

1 **EU - TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres
Directive 2014/34/EU**

3 EU - Type Examination Certificate **Baseefa02ATEX0211X - Issue 8**
Number:

3.1 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. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.

4 Product: **SD**xxx Series Surge Protection Devices**

5 Manufacturer: **Eaton Electric Limited**

6 Address: **Great Marlings, Butterfield, Luton, Bedfordshire, LU2 8DL**

7 This re-issued certificate extends EC Type Examination Certificate No. Baseefa02ATEX0211X to apply to product designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

8 SGS Fimko Oy, Notified Body number 0598, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

8.1 The original certificate was issued by SGS Baseefa Ltd (UK Notified Body 1180). It, and any supplements previously issued by SGS Baseefa Ltd have been transferred to the supervision of SGS Fimko Oy (EU Notified Body 0598). The original certificate number is retained.

The examination and test results are recorded in confidential Report No. **See Certificate History**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 EN 60079-11:2012

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

11 This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:

⊕ II 1G Ex ia IIC T4 Ga (-30°C ≤ Ta ≤ See Schedule)

SGS Fimko Oy Customer Reference No. **0703**

Project File No. **21/0398**

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13 **Schedule**

14 **Certificate Number Baseefa02ATEX0211X – Issue 8**

15 **Description of Product**

SDxxx Series**

The SD**xxx Series Surge Protection Devices are designed to protect instrumentation and electronic systems from surges and transients conducted through signal cables.

The apparatus comprises a printed circuit board (PCB) upon which are mounted all of the electrical components. The units use two and three terminal gas discharge tubes, diodes, zener diodes, resistors and inductors for operational purposes and may be optionally encapsulated. The PCB is housed within a plastic enclosure with two groups of three terminals (1, 2 & 3 and 4, 5 & 6) at either end of the enclosure, for the connection of the interconnecting cables. An earth shoe is fitted to the apparatus to enable connection of an earth bonding conductor with a cross sectional area of at least 4mm².

The SD**xxx Series comprises SD**X (two wire and earth with Li = 0.22mH) and SD**T3 (three wire and earth with Li = 0.22mH). The apparatus in each of these Series differ only in the operating voltage. The “***” in the apparatus title indicates the nominal voltage the apparatus is designed to work at. For example, a unit marked SD07R has a nominal working voltage of 7V and an operating voltage of 7.5V. The working voltage and operating voltage of the devices are not critical for the safety assessment.

The SD**xxx Series Surge Protection Devices may be located in a hazardous area. For all units the permitted input current reduces as the voltage increases and the different input power limit determines the upper limit on the permitted ambient temperature range. The Surge Protected Devices are passive and therefore the surge protected output parameters are equal to the parameters of the device connected to the field terminals.

The parameters for all of the SD**X and SD**T3 units are:

All SD**X and SD**T3 units are marked Ex ia IIC T4 Ga (-30°C ≤ Ta ≤ See below)

Input: Field Terminals

- U_i = 20V I_i = 260mA
- or U_i = 26V I_i = 175mA
- or U_i = 28V I_i = 140mA
- or U_i = 60V I_i = 65mA
- P_i = 1W (-30°C ≤ Ta ≤ 75°C)
- or P_i = 1.2W (-30°C ≤ Ta ≤ 60°C)
- or P_i = 1.3W (-30°C ≤ Ta ≤ 40°C)

C_i = 0

Li = 0.22mH

Output: Surge Protected Terminals

U_o ≤ U_i

I_o ≤ I_i

P_o ≤ P_i

The surge protected output parameters are equal to the parameters of the device connected to the field terminals.

The parameters for all of the SD**R, SD**R3 and SDrtd units are:-

All the SD**R, SD**R3 and SDrtd. units are marked Ex ia IIC T4 Ga (-30°C ≤ Ta ≤ See Below)

Input: Field Terminals

$$U_i = 60V$$

$$I_i = 260mA$$

$$P_i = 1W \quad (-30^{\circ}C \leq T_a \leq 75^{\circ}C)$$

or $P_i = 1.2W \quad (-30^{\circ}C \leq T_a \leq 60^{\circ}C)$

or $P_i = 1.3W \quad (-30^{\circ}C \leq T_a \leq 40^{\circ}C)$

$$C_i = 0$$

$$L_i = 0$$

Output: Surge Protected Terminals

$$U_o \leq U_i$$

$$I_o \leq I_i$$

$$P_o \leq P_i$$

The surge protected output parameters are equal to the parameters of the device connected to the field terminals.

SDMxxx Series**

The SD**Mxxx Series Surge Protection Devices are based on a module construction and comprise a 'module base' unit which has four options and a plug-in surge 'module insert' which has thirty options. Once the 'module insert' is installed into the 'module base' unit it is retained in place by a locking bar.

The 'module base' unit comprises three input terminals, three output terminals and a printed circuit board, all mounted in an enclosure provided with a mounting slot for the 'module insert' and a conductive foot for mounting on a standard DIN rail. With the exception of the mounting foot, this enclosure provides a degree of protection of at least IP20 for the electrical circuit irrespective of whether the 'module insert' is fitted. A gas discharge tube may be inserted in the connections 3 & 6 to the mounting foot or alternatively this is replaced by a link which directly earths the foot and these components are mounted on the base printed circuit board. The 'module base' unit offers the option of maintaining the signal connections 2 & 5 and 1 & 4 when the 'module insert' is removed or interrupting these connections.

The 'module insert' comprises an encapsulated printed circuit board (PCB) upon which are mounted the electrical components. The modules use two and three terminal gas discharge tubes, diodes, zener diodes, LEDs, resistors and inductors for operational purposes mounted on the module printed circuit board and housed within a plastic module, which when fitted in the 'module base' unit, provides a degree of protection of at least IP20 for the electrical circuit. The 'module insert' is asymmetrical and the PCB edge connector is arranged so that the connections 3 & 6 makes first and breaks last when inserted or removed. Depending on the module two plug in external links may be available to disconnect the signal connections 2 & 5 and 1 & 4.

The SD**Mxxx Series Surge Protection Devices are available in a number of differing configurations and operating voltages. The "***" in the apparatus title indicates the nominal voltage the apparatus is designed to work at. For example, a unit marked SD07Mxxx has a nominal working voltage of 7V and an operating voltage of 7.5V. The differing configurations, working voltage and operating voltage of the device are not critical for the safety assessment.

The SD**Mxxx Series Surge Protection Devices may be located in a hazardous area. For all units the permitted input current reduces as the voltage increases and the different input power limit determines the upper limit on the permitted ambient temperature range. The Surge Protected Devices are passive and therefore the surge protected output parameters are equal to the parameters of the device connected to the field terminals.

It is intended that the 'module base' and the 'module insert' are combined before being supplied for installation and if the 'module insert' fails in service it may be easily replaced by an identical unit. However since the differing configurations, working voltage and operating voltage of the assembly are not critical for the safety assessment it is not significant if a different 'module insert' is fitted or if the 'module base' is installed without a 'module insert.'

All SD**Mxxx Series Surge Protection Devices are marked Ex ia IIC T4 Ga. For the Ambient Temperature limits, see below:

Input: Field Terminals:

- $U_i = 20V$ $I_i = 260mA$
- or $U_i = 26V$ $I_i = 175mA$
- or $U_i = 28V$ $I_i = 140mA$
- or $U_i = 60V$ $I_i = 65mA$
- or $U_i = 75V$ $I_i = 40mA$
- $P_i = 1W$ $(-30^{\circ}C \leq T_a \leq 75^{\circ}C)$
- or $P_i = 1.2W$ $(-30^{\circ}C \leq T_a \leq 60^{\circ}C)$
- or $P_i = 1.3W$ $(-30^{\circ}C \leq T_a \leq 40^{\circ}C)$

$C_i = 0$

$L_i = 0.22mH$ (All SD**Mxxx units are treated as if $L_i = 0.22mH$ irrespective of if L1 and L2 are fitted.)

Output: Surge Protected Terminals:

$U_o \leq U_i$

$I_o \leq I_i$

$P_o \leq P_i$

The surge protected output parameters are equal to the parameters of the device connected to the field terminals.

The safe use of the SD**Mxxx range of Surge Protection Devices is not dependent upon the nominal working voltage, but on the combination of input voltage and current from a certified intrinsically safe source. To accommodate the SD75Mxxx Series Surge Protection Device, the existing input parameters, which are applicable to all SD**Mxxx units within the range, are extended by the addition the higher combination of $U_i = 75V$ and $I_i = 40mA$. The full Modular Range is shown below:

Modular Options Only						Model
SD						
	VV					Nominal Working Voltage 07V, 16V, 32V, 55V & 75V
		M				Modular
			F			Fuse
				D		Disconnect Links fitted for maintenance Not now available with "Normally Off with Failure On" option.
					L	LED "Normally Off with Failure On"

Module Insert Options

Working Voltage 7V	Working Voltage 16V	Working Voltage 32V	Working Voltage 55V	Working Voltage 75V	Series Impedance	Disconnect Links	LED
SD07MXX	SD16MXX	SD32MXX	SD55MXX		<0.5Ω		
SD07MXL	SD16MXL	SD32MXL	SD55MXL	SD75MXL	<0.5Ω		Fitted
SD07MDX	SD16MDX	SD32MDX	SD55MDX		2-2.4 Ω	Fitted	
SD07MFX	SD16MFX	SD32MFX	SD55MFX		2-2.4 Ω	Disconnect Fuse Fitted	

Module Base Options

'Module Base' Type	GDT connects 3 & 6 to the mounting foot	Maintains the signal connections 2 & 5 and 1 & 4 with 'module insert' removed
SDBE-BCN	Not fitted	Maintains the signal connections, with insert removed
SDBE-BDN	Not fitted	Disconnects signal connections, with insert removed
SDBE-BCG	Fitted	Maintains the signal connections, with insert removed
SDBE-BDG	Fitted	Disconnects signal connections, with insert removed

16 Report Number

See Certificate History

17 Specific Conditions of Use

1. The Plastic enclosure may present an electrostatic risk and must not be rubbed in service.
2. The range of SD**xxx Series Surge Protection Devices will not meet the 500V insulation requirements to earth, therefore suitable precautions must be taken when installing the apparatus.

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product:

Clause	Subject	Compliance
1.2.7	LVD type requirements	Directive requires a manufacturer's declaration.
1.2.8	Overloading of equipment (protection relays, etc.)	Covered by installation rules and manufacturer's instructions. End used responsibility.
1.4.1	External effects	The Purchaser should make the manufacturer aware of such issues. Covered in Instructions
1.4.2	Aggressive substances, etc.	The Purchaser should make the manufacturer aware of such issues. Covered in Instructions

19 Drawings and Documents

New drawings submitted for this issue of certificate:

Number	Sheet	Issue	Date	Description
CISDXX-1	1 to 9	1	10 June 2021	SD Range Certification Drawing
CISDXXM-1	1 to 10	1	10 June 2021	SDXXM Certification Drawing

These drawings are common to IECEx BAS 12.0003X and IECEx BAS 19.0108X

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
None				

20 Certificate History

Certificate No.	Date	Comments
Baseefa02ATEX0211X	7 May 2003	The release of the prime certificate. The associated test and assessment against the requirements of EN 50014:1997+A1&A2, EN 50020:2002 and EN 50284:1999 is documented in Test Report No. 02(C)0356. Project File 02/0356.
Baseefa02ATEX0211X /1	12 April 2005	To permit minor drawing changes, including a change in manufacturing location. There is no Test Report. Project File 15/0199.
Baseefa02ATEX0211X /2	2 September 2011	To confirm the design met the updated requirements of EN 60079-0:2009 & EN 60079-11:2007 including the revision of the equipment marking in accordance with these standards. The associated assessment is recorded in Test Report Number 11(C)0573. Project File 11/0573.
Baseefa02ATEX0211X /3	29 September 2011	To permit the extension of the range of Surge Protection Devices to include a modular range of Type SD**Mxxx. The associated assessment is recorded in Test Report Number 11(C)0412. Project File 11/0412.
Baseefa02ATEX0211X /4	18 January 2012	To permit the certification labels to be dual marked with both ATEX and IECEx certificate details. The associated assessment is recorded in Test Report Number GB/BAS/ExTR12.0007/00. Project File 11/0933.
Baseefa02ATEX0211X /5	19 May 2014	To permit the introduction of two new models to the range. Type SDxxMxxL which contain no user removable links. Type SD75Mxxx which operates at a higher nominal voltage of 75V. The associated assessment is recorded in Test Report Number GB/BAS/ExTR13.0295/00. Project File 13/0908.
Baseefa02ATEX0211X /6	14 May 2015	To permit a variation to the base module printed circuit board to accommodate new spring fingers for improved connection to the module insert plugs. Also confirms that the equipment conforms to the updated requirements of EN 60079-0:2012+A11:2013 and EN 60079-11:2012. The associated assessment is recorded in Test Report Number GB/BAS/ExTR15.0096/00. Project File 15/0296.
Baseefa02ATEX0211X Issue 7	20 September 2016	This issue of the certificate incorporates previously issued primary & supplementary certificates into one certificate and confirms the current design meets the requirements of EN 60079-0:2012+A11 and EN 60079-11:2012 whilst also reflecting the change in company name. This issue also permits minor changes to the SD**Mxxx variant. The module insert PCB and module base PCB, the removal of the R variant and replacement with the F variant within model number nomenclature. The associated assessment is recorded in Test Report Number GB/BAS/ExTR16.0245/00. Project File 16/0661.
Baseefa02ATEX0211X Issue 8	12 August 2021	This issue of the certificate permits the additional labelling method of laser etching and confirms the current design meets the requirements of EN IEC 60079-0:2018. The associated assessment is recorded in Test Report Number GB/BAS/ExTR21.0130/00. Project File 21/0398.
For drawings applicable to each issue, see original of that issue.		