



# 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 11.0024 issue No.:3

Status: **Current**

Date of Issue: 2016-09-26

Page 1 of 4

Certificate history:

Issue No. 3 (2016-9-26)  
Issue No. 2 (2014-3-28)  
Issue No. 1 (2011-8-4)  
Issue No. 0 (2011-6-1)

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

Equipment: **MTL4581 Millivolt / Thermocouple Isolator**  
*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**

Approved for issue on behalf of the IECEx  
Certification Body:

R. S. Sinclair

Position:

Technical Manager

Signature:  
(for printed version)

Date:

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 11.0024  
Date of Issue: 2016-09-26 Issue No.: 3  
Page 2 of 4

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/ExTR11.0072/00  
GB/BAS/ExTR14.0065/00

GB/BAS/ExTR11.0073/00  
GB/BAS/ExTR16.0237/00

GB/BAS/ExTR11.0184/00

Quality Assessment Report:

GB/BAS/QAR06.0022/06

GB/BAS/QAR07.0017/05



# IECEX Certificate of Conformity

Certificate No.: IECEx BAS 11.0024

Date of Issue: 2016-09-26

Issue No.: 3

Page 3 of 4

## Schedule

### EQUIPMENT:

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

The MTL4581 Millivolt / Thermocouple Isolator are designed to restrict the transfer of energy from unspecified non-hazardous area equipment to a low-level d.c. signal from a voltage source or thermocouple located in the hazardous area by limitation of voltage and current. Two transformers provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL4581 Millivolt / Thermocouple Isolator are designed for connection to a low level d.c. signal from a voltage source of thermocouple situated in the hazardous area. The equipment isolates and passes the signal to the receiving equipment located in the non-hazardous area.

The equipment comprises two isolating transformers, duplicated zener diodes and current limiting resistors to provide 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.

See annex for electrical parameters.

### CONDITIONS OF CERTIFICATION: NO



# IECEx Certificate of Conformity

Certificate No.: IECEx BAS 11.0024

Date of Issue: 2016-09-26

Issue No.: 3

Page 4 of 4

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

### Variation 3.1

To permit the manufacturer's name to be changed on the certificate and equipment marking. No other changes are made to the equipment design.

### Variation 3.2

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

ExTR: GB/BAS/ExTR16.0237/00

File Reference: 16/0371

**MTL4581 Millivolt / Thermocouple Isolator****Non-Hazardous Area Terminals 8, 9, 11, 13 & 14**

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

The circuit connected to non-hazardous area terminals 8, 9, 11, 13 & 14 are designed to operate from a d.c. supply voltage of up to 35V.

**Hazardous Area Terminals 1 & 2**

$$\begin{array}{lll}
 U_o = 1.1V & U_i = 28V & C_i = 0 \\
 I_o = 53mA & I_i = 120mA & L_i = 0.5mH \\
 P_o = 15mW & & 
 \end{array}$$

Although the apparatus does not comply with the simple apparatus requirements of Clause 5.7 of IEC 60079-11: 2006, when terminals 1 & 2 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: 2006 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.

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

GROUP	CAPACITANCE ( $\mu F$ )	INDUCTANCE (mH)	OR	L/R RATIO ( $\mu H/ohm$ )
IIC	100	12.3		2,438
IIB*	1,000	47.3		8,932
IIA	1,000	104.2		18,140
I	1,000	155.7		28,229

\* 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  $\geq 1\%$  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  $1\mu F$  for Groups IIB, IIA & I and  $600nF$  for Group IIC.