Novaris

Hazardous Area Protection

Global Solutions in Hazardous Area Surge and Lightning Protection

Intrinsic Safety

When instrumentation is installed in a potentially explosive environment steps must be taken to ensure that there is no possible way a spark could cause ignition and hence an explosion of the gas, powder or dust that makes up the explosive atmosphere.

One way of ensuring this is to limit the available electrical energy in the explosive environment to levels below which ignition can take place. This technique is called intrinsic safety (IS). This is achieved by placing an energy limiting IS barrier at the boundary between the safe area (non explosive) and hazardous area (explosive). Then all equipment in the hazardous area must be approved for connection, or be defined as simple apparatus.

These IS barriers and field instruments are just like any other pieces of electronics susceptible to damage from surges and transients due to power faults or nearby lightning strikes.

The Novaris range of IS surge protectors and IS instrument protectors are certified for connection in IS circuits on the hazardous side the IS barrier and directly to instruments located in hazardous or explosive environments. They provide effective protection to the IS barriers and field instruments.

The Novaris Systematic Approach

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

- a complete package from analysis of your existing lightning and surge protection system to providing complete recommendations based on site surveys and technical analysis.

Structural Lightning Protection and Earthing Systems

- design and advice on lightning protection systems for all structures in accordance with recognised world standards.
- supply of structural lightning protection and earthing components.

A Comprehensive range of Surge Protection Products to suit any application

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

Custom Product Design

- our innovative R&D team can engineer a surge protection solution for even the most demanding of applications.

Project Management & Installation

- Novaris actively seeks consultancy, project management and installation work. Our experience extends from Australia to the Pacific, Asia, Africa and the Middle East.

The Novaris Intrinsically Safe Surge Protection

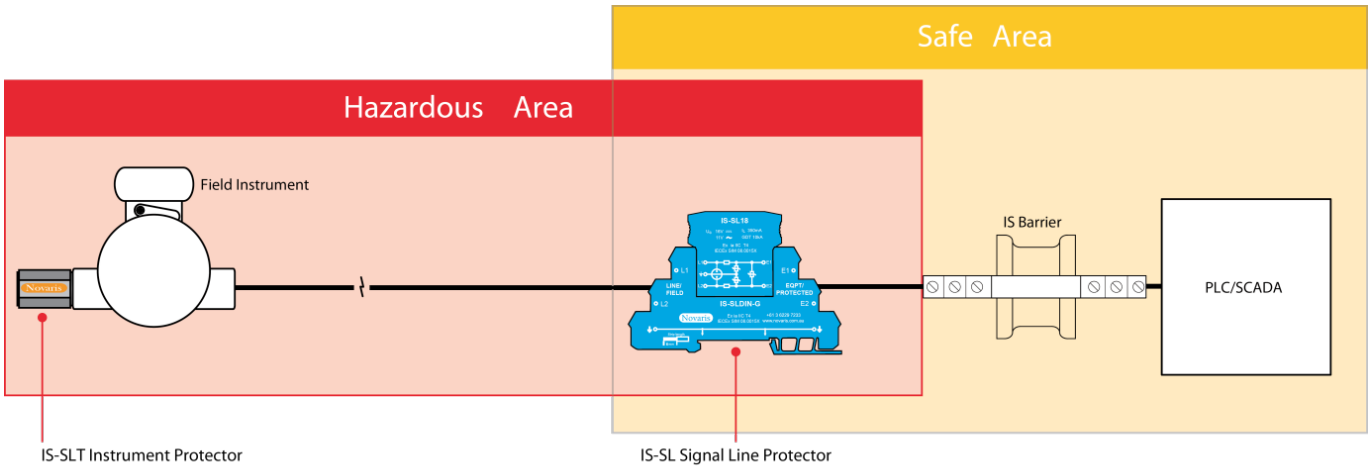
Why do I need surge protection?

Surge protection is often overlooked during design and installation phases of process control systems. Experience shows that emphasis is placed on the installation of lightning protection systems with the philosophy that this will protect not only the structure, but the process control system installed. This has often been disproven by failure and damage to equipment in a process control system as a result of a indirect cloud-to-ground lightning strike many kilometres away, despite the installation of a lightning protection system. Often long, underground signal cabling connecting field instruments to the process control instrumentation create potential difference and transient inductions into the cabling all play a part in the effect of indirect lightning strikes.

Therefore, the importance of surge protection must be stressed. Awareness of this often takes place after extensive damage to process control systems. In addition, surge protection must be recognised to only provide protection to connected equipment in close proximity. For example, protection fitted to equipment at one end of a cable run will not provide protection to the equipment on the other end. This must be taken into consideration when installing or specifying surge protection.

Novaris Intrinsically Safe Surge Protection

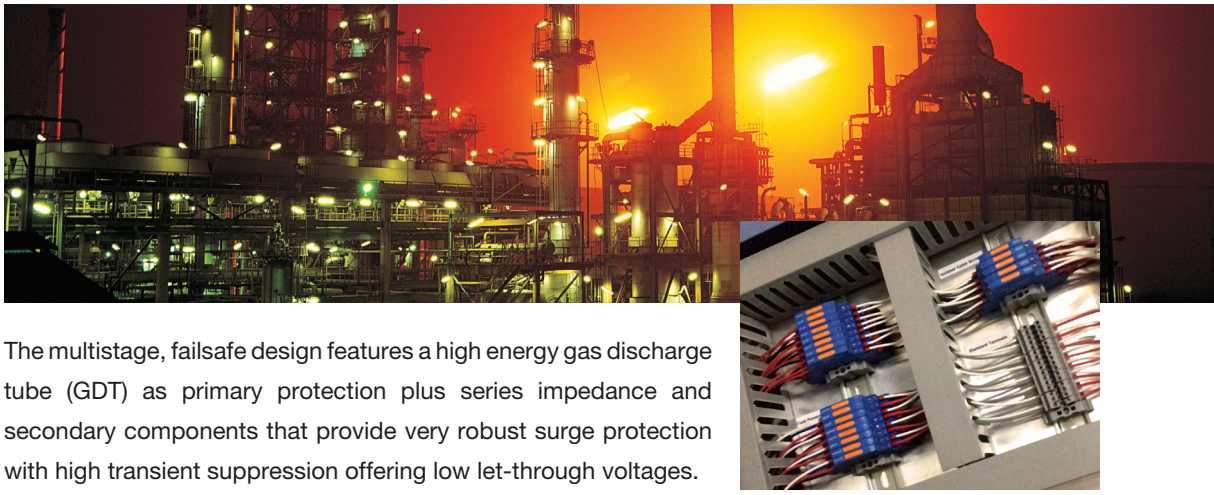
Novaris have designed surge protection devices specifically for Intrinsically Safe (IS) applications. Novaris products with the “IS-” prefix have all been certified in accordance with the requirements of the IEC Ex scheme by an authorised certification body. Every Novaris intrinsically safe surge protection device has the group IIC T4 certification making it acceptable for use with all gas/air mixtures. Novaris IS surge protection devices provide surge protection on IS circuits only. They do not take the place of the IS barrier.



For complete technical specifications or to view the certificate of conformity for the Novaris intrinsically safe range of surge protection devices please visit **www.novaris.com.au**.

Intrinsically Safe Signal Line Protectors

Novaris slimline surge protection devices (SPDs) provide surge protection for most twisted pair signaling schemes. Certified to be intrinsically safe Novaris IS SPDs can be installed in the hazardous zone or the field side of the IS barrier. This not only provides protection for the PLC or RTU I/O, it also provides protection for the IS barrier.



The multistage, failsafe design features a high energy gas discharge tube (GDT) as primary protection plus series impedance and secondary components that provide very robust surge protection with high transient suppression offering low let-through voltages.

At only 7mm wide, the Novaris Slimline Signal Line Protectors offer ease of retro-fit installations by conveniently replacing an existing pair of standard 4mm wide terminals with room to spare. This simplifies the installation into marshalling cabinets, greatly reducing down time.

The plug-in design of the Novaris slimline signal line protectors provides simple and rapid replacement and testing - no rewiring needed. This also provides a convenient method of field equipment isolation if required.

Novaris slimline signal line protectors easily clip onto standard 35mm DIN rail. The base provides a secure, low impedance earth connection to the DIN rail, essential for effective surge protection. In addition, screw terminals are also provided for additional earth connection.

Two base options are available for different applications:

G base – connects directly to the mounting DIN rail for the most effective, low impedance earth connection.

EC90 base – connects to the mounting DIN rail through a high-energy gas discharge tube (GDT) connected to provide isolation under normal conditions. During a surge, the GDT provides equipotential bonding between the earth screw terminals and DIN rail earth connection; avoiding possible earth loops.

IS-SL Intrinsically Safe Signal Line Protectors

The IS-SL range provides protection to most analogue and digital interfaces. Commonly analogue inputs and outputs are the most susceptible to damage from surge and transients induced onto the signal lines. The IS-SL range is designed exclusively for low current applications less than 350mA. For applications requiring a higher current rating Novaris recommend the IS-SSP6A range. The Novaris IS-SL range can are suitable for both input and output applications.

		IS-SL7V5	IS-SL18	IS-SL36	IS-SL420
Electrical Specifications					
Maximum continuous voltage (DC)	U_0	7V	16V	34V	34V
Maximum continuous voltage (AC)	U_c	5V	11V	24V	24V
Primary GDT rating 8/20µs		10kA			
Maximum load current	I_L	350mA			30mA

Signal Type	Marshalling Cubicle#	Field / Remote#
0-5V analogue	IS-SL7V5-G	IS-SL7V5-EC90
0-10V analogue	IS-SL18-G	IS-SL18-EC90
5V digital	IS-SL7V5-G	IS-SL7V5-EC90
12V digital	IS-SL18-G	IS-SL18-EC90
24V digital	IS-SL36-G	IS-SL36-EC90
0-20mA analogue	IS-SL36-G / IS-SL420-G	IS-SL36-EC90 / IS-SL420-EC90
4-20mA analogue	IS-SL36-G / IS-SL420-G	IS-SL36-EC90 / IS-SL420-EC90

High-speed data applications are catered for with the IS-SL485 and IS-SLDH models feature operation up to 20MHz. The IS-SL485 is ideal for applications such as RS485 serial communication and protocols such as Profibus and CAN. Similarly IS-SLDH is designed for other high speed protocols such as Data Highway and Data Highway Plus. Typically, these models are used in conjunction with the EC90 base to provide isolation from earth.

		IS-SL485	IS-SLDH	IS-SL-RTD
Electrical Specifications				
Maximum continuous voltage (DC)	U_0	7V	34V	7V
Maximum continuous voltage (AC)	U_c	5V	24V	5V
Primary GDT rating 8/20µs		10kA		
Maximum load current	I_L	500mA		350mA

Signal Type	Marshalling Cubicle#	Field / Remote#
RS485	IS-SL485-G	IS-SL485-EC90
Profibus DP	IS-SL485-G	IS-SL485-EC90
CAN	IS-SL485-G	IS-SL485-EC90
Data Highway	IS-SLDH-G	IS-SLDH-EC90
RTD applications	IS-SL-RTD-G	IS-SL-RTD-EC90

For complete and updated technical specification sheets go to www.novaris.com.au

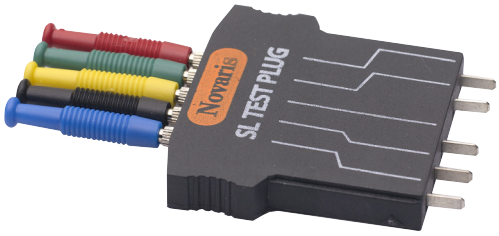
IS-SSP6A Intrinsically Safe Series Surge Protectors

The IS-SSP6A intrinsically safe series surge protectors complement the IS-SL range for applications of load currents up to 6A. Typical applications may include power supplies, digital outputs and other low voltage requirements up to 6A. The design of the Novaris IS-SSP6A range include high energy metal oxide varistors. The series connected design eliminates the effect of connection leads inductance encountered with shunt connected surge protectors.

		IS-SSP6A-14	IS-SSP6A-26	IS-SSP6A-38
Electrical Specifications				
Maximum continuous voltage (DC)	U_0	14V	26V	38V
Maximum continuous voltage (AC)	U_c	11V	20V	30V
Maximum discharge current 8/20µs	I_{max}	9.6kA		
Maximum load current	I_L	6A		

Signal Type	Marshalling Cubicle#	Field / Remote#
12VDC	IS-SSP6A-14-G	IS-SSP6A-14-EC90
24VDC	IS-SSP6A-26-G	IS-SSP6A-26-EC90
36VDC	IS-SSP6A-38-G	IS-SSP6A-38-EC90

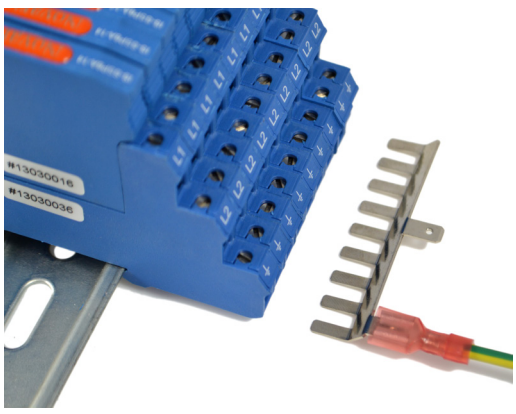
Accessories



SL Test Plug

SL-TEST

Novaris SL Test Plug provides access to field and equipment terminals plus earth via mini banana sockets mounted in the top face of the test plug. It provides a convenient way to connect to these lines for testing. This is defined as a simple apparatus.



SL Earth Comb

SL-COMB

The Novaris SL Earth Comb provides a convenient means of connecting the common points of SL series surge protectors. The earth comb contains nine contacts, allowing banks of 8 SL protectors to be commoned together with one overlapping contact. The earth comb can be cut to provide a lesser number of points. The earth comb contains two 6.3mm spade terminals.

Typical application

For complete and updated technical specification sheets go to www.novaris.com.au

Novaris Intrinsically Safe Instrument Protectors

Novaris threaded instrument protectors provide surge protection for most twisted pair signalling schemes. Certified to be intrinsically safe Novaris threaded instrument protectors are designed to be installed directly at the field equipment providing protection against induced surges and transients.

The multistage design provides a high energy gas discharge tube (GDT) as primary protection for common mode disturbances, commonly associated with lightning strikes and power system earth faults and a secondary metal-oxide varistor clamping stages across the signal lines. This combination provides very robust surge protection with high transient suppression and low let-through voltages where needed. In addition protection is provided for cable screens which may be open circuit at the instrument.

All Novaris IS instrument protectors are unique in that comply with the IEC 500V insulation breakdown requirement. This obviates the need for an additional earth bonding conductor between the instrument and the IS barrier earth.

The threaded enclosure provides an easy installation by directly screwing into a free cable entry on the instrument. Common thread types such as M20 x 1.5, ½" NPT and ¾" NPT threads are accommodated for. Other threads are available by request. All Novaris threaded instruments are certified intrinsically and their enclosures explosion proof so may be installed in Ex d rated instruments without loss of

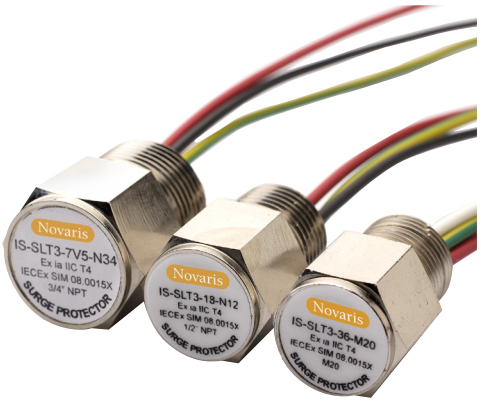
Thread Type	Thread Code
M20 x 1.5	-M20
1/2" NPT	-N12
3/4" NPT	-N34

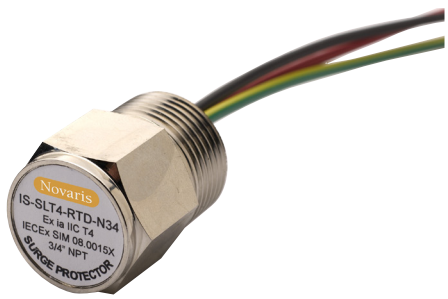
IS-SLT1 Intrinsically Safe Instrument Protector

The IS-SLT1 range provides protection for most single twisted pair signalling schemes. The units are shunt connected to the terminals and hence do not interrupt or interfere with the signal. Therefore, the IS-SLT1 range can be adapted to most instruments. Typical applications are analogue and digital instrument transmitters.

		IS-SLT1-7V5	IS-SLT1-18	IS-SLT1-36
Electrical Specifications				
Maximum continuous voltage (DC)	U_0	7V	16V	34V
Maximum continuous voltage (AC)	U_c	5V	11V	24V
Primary GDT rating 8/20µs		10kA		

Signal Type	Novaris Product
0-5V analogue	IS-SLT1-7V5
0-10V analogue	IS-SLT1-18
5V digital	IS-SLT1-7V5
12V digital	IS-SLT1-18
24V digital	IS-SLT1-36
0-20mA analogue	IS-SLT1-36
4-20mA analogue	IS-SLT1-36





IS-SLT3 Intrinsically Safe Instrument Protector

The IS-SLT3 range provides protection to most three-wire signalling schemes. The units are shunt connected to the terminals and hence do not interrupt or interfere with the signal. Therefore, the IS-SLT3 range can be adapted to most instruments. Applications may include instruments which are field powered with a single wire control signal.

In addition, the IS-SLT4-RTD is specifically designed for resistive temperature detectors (RTD) such as PT100 types. This unit caters for all two, three and four wire RTD systems.

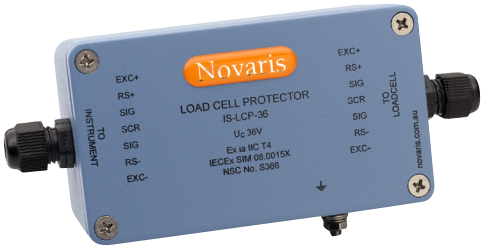
		IS-SLT3-7V5	IS-SLT3-18	IS-SLT3-36	IS-SLT4-RTD
Electrical Specifications					
Maximum continuous voltage (DC)	U_0	7V	16V	34V	7V
Maximum continuous voltage (AC)	U_c	5V	11V	24V	5V
Primary GDT rating 8/20µs		10kA			

For complete and updated technical specification sheets go to **www.novaris.com.au**

SLT-Y Adapter

Where a field instrument has no free cable entry Novaris can supply a Y-piece adapter to accommodate the threaded instrument protector and cable gland. The SLT-Y is available in the same thread types as the threaded instrument protectors.

Thread Type	Adapter Type
M20 x 1.5	SLT-Y-M20
1/2" NPT	SLT-Y-N12
3/4" NPT	SLT-Y-N34



IS-LCP Intrinsically Safe Load Cell Protector

The IS-LCP provides protection for both 4-wire and 6-wire loadcells as well as the measuring instrument. The LCP is contained within an IP65 enclosure, or alternatively it may be supplied as an assembled PCB. As well as having IS certification the IS-LCP is certified for installation into a loadcell circuit without affecting calibration.

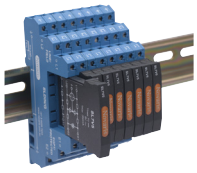
		IS-LCP-18	IS-LCP-36	IS-LCP-18-PCB	IS-LCP-36-PCB
Electrical Specifications					
Maximum continuous voltage (DC)	U_0	18V	36V	18V	36V
Maximum discharge current 8/20µs	I_{max}	250A			
Lines protected		4 or 6			

For complete and updated technical specification sheets go to **www.novaris.com.au**

Power Protection - Surge Diverters

Power Protection - Surge Filters

Process Control Protection



LAN & CCTV Protection

Coaxial Protection

Telephone Protection

Novaris provides a wide range of surge protection solutions to suit most industrial applications. All Novaris products comply with the relevant International and Australian standards.

We manufacture shunt connected surge diverters (one port SPDs) and series connected surge filters (two port SPDs) that may be configured for any LV power distribution system worldwide.

Novaris manufactures surge protection devices for signal processing, data transmission, and telecommunications applications.

We specialise in the design, manufacture and installation of specialised protection solutions. With our team of experienced engineers we can provide advice across a wide range of industries.

For a complete listing of all Novaris products refer to **The Novaris Product Handbook** or visit **www.novaris.com.au**.

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

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