IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

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Certificate No.:	**IECEx BAS 12.0003X**	Page 1 of 4	Certificate history:
Status:	**Current**	Issue No: 5	Issue 4 (2021-08-12) Issue 3 (2016-09-20) Issue 2 (2015-05-14) Issue 1 (2014-05-19) Issue 0 (2012-01-20)
Date of Issue:	2023-04-24		
Applicant:	**Eaton Electric Limited** Great Marlings Butterfield Luton Bedfordshire LU2 8DL **United Kingdom**		
Equipment:	**SD**xxx Series Surge Protection Devices**		
Optional accessory:			
Type of Protection:	**Intrinsic Safety**		
Marking:	**Ex ia IIC T4 Ga (-30°C ≤ Ta ≤ See Annex)**		

Approved for issue on behalf of the IECEx Certification Body: **R S Sinclair**

Position: **Technical Manager**

Signature: (for printed version)

Date: (for printed version) 24/4/2023

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Certificate issued by:

SGS UK Limited
Rockhead Business Park
Staden Lane
Buxton, Derbyshire SK17 9RZ
United Kingdom

IECEx Certificate of Conformity

Certificate No.: **IECEx BAS 12.0003X**

Date of issue: 2023-04-24

Issue No: 5

Manufacturer: **Eaton Electric Limited**
Great Marlings
Butterfield
Luton
Bedfordshire
LU2 8DL
United Kingdom

Manufacturing locations: **Eaton Electric Limited**
Great Marlings
Butterfield
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MTL Instruments PVT Limited
No 3 Old Mahabalipuram Road
Sholinganallur
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600 119
India

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

GB/BAS/ExTR12.0007/00
GB/BAS/ExTR13.0295/00
GB/BAS/ExTR15.0096/00
GB/BAS/ExTR16.0245/00
GB/BAS/ExTR21.0130/00
GB/BAS/ExTR23.0027/00

Quality Assessment Reports:

GB/BAS/QAR06.0022/10
GB/BAS/QAR07.0017/10

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The range designated as 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 (p.c.b.) 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 p.c.b. 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. Three further units are included the SD**R, SD**R3 and SDrtd.

The range designated as the SD**Mxxx Series Surge Protection Devices are designed to protect instrumentation and electronic systems from surges and transients conducted through signal cables. 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 two options. Once the 'module insert' is installed into the 'module base' unit it is retained in place by a locking bar.

The SD**xxx Series Surge Protection Devices and SD**Mxxx Series Surge Protection Devices may be located in a hazardous area.

For the full details of the units covered, the Input and output parameters and the Ambient Temperature limits, see the Annex.

SPECIFIC CONDITIONS OF USE: YES as shown below:
1. The plastic enclosure may present an electrostatic risk and must be cleaned only with a damp cloth.

2. The range of SD**xxx Series Surge Protection Devices and SD**Mxxx Series Surge Protection Devices will not meet the 500V insulation requirements to earth, therefore suitable precautions must be taken when installing the apparatus.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Variation 5.1

This issue of the certificate permits the addition of new models having spring terminals.

ExTR: **GB/BAS/ExTR23.0027/00**	File Reference: **22/0601**

Annex:

IECEx BAS 12.0003X - Annex - Issue 3.pdf

SGS Baseefa Limited
Rockhead Business Park
Staden lane, Buxton, Derbyshire
SK17 9RZ
United Kingdom

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 $4mm^2$.

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

	Ui = 20V	Ii = 260mA		
or	Ui = 26V	Ii = 175mA		
or	Ui = 28V	Ii = 140mA		
or	Ui = 60V	Ii = 65mA		
	Pi = 1W	(-30ºC	Ta	75ºC)
or	Pi = 1.2W	(-30ºC	Ta	60ºC)
or	Pi = 1.3W	(-30ºC	Ta	40ºC)

Ci = 0
Li = 0.22mH

Output : Surge Protected Terminals

Uo ≤ Ui
Io ≤ Ii
Po ≤ Pi

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

	Ui = 60V			
	Ii = 260mA			
	Pi = 1W	(-30ºC	Ta	75ºC)
or	Pi = 1.2W	(-30ºC	Ta	60ºC)
or	Pi = 1.3W	(-30ºC	Ta	40ºC)

Ci = 0
Li = 0

Output : Surge Protected Terminals

Uo ≤ Ui
Io ≤ Ii
Po ≤ Pi

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, LED's, 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.'

The SD**Mxxx Series Surge Protection Devices are considered to comply with the requirements for intrinsically safe equipment of IEC60079-0:2012+A11:2013 and IEC60079-11:2012 and may be marked with the code:-

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

Input : Field Terminals

Ui = 20V Ii = 260mA
or Ui = 26V Ii = 175mA
or Ui = 28V Ii = 140mA
or Ui = 60V Ii = 65mA
or Ui = 75V Ii = 40mA
Pi = 1W (-30ºC Ta 75ºC)
or Pi = 1.2W (-30ºC Ta 60ºC)
or Pi = 1.3W (-30ºC Ta 40ºC)
Ci = 0 Li = 0.22mH (All SD**Mxxx units are treated as if Li = 0.22mH irrespective of if L1 and L2 are fitted.)

Output: Surge Protected Terminals

Uo ≤ Ui
Io ≤ Ii
Po ≤ Pi

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 Ui = 75V and Ii = 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
Screw Cage Terminal Models	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
Spring Cage Terminal Models	SDBE-CCN	Not fitted	Maintains the signal connections, with insert removed
	SDBE-CDN	Not fitted	Disconnects signal connections, with insert removed
	SDBE-CCG	Fitted	Maintains the signal connections, with insert removed
	SDBE-CDG	Fitted	Disconnects signal connections, with insert removed