:****Investigation and Analysis**

Novaris offers analysis of existing lightning and surge protection systems as well as complete solutions based on technical analysis gathered from site visits.

**Structural Lightning Protection and Earthing Systems**

Design and advice on lightning protection systems is offered for all structures in accordance with recognised world standards. A range of structural lightning protection and earthing components is available.

**Comprehensive Surge Protection Products to suit any application**

Products are available ranging from main switchboard and distribution board surge protection, PLC and control system protection, to RF coaxial protection.

**Custom Product Design**

Novaris can engineer custom products and full site surge protection for any application.

**Project Management & Installation**

Novaris performs consultancy, project management and product installation worldwide.

<b>IEC Compliant</b>	Compliant with the relevant IEC lightning and surge protection standards, in particular IEC 62305 and IEC 61643.
<b>All Mode Protection</b>	Novaris models featuring all mode protection provide protection for all combinations of lines (L-N, L-E, N-E) ensuring the maximum level of protection is achieved at all times. They have been designed for installation in any wiring system worldwide.
<b>Multistage Transient Protection</b>	Models featuring multistage transient protection deliver greater levels of protection through a staged approach. The primary stage absorbs the majority of the surge energy. The remaining stages provide accurate clamping and a degree of redundancy.
<b>Redundant Segments</b>	Models featuring redundant segments have a parallel redundant arrangement of high energy metal oxide varistors (MOVs), thus promoting long life and exceptional surge handling capacity.
<b>Thermal Sensing</b>	Sustained overvoltages can cause components to overheat and degrade. Thermal sensing warns of this condition.
<b>Percentage Active Display</b>	A digital display confirms the device rating upon startup, then displays percentage active. The display indicates segment status and thermal overload.
<b>LED Status Display</b>	LED indicators are provided to indicate operating status.
<b>SIP and External Alarms</b>	The Novaris Surge Indicator Panel (SIP) allows remote monitoring of any Novaris product featuring external alarms. Models featuring external alarms have voltage free changeover contacts (SPDT) for remote status indication.
<b>DIN 43880 Compliant</b>	Protection devices housed in DIN 43880 compliant enclosures allow for convenient installation on DIN rail fittings commonly used in switchboards worldwide.
<b>Safe Metal Enclosure</b>	Novaris surge protection products are housed in safe, all metal enclosures. In the event of a prolonged overvoltage they will not catch fire or explode.

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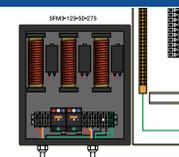
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NOTE: Due to the Novaris policy of continuing product development, specifications are subject to change without notice.



Novaris

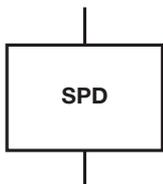
# POWER PROTECTION

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Power line surge protection must:

1. Provide adequate protection for all equipment.
2. Achieve a long working life.
3. Optimise the cost and size of the surge protection devices (SPDs).

Common SPD Configurations



One port SPDs

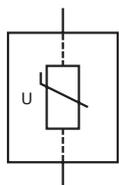
- ✓ Parallel or shunt connected devices across the line.
- ✓ It is critical that connecting lead length is minimized for this class of device.
- ✓ Includes the Novaris SD, SG and HSG products.



Two port SPDs

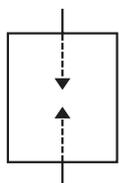
- ✓ Connected in series with the line.
- ✓ Mitigates lead length concerns.
- ✓ Includes the Novaris SSP, SF and PP products.

Classes of SPD components



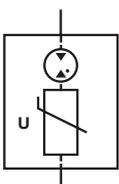
Voltage limiting SPDs/Clamping Devices

- ✓ Utilise metal oxide varistors (MOV) and suppressor diodes (TVS).
- ✓ Provide high impedance in normal operation that reduces proportionally to overvoltage.
- ✓ Produce no follow on AC current after a transient event.
- ✓ Includes the Novaris SD, SSP, SF and PP products.



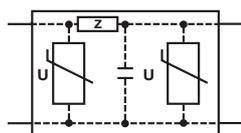
Voltage switching SPDs/Crowbar Devices

- ✓ Utilise spark gaps, gas discharge tubes, thyristors and triacs.
- ✓ Provide high impedance in normal operation that latches low at a defined overvoltage.
- ✓ Robust crowbar protection, but can produce significant follow on current after a transient event.
- ✓ Includes the Novaris SG products.



Hybrid SPDs

- ✓ Utilise a combination of switching gas discharge tubes (GDT) and MOV components in series.
- ✓ Will latch at a defined overvoltage and then perform in voltage limiting mode.
- ✓ Reduces follow on current whilst still providing robust protection.
- ✓ Can operate at prolonged overvoltages, without compromising protection.
- ✓ Includes the Novaris HSG and HSF products.

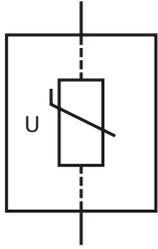


Filters

- ✓ Utilise LC filter components in addition to regular SPD components.
- ✓ Attenuate impulses in addition to diverting to earth.
- ✓ Provide the highest possible level of protection.
- ✓ Can be very accurately matched to the power system.
- ✓ Includes the Novaris SF, HSF, SFH and SFM products.

Selection of Surge Protection Devices

Surge Diverters, SD

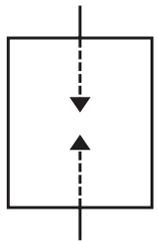


Surge diverters are voltage limiting SPDs utilising MOVs. They can be used in main switchboards, distribution boards as well as for final circuit protection and are available with ratings of  $I_{max}$  up to 200kA (8/20µs) or  $I_{imp}$  up to 25kA (10/350µs).

HRC fusing, or preferably Novaris SCB devices, must be used to limit current during a fault. During installation, lead length should be minimised as it can adversely affect the protection level. For this reason, additional secondary protection should be installed on distribution boards and final circuits.

Diverters are not recommended for installations where significant sustained overvoltage may be present. Hybrid or voltage switching devices should be used in these situations.

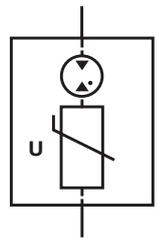
Spark Gaps, SG



Spark gaps have high surge ratings and are suitable for point of entry protection in installations with highly exposed overhead LV power lines with no local transformer in high lightning areas. They are available with surge ratings ( $I_{imp}$ ) of up to 110kA (10/350µs).

Spark gaps have a crowbar effect and effectively place a short circuit across the line once fired. High levels of AC follow on current may then flow, causing nuisance tripping of circuit breakers and extreme voltage disturbances. It is therefore critical to fuse the device to match the AC fault current of the supply and utilise secondary protection downstream from the device.

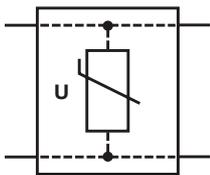
Hybrid Spark Gaps, HSG



Hybrid spark gaps combine the advantages of voltage switching and voltage limiting components. They are suitable for high exposure installations and meet IEC61643-12 in relation to surge ratings with  $I_{max}$  of 200kA (8/20µs) and  $I_{imp}$  of 25kA (10/350µs). A high energy GDT with an accurate firing voltage is employed to obtain protection levels very close to that of the SD products.

The hybrid combination eliminates AC follow on current and provides excellent protection whilst tolerating excessive temporary overvoltages (TOV), making it an ideal alternative to SD products where supply conditions can be unstable.

Series Surge Protector, SSP

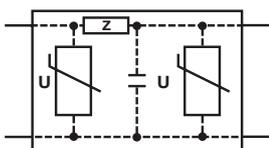


Single port SPDs are compromised by the presence of their interconnecting leads. Typically voltage drops of 500V per meter of connecting lead can be expected. Such lead lengths are often unavoidable in physically large main switchboards.

For circuits that are more sensitive the SSP provides a means of eliminating the shunt connected leads and places the SPD directly across the line. Such applications might include UPS inputs, rectifiers, VSDs and motors.

SSPs are series connected and must have a current rating  $I_L$  equal to or greater than the protected circuit.

Surge Filters, SF



The surge filter is a true two port SPD offering an extremely low let through voltage capable of protecting highly sensitive electronic circuits. An extensive range is available, from 6A DIN mount, to pluggable GPO endpoint, to 2000A per phase filters; with surge ratings up to 200kA (8/20µs). Hybrid types are also available (HSF) for installations that must tolerate TOV.

SF products provide primary and secondary protection in a monolithic package, ensuring the highest possible protection level. This makes them ideal for cellular base stations, process plant control rooms and data centres.

Surge filters are series connected and must have a current rating  $I_L$  equal to or greater than the protected circuit.

Custom filters are available and can integrate special options including under/over voltage contactors.

“SD1” novaris.com.au



### 1 PHASE MSB SURGE DIVERTERS

Novaris Single Phase MULTIMOV surge diverters offer unsurpassed safety, quality and reliability in protection for your electrical system. MULTIMOV surge diverters are an ideal point-of-entry protector for all industrial, commercial and communications applications.

- ✔ Percentage active display
- ✔ Segmented redundancy
- ✔ All mode protection (-N model)
- ✔ Active alarms
- ✔ Safe metal enclosure

Specifications

Specifications		SD1-100-275	SD1-100-275-N	SD1-150-275	SD1-150-275-N	SD1-200-275	SD1-200-275-N
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz					
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz					
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	100 kA	100 kA	150 kA	150 kA	200 kA	200 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA	12.5 kA	18.75 kA	18.75 kA	25 kA	25 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	40 kA	40 kA	60 kA	60 kA	80 kA	80 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 800 V	< 800 V	< 750 V	< 750 V	< 700 V	< 700 V
N-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	-	15 kA	-	30 kA	-	30 kA
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	-	50 kA	-	100 kA	-	100 kA
N-PE Voltage protection level @ 1kV / $\mu$ s	$U_p$	-	< 700 V	-	< 1200 V	-	< 1200 V
Dimensions		W 54 mm x H 140 mm x D 68 mm					



“SD3” novaris.com.au

### 3 PHASE MSB SURGE DIVERTERS

Novaris Three Phase MULTIMOV surge diverters offer unsurpassed safety, quality and reliability in protection for your electrical system. MULTIMOV surge diverters are an ideal point-of-entry protector for all industrial, commercial and communications applications.

- ✔ Percentage active display
- ✔ Segmented redundancy
- ✔ All mode protection (-N model)
- ✔ Active alarms
- ✔ Safe metal enclosure

Specifications

Specifications		SD3-100-275	SD3-100-275-N	SD3-150-275	SD3-150-275-N	SD3-200-275	SD3-200-275-N
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz					
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz					
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	100 kA	100 kA	150 kA	150 kA	200 kA	200 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA	12.5 kA	18.75 kA	18.75 kA	25 kA	25 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	40 kA	40 kA	60 kA	60 kA	80 kA	80 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 800 V	< 800 V	< 750 V	< 750 V	< 700 V	< 700 V
N-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	-	15 kA	-	30 kA	-	30 kA
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	-	50 kA	-	100 kA	-	100 kA
N-PE Voltage protection level @ 1kV / $\mu$ s	$U_p$	-	< 700 V	-	< 1200 V	-	< 1200 V
Dimensions		W 200 mm x H 200 mm x D 80 mm					



### 3 PHASE MSB ALL MODE SURGE DIVERTERS

Novaris SDN Surge Diverters are the ideal choice for all mode protection in major distribution switchboards. All mode protection is suitable for main switchboards in non MEN installations.

- ✓ Per MOV LED display
- ✓ Segmented redundancy
- ✓ All mode protection
- ✓ Active alarms
- ✓ Safe metal enclosure

Specifications		SDN3-100-275	SDN3-150-275	SDN3-200-275
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz		
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz		
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	100 kA	150 kA	200 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA	18.75 kA	25 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	40 kA	60 kA	80 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 800 V	< 750 V	< 700 V
N-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	15 kA	30 kA	30 kA
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	50 kA	100 kA	100 kA
N-PE Voltage protection level @ 1kV / $\mu$ s	$U_p$	< 700 V	< 1200 V	< 1200 V
Dimensions		W 80 mm x H 140 mm x D 68 mm		



### 1 PHASE DB SURGE DIVERTERS

🔍 "SDD1" 🌐 novaris.com.au

Novaris Single Phase SDD1 Surge Diverters DIN offer protection for domestic MSB and industrial DBs. SDD diverters are housed in DIN 43880 compliant, fail-safe, metal enclosures.

- ✔ LED status
- ✔ Active alarms (-A model)
- ✔ All mode protection
- ✔ Safe metal enclosure

Specifications

		SDD1-20-275	SDD1-50-275	SDD1-50-275-A	SDD1-100-275	SDD1-100-275-A
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz				
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz				
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	20 kA	50 kA	50 kA	100 kA	100 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	2 kA	6.25 kA	6.25 kA	12.5 kA	12.5 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	10 kA	20 kA	20 kA	40 kA	40 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 800 V	< 800 V	< 800 V	< 800 V	< 800 V
N-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	5 kA	5 kA	15 kA	15 kA	15 kA
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	10 kA	10 kA	50 kA	50 kA	50 kA
N-PE Voltage protection level @ 1kv / $\mu$ s	$U_p$	< 1200 V	< 1200 V	< 700 V	< 700 V	< 700 V
Width		18 mm			36 mm	



### 3 PHASE DB SURGE DIVERTERS

🔍 "SDD3" 🌐 novaris.com.au

Novaris Three Phase SDD3 Surge Diverters DIN offer protection for domestic MSB and industrial DBs. SDD diverters are housed in DIN 43880 compliant, fail-safe, metal enclosures.

- ✔ LED status
- ✔ Active alarms (-A model)
- ✔ All mode protection
- ✔ Safe metal enclosure

Specifications

		SDD3-20-275	SDD3-50-275	SDD3-50-275-A	SDD3-100-275	SDD3-100-275-A
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz				
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz				
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	20 kA	50 kA	50 kA	100 kA	100 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	2 kA	6.25 kA	6.25 kA	12.5 kA	12.5 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	10 kA	20 kA	20 kA	40 kA	40 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 800 V	< 800 V	< 800 V	< 800 V	< 800 V
N-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	5 kA	5 kA	5 kA	15 kA	15 kA
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	10 kA	10 kA	10 kA	50 kA	50 kA
N-PE Voltage protection level @ 1kv / $\mu$ s	$U_p$	< 1200 V	< 1200 V	< 1200 V	< 700 V	< 700 V
Width		54 mm			72 mm	



## ELV ISOLATED SURGE DIVERTERS

"IDD2" [novaris.com.au](http://novaris.com.au)

Novaris IDD2 Isolated Surge Diverters provide surge protection for two phase, balanced AC power feeds and for DC supplies that may not necessarily have one pole earthed. The IDD2 provides both common and transverse mode protection with earth leakage current in the microamp range. The IDD2 range was previously labelled SDD2.

- ✓ LED display
- ✓ No leakage current
- ✓ All mode protection
- ✓ Passive alarms
- ✓ Safe metal enclosure

### Specifications

		IDD2-12-14	IDD2-12-30	IDD2-40-50	IDD2-40-130
Nominal voltage	$U_0$	12V AC / DC	24V AC / DC	48V AC / DC	110 V AC
Maximum continuous voltage AC	$U_c$	14 V	30 V	50 V	130 V
Maximum continuous voltage DC	$U_c$	18 V	36 V	68 V	170 V
L-L Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	12 kA	12 kA	40 kA	40 kA
L-L Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	6 kA	6 kA	20 kA	20 kA
L-L Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 110 V	< 165 V	< 200 V	< 370 V
L-PE Total nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	6 kA	6 kA	20 kA	20 kA
L-PE Voltage protection level @ 1kV / $\mu$ s	$U_p$	< 90 V	< 130 V	< 155 V	< 360 V
Dimensions		W 36 mm x H 95 mm x D 68 mm			



## SURGE CIRCUIT BREAKERS

"SCB" [novaris.com.au](http://novaris.com.au)

Novaris Surge Circuit Breakers are purpose designed Over Current Protection Devices for power SPDs. They protect one port SPDs from excessive surge and AC currents, minimising damage. The SCB replaces standard CB/fuse in both main and distribution switchboards. Its 3A AC tripping current allows coordination with upstream OCPDs.

- ✓ Provides low impedance surge path
- ✓ Protects one port SPD from overvoltage
- ✓ Trips at 3A 50/60Hz to protect SPD
- ✓ Monitoring with Novaris active alarms

### Specifications

		SCB1-3-80	SCB1-3-25
Nominal voltage	$U_0$	230V / 50 Hz - 60 Hz	230V / 50 Hz - 60 Hz
Rated insulation voltage		400 VAC	400 VAC
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	80 kA	-
Impulse current (10/350 $\mu$ s)	$I_{imp}$	-	25 kA
Load current	$I_L$	3 A	3 A
Short circuit breaking capacity	$I_{cs}$	20 kA	50 kA
Dimensions		W 18 mm x H 84 mm x D 70 mm	W 36 mm x H 84 mm x D 70 mm



## SOLAR SURGE DIVERTERS

Novaris SDPV Solar Protectors provide DC-side protection against the damage from surges caused by lightning or over voltages for photovoltaic systems.

- ✓ Passive alarm
- ✓ Integrated thermal disconnect
- ✓ Replaceable pluggable modules

### Specifications

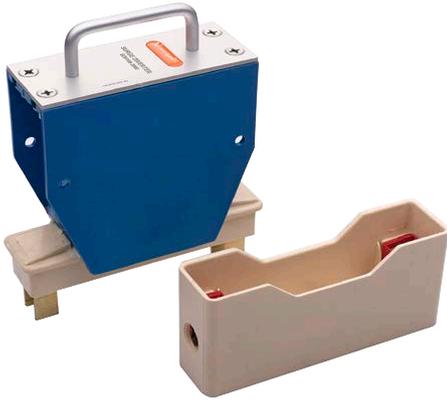
SDPV-50-1000

SDPV-50-1500

Nominal voltage	$U_0$	1000 V DC (OC)	1500 V DC (OC)
Maximum continuous voltage DC	$U_c$	1120 V DC	1650 V DC
L-L Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA	50 kA
L-L Impulse current (10/350 $\mu$ s)	$I_{imp}$	4 kA	4 kA
L-L Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	20 kA	20 kA
L-L Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 4000 V	< 4000 V
L-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	20 kA	20 kA
L-PE Voltage protection level @ 1kV / $\mu$ s	$U_p$	< 4000 V	< 4000 V
Dimensions		W 54 mm x H 100 mm x D 67 mm	

## AIRFIELD LIGHTING HV SURGE DIVERTERS

Novaris SDH High Voltage Surge Diverters have been engineered for system voltages above 500VRMS. Typical applications include aviation runway lighting, mining and railway industries.



- ✓ High energy capacity
- ✓ High voltage protection
- ✓ Base options
- ✓ Replaceable module
- ✓ Optional alarm (-A)

### Specifications

		SDH-100-550	SDH-200-1000	SDH-100-1500	SDH-100-2000
Maximum continuous voltage AC	$U_c$	550 V	1000 V	1500 V	2000 V
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	100 kA	200 kA	100 kA	100 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA	25 kA	12.5 kA	12.5 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	40 kA	80 kA	40 kA	40 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 1600 V	< 2600 V	< 3800 V	< 4800 V
Dimensions		W 57 mm x H 214 mm x D 162 mm			

### PRI WINDING RUNWAY LIGHTING SPD

Novaris Primary Transformer Winding Airfield Lighting Surge Protectors are engineered to protect the primary high voltage windings of runway lighting systems. RLP protectors are designed to be installed in series with the primary winding conductors.



- ✓ IP 65 enclosure
- ✓ Up to 3000V
- ✓ Series protector

RLP-50-3000

Specifications

Maximum continuous voltage AC	$U_c$	3000 V / 50 Hz - 60 Hz
L-PE Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
L-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	4 kA
L-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	20 kA
L-PE Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 7.5 kV
Connector Type		Single conductor
Dimensions		W 90 mm x H 115 mm x D 55 mm

### SEC WINDING RUNWAY LIGHTING SPD

Novaris Secondary Transformer Winding Airfield Lighting Series Surge Protectors are engineered to protect the secondary low voltage windings of runway lighting systems. RLS protectors are designed to be installed in series with the secondary winding conductors.



- ✓ LED display
- ✓ Segmented redundancy
- ✓ Passive alarms
- ✓ Safe metal enclosure

RLS-10-50-275

Specifications

Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz
L-L Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
L-L Impulse current (10/350 $\mu$ s)	$I_{imp}$	4 kA
L-L Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	20 kA
L-L Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 750 V
L-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	20 kA
L-PE Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 750 V
Connector Type		Dual conductors
Dimensions		W 90 mm x H 115 mm x D 55 mm



### 1 PHASE SPARK GAP ARRESTERS

Novaris Spark Gap surge diverters offer a high level of protection against direct strike surges. They are recommended for point of entry protection where direct strike protection is required.

- ✓ Status indicator
- ✓ Fully encapsulated
- ✓ Passive alarm

Specifications		SG1-50-275	SG1-50-275-N	SGN-100-255
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz	230 V / 50 Hz - 60 Hz	-
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz	275 V / 550 Hz - 60 Hz	255 V / 50 Hz - 60 Hz
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	150 kA	150 kA	-
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	50 kA	50 kA	-
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	50 kA	50 kA	-
L-N Voltage protection level @ $I_n$ (8/20 $\mu$ s)	$U_p$	< 1500 V	< 1500 V	-
N-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	-	100 kA	100 kA
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	-	100 kA	100 kA
N-PE Voltage protection level @ $I_n$	$U_p$	-	< 1500 V	< 1500 V
Width		36 mm	72 mm	36 mm



### 3 PHASE SPARK GAP ARRESTERS

Novaris Spark Gap surge diverters offer a high level of protection against direct strike surges. They are recommended for point of entry protection where direct strike protection is required.

- ✓ Status indicator
- ✓ Fully encapsulated
- ✓ Passive alarm

Specifications		SG3-50-275	SG3-50-275-N
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz	230 V / 50 Hz - 60 Hz
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz	275 V / 50 Hz - 60 Hz
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	150 kA	150 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	50 kA	50 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	50 kA	50 kA
L-N Voltage protection level @ $I_n$ (8/20 $\mu$ s)	$U_p$	< 1500 V	< 1500 V
N-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	-	100 kA
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	-	100 kA
N-PE Voltage protection level @ $I_n$	$U_p$	-	< 1500 V
Width		108 mm	144 mm



### 1 PHASE HYBRID SPARK GAP DIVERTERS

“HSG” [novaris.com.au](http://novaris.com.au)

Novaris HSG Hybrid Spark Gap Arresters combine the advantages of voltage switching and voltage limiting components. The hybrid technology mitigates AC follow on current and is ideal for applications where mains voltages fluctuations are significant.

- ✓ LED status
- ✓ Segmented redundancy
- ✓ All mode protection (-N model)
- ✓ Active alarms
- ✓ Overvoltage tolerance
- ✓ Safe metal enclosure

Specifications

HSG1-200-480

HSG1-200-480-N

Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz	
Maximum continuous voltage AC	$U_c$	480 V / 50 Hz - 60 Hz	
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	200 kA	200 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	25 kA	25 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	100 kA	100 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 1000 V	< 1000 V
N-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	-	30 kA
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	-	100 kA
N-PE Voltage protection level @ 1kv / $\mu$ s	$U_p$	-	< 1200 V
Dimensions		W 80 mm x H 140 mm x D 68 mm	



### 3 PHASE HYBRID SPARK GAP DIVERTERS

“HSG” [novaris.com.au](http://novaris.com.au)

Novaris HSG Hybrid Spark Gap Arresters combine the advantages of voltage switching and voltage limiting components. The hybrid technology mitigates AC follow on current and is ideal for applications where mains voltages fluctuations are significant.

- ✓ LED status
- ✓ Segmented redundancy
- ✓ All mode protection (-N model)
- ✓ Active alarms
- ✓ Overvoltage tolerance
- ✓ Safe metal enclosure

Specifications

HSG3-200-480

HSG3-200-480-N

Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz	
Maximum continuous voltage AC	$U_c$	480 V / 50 Hz - 60 Hz	
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	200 kA	200 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	25 kA	25 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	100 kA	100 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 1000 V	< 1000 V
N-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	-	30 kA
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	-	100 kA
N-PE Voltage protection level @ 1kv / $\mu$ s	$U_p$	-	< 1200 V
Dimensions		W 200 mm x H 200 mm x D 80 mm	



### 3 PHASE 100kA HYBRID SPARK GAPS

“HSG” [novaris.com.au](http://novaris.com.au)

Novaris HSG Hybrid Spark Gap Arresters combine the advantages of voltage switching and voltage limiting components. Novaris HSG hybrid spark gaps suit all high exposure installations. The hybrid technology mitigates AC follow on current and is ideal for applications where mains voltages fluctuations are significant.

- ✓ LED per MOV status
- ✓ Segmented redundancy
- ✓ All mode protection (-N model)
- ✓ Active alarms
- ✓ Overvoltage tolerance
- ✓ Safe metal enclosure

Specifications

HSG3-100-480

HSG3-100-480-N

Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz	
Maximum continuous voltage AC	$U_c$	480 V / 50 Hz - 60 Hz	
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	100 kA	100 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA	12.5 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	40 kA	40 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 1000 V	< 1000 V
N-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	-	30 kA
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	-	100 kA
N-PE Voltage protection level @ 1kv / $\mu$ s	$U_p$	-	< 1200 V
Dimensions		W 80 mm x H 140 mm x D 68 mm	



### 2 LINE ISOLATED SERIES PROTECTORS

“ISP” [novaris.com.au](http://novaris.com.au)

Novaris ISP Isolated Series Protectors are suitable for AC/DC installation in balanced circuits up to 16A. The ISP range has been engineered to provide excellent performance and installation independent let-through voltage. Their compact design makes them an ideal choice for space restricted applications.

- ✓ LED status
- ✓ All mode protection
- ✓ Safe metal enclosure
- ✓ Installation independent performance

Specifications

ISP2-16-10-30

ISP2-16-10-50

ISP2-16-15-130

ISP2-16-15-275

Maximum continuous voltage (AC)	$U_c$	30 V	50 V	130 V	275 V
Maximum continuous voltage (DC)	$U_c$	42 V	70 V	180V	380 V
L-L Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	10 kA	10 kA	15 kA	15 kA
L-L Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	5 kA	5 kA	6 kA	6 kA
L-L Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 70 V	< 200 V	< 400 V	< 800V
L-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	5 kA	5 kA	6 kA	6 kA
L-PE Voltage protection level @ 1kv / $\mu$ s	$U_p$	< 70 V	< 200 V	< 400 V	< 700V
Dimensions		W 18 mm x H 116 mm x D 70 mm			



### 1 PHASE SERIES SURGE PROTECTORS

Novaris SSP Series Surge Protectors are suitable for installation in circuits up to 63A. The SSP range has been engineered to provide excellent performance and installation independent let-through voltage.

- ✓ LED status
- ✓ Installation independent performance
- ✓ All mode protection
- ✓ Active alarms
- ✓ Safe metal enclosure

Specifications		SSP1-16-15-275	SSP1-20-50-275	SSP1-20-100-275	SSP1-32-50-275	SSP1-32-100-275	SSP1-63-50-275	SSP1-63-100-275
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz						
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz						
Maximum load current	$I_L$	16 A	20 A	20 A	32 A	32 A	63 A	63 A
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	15 kA	50 kA	100 kA	50 kA	100 kA	50 kA	100 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	-	6.25 kA	12.5 kA	6.25 kA	12.5 kA	6.25 kA	12.5 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	6 kA	20 kA	40 kA	20 kA	40 kA	20 kA	40 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 800 V	< 800 V	< 800 V	< 800 V	< 800 V	< 800 V	< 800 V
N-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	-	15 kA	15 kA	15 kA	15 kA	15 kA	15 kA
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	6 kA	50 kA	50 kA	50 kA	50 kA	50 kA	50 kA
N-PE Voltage protection level @ 1kV / $\mu$ s	$U_p$	< 700 V	< 700 V	< 700 V	< 700 V	< 700 V	< 700 V	< 700 V
Alarm included		Standard						
Width		18 mm	54 mm				72 mm	

### 3 PHASE SERIES SURGE PROTECTORS



Novaris SSP Series Surge Protectors are suitable for installation in circuits up to 63A. The SSP range has been engineered to provide excellent performance and installation independent let-through voltage.

- ✓ LED status
- ✓ Installation independent performance
- ✓ All mode protection
- ✓ Active alarms
- ✓ Safe metal enclosure

Specifications		SSP3-10-10-275	SSP3-20-50-275	SSP3-20-100-275	SSP3-32-50-275	SSP3-32-100-275	SSP3-63-50-275	SSP3-63-100-275
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz						
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz						
Maximum load current	$I_L$	10 A	20 A	20 A	32 A	32 A	63 A	63 A
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	10 kA	50 kA	100 kA	50 kA	100 kA	50 kA	100 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	-	6.25 kA	12.5 kA	6.25 kA	12.5 kA	6.25 kA	12.5 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	5 kA	20 kA	40 kA	20 kA	40 kA	20 kA	40 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 800 V	< 800 V	< 800 V	< 800 V	< 800 V	< 800 V	< 800 V
N-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	-	15 kA	15 kA	15 kA	15 kA	15 kA	15 kA
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	5 kA	50 kA	50 kA	50 kA	50 kA	50 kA	50 kA
N-PE Voltage protection level @ 1kV / $\mu$ s	$U_p$	< 700 V	< 700 V	< 700 V	< 700 V	< 700 V	< 700 V	< 700 V
Alarm		Passive			Active			
Width		53 mm	126 mm					

### AS/NZ PLUG-IN SURGE FILTERS

Novaris Plug-in Surge Filters plug into a standard mains outlet socket to provide premium protection for sensitive or critical electronic equipment. The AS/NZ filter range provide multiple AS/NZS 3112 outlets.



- ✓ LED status
- ✓ All mode protection
- ✓ Three layer protection
- ✓ Safe metal enclosure

Specifications		PP10A2-50	PP10A4-50	PP10A6-50	PP10A8-50
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz			
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz			
Maximum load current	$I_L$	10 A	10 A	10 A	10 A
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA	50 kA	50 kA	50 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	6.25 kA	6.25 kA	6.25 kA	6.25 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	20 kA	20 kA	20 kA	20 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 600 V	< 600 V	< 600 V	< 600 V
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	20 kA	20 kA	20 kA	20 kA
N-PE Voltage protection level @ 1kv / $\mu$ s	$U_p$	< 800 V	< 800 V	< 800 V	< 800 V
Number of outlets		2	4	6	8
Width		155 mm	205 mm	255 mm	305 mm

### EUROPEAN PLUG-IN SURGE FILTERS

Novaris Plug-in Surge Filters plug into a standard mains outlet socket to provide premium protection for sensitive or critical electronic equipment. The European filter range provide multiple CEE 7/3 outlets.

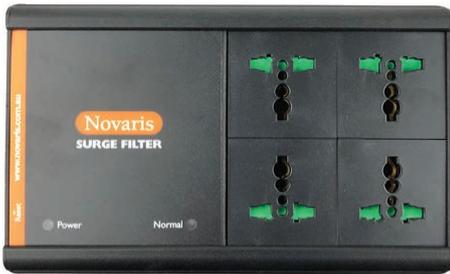


- ✓ LED status
- ✓ All mode protection
- ✓ Three layer protection
- ✓ Safe metal enclosure

Specifications		PP10E2-50	PP10E4-50	PP10E6-50	PP10E8-50
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz			
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz			
Maximum load current	$I_L$	10 A	10 A	10 A	10 A
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA	50 kA	50 kA	50 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	6.25 kA	6.25 kA	6.25 kA	6.25 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	20 kA	20 kA	20 kA	20 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 600 V	< 600 V	< 600 V	< 600 V
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	20 kA	20 kA	20 kA	20 kA
N-PE Voltage protection level @ 1kv / $\mu$ s	$U_p$	< 800 V	< 800 V	< 800 V	< 800 V
Number of outlets		2	4	6	8
Width		155 mm	205 mm	255 mm	305 mm

### UNIVERSAL PLUG-IN SURGE FILTERS

Novaris Plug-in Surge Filters plug into a standard mains outlet socket to provide premium protection for sensitive or critical electronic equipment. Please ensure universal sockets are approved in your region before ordering.



- ✓ LED status
- ✓ All mode protection
- ✓ Three layer protection
- ✓ Safe metal enclosure

Specifications		PP10U2-50	PP10U4-50	PP10U6-50	PP10U8-50
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz			
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz			
Maximum load current	$I_L$	10 A	10 A	10 A	10 A
L-N Maximum discharge current (8/20µs)	$I_{max}$	50 kA	50 kA	50 kA	50 kA
L-N Impulse current (10/350µs)	$I_{imp}$	6.25 kA	6.25 kA	6.25 kA	6.25 kA
L-N Nominal discharge current (15 x 8/20µs)	$I_n$	20 kA	20 kA	20 kA	20 kA
L-N Voltage protection level @ 3kA (8/20µs)	$U_p$	< 600 V	< 600 V	< 600 V	< 600 V
N-PE Nominal discharge current (15 x 8/20µs)	$I_n$	20 kA	20 kA	20 kA	20 kA
N-PE Voltage protection level @ 1kv / µs	$U_p$	< 800 V	< 800 V	< 800 V	< 800 V
Number of outlets	🔌	2	4	6	8
Width	📏	155 mm	205 mm	255 mm	305 mm

### BRITISH PLUG-IN SURGE FILTERS

Novaris Plug-in Surge Filters plug into a standard mains outlet socket to provide premium protection for sensitive or critical electronic equipment. The British filter range provide multiple BS1363 outlets.



- ✓ LED status
- ✓ All mode protection
- ✓ Three layer protection
- ✓ Safe metal enclosure

Specifications		PP13B2-50	PP13B4-50	PP13B6-50	PP13B8-50
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz			
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz			
Maximum load current	$I_L$	13 A	13 A	13 A	13 A
L-N Maximum discharge current (8/20µs)	$I_{max}$	50 kA	50 kA	50 kA	50 kA
L-N Impulse current (10/350µs)	$I_{imp}$	6.25 kA	6.25 kA	6.25 kA	6.25 kA
L-N Nominal discharge current (15 x 8/20µs)	$I_n$	20 kA	20 kA	20 kA	20 kA
L-N Voltage protection level @ 3kA (8/20µs)	$U_p$	< 600 V	< 600 V	< 600 V	< 600 V
N-PE Nominal discharge current (15 x 8/20µs)	$I_n$	20 kA	20 kA	20 kA	20 kA
N-PE Voltage protection level @ 1kv / µs	$U_p$	< 800 V	< 800 V	< 800 V	< 800 V
Number of outlets	🔌	2	4	6	8
Width	📏	155 mm	205 mm	255 mm	305 mm



### IEC IN-LINE SURGE FILTER

Novaris Plug-in Surge Filters plug into a standard mains outlet socket to provide premium protection for sensitive or critical electronic equipment. The IEC filter range provides a single IEC C14 outlet on a lead.

- ✔ LED status
- ✔ All mode protection
- ✔ Three layer protection
- ✔ Safe metal enclosure

PP1011-50

#### Specifications

Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz
Maximum load current	$I_L$	10 A
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	6.25 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	20 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 600 V
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	20 kA
N-PE Voltage protection level @ 1kV / $\mu$ s	$U_p$	< 800 V
Number of outlets		1 x IEC C14
Dimensions		W 100 mm x D 140 mm x H 60 mm



### AS/NZ 15A PLUG-IN SURGE FILTER

Novaris Plug-in Surge Filters provide premium protection for critical or sensitive electronic equipment. This model plugs into Australian standard 15 Amp wall outlets and has a single 15 Amp socket to power the load.

- ✔ LED status
- ✔ All mode protection
- ✔ Three layer protection
- ✔ Safe metal enclosure

PP15A1-50

#### Specifications

Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz
Maximum load current	$I_L$	15 A
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	6.25 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	20 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 600 V
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	20 kA
N-PE Voltage protection level @ 1kV / $\mu$ s	$U_p$	< 800 V
Number of outlets		1
Dimensions		W 170 mm x H 100 mm x D 60 mm

## PP10 1RU SURGE FILTER

Novaris Plug-in Surge Filters plug into a standard mains outlet socket to provide premium protection for sensitive or critical electronic equipment. The PP10 1RU series is designed for rack mount installation to protect computer and communications equipment.



- ✓ LED status
- ✓ All mode protection
- ✓ Three stage filter
- ✓ Safe metal enclosure

PP10A8-50 1RU

## Specifications

Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz
Maximum load current	$I_L$	10 A
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	20 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 600 V
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	20 kA
N-PE Voltage protection level @ 1kV / $\mu$ s	$U_p$	< 800 V
Number of outlets		8
Dimensions		W 484 mm x D 220 mm x H 44mm



## 1 PHASE SURGE FILTERS

Novaris SFD Single Phase Surge Filters provide the highest level of protection for critical and essential equipment up to 32A per phase.

- ✓ LED status
- ✓ Three stage filter
- ✓ All mode protection
- ✓ Active alarms (-A model)
- ✓ Safe metal enclosure

### Specifications

Specifications		SFD1-6-10-275	SFD1-10-50-275	SFD1-20-50-275	SFD1-20-100-275	SFD1-32-50-275	SFD1-32-100-275
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz					
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz					
Maximum load current	$I_L$	6 A	10 A	20 A	20 A	32 A	32 A
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	10 kA	50 kA	50 kA	100 kA	50 kA	100 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	-	6.25 kA	6.25 kA	12.5 kA	6.25 kA	12.5 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	5 kA	20 kA	20 kA	40 kA	20 kA	40 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 700 V	< 600 V	< 600 V	< 600 V	< 600 V	< 600 V
N-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	-	5 kA	15 kA	15 kA	15 kA	15 kA
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	4 kA	10 kA	50 kA	50 kA	50 kA	50 kA
N-PE Voltage protection level @ 1kv / $\mu$ s	$U_p$	< 500 V	< 700 V	< 700 V	< 700 V	< 700 V	< 700 V
Width		18 mm	54 mm	72 mm		108 mm	

## 2 LINE ISOLATED SURGE FILTERS



Novaris SFD Single Phase Surge Filters provide the highest level of protection for critical and essential equipment in balanced networks such as Isolated Transformer and DC systems. Voltage variations are available upon request.

- ✓ LED status
- ✓ Three stage filter
- ✓ All mode protection
- ✓ Active alarms
- ✓ Safe metal enclosure

### Specifications

Specifications		IFD2-6-10-275	IFD2-10-50-275	IFD2-10-100-275	IFD2-20-50-275	IFD2-20-100-275	IFD2-32-50-275	IFD2-32-100-275
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz						
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz						
Maximum load current	$I_L$	6A	10 A	10 A	20 A	20 A	32 A	32 A
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	10 kA	50 kA	100 kA	50 kA	100 kA	50 kA	100 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	-	6.25 kA	12.5 kA	6.25 kA	12.5 kA	6.25 kA	12.5 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	5 kA	20 kA	40 kA	20 kA	40 kA	20 kA	40 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 700 V	< 600 V	< 600 V	< 600 V	< 600 V	< 600 V	< 600 V
N-PE Combined impulse current (10/350 $\mu$ s)	$I_{imp}$	-	12.5 kA	12.5 kA	12.5 kA	12.5 kA	12.5 kA	12.5 kA
N-PE Combined nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	5 kA	40 kA	40 kA	40 kA	40 kA	40 kA	40 kA
N-PE Voltage protection level @ 1kv / $\mu$ s	$U_p$	< 500 V	< 700 V	< 700 V	< 700 V	< 700 V	< 700 V	< 700 V
Alarms included		-						Standard
Dimensions		W 18 mm		W 118 mm x H 95 mm x D 68 mm				

### 3 PHASE SURGE FILTERS

Novaris Three Phase SFD Surge Filters provide the highest level of protection for critical and essential equipment up to 32A per phase.



- ✓ LED status
- ✓ Three stage filter
- ✓ All mode protection
- ✓ Active alarms
- ✓ Safe metal enclosure

Specifications		SFD3-10-50-275-A	SFD3-20-50-275-A	SFD3-32-50-275-A
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz		
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz		
Maximum load current	$I_L$	10 A	20 A	32 A
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA	50 kA	50 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	6.25 kA	6.25 kA	6.25 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	20 kA	20 kA	20 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 600 V	< 600 V	< 600 V
N-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	15 kA	15 kA	15 kA
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	50 kA	50 kA	50 kA
N-PE Voltage protection level @ 1kv / $\mu$ s	$U_p$	< 500 V	< 700 V	< 700 V
Dimensions		W 180 mm x H 95 mm x D 68 mm		



### 1 PHASE HYBRID SURGE FILTERS

Novaris HSF Single Phase Hybrid Surge Filters combine the best qualities of voltage switching and voltage limiting components along with a low pass filter to provide a premium low let through voltage. They are suitable for high exposure installations and produce no AC follow on current.

- ✓ LED status
- ✓ All mode protection
- ✓ Three stage filter
- ✓ Active alarms
- ✓ Overvoltage tolerance
- ✓ Safe metal enclosure

Specifications

		HSF1-40-100-275	HSF1-63-100-275
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz	
Maximum continuous voltage AC	$U_c$	480 V / 50 Hz - 60 Hz	
Maximum load current	$I_L$	40 A	63 A
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	100 kA	100 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA	12.5 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	40 kA	40 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 650 V	< 650 V
N-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	15 kA	15 kA
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	50 kA	50 kA
N-PE Voltage protection level @ 1kv / $\mu$ s	$U_p$	< 700 V	< 700 V
Dimensions		W 86 mm x H 141 mm x D 68 mm	



### 3 PHASE HYBRID SURGE FILTERS

Novaris HSF Three Phase Hybrid Surge Filters combine the best qualities of voltage switching and voltage limiting components along with a low pass filter to provide a premium low let through voltage. They are suitable for high exposure installations and produce no AC follow on current.

- ✓ LED status
- ✓ All mode protection
- ✓ Three stage filter
- ✓ Active alarms
- ✓ Overvoltage tolerance
- ✓ Safe metal enclosure

Specifications

		HSF3-40-100-275	HSF3-63-100-275
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz	
Maximum continuous voltage AC	$U_c$	480 V / 50 Hz - 60 Hz	
Maximum load current	$I_L$	40 A	63 A
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	100 kA	100 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	12.5 kA	12.5 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	40 kA	40 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 650 V	< 650 V
N-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	15 kA	15 kA
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	50 kA	50 kA
N-PE Voltage protection level @ 1kv / $\mu$ s	$U_p$	< 700 V	< 700 V
Dimensions		W 168 mm x H 141 mm x D 68 mm	



### 1 PHASE SURGE FILTERS 40 - 125A

"SFM1" [novaris.com.au](http://novaris.com.au)

Novaris SFM Single Phase Medium Current Surge Filters provide excellent and effective MSB and DB protection for critical equipment up to 125A.

- ✓ LED status (50kA) / Digital (200kA)
- ✓ Three stage filter
- ✓ All mode protection
- ✓ Active alarms
- ✓ Very low let through  $U_p$

Specifications

		SFM1-40-50-275	SFM1-40-200-275	SFM1-63-50-275	SFM1-63-200-275	SFM1-125-50-275	SFM1-125-200-275
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz					
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz					
Maximum load current	$I_L$	40 A	40 A	63 A	63 A	125 A	125 A
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA	200 kA	50 kA	200 kA	50 kA	200 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	6.25 kA	25 kA	6.25 kA	25 kA	6.25 kA	25 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	20 kA	80 kA	20 kA	80 kA	20 kA	80 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 360 V	< 360 V	< 360 V	< 360 V	< 360 V	< 360 V
N-PE Combined impulse current (10/350 $\mu$ s)	$I_{imp}$	15 kA	100 kA	15 kA	100 kA	15 kA	100 kA
N-PE Combined nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	50 kA	100 kA	50 kA	100 kA	50 kA	100 kA
N-PE Voltage protection level @ 1kv / $\mu$ s	$U_p$	< 700 V	< 1000 V	< 700 V	< 1000 V	< 700 V	< 1000 V
Dimensions		W 282 mm x H 344 mm x D 106 mm					



### 3 PHASE SURGE FILTERS 40 - 125A

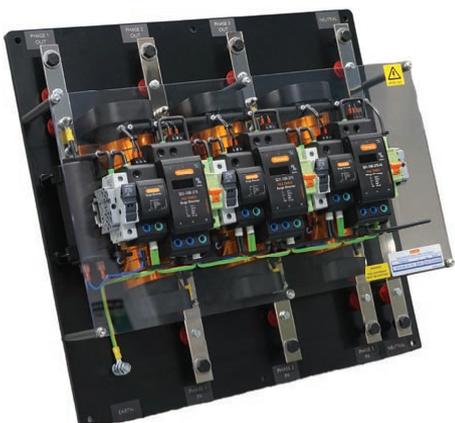
"SFM3" [novaris.com.au](http://novaris.com.au)

Novaris SFM Single Phase Medium Current Surge Filters provide excellent and effective MSB and DB protection for critical equipment up to 125A per phase.

- ✓ LED status (50kA) / Digital (200kA)
- ✓ Three stage filter
- ✓ All mode protection
- ✓ Active alarms
- ✓ Very low let through  $U_p$

Specifications

		SFM3-40-50-275	SFM3-63-50-275	SFM3-125-50-275	SFM3-40-200-275	SFM3-63-200-275	SFM3-125-200-275
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz					
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz					
Maximum load current	$I_L$	40 A	63 A	125 A	40 A	63 A	125 A
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	50 kA	50 kA	50 kA	200 kA	200 kA	200 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	6.25 kA	6.25 kA	6.25 kA	25 kA	25 kA	25 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	20 kA	20 kA	20 kA	80 kA	80 kA	80 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 360 V	< 360 V	< 360 V	< 360 V	< 360 V	< 360 V
N-PE Combined impulse current (10/350 $\mu$ s)	$I_{imp}$	15 kA	15 kA	15 kA	100 kA	100 kA	100 kA
N-PE Combined nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	50 kA	50 kA	50 kA	100 kA	100 kA	100 kA
N-PE Voltage protection level @ 1kv / $\mu$ s	$U_p$	< 700 V	< 700 V	< 700 V	< 1000 V	< 1000 V	< 1000 V
Dimensions		W 390 mm x H 450 mm x D 106 mm			W 390 mm x H 450 mm x D 182 mm		



### 3 PHASE SURGE FILTERS 160A - 400A

“SFH” [novaris.com.au](http://novaris.com.au)

Novaris SFH Three Phase Surge Filters provide the highest level of protection with the lowest let through voltage. Installation at a main switchboard will protect all connected downstream equipment.

- ✓ Percentage active display
- ✓ Three stage filter
- ✓ All mode protection
- ✓ Active alarms
- ✓ Very low let through  $U_p$

Specifications		SFH3-160-200-275	SFH3-250-200-275	SFH3-400-200-275
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz		
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz		
Maximum load current	$I_L$	160 A	250 A	400 A
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	200 kA	200 kA	200 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	25 kA	25 kA	25 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	80 kA	80 kA	80 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 360 V	< 360 V	< 360 V
N-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	100 kA	100 kA	100 kA
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	100 kA	100 kA	100 kA
N-PE Voltage protection level @ 1kv / $\mu$ s	$U_p$	< 1000 V	< 1000 V	< 1000 V
Dimensions		W 544 mm x H 530 mm x D 210 mm		W 640 mm x H 658 mm x D 272 mm



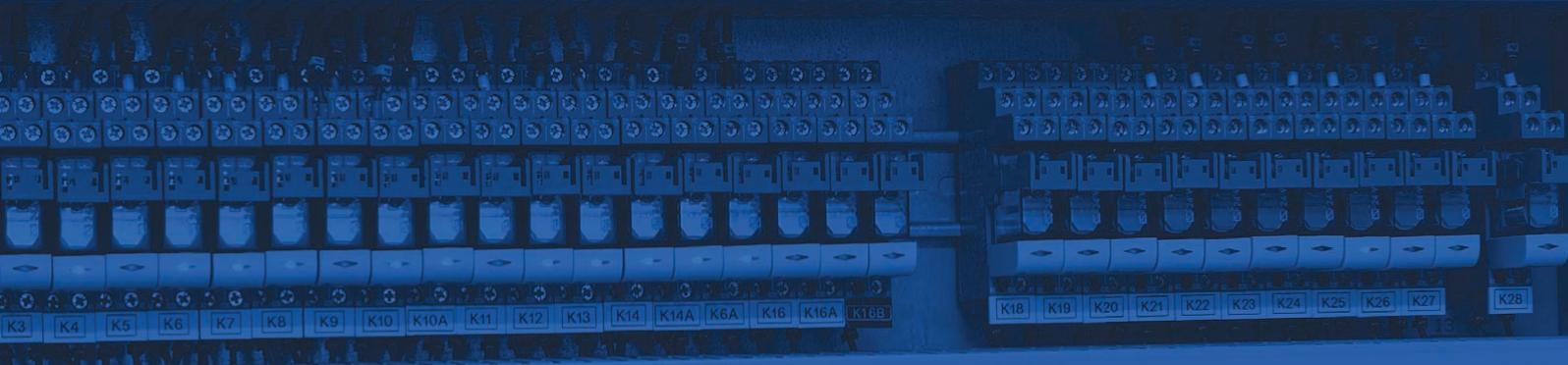
### 3 PHASE SURGE FILTERS 630A - 2000A

“SFH” [novaris.com.au](http://novaris.com.au)

Novaris SFH Three Phase Surge Filters provide the highest level of protection with the lowest let through voltage. Installation at a main switchboard will protect all connected downstream equipment. Higher load currents are available upon request.

- ✓ Percentage active display
- ✓ Three stage filter
- ✓ All mode protection
- ✓ Active alarms
- ✓ Very low let through  $U_p$

Specifications		SFH3-630-200-275	SFH3-800-200-275	SFH3-1200-200-275	SFH3-1600-200-275	SFH3-2000-200-275
Nominal voltage	$U_0$	230 V / 50 Hz - 60 Hz				
Maximum continuous voltage AC	$U_c$	275 V / 50 Hz - 60 Hz				
Maximum load current	$I_L$	630 A	800 A	1200 A	1600 A	2000 A
L-N Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	200 kA	200 kA	200 kA	200 kA	200 kA
L-N Impulse current (10/350 $\mu$ s)	$I_{imp}$	25 kA	25 kA	25 kA	25 kA	25 kA
L-N Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	80 kA	80 kA	80 kA	80 kA	80 kA
L-N Voltage protection level @ 3kA (8/20 $\mu$ s)	$U_p$	< 360 V	< 360 V	< 360 V	< 360 V	< 360 V
N-PE Impulse current (10/350 $\mu$ s)	$I_{imp}$	100 kA	100 kA	100 kA	100 kA	100 kA
N-PE Nominal discharge current (15 x 8/20 $\mu$ s)	$I_n$	100 kA	100 kA	100 kA	100 kA	100 kA
N-PE Voltage protection level @ 1kv / $\mu$ s	$U_p$	< 1000 V	< 1000 V	< 1000 V	< 1000 V	< 1000 V
Dimensions		W 700 mm x H 1300 mm x D 311 mm				



Novaris

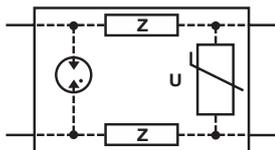
# PROCESS CONTROL PROTECTION

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Process control protection must:

1. Provide adequate protection for all equipment.
2. Achieve a long working life.
3. Allow the signal to pass under normal operation.
4. Optimise the cost and size of the surge protection devices (SPDs).

### Options for Surge Protection Devices



Two port SPDs are connected in series with the line. Most Novaris process control SPDs incorporate this configuration where a low let through voltage ( $U_p$ ) is required to protect low level signals.

Novaris process control SPDs utilise a combination of voltage switching components (GDT), series impedances and voltage limiting components (MOV, TVS).

### Selection of Surge Protection Devices

When selecting SPDs for process control, it is important to ensure that the signal is not attenuated or lost through the SPD. Novaris manufactures process control SPDs for most applications and custom solutions can be designed.

#### 1. Determine the signalling protocol and peak line voltage

The table on the next page provides common signalling protocols and the appropriate Novaris SPD for each application. If the protocol is unknown, the peak signal voltage must be determined.

#### 2. Select the clamping voltage

The clamping voltage of the SPD must be greater than the peak signalling voltage.

The following is a guide:

Nominal Peak Signal Voltage (V)	Power System (V)	Clamping Voltage (V)
0-6	5	7v5
6-15	12	18
15-30	24	36
30-60	48	68

#### 3. Determine the signal current

- SL models are rated at  $I_L = 250$  mA
- SL2/4 models are rated at  $I_L = 500$  mA,
- SLH2 models are rated at  $I_L = 2.5$  A
- SSP6A models are rated at  $I_L = 6$  A
- SSP10A models are rated at  $I_L = 10$  A

For higher current applications, consider using SFD2 surge filters.

#### 4. Select signal frequency / data rate

Standard SL/SL2 series will pass signals up to 60Mhz. For higher frequency / faster data rates consider using the SL485.

#### 5. Consider earth isolation

The normal SL DIN rail base, designated -G, connects the protective earth to the DIN rail to provide a low impedance earth path. If the earth must be isolated, for example with instrument loops and field installation, use the -EC90 base.

This table outlines some of the most common signalling protocols and the product best suited to these applications. For other signalling protocols, please contact Novaris to discuss the requirements.

Protocol	Signal Type	Novaris Product		
		High Exposure	Low Exposure	Field
I/O	± 7 VDC, < 60 MHz	SL2-7v5	SL7v5-G	SLT1-7v5
I/O	± 16 VDC, < 60 MHz	SL2-18	SL18-G	SLT1-18
I/O	± 34 VDC, < 60 MHz	SL2-36	SL36-G	SLT1-36
I/O	± 65 VDC, < 60 MHz	SL2-68	SL68-G	SLT1-68
I/O	0-20mA / 4-20mA		SL420-G	SLT1-36
I/O	RS-232		DBx-RS232	
I/O	RS-422	SL2-485-EC90 (x2)	SL485-EC90 (x2)	
I/O	RS-485	SL2-485-EC90	SL485-EC90	
I/O	1-Wire	SL2-485-EC90	SL485-EC90	
10/100/1000T	Ethernet	RJ45-xCAT6 (DRJ45-8CAT6)		ORJ45-2CAT6
ADSL	ADSL	SL-PSTN	KP1/10	MPP-RJxx
AS-i	32VDC 1-pair	SL2-36	SL36-G	SLT1-36
BACnet	ARCNET / Ethernet / BACnet/IP	RJ45-xCAT6 (DRJ45-8CAT6)		ORJ45-2CAT6
BACnet	RS-232	SL2-68	DBx-RS232	
BACnet	RS-485	SL2-485-EC90	SL485-EC90	
BitBus	RS-485	SL2-485-EC90	SL485-EC90	
CAN Bus (Signal)	5VDC 1-Pair	SL2-36	SL36-G	
C-Bus	36VDC 1-pair	SL2-68	SL68-G	SLT1-68
CC-Link/LT/Safety	RS-485	SL2-485-EC90	SL485-EC90	
CC-Link IE Field	Ethernet	RJ45-xCAT6 (DRJ45-8CAT6)		ORJ45-2CAT6
CCTV	Coaxial	CLB-MF-10		
CCTV	Power over Ethernet	RJ45-xCAT6 (DRJ45-8CAT6)		ORJ45-2CAT6
ControlNet	Coaxial	CLB-MF-10		
DALI	Digital Serial Interface	SL2-36	SL36-G	SLT1-36
Data Highway/Plus	RS-485	SL2-485-EC90	SL485-EC90	
DeviceNet (Signal)	5VDC 1-Pair	SL2-7v5	SL7v5-G	SLT1-7v5
DF1	RS-232		DBx-RS232	
DirectNET	RS-232		DBx-RS232	
DirectNET	RS-485	SL2-485-EC90	SL485-EC90	
Dupline (Signal)	5VDC 1-Pair	SL2-7v5	SL7v5-G	SLT1-7v5
Dynalite	DyNet	RJ45-xCAT6 (DRJ45-8CAT6)		ORJ45-2CAT6
EtherCAT	Ethernet	RJ45-xCAT6 (DRJ45-8CAT6)		ORJ45-2CAT6
Ethernet Global Data	Ethernet	RJ45-xCAT6 (DRJ45-8CAT6)		ORJ45-2CAT6
Ethernet Powerlink	Ethernet	RJ45-xCAT6 (DRJ45-8CAT6)		ORJ45-2CAT6
FIP Bus	RS-485	SL2-485-EC90	SL485-EC90	
FINS	Ethernet	RJ45-xCAT6 (DRJ45-8CAT6)		
FINS	RS-232		DBx-RS232	
FINS	DeviceNet (Signal)	SL2-7v5	SL7v5-G	SLT1-7v5
FOUNDATION Fieldbus H1	32VDC 1-pair	SSP10A-38	SSP6A-38-G	SLT1-36
FOUNDATION Fieldbus HSE	Ethernet	RJ45-xCAT6 (DRJ45-8CAT6)		ORJ45-2CAT6
GE-SRTP	Ethernet	RJ45-xCAT6 (DRJ45-8CAT6)		ORJ45-2CAT6
HART	4-20mA + HF Data	SL2-36	SL420-G	
HostLink	RS-232		DBx-RS232	
HostLink	RS-422	SL2-485-EC90 (x2)	SL485-EC90 (x2)	
Interbus	RS-485	SL2-485-EC90	SL485-EC90	
ISDN	PSTN	SL-PSTN	KP1/10	MPP-RJxx
Load Cell	Wheatstone Bridge	LCP-36		LCP-36
MODBUS	RS-485	SL2-485-EC90	SL485-EC90	
MODBUS TCP	Ethernet	RJ45-xCAT6 (DRJ45-8CAT6)		ORJ45-2CAT6
P-Net	RS-485	SL2-485-EC90	SL485-EC90	
PieP	Ethernet	RJ45-xCAT6 (DRJ45-8CAT6)		ORJ45-2CAT6
Power over Ethernet	Power over Ethernet	RJ45-xCAT6 (DRJ45-8CAT6)		ORJ45-2CAT6
Process Bus (P-Bus)	RS-485	SL2-485-EC90	SL485-EC90	
Profibus DP/FMS	RS-485	SL2-485-EC90	SL485-EC90	
Profibus PA	32VDC 1-pair	SL2-36	SL36-G	SLT1-36
Profinet IO	Ethernet	RJ45-xCAT6 (DRJ45-8CAT6)		ORJ45-2CAT6
PSTN	POTS	SL-PSTN	KP1/10	MPP-RJxx
S-Bus	32VDC 1-pair	SL2-36	SL36-G	SLT1-36
Sercos III	Ethernet	RJ45-xCAT6 (DRJ45-8CAT6)		ORJ45-2CAT6
Sinec H1	Ethernet	RJ45-xCAT6 (DRJ45-8CAT6)		ORJ45-2CAT6
SynqNet	Ethernet	RJ45-xCAT6 (DRJ45-8CAT6)		ORJ45-2CAT6
TTEthernet	Ethernet	RJ45-xCAT6 (DRJ45-8CAT6)		ORJ45-2CAT6
VDSL	VDSL	MPP-VDSL		

IECEx ia and Ex d models available with the Novaris Hazardous Area range



## 1 PAIR 250MA SIGNAL LINE PROTECTORS

🔍 "SL" [novaris.com.au](http://novaris.com.au)

Novaris SL Plug-in Signal Line Protectors provide surge protection for most twisted pair signalling schemes. They are ideal for the protection of PLCs, fire and security systems, telecommunications, telemetry systems, railway signalling, SCADA and other industrial monitoring and control equipment.

- ✓ 7mm width
- ✓ Replaceable cartridge
- ✓ Earth isolation (-EC90)
- ✓ 10 kA protection
- ✓ Multistage protection
- ✓ Failsafe design

Specifications		SL7v5	SL18	SL36	SL68
Maximum continuous voltage (DC)	$U_c$	7 V	16 V	34 V	65 V
Maximum continuous voltage (AC)	$U_c$	6 V	11 V	24 V	46 V
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	5 kA per line (10 kA common mode)			
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	1.25 kA per line (2.5 kA common mode)			
Impulse durability		C2 8/20 $\mu$ s 5 kA - D1 10/350 $\mu$ s 2.5kA			
Maximum load current	$I_L$	250 mA	250 mA	250 mA	250 mA
L-L Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 15 V	< 30 V	< 45 V	< 80 V
L-PE Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 350 V	< 350 V	< 350 V	< 350 V
Line resistance		8.2 $\Omega$	8.2 $\Omega$	8.2 $\Omega$	8.2 $\Omega$
Dimensions		W 7 mm x H 102 mm x D 68 mm			



## 1 PAIR 250MA SIGNAL LINE PROTECTORS

🔍 "SL" [novaris.com.au](http://novaris.com.au)

Novaris SL Plug-in Signal Line Protectors provide surge protection for most twisted pair signalling schemes. They are ideal for the protection of PLCs, fire and security systems, telecommunications, telemetry systems, railway signalling, SCADA and other industrial monitoring and control equipment.

- ✓ 7mm width
- ✓ Replaceable cartridge
- ✓ Earth isolation (-EC90)
- ✓ Multistage protection
- ✓ Failsafe design

Specifications		SL-PSTN	SL-485	SL-RTD	SL-420
Maximum continuous voltage (DC)	$U_c$	180 V	8 V	3 V	34 V
Maximum continuous voltage (AC)	$U_c$	130 V	6 V	2 V	-
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	5 kA per line (10 kA common mode)			
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	1.25 kA per line (2.5 kA common mode)			
Impulse durability		C2 8/20 $\mu$ s 5 kA - D1 10/350 $\mu$ s 2.5kA			
Maximum load current	$I_L$	250 mA	250 mA	250 mA	30 mA
L-L Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 220 V	< 35 V	< 15 V	< 40 V
L-PE Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 350 V	< 350 V	< 350 V	< 350 V
Line resistance		8.2 $\Omega$	3.9 $\Omega$	3.9 $\Omega$	8.2 $\Omega$
Dimensions		W 7 mm x H 102 mm x D 68 mm			



### 1 PAIR 500MA SIGNAL LINE PROTECTORS

Novaris SL2 Plug-in Signal Line Protectors provide surge protection for most twisted pair signalling schemes. They are ideal for the protection of PLCs, fire and security systems, telecommunications, telemetry systems, railway signalling, SCADA and other industrial monitoring and control equipment.

- ✓ Visual indicator
- ✓ Replaceable cartridge
- ✓ Earth isolation (-EC90)
- ✓ 20 kA protection
- ✓ Multistage protection
- ✓ Alarm contacts

Specifications		SL2-7V5	SL2-18	SL2-36	SL2-68	SL2-485-EC90	SL2-PSTN
Maximum continuous voltage (DC)	$U_c$	7 V	16 V	34 V	65 V	8 V	180 V
Maximum continuous voltage (AC)	$U_c$	6 V	11 V	24 V	46 V	6 V	130 V
Maximum discharge current (8/20µs)	$I_{max}$	10 kA per line (20 kA common mode)					
Maximum impulse current (10/350µs)	$I_{imp}$	2.5 kA per line (5 kA common mode)					
Impulse durability		C2 8/20µs 10 kA - D1 10/350µs 5kA					
Maximum load current	$I_L$	500 mA	500 mA	500 mA	500 mA	500 mA	500 mA
L-L Voltage protection level @ 1 kV/µs	$U_p$	< 15 V	< 30 V	< 45 V	< 80 V	< 35 V	< 220 V
L-PE Voltage protection level @ 1 kV/µs	$U_p$	< 350 V	< 350 V	< 350 V	< 350 V	< 350 V	< 350 V
Line resistance		8.2 Ω	8.2 Ω	8.2 Ω	8.2 Ω	3.9 Ω	8.2 Ω
Dimensions		W 12 mm x H 110 mm x D 71 mm					



### 2 PAIR 500MA SIGNAL LINE PROTECTOR

Novaris SL4 Plug-in Signal Line Protectors provide surge protection for most dual twisted pair signalling schemes. They are ideal for the protection of PLCs, fire and security systems, telecommunications, telemetry systems, railway signalling, SCADA and other industrial monitoring and control equipment with a load current up to 500mA.

- ✓ Visual indicator
- ✓ Replaceable cartridge
- ✓ Earth isolation (-EC90)
- ✓ 20 kA protection
- ✓ Multistage protection

Specifications		SL4-36
Maximum continuous voltage (DC)	$U_c$	34 V
Maximum continuous voltage (AC)	$U_c$	24 V
Maximum discharge current (8/20µs)	$I_{max}$	10 kA per line (20 kA common mode)
Maximum impulse current (10/350µs)	$I_{imp}$	2.5 kA per line (5 kA common mode)
Impulse durability		C2 8/20µs 10 kA - D1 10/350µs 5kA
Maximum load current	$I_L$	500 mA
L-L Voltage protection level @ 1 kV/µs	$U_p$	< 45 V
L-PE Voltage protection level @ 1 kV/µs	$U_p$	< 350 V
Line resistance		8.2 Ω
Dimensions		W 12 mm x H 110 mm x D 71 mm



## 1 PAIR 2.5A SIGNAL PROTECTORS

🔍 "SLH2" 🌐 novaris.com.au

Novaris SLH2 Plug-in Signal Line Protectors provide surge protection for most twisted pair signalling schemes with load current up to 2.5A. They are ideal for the protection of PLCs, fire and security systems, telecommunications, telemetry systems, railway signalling, SCADA and other industrial monitoring and control equipment.

- ✓ Visual indicator
- ✓ Replaceable cartridge
- ✓ Earth isolation (-EC90)
- ✓ 20 kA protection
- ✓ Multistage protection
- ✓ Alarm contacts

Specifications		SLH2-18	SLH2-36	SLH2-68	SLH2-130
Maximum continuous voltage (DC)	$U_c$	16 V	34 V	65 V	155 V
Maximum continuous voltage (AC)	$U_c$	11 V	24 V	46 V	130 V
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	10 kA per line (20 kA common mode)			
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	2.5 kA per line (5 kA common mode)			
Impulse durability		C2 8/20 $\mu$ s 10 kA - D1 10/350 $\mu$ s 5kA			
Maximum load current	$I_L$	2.5 A	2.5 A	2.5 A	2.5 A
L-L Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 25 V	< 70 V	< 140 V	< 300 V
L-PE Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 350 V	< 350 V	< 350 V	< 600 V
Line resistance		0.06 $\Omega$	0.06 $\Omega$	0.06 $\Omega$	0.06 $\Omega$
Dimensions	📏	W 12 mm x H 110 mm x D 71 mm			

## MULTILINE SIGNAL LINE PROTECTORS

🔍 "SLM" 🌐 novaris.com.au



Novaris SLM Protectors offer protection for up to 12 signal lines. Typical applications include process control, telemetry, PLC, and irrigation systems.

- ✓ Replaceable unit
- ✓ -2A (2A per line)
- ✓ Multistage protection
- ✓ 20 kA protection
- ✓ -H (25 Mhz signals)

Specifications		SLM-7v5	SLM-18	SLM-36	SLM-68	SLM-200
Maximum continuous voltage (DC)	$U_c$	7 V	16 V	34 V	65 V	200 V
Maximum continuous voltage (AC)	$U_c$	6 V	11 V	24 V	46 V	140 V
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	10 kA per line (20 kA common mode)				
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	2.5 kA per line (5 kA common mode)				
Impulse durability		C2 8/20 $\mu$ s 10 kA - D1 10/350 $\mu$ s 5kA				
Maximum load current	$I_L$	350 mA	350 mA	350 mA	350 mA	350 mA
L-L Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 10 V	< 20 V	< 39 V	< 70 V	< 370 V
L-PE Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 10 V	< 20 V	< 39 V	< 70 V	< 370 V
Line resistance		8.2 $\Omega$	8.2 $\Omega$	8.2 $\Omega$	8.2 $\Omega$	8.2 $\Omega$
Dimensions	📏	W 128 mm x H 80 mm x D 42 mm				

“SSP6A” novaris.com.au



### 6A SERIES SURGE PROTECTORS

Novaris SSP6A Series Surge Protectors complement the SL range for applications with load currents up to 6A. These may include power supplies, digital outputs and other low voltage systems.

- ✓ 6A load current
- ✓ Replaceable cartridge
- ✓ Earth isolation (-EC90)
- ✓ 20 kA protection
- ✓ Multistage protection
- ✓ Alarm contacts

Specifications

		SSP6A-14	SSP6A-26	SSP6A-38	SSP6A-65	SSP6A-130	SSP6A-275
Maximum continuous voltage (DC)	$U_c$	14 V	26 V	38 V	65 V	170 V	380 V
Maximum continuous voltage (AC)	$U_c$	6 V	11 V	30 V	50 V	130 V	275 V
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	4.8 kA per line (9.6 kA common mode)				1.8 kA per line	
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	-					
Impulse durability		C2 8/20 $\mu$ s 2.5 kA				C2 8/20 $\mu$ s 1 kA	
Maximum load current	$I_L$	6 A	6 A	6 A	6 A	6 A	6 A
L-L Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 35 V	< 55 V	< 75 V	< 130 V	< 450 V	< 800 V
L-PE Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 35 V	< 55 V	< 75 V	< 130 V	< 450 V	< 800 V
Line resistance		0.02 $\Omega$	0.02 $\Omega$	0.02 $\Omega$	0.02 $\Omega$	0.02 $\Omega$	0.02 $\Omega$
Dimensions		W 7 mm x H 110 mm x D 71 mm					



“SSP10A” novaris.com.au

### 10A SERIES SURGE PROTECTORS

Novaris SSP10A Series Surge Protectors complement the SL2 range for applications with load currents up to 10A. Typical applications may include power supplies, digital outputs and other low voltage systems. This product has free from AC follow on current under all conditions and may safely be used to protect battery backed power supplies.

- ✓ 10A load current
- ✓ Replaceable module
- ✓ Visual indicator
- ✓ Alarm contacts

Specifications

		SSP10A-38	SSP10A-65
Maximum continuous voltage (DC)	$U_c$	38 V	65 V
Maximum continuous voltage (AC)	$U_c$	30 V	50 V
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	7.5 kA per line (15 kA common mode)	
Impulse durability		C2 8/20 $\mu$ s 2.5 kA	
Maximum load current	$I_L$	250 mA	250 mA
L-L Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 110 V	< 145 V
L-PE Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 550 V	< 550 V
Line resistance		0.02 $\Omega$	0.02 $\Omega$
Dimensions		W 12 mm x H 110 mm x D 71 mm	

### 1 PAIR THREADED SIGNAL PROTECTORS

Novaris SLT1 1 Pair Threaded Instrument Protectors provide surge protection for twisted pair signalling schemes. They are designed to be installed directly at field equipment, providing protection against induced surges and transients.



- ✓ IP 67 (installed)
- ✓ M20 and 1/2" NPT option
- ✓ 10 kA protection
- ✓ IEC Ex ia and Ex d models available

Specifications		SLT1-7V5	SLT1-18	SLT1-36	SLT1-68
Maximum continuous voltage (DC)	$U_c$	7 V	18 V	36 V	65 V
Maximum continuous voltage (AC)	$U_c$	5 V	14 V	30 V	50 V
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	5 kA per line (10 kA common mode)			
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	1.25 kA per line (2.5 kA common mode)			
Impulse durability		C2 8/20 $\mu$ s 2 kA - D1 10/350 $\mu$ s 500 A			
L-L Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 45 V	< 50 V	< 75 V	< 100 V
L-PE Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 350 V	< 350 V	< 350 V	< 350 V
Dimensions		W 24mm x H 27 mm x D 53 mm			

### 3 WIRE THREADED SIGNAL PROTECTORS

Novaris SLT1 3 Wire Threaded Instrument Protectors provide surge protection for twisted pair signalling schemes. They are designed to be installed directly at field equipment, providing protection against induced surges and transients.



- ✓ IP 67 (installed)
- ✓ M20 and 1/2" NPT option
- ✓ 10 kA protection
- ✓ IEC Ex ia and Ex d models available

Specifications		SLT3-7V5	SLT3-18	SLT3-36	SLT3-68
Maximum continuous voltage (DC)	$U_c$	7 V	18 V	36 V	65 V
Maximum continuous voltage (AC)	$U_c$	5 V	14 V	30 V	50 V
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	5 kA per line (10 kA common mode)			
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	1.25 kA per line (2.5 kA common mode)			
Impulse durability		C2 8/20 $\mu$ s 2 kA - D1 10/350 $\mu$ s 500 A			
L-L Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 45 V	< 50 V	< 75 V	< 100 V
L-PE Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 350 V	< 350 V	< 350 V	< 350 V
Dimensions		W 24mm x H 27 mm x D 53 mm			

## 2 PAIR THREADED SIGNAL PROTECTORS

Novaris SLT1 2 Pair Threaded Instrument Protectors provide surge protection for twisted pair signalling schemes. They are designed to be installed directly at field equipment, providing protection against induced surges and transients.



- ✓ IP 67 (installed)
- ✓ M20 and 1/2" NPT option
- ✓ 10 kA protection
- ✓ IEC Ex ia and Ex d models available

Specifications		SLT4-7v5	SLT4-18	SLT4-36	SLT4-68	SLT4-RTD
Maximum continuous voltage (DC)	$U_c$	7 V	18 V	36 V	65 V	8 V
Maximum continuous voltage (AC)	$U_c$	5 V	14 V	30 V	50 V	6 V
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	5 kA per line (10 kA common mode)				
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	1.25 kA per line (2.5 kA common mode)				
Impulse durability		C2 8/20 $\mu$ s 2 kA - D1 10/350 $\mu$ s 500 A				
L-L Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 45 V	< 50 V	< 75 V	< 100 V	< 45 V
L-PE Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 350 V	< 350 V	< 350 V	< 350 V	< 350 V
Dimensions	▽	W 24mm x H 27 mm x D 53 mm				

## COMBINED THREADED SIGNAL PROTECTORS

Novaris SLT4 Combined Threaded Instrument Protectors provide surge protection for most twisted pair signalling and 230V power systems. They are designed to be installed directly at field equipment, providing protection against induced surges and transients.



- ✓ IP 67 (installed)
- ✓ M20 and 1/2" NPT option
- ✓ 10 kA signal protection

Specifications		SLT4-36-275
Signal maximum continuous voltage (DC)	$U_c$	36 V
Signal maximum discharge current (8/20 $\mu$ s)	$I_{max}$	5 kA per line (10 kA common mode)
Signal L-L voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 75 V
Power maximum continuous voltage (AC)	$U_c$	275V
Power maximum discharge current (8/20 $\mu$ s)	$I_{max}$	250 A
Power L-L voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 700 V
Dimensions	▽	W 24mm x H 27 mm x D 53 mm

## DB PORT PROTECTORS

Novaris DB Protectors provide protection for serial protocol systems in RS232 and RS485 applications. These units are housed in a head-shell enclosure.



- ✓ Visual indicator
- ✓ Replaceable cartridge
- ✓ Earth isolation (-EC90)
- ✓ 20kA protection
- ✓ Multistage protection
- ✓ Alarm contacts

Specifications		DB9-RS232	DB25-RS232	DB9-RS485
Maximum continuous voltage (DC)	$U_c$	36 V	36 V	8.2 V
Maximum continuous voltage (AC)	$U_c$	25 V	25 V	5 V
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	250 A per line		
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	-		
Impulse durability		C1 8/20 $\mu$ s 250 A		
Maximum load current	$I_L$	500 mA	500 mA	500 mA
L-L Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 45 V	< 45 V	<15 V
L-PE Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 350 V	< 350 V	< 350 V
Line resistance		0.1 $\Omega$	0.1 $\Omega$	0.1 $\Omega$
Width		34 mm	56 mm	34 mm

## LOAD CELL PROTECTORS

The Novaris LCP provides protection for four and six-wire load-cells in addition to the associated measuring instrument. The LCP is contained within an IP65 enclosure. Installation of the LCP is certified and does not affect weigh-bridge calibration.



- ✓ Sealed IP65 enclosure
- ✓ Does not affect calibration
- ✓ 6 line protection

Specifications		LCP-18	LCP-36
Maximum continuous voltage (DC)	$U_c$	18 V	36 V
Maximum continuous voltage (AC)	$U_c$	12 V	25 V
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	250 A per line	
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	-	
Impulse durability		C1 8/20 $\mu$ s 250 A	
Maximum load current	$I_L$	5 A	5 A
L-L Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 45 V	< 80 V
L-PE Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 350 V	< 350 V
Line resistance		0.2 $\Omega$	0.2 $\Omega$
Dimensions		W 12 mm x H 110 mm x D 71 mm	



Novaris

**LAN & CCTV PROTECTION**

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## 1 PORT NETWORK PROTECTORS

🔍 "RJ45" 🌐 novaris.com.au

Novaris RJ45 Network Protection Products are designed for twisted pair Ethernet systems and utilise a combination of rugged and fine grain protection elements. They are suited for Gigabit Ethernet and PoE applications up to 160W. The 1CB is designed for CBUS TM network protection.

- ✓ Gigabit CAT6 and PoE
- ✓ 160W+ PoE
- ✓ Earth isolation for field STP (-EC90)
- ✓ High protection per pair
- ✓ Multistage protection
- ✓ DIN mount

Specifications		RJ45-1CAT6	RJ45-1CAT6-EC90	RJ45-1CB
Maximum continuous voltage (DC)	$U_c$	6 V	6 V	38 V
Maximum continuous voltage (AC)	$U_c$	4 V	4 V	30 V
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	5 kA per line (10 kA common mode)	5 kA per line (10 kA common mode)	2 kA per line (4 kA common mode)
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	2.5 kA per line (5 kA common mode)	2.5 kA per line (5 kA common mode)	-
Impulse durability		C2 8/20 $\mu$ s 1.5 kA - D1 10/350 $\mu$ s 0.5kA	C2 8/20 $\mu$ s 1.5 kA - D1 10/350 $\mu$ s 0.5kA	C2 8/20 $\mu$ s 1.5 kA
Maximum load current (per pair)	$I_L$	1000 mA	1000 mA	1000 mA
L-L Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 20 V	< 20 V	< 80 V
L-PE Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 350 V	< 500 V	< 350 V
Line resistance		0.1 $\Omega$	0.1 $\Omega$	0.1 $\Omega$
Dimensions	📏	W 80 mm x H 28 mm x D 27 mm		

## MULTI-PORT 2RU PROTECTORS

🔍 "RJ45" 🌐 novaris.com.au

Novaris Network Protection Products are designed for the protection of twisted pair Ethernet systems and utilise a combination of rugged and fine grain protection elements. They are suited for Gigabit Ethernet and PoE applications up to 160W in standard equipment racks.

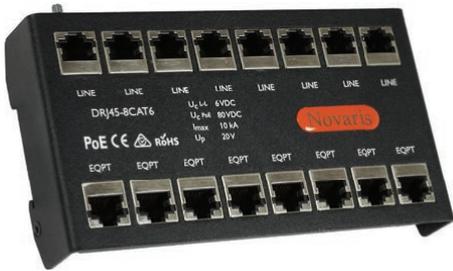


- ✓ Gigabit CAT6 and PoE
- ✓ 160W + PoE
- ✓ 10 kA protection per pair
- ✓ Multistage protection

Specifications		RJ45-8CAT6	RJ45-16CAT6	RJ45-24CAT6
Maximum continuous voltage (DC)	$U_c$		6 V	
Maximum continuous voltage (AC)	$U_c$		4 V	
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$		5 kA per line (10 kA common mode)	
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$		2.5 kA per line (5 kA common mode)	
Impulse durability			C2 8/20 $\mu$ s 1.5 kA - D1 10/350 $\mu$ s 0.5kA	
Maximum load current	$I_L$		1000 mA	
L-L Voltage protection level @ 1 kV/ $\mu$ s	$U_p$		< 20 V	
L-PE Voltage protection level @ 1 kV/ $\mu$ s	$U_p$		< 350 V	
Line resistance			0.1 $\Omega$	
No of protected network circuits		8	16	24
Dimensions	📏	W 483 mm x H 88 mm x D 20 mm		

## DIN MOUNT 8 PORT NETWORK PROTECTOR

Novaris Network Protection Products are designed for twisted pair Ethernet systems and utilise a combination of rugged and fine grain protection elements. This network protector is suited for industrial DIN mount applications for up to 8 circuits.



- ✓ Gigabit CAT6 and PoE
- ✓ 160W + PoE
- ✓ DIN mount
- ✓ 10 kA protection per pair
- ✓ Multistage protection

DRJ45-8CAT6

## Specifications

Maximum continuous voltage (DC)	$U_c$	6 V
Maximum continuous voltage (AC)	$U_c$	4 V
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	5 kA per line (10 kA common mode)
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	2.5 kA per line (5 kA common mode)
Impulse durability		C2 8/20 $\mu$ s 1.5 kA - D1 10/350 $\mu$ s 0.5kA
Maximum load current	$I_L$	1000 mA
L-L Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 20 V
L-PE Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 350 V
Line resistance		0.1 $\Omega$
No of protected network circuits		8
Dimensions		W 162 mm x H 90 mm x D 30 mm



## WEATHERPROOF NETWORK PROTECTOR

Novaris Network Protection Products are designed for twisted pair Ethernet systems with a combination of rugged and fine grain protection elements. The weatherproof protector is suited for outdoor PoE applications such as network cameras and wireless equipment with up to 2 circuits.

- ✓ Gigabit CAT6 and PoE
- ✓ 160W + PoE
- ✓ IP 65 weatherproof
- ✓ 10 kA protection per pair
- ✓ Multistage protection

ORJ45-2CAT6

## Specifications

Maximum continuous voltage (DC)	$U_c$	6 V
Maximum continuous voltage (AC)	$U_c$	4 V
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	5 kA per line (10 kA common mode)
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	2.5 kA per line (5 kA common mode)
Impulse durability		C2 8/20 $\mu$ s 1.5 kA - D1 10/350 $\mu$ s 0.5kA
Maximum load current	$I_L$	1000 mA
L-L Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 20 V
L-PE Voltage protection level @ 1 kV/ $\mu$ s	$U_p$	< 350 V
Line resistance		0.1 $\Omega$
No of protected network circuits		2
Dimensions		W 124 mm x H 118 mm x D 42 mm

### CCTV COAXIAL PROTECTORS

Novaris Coaxial CCTV Protectors are suited to the protection of security and CCTV systems. The 68V version has been designed for power over coax (PoC) applications.



- ✓ Low VSWR
- ✓ Supports PoC
- ✓ 20 kA protection
- ✓ Multistage protection

Specifications		CLB-MF	CLB-FF	CLB-FM	CLF-FF
Maximum continuous voltage (DC)	$U_c$		65 V		
Maximum continuous voltage (AC)	$U_c$		45 V		
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$		20 kA		
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$		2.5 kA		
Impulse durability			C2 8/20 $\mu$ s 10 kA - D1 10/350 $\mu$ s 2.5kA		
Maximum load current	$I_L$		500 mA		
Voltage protection level @ 1 kV/ $\mu$ s	$U_p$		< 65 V		
Line resistance			1.5 $\Omega$		
Connector type			BNC		F type
Connector orientation		M / F	F / F	F / M	F / F
Dimensions			W ~ 88 mm x H 26 mm x D 26 mm		



### COAX + POWER COMBINED PROTECTORS

Novaris protection for both Power and Signal is provided in a compact and economical DIN compliant package. They are ideal for security and CCTV camera protection.

- ✓ LED indicator
- ✓ 20 kA protection (signal)
- ✓ 18mm combined product
- ✓ Up to 10kA protection (power)
- ✓ Multistage protection

Specifications		SFD1-6-3-30-C	SFD1-6-10-50-C	SFD1-6-10-130-C	SFD1-6-10-275-C
Power maximum continuous voltage (DC)	$U_c$	40 V	70 V	180 V	380 V
Power maximum continuous voltage (AC)	$U_c$	30 V	50 V	130 V	275 V
Power maximum discharge current (8/20 $\mu$ s)	$I_{max}$	3 kA per line	10 kA per line (20 kA common mode)		
Power impulse durability		C2 8/20 $\mu$ s 2 kA		C2 8/20 $\mu$ s 5 kA	
Power maximum load current	$I_L$	6 A	6 A	6 A	6 A
Power voltage protection level @ 3 kA (8/20 $\mu$ s)	$U_p$	< 100 V	< 180 V	< 450 V	< 750 V
Signal maximum continuous voltage (DC)	$U_c$	8.2 V DC			
Signal maximum discharge current (8/20 $\mu$ s)		20 kA			
Signal voltage protection level @ 1 kV/ $\mu$ s	$U_p$	14 V			
Dimensions		W 18 mm x H 116 mm x D 70 mm			



Novaris

**COAXIAL PROTECTION**

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**Coaxial line surge protection must:**

1. Provide adequate protection for all equipment.
2. Achieve a long working life.
3. Allow the signal to pass under normal operation and not have an adverse affect on insertion loss and return loss.
4. Optimise the cost and size of the surge protection devices (SPDs).

**Options for Surge Protection Devices****Inline GDT**

Inline GDT coaxial protectors containing a gas discharge tube (GDT) are suitable for a wide frequency range but must be chosen with respect to the power on the line if used for a transmitting application.

**Spark Gap**

Spark gap coaxial protectors provide protection for high powered transmission systems. Arc detection and extinguishing features are available as an option to prevent the transmitter from keeping the spark lit after a transient.

**Selection of Surge Protection Devices****1. Identify the connector type**

Novaris manufactures a range of coaxial SPDs to suit most common connectors and gender variations.

**2. Select the clamping voltage**

The clamping voltage of the SPD must be greater than the peak voltage on the line. This is particularly important when used for transmitting applications. The following is a guide:

Power in 50 $\Omega$ (W)	GDT Voltage (V)
0-40	90
40-125	230
125-300	350
300-800	600
800-2000	1000

*Please contact us for higher power levels*

**3. Identify the maximum operating frequency**

3G models are available in all standard small format connector types and feature replaceable GDTs and will operate to 3 GHz.

6G models are available in only N type connectors and will operate to 6 GHz.

🔍 "CB" 🌐 novaris.com.au

### BNC RF PROTECTORS

Novaris CB BNC RF Protectors are suited for RF signals at frequencies up to 3Ghz.



- ✔ Replaceable GDT
- ✔ Low VSWR (<1.1:1)
- ✔ DIN rail mounting (-D)
- ✔ 90 mounting (-M)
- ✔ Earth stud (-E)
- ✔ G rail mounting (-G)

Specifications		CB-MF-90-3	CB-FF-90-3	CB-MF-230-3	CB-FF-230-3	CB-MF-350-3	CB-FF-350-3	CB-MF-600-3	CB-FF-600-3	CB-MF-1000-3	CB-FF-1000-3
Spark-over voltage	$U_c$	90 V		230 V		350 V		600 V		1000 V	
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	20 kA									
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	5 kA									
Impulse durability		C2 8/20 $\mu$ s 10 kA - D1 10/350 $\mu$ s 5kA									
Power rating		0 - 40 W		40 - 125 W		125 - 300 W		300 - 800 W		800 - 2000 W	
L-L Voltage protection level @ 5 kV 10/700 $\mu$ s	$U_p$	< 650 V		< 820 V		< 1.1 kV		< 1.3 kV		< 1.8 kV	
VSWR		< 1.1 : 1									
Connector orientation		M / F	F / F	M / F	F / F	M / F	F / F	M / F	F / F	M / F	F / F
Dimensions		W ~55 mm x H 25 mm x D 25 mm									

🔍 "CF" 🌐 novaris.com.au

### F-TYPE DIN RF PROTECTORS

Novaris CF F-Type RF Protectors are suited for RF signals at frequencies up to 3Ghz.



- ✔ Replaceable GDT
- ✔ Low VSWR (<1.1:1)
- ✔ DIN rail mounting (-D)
- ✔ 90 mounting (-M)
- ✔ Earth stud (-E)
- ✔ G rail mounting (-G)

Specifications		CF-FF-90-3	CF-FF-230-3	CF-FF-350-3	CF-FF-600-3	CF-FF-1000-3					
Spark-over voltage	$U_c$	90 V		230 V		350 V		600 V		1000 V	
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	20 kA									
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	5 kA									
Impulse durability		C2 8/20 $\mu$ s 10 kA - D1 10/350 $\mu$ s 5kA									
Power rating		0 - 40 W		40 - 125 W		125 - 300 W		300 - 800 W		800 - 2000 W	
L-L Voltage protection level @ 5 kV 10/700 $\mu$ s	$U_p$	< 650 V		< 820 V		< 1.1 kV		< 1.3 kV		< 1.8 kV	
VSWR		< 1.1 : 1									
Connector orientation		F / F		F / F		F / F		F / F		F / F	
Dimensions		W 50 mm x H 25 mm x D 25 mm									

## N-TYPE RF PROTECTORS

🔍 "CN" [novaris.com.au](http://novaris.com.au)

Novaris CN N-Type RF Protectors are suited for RF signals at frequencies up to 3Ghz. N Type protectors are bulk head mountable.



- ✓ Replaceable GDT
- ✓ Low VSWR (<1.1:1)
- ✓ DIN rail mounting (-D)
- ✓ 90 mounting (-M)
- ✓ Earth stud (-E)
- ✓ G rail mounting (-G)

Specifications		CN-MF-90-3		CN-MF-230-3		CN-MF-350-3		CN-MF-600-3		CN-MF-1000-3	
		CN-MF-90-3	CN-MF-90-3	CN-MF-230-3	CN-MF-230-3	CN-MF-350-3	CN-MF-350-3	CN-MF-600-3	CN-MF-600-3	CN-MF-1000-3	CN-MF-1000-3
Spark-over voltage	$U_c$	90 V		230 V		350 V		600 V		1000 V	
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	20 kA									
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	5 kA									
Impulse durability		C2 8/20 $\mu$ s 10 kA - D1 10/350 $\mu$ s 5kA									
Power rating		0 - 40 W		40 - 125 W		125 - 300 W		300 - 800 W		800 - 2000 W	
L-L Voltage protection level @ 5 kV 10/700 $\mu$ s	$U_p$	< 650 V		< 820 V		< 1.1 kV		< 1.3 kV		< 1.8 kV	
VSWR		< 1.1 : 1									
Connector orientation		M / F	F / F	M / F	F / F	M / F	F / F	M / F	F / F	M / F	F / F
Dimensions		W 60 mm x H 25 mm x D 25 mm									

## SMA RF PROTECTORS

🔍 "CS" [novaris.com.au](http://novaris.com.au)

Novaris CS SMA RF Protectors are suited for RF signals at frequencies up to 3Ghz.



- ✓ Replaceable GDT
- ✓ Low VSWR (<1.1:1)
- ✓ DIN rail mounting (-D)
- ✓ 90 mounting (-M)
- ✓ Earth stud (-E)
- ✓ G rail mounting (-G)

Specifications		CS-MF-90-3		CS-MF-230-3		CS-MF-350-3		CS-MF-600-3		CS-MF-1000-3	
		CS-MF-90-3	CS-MF-90-3	CS-MF-230-3	CS-MF-230-3	CS-MF-350-3	CS-MF-350-3	CS-MF-600-3	CS-MF-600-3	CS-MF-1000-3	CS-MF-1000-3
Spark-over voltage	$U_c$	90 V		230 V		350 V		600 V		1000 V	
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	20 kA									
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	5 kA									
Impulse durability		C2 8/20 $\mu$ s 10 kA - D1 10/350 $\mu$ s 5kA									
Power rating		0 - 40 W		40 - 125 W		125 - 300 W		300 - 800 W		800 - 2000 W	
L-L Voltage protection level @ 5 kV 10/700 $\mu$ s	$U_p$	< 650 V		< 820 V		< 1.1 kV		< 1.3 kV		< 1.8 kV	
VSWR		< 1.1 : 1									
Connector orientation		M / F	F / F	M / F	F / F	M / F	F / F	M / F	F / F	M / F	F / F
Dimensions		W 54 mm x H 25 mm x D 25 mm									

### TNC RF PROTECTORS

Novaris CU UHF RF Protectors are suited for RF signals at frequencies up to 3Ghz.



- ✓ Replaceable GDT
- ✓ Low VSWR (<1.1:1)
- ✓ DIN rail mounting (-D)
- ✓ 90 mounting (-M)
- ✓ Earth stud (-E)
- ✓ G rail mounting (-G)

Specifications		CT-MF-90-3		CT-MF-230-3		CT-MF-350-3		CT-MF-600-3		CT-MF-1000-3	
		CT-MF-90-3	CT-MF-90-3	CT-MF-230-3	CT-MF-230-3	CT-MF-350-3	CT-MF-350-3	CT-MF-600-3	CT-MF-600-3	CT-MF-1000-3	CT-MF-1000-3
Spark-over voltage	$U_c$	90 V		230 V		350 V		600 V		1000 V	
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	20 kA									
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	5 kA									
Impulse durability		C2 8/20 $\mu$ s 10 kA - D1 10/350 $\mu$ s 5kA									
Power rating		0 - 40 W		40 - 125 W		125 - 300 W		300 - 800 W		800 - 2000 W	
L-L Voltage protection level @ 5 kV 10/700 $\mu$ s	$U_p$	< 650 V		< 820 V		< 1.1 kV		< 1.3 kV		< 1.8 kV	
VSWR		< 1.1 : 1									
Connector orientation		M / F	F / F	M / F	F / F	M / F	F / F	M / F	F / F	M / F	F / F
Dimensions	▽	W 54 mm x H 25 mm x D 25 mm									

### UHF RF PROTECTORS

Novaris CU UHF RF Protectors are suited for RF signals at frequencies up to 3Ghz.



- ✓ Replaceable GDT
- ✓ Low VSWR (<1.1:1)
- ✓ DIN rail mounting (-D)
- ✓ 90 mounting (-M)
- ✓ Earth stud (-E)
- ✓ G rail mounting (-G)

Specifications		CU-MF-90-3		CU-MF-230-3		CU-MF-350-3		CU-MF-600-3		CU-MF-1000-3	
		CU-MF-90-3	CU-MF-90-3	CU-MF-230-3	CU-MF-230-3	CU-MF-350-3	CU-MF-350-3	CU-MF-600-3	CU-MF-600-3	CU-MF-1000-3	CU-MF-1000-3
Spark-over voltage	$U_c$	90 V		230 V		350 V		600 V		1000 V	
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	20 kA									
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	5 kA									
Impulse durability		C2 8/20 $\mu$ s 10 kA - D1 10/350 $\mu$ s 5kA									
Power rating		0 - 40 W		40 - 125 W		125 - 300 W		300 - 800 W		800 - 2000 W	
L-L Voltage protection level @ 5 kV 10/700 $\mu$ s	$U_p$	< 650 V		< 820 V		< 1.1 kV		< 1.3 kV		< 1.8 kV	
VSWR		< 1.1 : 1									
Connector orientation		M / F	F / F	M / F	F / F	M / F	F / F	M / F	F / F	M / F	F / F
Dimensions	▽	W 57 mm x H 25 mm x D 25 mm									

## 6GHZ N-TYPE RF PROTECTORS

🔍 "CN" 🌐 novaris.com.au

Novaris CN N-Type RF Protectors are suited for RF signals at frequencies up to 6Ghz. N-Type protectors are bulk head mountable.



- ✓ Replaceable GDT
- ✓ Low VSWR (<1.1:1)
- ✓ DIN rail mounting (-D)
- ✓ 90 mounting (-M)
- ✓ Earth stud (-E)
- ✓ G rail mounting (-G)

Specifications		CN-MF-90-6		CN-MF-230-6		CN-MF-350-6		CN-MF-600-6		CN-MF-1000-6	
Spark-over voltage	$U_c$	90 V		230 V		350 V		600 V		1000 V	
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	20 kA									
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	5 kA									
Impulse durability		C2 8/20 $\mu$ s 10 kA - D1 10/350 $\mu$ s 5kA									
Power rating		0 - 40 W		40 - 125 W		125 - 300 W		300 - 800 W		800 - 2000 W	
L-L Voltage protection level @ 5 kV 10/700 $\mu$ s	$U_p$	< 650 V		< 820 V		< 1.1 kV		< 1.3 kV		< 1.8 kV	
VSWR		< 1.1 : 1									
Connector orientation		M / F	F / F	M / F	F / F	M / F	F / F	M / F	F / F	M / F	F / F
Dimensions		W ~65 mm x H 28 mm x D 22 mm									

## 7/16 DIN RF PROTECTORS

🔍 "CD" 🌐 novaris.com.au

Novaris CD 7/16 DIN RF Protectors are suited for RF signals at frequencies up to 3Ghz.



- ✓ Replaceable GDT
- ✓ Low VSWR (<1.1:1)
- ✓ DIN rail mounting (-D)
- ✓ 90 mounting (-M)
- ✓ Earth stud (-E)
- ✓ G rail mounting (-G)

Specifications		CD-MF-90-3		CD-MF-230-3		CD-MF-350-3		CD-MF-600-3		CD-MF-1000-3	
Spark-over voltage	$U_c$	90 V		230 V		350 V		600 V		1000 V	
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	20 kA									
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	5 kA									
Impulse durability		C2 8/20 $\mu$ s 10 kA - D1 10/350 $\mu$ s 5kA									
Power rating		0 - 40 W		40 - 125 W		125 - 300 W		300 - 800 W		800 - 2000 W	
L-L Voltage protection level @ 5 kV 10/700 $\mu$ s	$U_p$	< 650 V		< 820 V		< 1.1 kV		< 1.3 kV		< 1.8 kV	
VSWR		< 1.1 : 1									
Connector orientation		M / F	F / F	M / F	F / F	M / F	F / F	M / F	F / F	M / F	F / F
Dimensions		W ~72 mm x $\phi$ 40 mm									

🔍 "CEIA" 🌐 novaris.com.au

### HIGH POWER RF PROTECTIONS

Novaris CEIA High Power Surge Protectors suit applications including MF, HF and VHF transmitters to 50kW. The spark gap arrester has an optional arc sensor which may be used to momentarily interrupt the transmitter.



- ✓ Up to 50 kW
- ✓ Up to 14 arc sensor controllers
- ✓ Optional arc detection
- ✓ 100kA protection

Specifications		CEIA-078	CEIA-158	CEIA-318
Spark-over voltage	$U_c$	2.6 kV per 2mm gap		
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	100 kA		
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	30 kA		
Power rating		> 50 kW (limited by coax cable)		
Characteristic impedance		50 $\Omega$		
VSWR		< 1.1 : 1		
Connector type		7/8" EIA	1 5/8" EIA	3 1/8" EIA

🔍 "EKIT" 🌐 novaris.com.au

### EKIT CABLE BONDING KITS

Novaris Cable Bonding Kits are used to bond the shields of coaxial feeders and wave guides on communication towers and at cable entry points to communications buildings.



- ✓ Self amalgamating
- ✓ Easy bonding upgrade

Specifications		EKIT-014	EKIT-038	EKIT-012	EKIT-078	EKIT-158
Connection type		Cable clamp				
Sheath connection		25 mm braid				
Earth connection		900 mm - 6 mm <sup>2</sup> flying lead				
Cable sealing		Self amalgamating upper and lower seals				
Coaxial connection size		1/4"	3/8"	1/2"	7/8"	1 5/8"



Novaris

**SPECIAL PRODUCTS**

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🔍 "KP" 🌐 novaris.com.au

### KRONE-LSA® MDF - 1 PAIR / 10 PAIR

The Novaris KP provides protection for KRONE-LSA® termination systems. It is suitable for twisted pair telecommunication services. The DC rated devices can be used to protect signalling circuits terminated through a KRONE-LSA® block.



- ✓ Easily replaceable
- ✓ Earthing bar available (KP1)
- ✓ Low let through

Specifications		KP1-T	KP1-06-DC	KP1-12-DC	KP1-24-DC	KP1-48-DC	KP10-[*]
Maximum continuous voltage (DC)	$U_c$	200 V	8 V	15 V	30 V	56 V	* Refer to KP1-[*] version specifications
Maximum continuous voltage (AC)	$U_c$	140 V	6 V	11 V	22 V	40 V	
Maximum discharge current (8/20µs)	$I_{max}$	5 kA per line (10 kA common mode)					
Impulse durability		C2 8/20µs 5 kA					
Maximum load current	$I_L$	250 mA	250 mA	250 mA	250 mA	250 mA	
L-L Voltage protection level @ 1 kV/µs	$U_p$	< 220 V	< 10 V	< 17 V	< 36 V	< 60 V	
L-PE Voltage protection level @ 1 kV/µs	$U_p$	< 350 V	< 350 V	< 350 V	< 350 V	< 350 V	
Line resistance		2.7 Ω	2.7 Ω	2.7 Ω	2.7 Ω	2.7 Ω	
Dimensions	▽	W 9.5 mm x H 21 mm x D 36 mm					W 125 mm

### TELEPHONE LINE PROTECTORS

🔍 "MPP" 🌐 novaris.com.au

Novaris Modular Plug Protectors are designed for twisted pair telecommunication services suitable for telephones, FAX, dial-up, ISDN and xDSL modems.



- ✓ Metal enclosure
- ✓ Multistage protection

Specifications		MPP-RJ12-1	MPP-RJ12-2	MPP-RJ45	MPP-VDSL
Number of pairs		1	2	2	1
Maximum continuous voltage (DC)	$U_c$	200 V	200 V	200 V	200 V
Maximum continuous voltage (AC)	$U_c$	140 V	140 V	140 V	140 V
Maximum discharge current (8/20µs)	$I_{max}$	5 kA per line (10 kA common mode)			
Maximum impulse current (10/350µs)	$I_{imp}$	1.25 kA per line (2.5 kA common mode)			
Impulse durability		C2 8/20µs 5 kA - D1 10/350µs 2.5kA			
Maximum load current	$I_L$	350 mA	350 mA	350 mA	350 mA
L-L Voltage protection level @ 1 kV/µs	$U_p$	< 150 V	< 150 V	< 150 V	< 950 V
L-PE Voltage protection level @ 1 kV/µs	$U_p$	< 350 V	< 350 V	< 350 V	< 750 V
Line resistance		8.2 Ω	8.2 Ω	8.2 Ω	0.1 Ω
Dimensions	▽	W 90 mm x H 26 mm x D 26 mm			



## WEATHERPROOF SURGE COUNTER

🔍 "TSC1" 🌐 novaris.com.au

Novaris Transient Surge Counters count direct lightning strikes and transient events. They may be clamped to the downconductor of a building, tower or in the earth return conductor of a SPD.

- ✔ 6 digit display
- ✔ Sensitive to lightning surges
- ✔ Noise rejection
- ✔ Pretested

TSC1-IP65

### Specifications

Sensitivity	$I_{tc}$	100 A
Max counting discharge current	$I_{mcw}$	200 kA
Battery life		7 years
Display		Resettable LCD
Dimension		W 80 mm x H 110 mm x D 65 mm



## DIN MOUNTABLE SURGE COUNTERS

🔍 "TSC1" 🌐 novaris.com.au

Novaris Transient Surge Counters count direct lightning strikes and transient events. The TSC1-DIN is designed to have the earth conductor pass through the device. The TSC1-CT employs a current transformer to clamped onto an earth conductor of up to 50mm<sup>2</sup>.

- ✔ 6 digit display
- ✔ Sensitive to lightning surges
- ✔ Rejects earth spikes
- ✔ Pretested

### Specifications

		TSC1-DIN	TSC1-CT
Sensitivity	$I_{tc}$	100 A	100 A
Max counting discharge current	$I_{mcw}$	200 kA	200 kA
Battery life		7 years	7 years
Display		Resettable LCD	Resettable LCD
Dimension		W 80 mm x H 98 mm x D 90 mm	W 51 mm x H 95 mm x D 72 mm

### 20KA EARTH CLAMPS

Novaris EC Earth Clamps provide a means to electrically clamp different earthing systems during transient disturbances. Applications include computer rooms and in the bonding of cable sheaths to ground where direct bonding would introduce interference and “earth loops”.



- ✔ Waterproof
- ✔ Prevent potential differences
- ✔ Bond earth isolated system
- ✔ 500mm lead length (customizable)

Specifications		EC20-90	EC20-230	EC20-350	EC20-600
Maximum continuous voltage (DC)	$U_c$	90 V	230 V	350 V	600 V
Maximum continuous voltage (AC)	$U_c$	60 V	160 V	245 V	425 V
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	20 kA			
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	2.5 kA			
Impulse durability		C2 8/20 $\mu$ s 10 kA - D1 10/350 $\mu$ s 2.5kA			
Voltage protection level @ 5 kV 10/700 $\mu$ s	$U_p$	< 640 V	< 700 V	< 850 V	< 1200 V
Dimensions		W 60 mm x $\varnothing$ 20 mm			

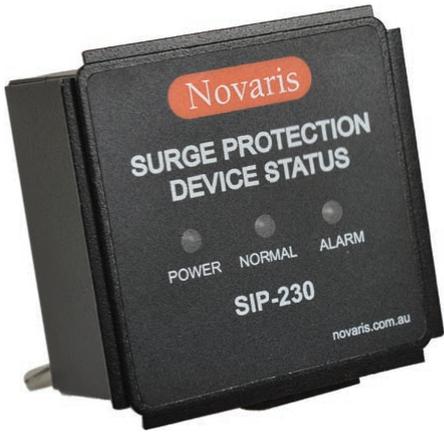
### 100KA EARTH CLAMPS

Novaris EC Earth Clamps provide a means to electrically clamp different earthing systems during transient disturbances. Applications include computer rooms, defense installations and gas pipeline insulated joints.



- ✔ Waterproof
- ✔ Prevent potential differences
- ✔ Bond earth isolated system
- ✔ 500mm lead length (customizable)

Specifications		EC100-230	EC100-350	EC100-500	EC100-800
Maximum continuous voltage (DC)	$U_c$	230 V	350 V	500 V	800 V
Maximum continuous voltage (AC)	$U_c$	160 V	245 V	350 V	565 V
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	100 kA			
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	20 kA			
Voltage protection level @ 5 kV 10/700 $\mu$ s	$U_p$	< 900 V	< 1000 V	< 1200 V	< 1500 V
Dimensions		W 100 mm x $\varnothing$ 30 mm			



## SURGE INDICATOR PANELS

🔍 "SIP" | 🌐 novaris.com.au

Novaris Surge Indicator Panels allow remote monitoring of any Novaris product featuring external alarms. Visual and audible indicators provide at-a-glance surge protection status. Designed to fit into standard 72mm panel meter cutouts, integration into switchboards is simple.

- ✔ Remote alarm output
- ✔ Front panel monitoring

Specifications		SIP-110	SIP-230	SIP-24
Nominal voltage	$U_0$	110 V / 60 Hz	230 V / 50 Hz	24 V AC / DC
Display			LED power and status	
Alarm			SPDT contacts	
Dimension	📏		W 72 mm x H 72 mm x D 55 mm	



## SURGE CATHODIC DECOUPLER

🔍 "SCD" | 🌐 novaris.com.au

Novaris SCD Series provide pipelines with surge, AC and DC voltage protection whilst providing low voltage DC isolation for cathodic protection. This combination provides the best electrical protection for ICCP systems, pipelines and personnel.

Specifications		SCD-20-100
Nominal voltage	$U_0$	< 2 V DC blocking - AC and > 2V DC passing
Maximum discharge current (8/20 $\mu$ s)	$I_{max}$	100 kA
Maximum impulse current (10/350 $\mu$ s)	$I_{imp}$	30 kA
Voltage protection level @ 5 kV 10/700 $\mu$ s	$U_p$	< 230V
Dimension	📏	W 150 mm x H 150 mm x D 90 mm



## SURGE PROTECTION TESTER

Novaris SPT Series allow surge protection installers and maintainers to monitor\* and diagnose surge protection equipment on site. The SPT-02 uses an auto-range function to accurately determine the clamping voltage of voltage limiting products and the firing voltage of voltage switching products. The SPT-02 is also a multifunction device that supports insulation resistance, continuity, voltage and diode testing. Test results are displayed on a 2 x 16 character display.

\*Measurements of SPDs with intact display hardware will be inaccurate due to the current required to drive the hardware.

SPT-02

### Specifications

SPD Voltage range	$U_0$	5 - 1020V
Voltmeter voltage range		0 - 950 V DC / 0 - 700 V AC
Insulation resistance test voltage		250V, 500V, 1000V
Resistance testing		1 - 400 k $\Omega$
Dimension		W 90 mm x H 205 mm x D 55 mm



Novaris

**ADDITIONAL INFORMATION**

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## Standards

Many countries have comprehensive lightning protection standards. As a global provider of lightning and surge protection solutions Novaris provides solutions in accordance with recognised world standards.

Novaris is an Australian company, and as such conforms to the guidelines in the Australian and New Zealand standard on lightning protection - AS1768.

Novaris solutions and products conform to the relevant IEC standards, notably IEC62305 (Protection against Lightning) and IEC61643 (Low-voltage Surge Protection Devices).

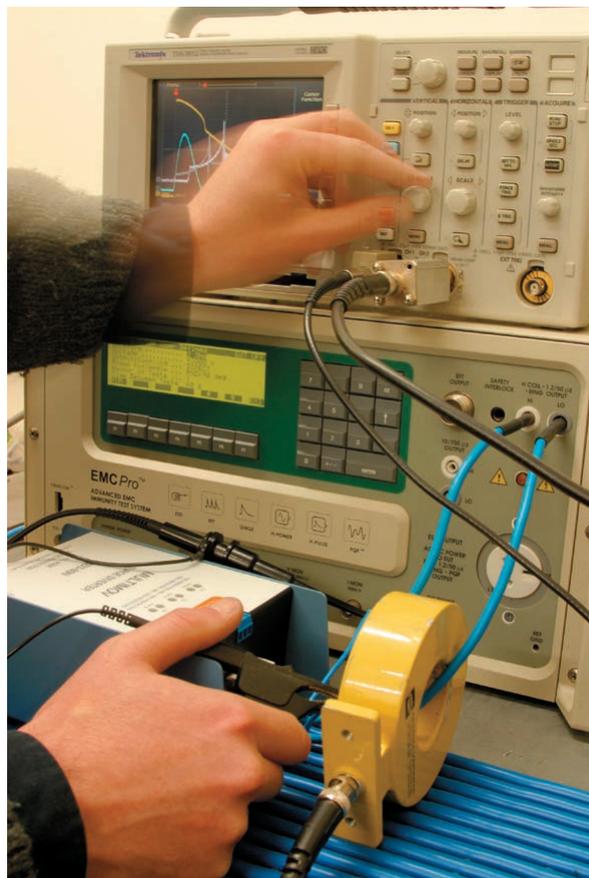
In line with AS1768, Novaris does not recommend or endorse the use of so called non-conventional lightning 'attraction' or protection systems.

## Safety

Novaris products are subjected to rigorous testing in our laboratory. We can generate most of the test waveforms specified in the IEC, Australian and US standards. We can test for temporary overvoltage and high current test series connected or two port SPDs up to 2000A per phase.

Lightning transients and the follow on effects of power systems overvoltages can be unpredictable, causing surge protection components to overload and fail. Our laboratory is equipped to perform destructive tests to ensure safe failure in these scenarios.

Surge protection components can rupture and be subject to excessive heating under fault conditions. For this reason that all Novaris power line surge protection products are housed in robust metal enclosures and we recommend that all SPDs be protected with appropriate fuses or SCB surge circuit breakers in accordance with the relevant standards.



Historically, lightning protection consulting only concentrated on the protection of buildings and structures. Little thought was ever given to protecting against the indirect effects of lightning strikes which cause damage to equipment, regardless of whether structural protection is present or not. It was assumed that structural lightning protection would protect everything, which is not the case; protection against the indirect effects of a lightning strike is often more important than structural protection.

Modern buildings with steel frames and metal roofing are self protecting, forgoing the need for structural lightning protection. Unfortunately, structural protection is often installed unnecessarily with the indirect protection neglected.

Fortunately, this situation is now recognised and both the IEC and the Australian lightning protection standards present risk assessment procedures capable of clearly defining the need for both structural and surge (or indirect) protection. The IEC standard (IEC62305-2) recognizes the need for both structural and surge protection but mandates that surge protection is necessary whenever structural protection is required (Figure 1). The Australian standard (AS1768) allows surge protection in the absence of structural protection (Figure 2).

Any lightning protection design should begin with risk assessment. If structural protection is required, first determine if the structure is self protecting before following the procedures stipulated by the standards.

Figure 1. IEC Risk Assessment Procedure (from IEC62305-2)

Figure 2. Australian Standard Risk Assessment Procedure (from AS 1768)

Ratings of primary and secondary surge protection devices can be obtained by identifying their position in relation to the lightning protection zone barriers shown in Figure 3. Figure 4 shows recommended surge ratings for power line SPDs whilst Figure 5 shows recommended surge ratings for signal/data line SPDs. These tables are based upon AS1768 and IEC61643 standards.

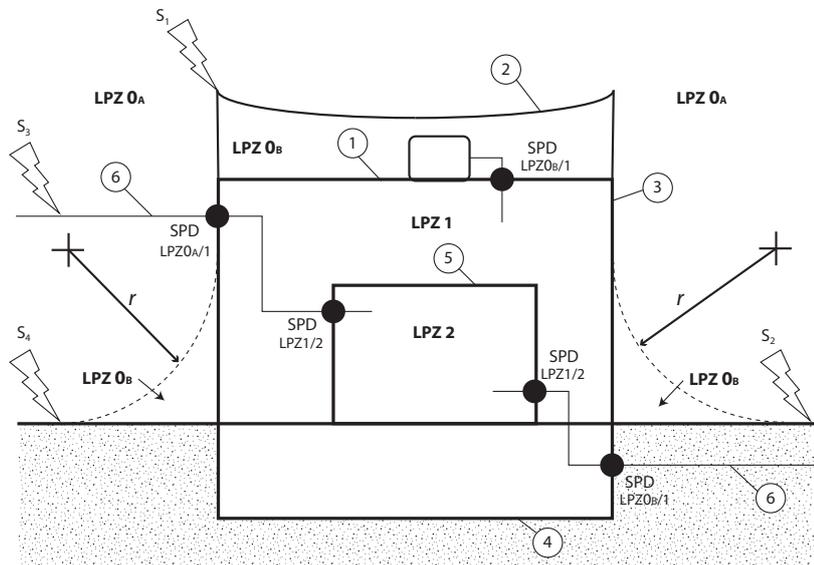


Figure 3. Lightning Protection Zones.

**RECOMMENDED SURGE RATINGS FOR A.C. POWER SYSTEM  
SPDs PER PHASE**

Zone Boundary	SPD location	$I_{max}$ rating 8/20 $\mu$ s	$I_n$ rating 8/20 $\mu$ s	$I_{imp}$ rating 10/350 $\mu$ s
LPZ2/..n	Long final subcircuits and electricity supply outlets	3 - 10kA	2 - 5kA	-
LPZ1/2	Major submains, short final subcircuits and load centres	10 - 50kA	5 - 20kA	-
LPZ0 <sub>B</sub> /1	Service entrance, underground, domestic	50kA	20kA	6.25kA
LPZ0 <sub>A</sub> /1	Service entrance, building fed by long overhead service lines, or is a large industrial or commercial premises	100kA	40kA	12.5kA
LPZ0 <sub>A</sub> /1	Service entrance, building in a high lightning area ( $N_b$ greater than 2.5), or fitted with a LPS	100kA	40kA	12.5kA
LPZ0 <sub>A</sub> /1	Service entrance, building in a high lightning area ( $N_b$ greater than 5), and fitted with a LPS, e.g. mountain top site or tropical regions	200kA	80kA	25kA

Figure 4. Recommended surge ratings - power.

**SURGE RATINGS FOR SIGNAL / DATA LINE SPDs**

Zone Boundary	SPD location	$I_{max}$ rating 8/20 $\mu$ s	$I_{imp}$ rating 10/350 $\mu$ s
LPZ2/..n	Internal marshalling cubicle or equipment cabinet	5kA	-
LPZ0 <sub>B</sub> /1	External signal cables shielded from direct lightning strike	10kA	2.5kA
LPZ0 <sub>A</sub> /1	Point of entry, long overhead or underground signal cables	20kA	5kA
LPZ0 <sub>A</sub> /1	Point of entry signal cables, building in a high lightning area ( $N_b$ greater than 2.5), or fitted with an LPS	20kA	5kA

Figure 5. Recommended surge ratings - signal / data.

The table on the previous page recommends that main switchboards fitted with a lightning protection system, or fed with long overhead power lines, have primary LV arresters (per phase) with at least 100kA (8/20 $\mu$ s) impulse rating. Product lifespan, redundancy and improved let through voltages are benefits provided by selecting products with a higher  $I_{max}$  rating.

All SPDs should be installed in accordance with AS/NZS 3000 and AS1768, or the equivalent wiring standard for that country and be connected between each phase and neutral. At switchboards where there is no MEN, neutral-earth protection is also required. The neutral-earth protection is generally provided by a high energy gas discharge tube (GDT), with  $I_{max} = 100kA$ .

Secondary protection requires a lower surge rating. Sub boards within buildings are adequately served with SPDs of surge rating 50kA. The appropriate surge protector for these applications is a series connected device, being either a series surge protector or surge filter. These will require all mode protection since there is unlikely to be an MEN link in the equipment cabinet.

The normal configuration of primary and secondary protection would be shunt surge diverters as primary protection and suitably rated series protection devices as secondary protection in sub or distribution boards.

At sites where primary and secondary protection is required and the cable length from MSB to equipment is short (typically less than 10m), a surge filter protecting the whole site should be considered. This would have the primary surge rating in accordance with LPZ0/1 and secondary surge protection as per LPZ1/2. The series inductance artificially lengthens the line. This would be appropriate for small sites such as cellular base stations, TV transmitters and remote telemetry field sites.

At installations with an MSB and a number of distribution boards, such as a multi-storey building, primary and secondary protection should be provided. The primary protection would comprise shunt connected surge diverters fitted to the main switchboard. These provide a path to earth via the neutral for the surge energy.

SPDs are wired from phase to neutral in accordance with IEC and other standards. In countries employing the MEN system, the MEN link provides the neutral to earth path. In other countries, the neutral to earth connection may be via a high energy gas discharge tube (GDT).

The effectiveness of this primary protection depends upon how it is installed. In large switchboards long shunt leads are unavoidable and the voltage let through by such primary protection is unlikely to be low enough to provide effective protection for sensitive loads. While this is generally sufficient to protect the switchboard components, secondary protection is recommended.

Surge filters provide the best protection and are recommended to protect electronic and computing equipment. They are series connected, which eliminates the degradation caused by long shunt connected leads. They have an inbuilt low pass LC filter, which means their let through voltage ( $U_p$ ) is low enough to protect sensitive electronic equipment.

Ph	Phase
$I_{imp}$	Defined by three parameters, a current peak value, a charge and a specific energy. Generally relates the IEC definition of a direct lightning strike modelled by a 10/350 $\mu$ s waveshape. This is used for the classification of SPDs for test class I in accordance with IEC61643-11.
Q	Charge contained in a test waveform. Expressed in coulombs (As).
W/R	Specific Energy relating to a test waveform. Expressed in kJ/ $\mu$ s.
$I_{max}$	Defined as the peak value of a current through the SPD having an 8/20 $\mu$ s waveshape. This is used for the classification of SPDs for test class II in accordance with IEC61643-11. This is generally recognized for MOV based SPDs as the single shot impulse rating.
$I_n$	Defined as the peak value of a current through the SPD having an 8/20 $\mu$ s waveshape. This is used for the classification of SPDs for test class II in accordance with IEC61643-11. This is known as the nominal discharge current and is generally recognized for MOV based SPDs as the rating of the SPD for 15 such impulses.
$I_L$	The maximum continuous RMS or DC current that can be supplied to a load connected to a two port or series connected SPD.
$I_f$	The current supplied by the electrical power system which flows through an SPD after a discharge current impulse. This is called the follow-on current and is particularly applicable to voltage switching type SPDs such as spark gaps and gas discharge tubes.
$I_{fi}$	Follow-on current interrupting rating. This is the maximum AC RMS current that a voltage switching SPD such as a spark gap can interrupt.
$U_0$	The RMS line to neutral voltage of the power system.
$U_c$	The maximum RMS or DC voltage, which may be continuously applied to an SPD.
$U_p$	The let through voltage of an SPD defined for a specified test waveform.
$t_A$	Response time of an SPD to a defined test waveform.
$\Delta U$	Voltage drop of a two port SPD at rated current expressed as a percentage of $U_0$ .
$f_c$	The maximum usable frequency.

Effective surge protection is highly dependent upon installation practices. All Novaris products are supplied with detailed installation instructions to ensure correct installation. The following diagrams illustrate power line surge diverter and surge filter installations.

### Surge Diverter – Main Switchboard (Figure 6)

Install protection:

- Downstream of the main switch.
- Upstream of all equipment including earth leakage devices where possible.
- Protect with recommended surge circuit breaker. (Refer to page 10 for details)
- Keep lead lengths as short as possible to improve let-through voltage.

**MEN systems** - install single mode (L-N) protection as close to the MEN link as possible. E.g. SD3-200-275

**Non-MEN systems** - install all mode (L-N, L-PE, N-PE) protection. E.g. SD3-200-275-N

### Surge Filter – Distribution Board (Figure 7)

Install all mode protection:

- Downstream of main switch.
- Upstream of all equipment, including earth leakage devices where possible.
- Protect with product recommended HRC fuses where possible or circuit breaker, with current rating less than or equal to the load current rating of the filter.
- Keep output cables away from input cables.

### Surge Diverter – Distribution Board (Figure 8)

Install all mode protection:

- Downstream of main switch.
- Upstream of all equipment, including earth leakage devices where possible.
- Protect with recommended surge circuit breaker. (Refer to page 10 for details)
- Keep lead lengths as short as possible to improve let-through voltage.

### Surge Filter – Final Circuit / Equipment (Figure 9)

Install all mode protection:

- Downstream of fuses or circuit breaker with current rating less than or equal to the load current rating of the filter.
- As close to the equipment as possible.
- Keep output cables away from input cables.

Ensure all signal cables exiting the protection boundary have signal protection applied.

For further details see individual product installation instructions.

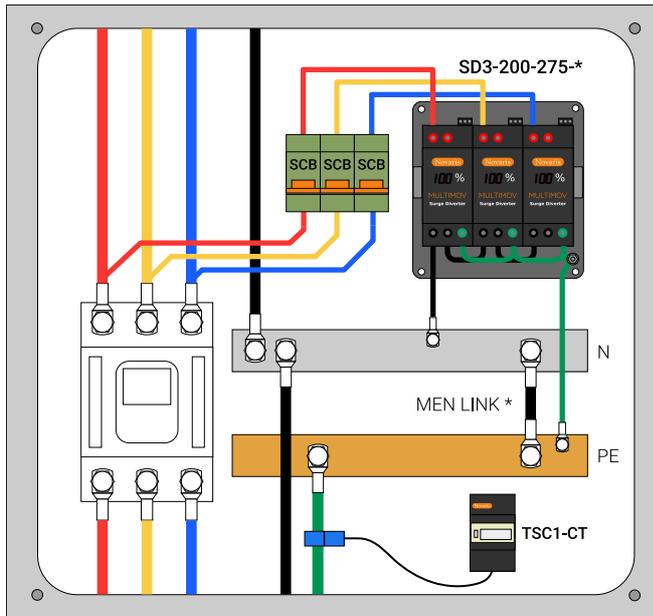


Figure 6. Surge Diverter - Main Switchboard.

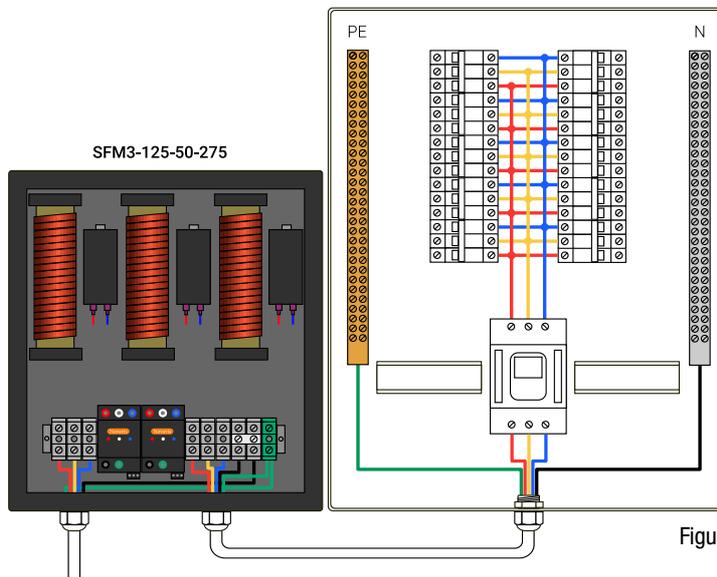


Figure 7. Surge Filter – Distribution Board.

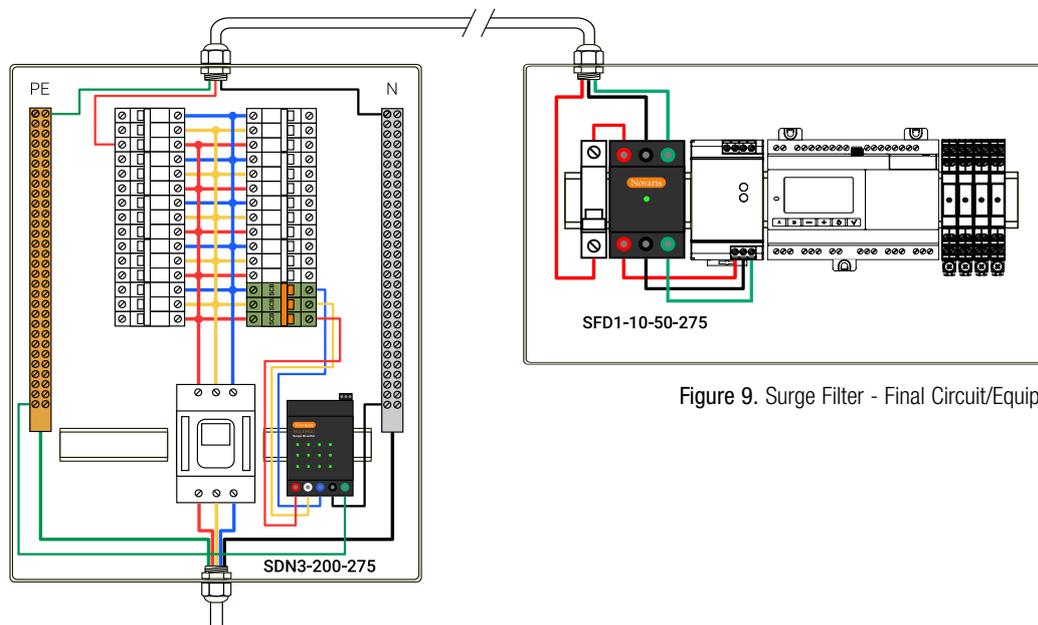


Figure 8. Surge Diverter – Distribution Board.

Figure 9. Surge Filter - Final Circuit/Equipment.



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