



# IECEx TEST REPORT COVER



ExTR Reference Number.....:	AU/ExTC/ExTR23.0047/00	
ExTR Free Reference Number .....	REP23064-01 (Job 23064)	
Compiled by + signature (ExTL) .....	Ajay Maira	<i>Ajay Maira</i>
Reviewed by + signature (ExTL).....:	Matthew Hughes	<i>Matthew Hughes</i>
Endorsed by + signature (ExCB) ...:	Justin Gavranich	<i>[Signature]</i>
Date of issue .....	2023-10-22	
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Ex Certification Body (ExCB) .....	Ex Testing & Certification Pty. Ltd.	
Address .....	1/30 Kennington Drive, Tomago NSW 2322, Australia	
Applicant's name.....:	Novaris Pty Ltd	
Address .....	72 Browns Road, Kingston TAS 7050. Australia	
Standards associated with this ExTR package .....	IEC 60079-0:2011; IEC 60079-11:2011	
Clauses considered .....	All clauses considered	
Test Report Form Number .....	ExTR Cover_10 (released 2022-10) QMA-HAE-08-510 (released 2022-11-16)	
Related Amendments, Corrigenda or ISHs .....	Refer to the attached reports	
Test item description.....:	Intrinsically Safe Surge Protectors	
Model/type reference .....	See equipment description	
Code (e.g. Ex _ II_ T_).....:	Ex ia IIC T4	
Rating.....:	See equipment description	

<b>ExTR Package Contents</b>
Assembled ExTR documents and Additional reference material:
IECEx Test Report Cover
IECEx Test Report Addendum: IEC 60079-0:2011 and IEC 60079-11:2011

Manufacturer's name .....	Novaris Technologies (M) Sdn Bhd
Address .....	No.15, 2nd floor, Jalan Tembaga SD5/2, Sri Damansara Industrial Park, Kuala Lumpur, Selangor 52200, Malaysia
Trademark .....	
Certificate No. (optional) .....	IECEX ITA 14.0011X-2
QAR Reference No. (optional) .....	AU/ITA/QAR14.0002/08
<b>Particulars: Test item vs. Test requirements</b>	
Classification of installation and use .....	: Fixed
Ingress protection .....	: IP20
Rated ambient temperature range (°C).....	: -20°C < Tamb < +40°C
Rated service temperature range (°C) for Ex Components .....	: Not applicable
<b>General remarks:</b>	
The test results presented in this ExTR package relate only to the item or product tested.	
<ul style="list-style-type: none"> <li>▪ "(See Attachment #)" refers to additional information appended to the ExTR package.</li> <li>▪ "(See appended table)" refers to a table appended to the ExTR package.</li> <li>▪ Throughout this ExTR package, a point is used as the decimal separator.</li> <li>▪ Where the term "N/A" appears in any part of an ExTR package, it indicates that the associated issue was considered "Not applicable" to the involved evaluation.</li> <li>▪ In accordance with IECEx 02, a Receiving ExCB may request a sample of the Ex equipment and copies of the documentation referred to in an ExTR Cover.</li> </ul>	
The technical content of this ExTR package shall not be reproduced except in full without the written approval of the Issuing ExCB and ExTL.	
ExT&C has NATA accreditation No: 20185	
<b>Use of uncertainty of measurement for decisions on conformity (Decision rule):</b>	
No decision rule is specified by the standards associated with this ExTR package, when comparing the measurement result with the applicable limit according to the specification in these standards. The decisions on conformity are made without applying the measurement uncertainty as described in IECEx OD 012 (i.e. "simple acceptance" decision rule, previously known as "accuracy method").	
<b>General product information:</b>	
The surge protectors are installed in intrinsically safe systems to protect equipment and wiring from transients and surges.	
Under normal operating conditions, the devices are not operational and do not affect the system operation.	
<b>IS-SL range:</b> Slimline signal line protectors suitable for process control applications. This range of products are assembled on a single printed circuit board that is fitted in a polyamide case with external connecting pins. The enclosure measures 44mm x 40mm x 6mm.	
<b>IS-SSP6A range:</b> This range of products are assembled on a single printed circuit board that is fitted in a polyamide case with external connecting pins. The enclosure measures 44mm x 40mm x 6mm.	
<b>IS-SLDIN range:</b> Slimline DIN-rail bases to accommodate the IS-SL slimline signal line protectors. Gas Discharge tubes are fitted inside the EC90 bases.	
<b>IS-SLT range:</b> Threaded instrument protectors for transmitter protection. The protector is assembled on a single printed circuit board that is fitted in a hollow stainless steel plug for mounting on an enclosure wall.	

The external thread may be M20, ½" NPT (N12 enclosure), or ¾" NPT (N34 enclosure). The length of the enclosure measures 54mm. The electronics are encapsulated in a two part epoxy resin.

**IS-LCP range:** Load cell protectors suitable for load cell applications. The IS-LCP comes in two variants. Type 1V1 features a single printed circuit board with screw terminals, mounted within an aluminium enclosure with cable gland entries. The printed circuit board and components are encapsulated in a two part epoxy resin leaving only the screw termination points free. The enclosure measures 116mm x 66mm x 55mm. Type 2V1 is a printed circuit board with screw terminal connections and supplied without an enclosure.

The models listed below are covered by this report

Model Range	Model Number	Description
IS-SL	IS-SL7V5	Slimline one-pair signal line protector
	IS-SL18	Slimline one-pair signal line protector
	IS-SL36	Slimline one-pair signal line protector
IS-SL-RTD	IS-SL-RTD	Slimline one-pair RTD protector
IS-SL-485	IS-SL-485	Slimline one-pair RS485 protector
IS-SL-PSTN	IS-SL-PSTN	Slimline one-pair PSTN protector
IS-SSP6A	IS-SSP6A-14	Slimline surface-mount MOV
	IS-SSP6A-26	Slimline surface-mount MOV
	IS-SSP6A-38	Slimline surface-mount MOV
	IS-SSP6A-65	Slimline surface-mount MOV
IS-SLDIN	IS-SLDIN-G	Slimline base module
	IS-SLDIN-EC90	Slimline base module
IS-SLT1	IS-SLT1-7V5-N34	Hazardous location one-pair signal line protector.
	IS-SLT1-18-N34	Hazardous location one-pair signal line protector.
	IS-SLT1-36-N34	Hazardous location one-pair signal line protector.
	IS-SLT1-7V5-N12	Hazardous location one-pair signal line protector.
	IS-SLT1-18-N12	Hazardous location one-pair signal line protector.
	IS-SLT1-36-N12	Hazardous location one-pair signal line protector.
	IS-SLT1-7V5-M20	Hazardous location one-pair signal line protector.
	IS-SLT1-18-M20	Hazardous location one-pair signal line protector.
IS-SLT3	IS-SLT3-7V5-N34	Hazardous location three-wire signal line protector.
	IS-SLT3-18-N34	Hazardous location three-wire signal line protector.
	IS-SLT3-36-N34	Hazardous location three-wire signal line protector.
	IS-SLT3-7V5-N12	Hazardous location three-wire signal line protector.
	IS-SLT3-18-N12	Hazardous location three-wire signal line protector.
	IS-SLT3-36-N12	Hazardous location three-wire signal line protector.
	IS-SLT3-7V5-M20	Hazardous location three-wire signal line protector.
	IS-SLT3-18-M20	Hazardous location three-wire signal line protector.
IS-SLT4-RTD	IS-SLT4-RTD-N34	Hazardous location two-pair signal line protector.
	IS-SLT4-RTD-N12	Hazardous location two-pair signal line protector.
	IS-SLT4-RTD-M20	Hazardous location two-pair signal line protector.
IS-LCP	IS-LCP-18	Loadcell Protector
	IS-LCP-36	Loadcell Protector
	IS-LCP-18-PCB	Loadcell Protector (sans enclosure)
	IS-LCP-36-PCB	Loadcell Protector (sans enclosure)

**Details of change (applicable only when revising an existing ExTR package):**

The equipment was earlier issued with report AU/ITA/ExTR14.0017/01 (TUV Job 1113006873) for compliance to all the Clauses of the Standards mentioned in the Report Cover.

Internal circuit designs of the top cassette modules for the models IS-SL and SSP6A (available in different voltage options) have been modified and simplified, with the earlier TVS devices between the data lines

and the GND removed. Existing base units remain unchanged. These changes have been considered in this report.

Earlier models IS-SL-DH, IS-SL-i, SL420i have been obsoleted.

All other compliance information provided in the original report remains current.

**Copy of Marking Plate:**



**Details regarding ‘trade agent’ / ‘local assembler’ application in accordance with OD 203:**

Not applicable

**Testing not fully performed by ExTL staff at the above ExTL address:**

Not applicable

**National differences considered as part of this evaluation:**

Not applicable

**“Specific Conditions of Use” / “Schedule of Limitations”:**

- a) The following parameters shall be taken into account when interconnecting in an intrinsically safe system:

Model Range	U <sub>i</sub> (V)	I <sub>i</sub> (A)	P <sub>i</sub> (W)	C <sub>i</sub> (nF)	L <sub>i</sub> (uH)
IS-SLnn	30	1.639	1.3	0	0
IS-SL-RTD	30	1.639	1.3	0	0
IS-SL-485	30	1.639	1.3	0	0
IS-SL-PSTN	30	1.639	1.3	0	0
IS-SSP6A	30	1.639	2.2	0	0
IS-SLDIN	30	3.0	2.4	0	0
IS-SLT1	30	3.0	2.2	0.2	0.2
IS-SLT3	30	3.0	2.2	0.2	0.2
IS-SLT4	30	3.0	2.2	0.2	0.2
IS-LCP	30	3.0	2.4	0	0

- b) In the practical use of the Surge protectors, when the earth wire is connected to the earth terminals, then care shall be taken that the intrinsically safe circuit of the surge protector is now not isolated from the earth under fault considerations. Either the signals shall be derived from galvanically isolated associated equipment, or bonding shall be applied between the associated equipment earth and the Surge Protector earth. The equipment has been marked with an ‘X’ to indicate that IEC 60079-11 Clause 6.3.13 is not in compliance. Manufacturer’s documentation must be followed to ensure correct installation.
- c) In addition, the following model specific conditions apply:
- IS-SL, IS-SSP6A: This series of protectors are marked with an “X” as they do not satisfy the requirement for avoidance of build-up of electrostatic charge in accordance with clause 7.4.2 of 60079-0:2011. Manufactures documentation must be followed to ensure that at installation, the risk from electrostatic discharge is minimized.
  - IS-LCP: This series of protectors are marked with an “X” as they do not satisfy the requirements for aluminium content in accordance with clause 8.3 of IEC 60079-0:2011. Account of this shall be taken on installation to avoid ignition hazards due to impact or friction. The equipment is marked with an “X” as it also does not satisfy the requirements of the dielectric strength test in accordance with clause 6.3.13 of IEC 60079-11:2011.

**Routine tests:**

Nil

**Date(s) of performance for all testing:**

Where tests were applicable to this report, refer to appendices of this report for dates of performance of tests.

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<b>Technical Documents</b>				
Title:	Drawing No.:	Pages	Rev. Level:	Date:
<b>IS-SL range</b>				
<b>Models IS-SLnn, IS-SL-RTD, IS-SL-485</b>				
*IS-SL label placement	0004-A43V3	1	-	2023-09-05
*SL-xxx (Schematic and BOM information)	0004-E5V2	1	-	2016-12-22
IS-SL Enclosure and Pin Detail	0610049R-10V1	1	1	2008-04-30
*IS-SL (Mech Assembly and PCB layouts)	0004-E5V2a	4	-	2023-09-06
<b>IS-SSP6A</b>				
*IS-SSP6A label placement	0031-A32V2	1	-	2023-09-06
*SSP6A (Schematic and Bill of Materials)	0072-E1V2	2	-	2023-07-03
*IS-SSP6A (Mech Assembly and PCB layouts)	0072-E1V2a	4	-	2023-09-06
<b>Model IS-SLDIN</b>				
IS-SLDIN-xxxx	0610052R-1V1	1 of 1	2	2013-11-22
IS-SL SLIMLINE SURGE PROTECTOR	0610049R-11V1	1	1	2008-04-30
Novaris IS-SLDIN-EC90 slimline base	0068-A9V1	1	1.0	2014-06-18
Novaris IS-SLDIN-G slimline base	0068-A8V1	1	1.0	2014-06-18
IS-SLDIN-EC90 BOM	0068-B1V1	1 of 1	-	2014-07-22
<b>IS-SLT</b>				
<b>Model IS-SLTx</b>				
IS-SLT marking placement	0050-A8V1	1 of 1	1.0	2014-06-19
Intrinsically Safe Range Threaded Signal Line Protector User Instructions (Not a Certified document)	0050-D8V1	1 to 2	-	2014-07-31
Intrinsically Safe Range Threaded Signal Line Protector User Instructions (Not a Certified document)	0050-D9V1	1 to 2	-	2014-07-31
<b>Model IS-SLT1</b>				
IS-SLT1-xxx-xxx Schematic	0050-E3V1	1 of 1	0	2014-02-19
IS-SLT1-xxx-xxx BOTTOM LAYER	0610131R-1V3	4	1	2009-12-10
IS-SLT1 BOM	0050-B3V1	1 of 1	-	2014-07-16
<b>Model IS-SLT3</b>				
IS-SLT3-xxx-xxx Schematic	0050-E4V1	1 of 1	0	2014-02-19
IS-SLT3-xxx-xxx TOP LAYER	0610132R-1V4	4	1	2009-12-10
IS-SLT3-xxx-xxx BOTTOM LAYER	0610132R-1V4	5	1	2009-12-10
IS-SLT3 BOM	0050-B1V1	1 of 1	-	2014-07-16
<b>Model IS-SLT4</b>				
SLT4-xxx-xxx PCB	0050	1 of 1	2V1	2014-02-18

IS-SLT4-RTD-xxx BOTTOM LAYER	0701004R-1V3	3	1	2009-12-10
IS-SLT4-RTD BOM	0050-B2V1	1 of 1	-	2014-07-16
<b>SLT Enclosure</b>				
SLTx-xxx-M20 Housing	0050-M1V2	1 of 1	-	2013-12-18
IS-SLTx-xxx-N12 Enclosure	0702016-4V2	1 of 1	-	2008-12-16
IS-SLTx-xxx-N34 Enclosure	0702016-3V2	1 of 1	-	2008-12-16
<b>IS-LCP</b>				
<b>IS-LCP Drawings</b>				
LCP-xx-PCB ( <i>The same schematic for the 1V1 and 2V1 version</i> )	0054-E1V1	1	1	2012-03-13
Load Cell Protectors User Instructions (Not a Certified document)	0054-D3V1	1 to 2	-	2014-06-26
IS-LCP BOM	0054-B1V1	1 of 1	-	2014-07-16
<b>Model IS-LCP-1V1</b>				
IS-LCP-XX (Mechanical drawing)	0610134R-1V1	1	1	2007-03-09
IS-LCP-xx	0610134R-1V1	1	1	2007-05-11
IS-LCP-xx-x	0610134R-1V1	2	1	2007-03-15
IS-LCP-xx-x	0610134R-1V1	3	1	2007-03-15
IS-LCP-xx-x	0610134R-1V1	4	1	2007-03-15
IS-LCP-xx-x	0610134R-1V1	5	1	2007-03-15
IS-LCP-xx-x	0610134R-1V1	6	1	2007-03-15
IS-LCP label placement	0054-A6V1	1	-	2014-06-23
<b>Model IS-LCP-2V1</b>				
IS-LCP-xx-PCB	0610134-2V1	1	1	2007-05-11
IS-LCP-xx-PCB	0610134-2V1	2	1	2007-03-15
IS-LCP-xx-PCB	0610134-2V1	3	1	2007-03-15
IS-LCP-xx-PCB	0610134-2V1	4	1	2007-03-15
IS-LCP-xx-PCB	0610134-2V1	5	1	2007-03-15
IS-LCP-18-PCB artwork	IS-LCP-18-PCB	1	4.0	2014-06-17
IS-LCP-36-PCB artwork	IS-LCP-36-PCB	1	4.0	2014-06-17
<b>User instructions</b>				
*Intrinsically Safe Range Slimline Signal Line Protectors IS-SL and IS-SSP6A User Instructions	0004-D10 V4	4	-	2023-09-26

Note: An \* is included before the title of documents that are new or revised.

<b>Reference Documents</b>				
<b>Title:</b>	<b>Drawing No.:</b>	<b>Pages</b>	<b>Rev. Level:</b>	<b>Date:</b>
*Product Datasheet IS-SL36-G Intrinsically Safe Protectors	NDS39.411	2	-	2023-09-27
*Product Datasheet IS-SSP6A-26-G Intrinsically Safe Protectors	NDS1.415	2	-	2023-09-27

*Note: An \* is included before the title of documents that are new or revised.*



**IECEx TEST REPORT ADDENDUM**



ExTR Reference Number .....	See Report Cover
ExTR Free Reference Number.....	See Report Cover
Compiled by + signature (ExTL).....	See Report Cover
Reviewed by + signature (ExTL) .....	See Report Cover
Date of issue.....	See Report Cover
Ex Testing Laboratory (ExTL) .....	Ex Testing & Certification Pty Ltd
Address .....	1/30 Kennington Drive, Tomago NSW 2322, Australia
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Address .....	See Report Cover
Standards .....	See Report Cover
Test Report Form Number .....	ExTR Addendum_3 (released 2018-02) QMA-HAE-08-511 (released 2018-02-06)
Related Amendments, Corrigenda or ISHs.....	None applicable

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**Possible test case verdicts:**

- test case does not apply to the test item..... :N / A
- test item does meet the requirement..... :Pass

**General remarks:**

The test results presented in this ExTR Addendum relate only to the item or product tested, and are only valid when considered together with the related Ex Test Report that was previously issued, along with any previously issued ExTR Addendums for the same item or product.

Only clauses and manufacturer's documents impacted by this document are detailed.

- "(see Attachment #)" refers to additional information appended to this document.
- "(see appended table)" refers to a table appended to this document.
- Throughout this document, a point is used as the decimal separator.

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Clause	Requirement – Test	Result – Remark	Verdict
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The surge protectors comprise a variety of clamping devices to shunt undesirable transients to earth to protect equipment in Intrinsically Safe systems. The equipment contains no infallible voltage or current limitation or infallible segregation distances on which the type of protection depends.

The new design for the IS-SL range provides tranzorb between the datalines (J1-J2), but no tranzorb or varistors between datalines to the earth reference (J1-J5, J2-J5). It retains a gas discharge tube between J1-J5, J2-J5. The tranzorb in the bridge provides the close clamping L-L required, whilst also passing the high frequency signals common with the more modern types of field equipment/transmitters. Line to Line capacitance is minimised with this configuration. The line resistors are to provide coordination between the GDT and the tranzorb. The maximum line current for the revised IS-SL is the same as the existing one at 250mA. The line resistors are now being standardised at  $3.9\Omega$  /  $8.2\Omega$ . The resistors have changed to wire wound resistors as these handle current surges better than metal film.

The Model IS-SL-PSTN has now the same design as the other models in the IS-SL range except that the tranzorb is selected as 200V.

The new design for the IS-SSP6A uses several MOV's in parallel across the data lines and uses a gas discharge to the common reference line.

Only those clauses of the Standards that were affected by the changes in the design of the equipment have been considered in the report below. All other compliance requirements remain unchanged from the original report AU/ITA/ExTR14.0017/01 (TUV Job 1113006873)

IEC 60079-0:2011			
5.3	Maximum surface temperature	For the new design for the IS-SL range and the IS-SSP6A, the changes in the internal components were examined for the temperature under fault conditions. See IEC 60079-11 report Clause 5.6.1	Pass
24	Documentation	The revised documentation showing the new design has been provided and listed in the documentation list in the report cover. Documentation pertaining to the obsoleted models IS-SL-DH, IS-SL-i, SL420i has been removed.	Pass
29	Marking	For the new design for the IS-SL range and the IS-SSP6A the marking plate has been revised to the extent to show the new internal component connection diagram. There were no changes to the model number, Ex marking code, certification numbers.	Pass

Clause	Requirement – Test	Result – Remark	Verdict
30	Instructions	<p>The instructions are in 2 parts:</p> <ul style="list-style-type: none"> <li>- a general user guide '0004-D10V4 IS-SL and IS-SSP6A Installation manual' for all IS-SL and IS-SSP6A surge protectors on their method of connection, earthing. #5.4 in the document provides information of the input safety parameters by referring to the certificate IECEx ITA 14.0011X issued for this equipment. Due to the 'X' in the certificate, the User is required to apply the information in the certificate during installation and use. The user guide has been listed in the 'Technical Documents' table in the report cover.</li> <li>- the Product Datasheet (example NDS39.411) that includes Ex code, Certificate number, and the intrinsic safety parameters. Examples of the Product Datasheet have been included in the 'Reference Documents' table in the report cover.</li> </ul>	Pass

IEC 60079-11:2011			
5.5	Spark ignition compliance	<p>For the new design for the IS-SL range and the IS-SSP6A, there are no changes that result in increase of voltage or current. There are no energy storing components. The intrinsic safety connection parameters remain the same as in the earlier report.</p> <p>The Model IS-SL-PSTN has now the same design as the other models in the IS-SL range except that the tranzorb is selected as 200V. This design allows the <math>U_i</math>, <math>C_i</math> to be revised to 30V, 0nF when compared to the earlier design of this model.</p>	Pass
5.6.1	Thermal ignition compliance	For the new design for the IS-SL range and the IS-SSP6A, the changes in the internal components were examined for the temperature under fault conditions.	Pass
5.6.2	Temperature for small components for Group I and Group II	<p>For the new design for the IS-SL range and the IS-SSP6A, the temperature of the internal components were examined under fault conditions.</p> <ul style="list-style-type: none"> <li>- For the IS-SL range, all the electronic components used in the construction of the equipment have a surface area greater than 20mm<sup>2</sup>. Therefore, at <math>P_i</math> of 1.3W, these comply with the temperature classification of T4 in a 40°C ambient.</li> <li>- For the IS-SSP6A range, the electronic components used in the construction of the equipment have a surface area greater than 20mm<sup>2</sup>. The smallest component is V5 (5.7mm x 5.00mm x 2.0mm). Evaluation of a component that is smaller in surface area is 2512 package resistor with a known temperature rise co-efficient of 50K/W. With a <math>P_i</math> specified as 2.2W, the temperature is assessed under maximum power dissipation as 150°C in a 40°C ambient. This complies with T4 classification for components smaller than 1000mm<sup>2</sup></li> </ul>	Pass

5.6.4	Tracks on printed circuit boards for Group I and Group II	<p>For the new design for the IS-SL range and the IS-SSP6A, the temperature of tracks were evaluated as follows:</p> <ul style="list-style-type: none"> <li>- For the IS-SL range, the printed circuit board is FR4 1mm thick, double sided, copper layer 70um (2 oz) (doc 0004-E5V2a). Since the power in the circuit has been specified as Pi 1.3W, this is suitable for T4 with no further consideration necessary.</li> <li>- For the IS-SSP6A range, the printed circuit board is FR4 1.0mm thick, double sided, copper layer 70um (2 oz).and tracks do not pass under components (doc 0072-E1V2a). Hence the divisor when applying Table 4 of IEC 60079-11:2011 is 1.385. The printed board tracks were measured as greater than 2.0mm. are considered satisfactory at <math>9.9A / 1.385 = 7.148A</math>, which exceeds the available <math>1.639A</math> for T4 temperature classification.</li> </ul>	Pass
6.3	Separation distances	The equipment does not rely on any segregation distances for intrinsic safety purposes. No further consideration is necessary	Pass
7.1	Components on which intrinsic safety depends	<p>The equipment does not rely on any safety components for voltage, current, power limitation.</p> <p>Full power is assumed across all internal components for thermal assessments</p>	Pass
12	Marking	There are no changes in the marking plate that affect the parameters or conditions of safe use.	Pass