

1 **EU - TYPE EXAMINATION CERTIFICATE**

2 **Safety Device, Controlling Device or Regulating Device intended for use outside a potentially explosive atmosphere but required for or contributing to the safe functioning of Equipment and Protective Systems with respect to the risks of explosion  
Directive 2014/34/EU**

3 EU - Type Examination Certificate **Baseefa06ATEX0157 – Issue 9**  
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: **MTL4546 / MTL4546C / MTL4546Y / MTL4546S Single Channel Isolating Driver, 4/20mA for Smart I/P Converters**

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. Baseefa06ATEX0157 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 Baseefa, Notified Body number 1180, 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.

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 60079-0: 2012 + A11: 2013 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 (I) GD [Ex ia Ga] IIC (-20°C ≤ T<sub>a</sub> ≤ +60°C)  
[Ex ia Da] IIIC (-20°C ≤ T<sub>a</sub> ≤ +60°C)  
⊕ I (M1) [Ex ia Ma] I (-20°C ≤ T<sub>a</sub> ≤ +60°C)

SGS Baseefa Customer Reference No. **0703**

Project File No. **16/0371**

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R S SINCLAIR

TECHNICAL MANAGER

On behalf of SGS Baseefa Limited

13

## Schedule

14

Certificate Number Baseefa06ATEX0157 – Issue 9

### 15 Description of Product

The MTL4546 / MTL4546C / MTL4546Y / MTL4546S Single Channel Isolating Driver, 4/20mA for Smart I/P Converters accepts a 4/20mA signal from a controller located in the non-hazardous area to drive a load in the hazardous area. It permits bi-directional transmission of digital signals to and from an operator station or hand-held communicator. The apparatus restricts the transfer of energy from unspecified non-hazardous area apparatus to intrinsically safe circuit by limitation of voltage and current. Three transformers provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The equipment comprises a power transformer, two current transformers, zener diodes and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections.

The MTL4546, MTL4546C & MTL4546Y models in terms of intrinsic safety are identical. The difference between them is the MTL4546C & MTL4546Y have the Line Fault Detection (LFD) facility disabled. The MTL4546S uses the same PCB and enclosure but the PCB is populated with different voltage and current limiting components, and therefore has different output parameters to the other variants.

#### Input/Output Parameters

##### MTL4546, MTL4546C & MTL4546Y Models

###### Non-Hazardous Area Terminals 11 to 14

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

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

###### Hazardous Area Terminals 2 w.r.t. 1

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

##### MTL4546S Model only

###### Non-Hazardous Area Terminals 11, 12, 13 & 14

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

The circuit connected to non-hazardous area terminals 11 to 14 is designed to operate from a d.c. supply voltage of up to 35V.

###### Hazardous Area Terminals 2 w.r.t. 1

$$\begin{array}{ll} U_o = 22V & C_i = 0 \\ I_o = 100mA & L_i = 0 \\ P_o = 0.55W & \end{array}$$

### Load Parameters

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

GROUP	CAPACITANCE ( $\mu\text{F}$ )	INDUCTANCE (mH)	OR	L/R RATIO ( $\mu\text{H}/\text{ohm}$ )
MTL4546, MTL4546C & MTL4546Y Models				
IIC	0.083	4.2		56
IIB*	0.65	12.6		210
IIA	2.15	33.6		444
I	3.76	53.7		668
MTL4546S Model only				
IIC	0.165	3.55		64
IIB*	1.14	14.6		258
IIA	4.20	30.5		517
I	6.00	44.3		848

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

#### Notes:

- 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.
- 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.

### 16 Report Number

GB/BAS/ExTR16.0237/00

### 17 Specific Conditions of Use

None

### 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, and conformity is demonstrated in the report:

Clause	Subject	Compliance
1.2.7	Protection against other hazards (LVD type requirements, etc.)	Manufacturer responsibility
1.2.8	Overloading of equipment (protection relays, etc.)	User/Installer responsibility
1.4.1	External effects	User/Installer responsibility
1.4.2	Aggressive substances, etc.	User/Installer responsibility

### 19 Drawings and Documents

New drawings submitted for this issue of certificate:

Number	Sheet	Issue	Date	Description
CI4546-1	7 of 7	6	7.16	MTL4546 Certification Label Details – Baseefa

The above drawings are associated and held with IECEx BAS 06.0035 Iss. 10

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
CI4546-1	1 of 7	3	10.08	Parts List for MTL4546
CI4546-1	2 of 7	6	10.12	Circuit Diagram for MTL4546
CI4546-1	3 of 7	3	6.07	MTL4546 Track Layout
CI4546-1	4 of 7	6	10.12	MTL4546 Component Layout
CI4546-1	5 of 7	2	1.07	PCB Detail for TPL300 and TPL302
CI4546-1	6 of 7	2	1.07	PCB Detail for TPL301
CI4546S-1	1 of 1	1	1.13	Parts List for MTL4546S
CI4500-3	1 of 1	1	12.10	MTL4500 & MTL5500 – Alternative Zener Diodes (Panjit)
CI4500-6	1 of 1	1	20.12.10	MTL4500 & MTL5500 – Conformal Coating
CI4500-100	1 of 1	2	1.13	MTL4500 Case

The above drawings are associated and held with IECEx Certificate No. IECEx BAS 06.0035

## 20 Certificate History

Certificate No.	Date	Comments
Baseefa06ATEX0157	16 November 2006	The release of the prime certificate. The associated test and assessment against the requirements of EN 60079-0: 2004, EN 50020: 2002, IEC 61241-0: 2004 and IEC 61241-11: 2005 is documented in Certification Report No. 05(C)0863/5.
Baseefa06ATEX0157/1	20 December 2006	To permit minor changes to the circuit and PCB layout not affecting the original assessment.
Baseefa06ATEX0157/2	31 January 2007	To permit minor changes to the transformer PCB's not affecting the original assessment.
Baseefa06ATEX0157/3	3 July 2007	To permit minor changes to the circuit and the layout of the PCB.
Baseefa06ATEX0157/4	15 November 2007	<p>i) To permit minor drawing changes not affecting the original assessment.</p> <p>ii) To confirm the current design of the equipment meets the requirements of EN 60079-0: 2006 and EN 60079-11: 2007.</p> <p>The associated test and assessment is documented in Certification Report No. GB/BAS/ExTR07.0123/00.</p>
Baseefa06ATEX0157/5	20 November 2008	<p>To permit minor component changes to the current design to form the MTL4546Y Single Channel Isolating Driver, 4/20mA for Smart I/P Converters.</p> <p>The associated test and assessment is documented in Certification Report No. GB/BAS/ExTR08.0216/00.</p>

Certificate No.	Date	Comments
Baseefa06ATEX0157/6	31 January 2011	<p>i) To permit the alternative fitting of 1SMB3EZ** zener diodes in place of 1SMB59**BT3 components currently fitted.</p> <p>ii) An alternative method of applying the conformal coating to the PCB fitted in the equipment not affecting the original assessment.</p> <p>iii) To confirm the current designs of the MTL4546, MTL4546C &amp; MTL4546Y Single Channel Isolating Driver, 4/20mA for Smart I/P Converters have been reviewed against the requirements of EN 60079-0: 2009 in respect of the differences from EN 60079-0: 2006, and with exception of the marking, none of the differences affect the equipment. In accordance with the requirements of EN 60079-0: 2009, the equipment markings were revised to include the Equipment Protection Level (EPL) markings.</p> <p>The associated test and assessment is documented in Certification Report No. GB/BAS/ExTR10.0297/00.</p>
Baseefa06ATEX0157/7	6 August 2012	<p>To confirm the current designs of the MTL4546, MTL4546C &amp; MTL4546Y Single Channel Isolating Driver, 4/20mA for Smart I/P Converters have been reviewed against the requirements of EN 60079-0: 2012 and EN 60079-11:2012 in respect of the differences from EN 60079-0: 2009, EN 60079-11: 2007 &amp; EN 61241-11: 2006 and none of the differences affect the equipment. In accordance with EN 60079-11: 2012, the Group I capacitive load parameters were corrected and the associated load parameter notes were updated.</p> <p>The associated test and assessment is documented in Certification Report No. GB/BAS/ExTR12.0181/00.</p>
Baseefa06ATEX0157/8	31 January 2013	<p>To permit minor component changes to the current design to form the MTL4546S Single Channel Isolating Driver, 4/20mA for Smart I/P Converters.</p> <p>The associated test and assessment is documented in Certification Report No. GB/BAS/ExTR13.0014/00.</p>
Baseefa06ATEX0158 Issue 9	26 September 2016	<p>This issue of the certificate incorporates previously issued primary &amp; supplementary certificates into one certificate and confirms the current designs meet the requirements of EN 60079-0: 2012 + A11: 2013 &amp; EN 60079-11: 2012.</p> <p>The equipment name on page 1 of the certificate was revised to include reference to the MTL4549Y &amp; MTL4546S models.</p> <p>The certificate also permits the manufacturer's name to be changed on page 1 of the certificate and on the equipment marking.</p> <p>The associated assessment is documented in Certification Report No. GB/BAS/ExTR16.0237/00.</p>
For drawings applicable to each issue, see original of that issue.		