



# 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](http://www.iecex.com)

Certificate No.:	IECEX BAS 09.0071	Issue No: 7	Certificate history:
Status:	<b>Current</b>	Page 1 of 5	Issue No. 7 (2017-05-02)
Date of Issue:	<b>2017-05-02</b>		Issue No. 6 (2016-10-05)
Applicant:	<b>Eaton Electric Limited</b> Great Marlings, Butterfield Luton, Bedfordshire LU2 8DL <b>United Kingdom</b>		Issue No. 5 (2014-01-27)
Equipment:	<b>MTL5541S, MTL5541S-T, MTL5544S &amp; MTL5544D Repeater Power Supplies, 4/20mA</b>		Issue No. 4 (2013-03-04)
Optional accessory:			Issue No. 3 (2012-08-06)
Type of Protection:	<b>Intrinsic Safety</b>		Issue No. 2 (2011-01-31)
Marking:	<b>[Ex ia Ga] IIC [Ex ia Da] IIIC [Ex ia Ma] I -20°C ≤ Ta ≤ +60°C - MTL5541S, MTL5544S &amp; MTL5544D Models -20°C ≤ Ta ≤ +65°C - MTL5541S-T Model only</b>		Issue No. 1 (2010-06-28)
			Issue No. 0 (2009-07-09)

Approved for issue on behalf of the IECEX  
Certification Body:

R. S. Sinclair

Position:

Technical Manager

Signature:  
(for printed version)

Date:

3-5-17

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](http://www.iecex.com).

Certificate issued by:

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





# IECEX Certificate of Conformity

Certificate No: IECEx BAS 09.0071 Issue No: 7  
Date of Issue: **2017-05-02** Page 2 of 5  
Manufacturer: **Eaton Electric Limited**  
Great Marlings, Butterfield  
Luton, Bedfordshire  
LU2 8DL  
**United Kingdom**

Additional Manufacturing location(s):

**MTL Instruments Pvt Limited**  
No 3 Old Mahabalipuram Road  
Sholinganallur  
Chennai 600119  
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 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** Explosive atmospheres - Part 0: General requirements  
Edition:6.0  
**IEC 60079-11 : 2011** Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"  
Edition:6.0

*This Certificate **does not** indicate compliance with 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/ExTR09.0103/00](#) [GB/BAS/ExTR10.0100/00](#) [GB/BAS/ExTR10.0298/00](#)  
[GB/BAS/ExTR12.0181/00](#) [GB/BAS/ExTR13.0022/00](#) [GB/BAS/ExTR14.0019/00](#)  
[GB/BAS/ExTR16.0238/00](#) [GB/BAS/ExTR17.0080/00](#)

#### Quality Assessment Report:

[GB/BAS/QAR06.0022/06](#) [GB/BAS/QAR07.0017/06](#)



# IECEx Certificate of Conformity

Certificate No: IECEx BAS 09.0071

Issue No: 7

Date of Issue: **2017-05-02**

Page 3 of 5

## Schedule

### EQUIPMENT:

*Equipment and systems covered by this certificate are as follows:*

The MTL5544S Two Channel Repeater Power Supply, 4/20mA for 'Smart' Transmitters is designed to provide floating d.c. supplies for energising two 'Smart' 4/20mA Transmitters located 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 means of limitation of current and voltage. 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 MTL5544S Two Channel Repeater Power Supply, 4/20mA for 'Smart' 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. LED indication is fitted to indicate power-on.

The MTL5541S Single Channel Repeater Power Supply, 4/20mA for 'Smart' Transmitters is a depopulated version of the MTL5544S and has only one channel populated.

The MTL5541S-T Single Channel Repeater Power Supply, 4/20mA for 'Smart' Transmitters is of a similar construction to the MTL5541S variant of the equipment with the same input and output parameters, but has an extended ambient temperature range.

See the Additional Page for further model information.

**SPECIFIC CONDITIONS OF USE: NO**



# IECEx Certificate of Conformity

Certificate No: IECEx BAS 09.0071

Issue No: 7

Date of Issue: 2017-05-02

Page 4 of 5

## **EQUIPMENT (continued):**

The MTL5544D Repeater Power Supply, 4/20mA for 2 or 3 Wire Transmitters with two outputs is designed to provide a floating d.c. supplies for energising a 2 or 3-Wire 4/20mA Transmitter located in the hazardous area and repeat the current on two channels in the non-hazardous area, whilst restricting the transfer of energy from the unspecified non-hazardous area apparatus to the intrinsically safe circuits by means of limitation of current and voltage. 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 apparatus uses the same printed circuit board and enclosure as the MTL5544S but is populated with only one hazardous area transmitter connection and two non-hazardous area outputs fitted.

See annex for electrical parameters.



# IECEX Certificate of Conformity

Certificate No: IECEx BAS 09.0071

Issue No: 7

Date of Issue: 2017-05-02

Page 5 of 5

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

### Variation 7.1

To permit the addition of the MTL5541S-T Single Channel Repeater Power Supply, 4/20mA for 'Smart' Transmitters to the range covered by the certificate. The MTL5541S-T is of similar construction to the MTL5541S 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 7.2

To permit a minor drawing change not affecting the original assessment.

ExTR: **GB/BAS/ExTR17.0080/00**

File Reference: **17/0163**

### Annex:

[IECEX BAS 09.0071 Annex Iss 3.pdf](#)

**MTL5541S Single, MTL5541S-T Single & MTL5544S Two Channel Repeater Power Supply, 4/20mA for 'Smart' Transmitters and MTL5544D Repeater Power Supply, 4/20mA for 2 or 3 Wire Transmitters with Two Outputs**

**Input/Output Parameters**

Non-hazardous Area Terminals 8, 9, 11, 12, 13 & 14

$$U_m = 253V \text{ r.m.s.}$$

The apparatus is designed to operate on non-hazardous area terminals 8, 9, 11, 12, 13 & 14 from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 2 w.r.t. 1 (Channel 1)

Or

Hazardous Area Terminals 5 w.r.t. 4 (Channel 2 – MTL5544S model)

$$\begin{array}{ll} U_o = 28V & C_i = 0 \\ I_o = 93mA & L_i = 0 \\ P_o = 0.65W & \end{array}$$

Hazardous Area Terminals 3 w.r.t. 1 (Channel 1)

Or

Hazardous Area Terminals 6 w.r.t. 4 (Channel 2 – MTL5544S model)

$$\begin{array}{lll} U_o = 1.1V & U_i = 30V & C_i = 0 \\ I_o = 53mA & I_i = 121mA & L_i = 0 \\ P_o = 15mW & \end{array}$$

Although the apparatus does not comply with the simple apparatus requirements of Clause 5.7 of IEC 60079-11: 2011, when terminals 3 w.r.t. 1 or terminals 6 w.r.t. 4 (MTL5544S model only) are connected in an intrinsically safe circuit the internal stored energy, voltage and current of the interface will not add more than the values specified in Clause 5.7 of IEC 60079-11: 2011 to the parameters of the circuit into which it is connected.

When an external 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.

Hazardous Area Terminals 2 w.r.t. 3 (Channel 1)

Or

Hazardous Area Terminals 5 w.r.t. 6 (Channel 2 – MTL5544S model)

$$\begin{array}{ll} U_o = 28V & C_i = 0 \\ I_o = 87mA & L_i = 0 \\ P_o = 0.61W & \end{array}$$

Each channel must be considered as a separate intrinsically safe circuit.

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

GROUP	CAPACITANCE ( $\mu\text{F}$ )	INDUCTANCE (mH)	OR	L/R RATIO ( $\mu\text{H}/\text{ohm}$ )
Hazardous Area Terminals 2 w.r.t. 1 or 5 w.r.t. 4 (MTL5544S only)				
IIC	0.083	4.2		56
IIB*	0.65	12.6		210
IIA	2.15	33.6		444
I	3.76	53.7		668
Hazardous Area Terminals 3 w.r.t. 1 or 6 w.r.t. 4 (MTL5544S only)				
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 (MTL5544S only)				
IIC	0.083	4.9		59
IIB*	0.65	20.0		222
IIA	2.15	40.9		469
I	3.76	59.1		710

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  $\geq 1\%$  of the  $L_o$  value and
  - the total  $C_i$  of the external circuit (excluding the cable) is  $\geq 1\%$  of the  $C_o$  value.

The reduced capacitance of the external circuit (including cable) shall not be greater than  $1\mu\text{F}$  for Groups IIB, IIA & I and  $600\text{nF}$  for Group IIC.

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