IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx BAS 07.0069

Issue No: 8

Status: **Current**

Date of Issue: **2018-02-09**

Certificate history:
Issue No. 8 (2018-02-09)
Issue No. 7 (2016-10-05)
Issue No. 6 (2014-03-05)
Issue No. 5 (2011-01-31)
Issue No. 4 (2010-06-28)
Issue No. 3 (2009-08-21)
Issue No. 2 (2009-05-06)
Issue No. 1 (2008-01-10)
Issue No. 0 (2007-11-12)

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

Equipment: **MTL5541 / MTL5541-T / MTL5544 Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters**

Optional accessory:

Type of Protection: **Intrinsic Safety**

Marking:

[Ex ia Ga] IIC
[Ex ia Da] IIIC
[Ex ia Ma] I
-20°C ≤ Ta ≤ +60°C - MTL5541 & MTL5544 Models

-20°C ≤ Ta ≤ +65°C - MTL5541-T Model only

Approved for issue on behalf of the IECEx Certification Body:

R S Sinclair PP DBRENTLEY CERTIFICATION MANAGER

Position:

Technical Manager

Signature:
(for printed version)

DBrentley

Date:

12/2/18

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

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

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

Additional Manufacturing location(s):

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 electrical apparatus 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 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-11 : 2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

*This Certificate **does not** indicate compliance with electrical 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 Report:

GB/BAS/ExTR07.0129/00 GB/BAS/ExTR08.0001/00 GB/BAS/ExTR09.0124/00
GB/BAS/ExTR10.0101/00 GB/BAS/ExTR10.0298/00 GB/BAS/ExTR14.0043/00
GB/BAS/ExTR16.0238/00 GB/BAS/ExTR18.0016/00

Quality Assessment Report:

GB/BAS/QAR07.0017/06

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The MTL5544 Two Channel Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters is designed to provide a floating d.c. supply for energising two conventional 2 or 3-Wire 4/20mA transmitters or a 'smart' transmitter in the hazardous area and repeat these currents in the non-hazardous area, whilst restricting the transfer of energy from the unspecified non-hazardous area apparatus to the intrinsically safe circuits by the means of limitation of voltage and current. The apparatus also allows bi-directional signal communication between the hazardous and non-hazardous area by the connection of a hand-held communicator (HHC).

The MTL5544 Two Channel Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters comprises four isolating transformers that provide galvanic isolation between the hazardous and non-hazardous area circuitry, zener diode chains and resistors providing voltage and current limitation. The above, together with other electronic components are mounted on a single printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. A power indicator LED is fitted to the top of the equipment.

The MTL5541 Single Channel Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters is a depopulated version of the MTL5544 and has only one channel populated.

The MTL5541-T Single Channel Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters is of similar construction to the MTL5541 variants of the equipment with the same input and output parameters, but has an extended ambient temperature range.

See Annex for model and electrical data.

SPECIFIC CONDITIONS OF USE: NO

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Variation 8.1

To permit the addition of the MTL5541-T Single Channel Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters to the range covered by the certificate. The MTL5541-T is of similar construction to the MTL5541 variant and has the same input and output parameters, but has an extended ambient temperature range of -20°C to +65°C.

The Equipment Title, Marking section and Schedule was revised to detail the new variant of the equipment. The Certificate Annex (now Issue 3) was updated to list the new variant.

Variation 8.2

To permit minor drawing changes not affecting the original assessment.

ExTR: **GB/BAS/ExTR18.0016/00**	File Reference: **18/0066**

Annex:

IECEx BAS 07.0069 Annex Issue 3.pdf

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

MTL5541 / MTL5541-T / MTL5544 Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters

Non-Hazardous Area Terminals 7 to 14 (10 to 14 on MTL5541 & MTL5541-T models)

U_m = 253V

The apparatus is designed to operate on the above terminals from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 2 w.r.t. 1
or
Hazardous Area Terminals 5 w.r.t 4 (MTL5544 model only)

U_o = 28V C_i = 0
I_o = 93mA L_i = 0
P_o = 0.65W

Hazardous Area Terminals 3 w.r.t. 1
or
Hazardous Area Terminals 6 w.r.t 4 (MTL5544 model only)

U_o = 1.1V U_i = 30V
I_o = 53mA I_i = 121mA
P_o = 15mW
C_i = 0
L_i = 0

When an intrinsically safe source is connected to these terminals it should have a source resistance of U_i / I_i and the capacitance and either the inductance or inductance to resistance ratio (L/R) of the hazardous area connections must not exceed the values detailed in the certificate of the intrinsically safe source.

Hazardous area terminals 2 and 5 must not be used when the source is connected to these terminals.

Hazardous Area Terminals 2 w.r.t. 3
or
Hazardous Area Terminals 5 w.r.t 6 (MTL5544 model only)

U_o = 28V C_i = 0
I_o = 87mA L_i = 0
P_o = 0.61W

On the MTL5544 each channel must be considered as a separate intrinsically safe circuit.

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the hazardous area load connected must not exceed must not exceed the following values for either channel:

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
Hazardous Area Terminals 2 w.r.t. 1 or 5 w.r.t. 4				
IIC	0.083	4.2		56
IIB*	0.65	12.6		210
IIA	2.15	33.6		444
I	3.76	53.7		668

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR L/R RATIO (µH/ohm)
Hazardous Area Terminals 3 w.r.t. 1 or 6 w.r.t. 4			
IIC	100	12.8	2,438
IIB*	1,000	47.8	8,932
IIA	1,000	104.7	18,140
I	1,000	156.2	28,229
Hazardous Area Terminals 2 w.r.t. 3 or 5 w.r.t. 6			
IIC	0.083	4.9	59
IIB*	0.65	20.0	222
IIA	2.15	40.9	469
I	3.76	59.1	710

* Group IIB parameters also applicable for associated apparatus [Ex ia Da] IIIC

Notes:

1) The above load parameters apply when one of the two conditions below is given:
   - the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
   - the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

2) The above parameters are reduced to 50% when both of the two conditions below are given:
   - the total L_i of the external circuit (excluding the cable) is ≥ 1% of the L_o value and
   - the total C_i of the external circuit (excluding the cable) is ≥ 1% of the C_o value.

   The reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for Groups IIB, IIA & I and 600nF for Group IIC.

The values of L_o and C_o determined by this method shall not be exceeded by the sum of all the L_i plus cable inductances in the circuit and the sum of all of the C_i plus cable capacitances respectively.