1 **EU-TYPE EXAMINATION CERTIFICATE**

2 Component intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: **Sira 05ATEX2274U** Issue: **7**

4 Component: **Overmoulded Fuse Types:**
Surface mounted ISF001, ISF003, ISF004 and ISF005
Axial leaded ISF011 and ISF012
Radial leaded ISF021/F, ISF021/T and ISF021U/T

5 Applicant: **IS Fusion Limited**

6 Address: Unit 8, Mile Oak Industrial Estate, Maesbury Road, Oswestry, Shropshire SY10 8GA, UK

7 This component and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 CSA Group Netherlands B.V., Notified Body Number 2813 in accordance with Articles 17 and 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this component has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of a component intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 60079-0:2012/A11:2013 EN 60079-11:2012 EN 60079-26:2007

10 The sign 'U' is placed after the certificate number to indicate that the product assessed is a component and may be subject to further assessment when orporated into equipment. Any limitations of use are listed in the schedule to this certificate.

11 This EU-Type Examination Certificate relates only to the design and construction of the specified component. If applicable, further requirements of this Directive apply to the manufacture and supply of this component.

12 The marking of the component shall include the following:

II 1 G
I M1
II (1) G
I (M1)
Ex ia IIC Ga
Ex ia I Ma
Ex [ia] (Ga)
Ex [ia] (Ma)

The marking depends on the product type, refer to Description of Component.

Project Number 80021032

Signed: J A May

Title: Director of Operations

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13 **DESCRIPTION OF COMPONENT**

ISF001, ISF003, ISF004 and ISF005

ATEX Marking:	II 1 G I M1
Certification code:	Ex ia IIC Ga Ex ia I Ma
Ambient range:	-50°C to +93°C (I_N = 2 A max) -50°C to +80°C (I_N = 3 A max)
Identifying marks:	These fuses either bear no marking or carry a colour code and/or alphanumeric coding that is defined in an associated datasheet.

The **ISF001** is a range of overmoulded 1206 or smaller surface mounted fuses nominally sized 5.6 mm (L) x 3.8 mm (W) x 3.2 mm (H) with at least 0.6 mm of solid insulation to the free surface intended for use within Intrinsically Safe Equipment. They are suitable for voltages up to 30 V uncoated or 60 V under coating.

The **ISF003** is a range of overmoulded 0603 or smaller surface mounted fuses nominally sized 5.6 mm (L) x 3.8 mm (W) x 3.2 mm (H) with at least 1 mm of overmoulded solid insulation to the free surface intended for use within Intrinsically Safe Equipment. They are suitable for voltages up to 30 V uncoated or 60 V under coating.

The **ISF004** is a range of overmoulded 0603 or smaller surface mounted fuses nominally sized 5.0 mm (L) x 3.0 mm (W) x 2.2 mm (H) with at least 1 mm of overmoulded solid insulation to the free surface intended for use within Intrinsically Safe Equipment. They are suitable for voltages up to 30 V uncoated or 60 V under coating.

The **ISF005** is a range of overmoulded 0603 or smaller surface mounted fuses nominally sized 4.2 mm (L) x 2.4 mm (W) x 1.8 mm (H) with at least 0.6 mm of overmoulded solid insulation to the free surface intended for use within Intrinsically Safe Equipment. They are suitable for voltages up to 30 V uncoated or 60 V under coating.

The product part numbers are as follows:

ISF00*#/**/$$ - Where: * = Indicates permitted types, either ISF001, ISF003, ISF004 or ISF005
= A single character representing the type of PCB plating
** = A two character code representing the fuse manufacturer
$$ = A variable length string of characters representing the fuse manufacturers part number

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ISF011/*

ATEX Marking:	II 1 G I M1 II (1) G I (M1)
Certification code:	Ex ia IIC Ga Ex ia I Ma Ex [ia] (Ga) Ex [ia] (Ma)
Ambient range:	-50°C to +93°C
Identifying marks:	These fuses bear either a colour code (see table below) and/or alphanumeric coding that is defined in an associated datasheet.

The **ISF011** is a range of overmoulded axial leaded fuses nominally sized 5.9 mm (D) x 12 mm (L) intended for use within either intrinsically safe apparatus or intrinsically safe associated apparatus. They have at least 1 mm of overmoulded solid insulation to the free surface in all directions. The fuses are based on the Littelfuse 242 series with a specified voltage rating of 250 V and breaking capacity of 4000 A. They are suitable for voltages up 250 V uncoated.

The product part numbers and ratings are as follows:

ISF Part No.	Colour Code	Rated current
ISF011/040	Gold	0.040 A
ISF011/050	Red	0.050 A
ISF011/080	Green	0.080 A
ISF011/100	Blue	0.100 A
ISF011/125	Orange	0.125 A
ISF011/160	Violet	0.160 A
ISF011/200	Brown	0.200 A
ISF011/250	White	0.250 A

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ISF012/**

ATEX Marking:	II 1 G I M1 II (1) G I (M1)
Certification code:	Ex ia IIC Ga Ex ia I Ma Ex [ia] (Ga) Ex [ia] (Ma)
Ambient range:	-50°C to +93°C (I_N = 5 A max) -50°C to +80°C (I_N = 7 A max) -50°C to +45°C (I_N = 10 A max)
Identifying marks:	These fuses bear either a colour code (see table below) and/or alphanumeric coding that is defined in an associated datasheet.

The **ISF012** is a range of overmoulded axial leaded fuses nominally sized 5.9 mm (D) x 12 mm (L) intended for use within either intrinsically safe apparatus or intrinsically safe associated apparatus. They have at least 1 mm of overmoulded solid insulation to the free surface in all directions. The fuses are based on the Littelfuse 251 series with a specified voltage rating of 125 V and breaking capacity of 300 A @rated voltage dc and 50A @ rated voltage ac. They are suitable for voltages up 125 V uncoated.

The product part numbers and ratings are as follows:

ISF Part No.	Colour Code	Rated current
ISF012/062	Silver	0.062 A
ISF012/125	White	0.125 A
ISF012/200	Black	0.200 A
SF012/250	Red	0.250 A
ISF012/375	Yellow	0.375 A
ISF012/500	Orange	0.500 A
ISF012/630	Gold	0.630 A
ISF012/750	Green	0.750 A
ISF012/001.	Violet	1.000 A
ISF012/1.25	White/Silver	1.250 A
ISF012/01.5	Black/Silver	1.500 A
ISF012/002.	Red/Silver	2.000 A
ISF012/02.5	Yellow/Silver	2.500 A
ISF012/003.	Orange/Silver	3.000 A
SF012/03.5	Green/Silver	3.500 A
ISF012/004.	Violet/Silver	4.000 A
ISF012/005.	Silver/Silver	5.000 A
ISF012/007.	White/White	7.000 A
ISF012/010.	Black/Black	10.000 A

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ISF021/F and ISF021/T

ATEX Marking:	II 1 G I M1 II (1) G I (M1)
Certification code:	Ex ia IIC Ga Ex ia I Ma Ex [ia] (Ga) Ex [ia] (Ma)
Ambient range:	-50°C to +93°C (I_N = 5 A max) -50°C to +80°C (I_N = 6.3 A max)
Identifying marks:	These fuses bear the certificate number and the full product part number.

The **ISF021/F** is a range of overmoulded radial leaded fuses nominally sized 11 mm (D) x 12 mm (L) intended for use within either intrinsically safe apparatus or intrinsically safe associated apparatus. They have at least 1 mm of overmoulded solid insulation to the free surface in all directions. The fuses are a quick-acting type with a specified voltage rating of 250 V ac/dc and a breaking capacity of 35 A @ rated voltage up to 3.15 A and 10I_n @ 4 A and above. The fuses are intended to be, either soldered directly on PCBs or plugged into a fuse holder for example the Schurter type FMS (250 V). The creepage and clearance distances are suitable for voltages up 90 V uncoated and 250 V under coating.

The **ISF021/T** is a range of overmoulded radial leaded fuses sized 11 mm (D) x 11 mm (L) intended for use within either intrinsically safe apparatus or intrinsically safe associated apparatus. They have at least 1 mm of overmoulded solid insulation to the free surface in all directions. The fuses are a time-lag type with breaking capacity of 35 A @ 250 V ac and 50 A @ 125 Vdc, up to 3.15 A and 10I_n @ 4 A and above. The fuses are intended to be, either soldered directly on PCBs or plugged into a fuse holder for example the Schurter type FMS (250 V). The creepage and clearance distances are suitable for voltages up 90 V uncoated and 250 V under coating.

The product part numbers and ratings are as follows:

ISF021/F/***							
ISF part no.	Rated current	ISF part no.	Rated current	ISF part no.	Rated current	ISF part no.	Rated current
ISF021/F/040	0.040 A	ISF021/F/160	0.160 A	ISF021/F/630	0.630 A	ISF021/F/2.0	2.000 A
ISF021/F/050	0.050 A	ISF021/F/200	0.200 A	ISF021/F/800	0.800 A	ISF021/F/2.5	2.500 A
SF021/F/063	0.063 A	ISF021/F/250	0.250 A	ISF021/F/1.0	1.000 A	ISF021/F/3.15	3.150 A
ISF021/F/080	0.080 A	ISF021/F/315	0.315 A	ISF021/F/1.25	1.250 A	ISF021/F/4.0	4.000 A
ISF021/F/100	0.100 A	ISF021/F/400	0.400 A	ISF021/F/1.6	1.600 A	ISF021/F/5.0	5.000 A
ISF021/F/125	0.125 A	ISF021/F/500	0.500 A				
ISF021/T/***							
ISF part no.	Rated current	ISF part no.	Rated current	ISF part no.	Rated current	ISF part no.	Rated current
ISF021/T/050	0.050 A	ISF021/T/200	0.200 A	ISF021/T/800	0.800 A	ISF021/T/2.5	2.500 A
SF021/T/063	0.063 A	ISF021/T/250	0.250 A	ISF021/T/1.0	1.000 A	ISF021/T/3.15	3.150 A
ISF021/T/080	0.080 A	ISF021/T/315	0.315 A	ISF021/T/1.25	1.250 A	ISF021/T/4.0	4.000 A
ISF021/T/100	0.100 A	ISF021/T/400	0.400 A	ISF021/T/1.6	1.600 A	ISF021/T/5.0	5.000 A
ISF021/T/125	0.125 A	ISF021/T/500	0.500 A	ISF021/T/2.0	2.000 A	ISF021/T/6.3	6.300 A
ISF021/T/160	0.160 A	ISF021/T/630	0.630 A				

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ISF021U/T/***

ATEX Marking:	II 1 G I M1
Certification code:	Ex ia IIC Ga Ex ia I Ma
Ambient range:	-50°C to +93°C
Identifying marks:	These fuses bear the certificate number and the full product part number.

The **ISF021U/T** is a range of overmoulded radial leaded fuses nominally sized 11 mm (D) x 11 mm (L) intended for use within intrinsically safe apparatus. They have at least 1mm of overmoulded solid insulation to the free surface in all directions. The fuses have a breaking capacity of 35 A @ 250 V ac or 63 V dc. The fuses are intended to be, either soldered directly on PCBs or plugged into a fuse holder for example the Schurter type FMS (250 V). The creepage and clearance distances are suitable for voltages up 90 V uncoated.

The product part numbers and ratings are as follows:

ISF Part No.	Rated current
ISF021U/T/044	0.044 A
ISF021U/T/056	0.056 A
SF021U/T/070	0.070 A
ISF021U/T/0875	0.0875 A
ISF021U/T/112	0.112 A
ISF021U/T/140	0.14 A
ISF021U/T/175	0.175 A
ISF021U/T/220	0.220 A
ISF021U/T/280	0.280 A
ISF021U/T/350	0.350 A
ISF021U/T/441	0.441 A
ISF021U/T/560	0.560 A

Variation 1 - This variation introduced the following changes:

i. Following appropriate assessment to demonstrate compliance with the requirements of the latest standards, the documents previously listed in section 9, EN 50014:1997 + Amendments 1 and 2, EN 50020:2002, EN 50284:1999 and EN 50303:2000, were replaced by those currently listed, the markings in section 12 were updated accordingly and the special conditions for safe use were amended to recognise the new standard.
ii. The construction of the ISF001 series fuse was modified.
iii. The following new fuse types were introduced, the description of the component, special conditions for safe use and the conditions of certification being modified to recognise the new products:
   - Surface mounted fuse types ISF003, ISF004 and ISF005
   - Axial leaded fuse types ISF011 and ISF012
   - Radial leaded fuse series types ISF021/F, ISF021/T and ISF021U/T
iv. The lists of certified drawings were rationalised to produce a new definitive version that covers the changes assessed and replaces the previous lists.

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Variation 2 – This variation introduced the following changes:

i. The following changes to the Types ISF021/F, ISF021/T and ISF021U/T were recognised:
   - The maximum length of the connecting leads was specified.
   - The option to use colour in the IS Fusion logo was permitted.

ii. The introduction of the option to use unplated thru holes in the PCBs for the ISF001, ISF003, ISF004 and ISF005 fuses.

Variation 3 – This variation introduced the following changes:

i. T The introduction of new fuse values to extend the range of the ISF011 and ISF012 fuses.

ii. The following changes to the ISF003, ISF004 and ISF005 fuses were recognised:
   - The minimum separation distances through solid insulation between the pads have been reduced. The external pads remain unchanged.
   - The minimum thickness of the PCB has been reduced to increase the maximum height of the fuses under moulded solid insulation.

iii. Standards IEC 60079-0:2011 and IEC 60079-11:2011 have been replaced with equivalent EN 60079-0:2012/A11:2013 and EN 60079-11:2012 standards.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report no.	Comment
0	12 January 2006	R52A13918B	The release of the prime certificate.
1	12 October 2007	R52L16916B	The recognition of the change of company name, previously Pryce Hindmarch Limited.
2	14 October 2011	R25820A/00	The introduction of Variation 1.
3	12 January 2012	R25820A/01	Report no. R25820A/00 was replaced by R25820A/01, the description being modified accordingly.
4	20 September 2012	R25820A/02	Report no. R25820A/01 was replaced by R25820A/02.
5	15 March 2013	R30013A/00	The introduction of Variation 2.
6	15 October 2019	2172	• Transfer of certificate **Sira 05ATEX2274U** from Sira Certification Service to CSA Group Netherlands B.V.. • EC Type-Examination Certificate in accordance with 94/9/EC updated to EU Type-Examination Certificate in accordance with Directive 2014/34/EU. *(In accordance with Article 41 of Directive 2014/34/EU, EC Type-Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Variations to such EC Type-Examination Certificates may continue to bear the original certificate number issued prior to 20 April 2016.)*
7	I27 November 2019	R80021032A	The introduction of Variation

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15 **SPECIAL CONDITIONS FOR SAFE USE**

15.1 The mounting of the fuse shall be such that its creepage and clearance distances comply with table 5 of IEC 60079-11:2011.

15.2 The maximum external surface temperature rises of the fuses are:

- ISF001, ISF003, ISF004, ISF005 = 85 K
- ISF011 = 88.5 K
- ISF012 10A = 149.1 K
- ISF012 up to 7 A = 112.5 K
- ISF012 up to 5 A = 88.5 K
- ISF021 = 85 K

15.3 Due to size limitations, the marking shown on the actual fuses is limited and in some cases there may be no marking at all or it may take the form of a colour code and/or alphanumeric coding. For this reason, the full information is shown on the product packaging label and detailed in the manufacturer's data sheet, therefore, the user/installer shall refer to these items in order to determine the suitability of the particular fuse before use.

15.4 If the ISF011/*** and ISF012 fuses are used for associated apparatus applications, then the user/installer shall use the appropriate Littelfuse data sheets, see table below, to determine the let through current characteristics of the fuse.

ISF011/*** Part Nos.		ISF012/**** Part Nos.	
ISF	Littelfuse	ISF	Littelfuse
ISF011/040	0242.040	ISF012/062	0251.062
ISF011/050	0242.050	ISF012/125	0251.125
ISF011/080	0242.080	ISF012/200	0251.200
ISF011/100	0242.100	SF012/250	0251.250
ISF011/125	0242.125	ISF012/375	0251.375
ISF011/160	0242.160	ISF012/500	0251.500
ISF011/200	0242.200	ISF012/630	0251.630
ISF011/250	0242.250	ISF012/750	0251.750
		ISF012/001.	0251001.
		ISF012/1.25	02511.25
		ISF012/01.5	025101.5
		ISF012/002.	0251002.
		ISF012/02.5	025102.5
		ISF012/003.	0251003.
		SF012/03.5	025103.5
		ISF012/004.	0251004.
		ISF012/005.	0251005.
		ISF012/007.	0251007.
		ISF012/010.	0251010.

Note: The part number of the Littelfuse may include several suffix characters.

16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II** (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.

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