

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 Number: **Baseefa09ATEX0117 – Issue 4**

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: **MTL4576 Two Channel & MTL4575B Single Channel Temperature Converter**

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. Baseefa09ATEX0117 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 (1) GD [Ex ia Ga] IIC (-20°C ≤ T_a ≤ +60°C)
[Ex ia Da] IIIC (-20°C ≤ T_a ≤ +60°C)
⊕ I (M1) [Ex ia Ma] I (-20°C ≤ T_a ≤ +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 Baseefa09ATEX0117 – Issue 4**

15 **Description of Product**

The MTL4576 Two Channel Temperature Converter is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to either up to two thermocouples or RTD's located in the hazardous area by limitation of voltage and current. A transformer and opto-isolators provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL4576 Two Channel Temperature Converter is designed for connection of thermocouples or two, three or four wire RTD's situated in the hazardous area. The apparatus converts the low level d.c. signal from the sensor mounted in the hazardous area into a 4/20mA current for driving a load in the non-hazardous area.

The apparatus comprises an isolating transformer, opto-isolators, duplicated zener diodes chains and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a 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 jack socket is provided for the connection of a suitably certified data terminal for programming the apparatus.

The MTL4575B Single Channel Temperature Converter comprises the same circuitry and enclosure as the MTL4576, the only difference being is it only has one channel for the connection of thermocouples or two, three or four wire RTD's situated in the hazardous area. In terms of intrinsic safety, both the MTL4576 & MTL4575B are identical.

Input / Output Parameters

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

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

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

Hazardous Area Terminals 1, 2, 3 & 4 (forming part of the same intrinsically safe circuit)

$$\begin{aligned} U_o &= 6.6V & C_i &= 0 \\ I_o &= 42mA & L_i &= 0 \\ P_o &= 69.3mW \end{aligned}$$

Hazardous Area Terminals 1, 2 & 3 (Channel 1)

or

Hazardous Area Terminals 4, 5 & 6 (Channel 2 – MTL4576 model only)

$$\begin{aligned} U_o &= 6.6V & C_i &= 0 \\ I_o &= 28mA & L_i &= 0 \\ P_o &= 46.2mW \end{aligned}$$

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

or

Hazardous Area Terminals 6 w.r.t. 4 (Channel 2 – MTL4576 model only)

$$\begin{aligned} U_o &= 1.2V & U_i &= 5V \\ I_o &= 4mA & C_i &= 0 \\ P_o &= 1.2mW & L_i &= 0 \end{aligned}$$

Programming / Configuration Port (Jack Socket)

$$\begin{array}{ll}
 U_o = 6.68V & U_i = 9.1V \\
 I_o = 12mA & C_i = 0 \\
 P_o = 17.7mW & L_i = 0
 \end{array}$$

Load Parameters

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

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu H/ohm$)
Hazardous area terminals 1, 2, 3 & 4 (forming part of the same intrinsically safe circuit)				
IIC	22.0	20.1		513
IIB*	500	80.6		2,052
IIA	1,000	161.2		4,104
I	1,000	264.5		6,363
Hazardous area terminals 1, 2 & 3 (Channel 1) or terminals 4, 5 & 6 (Channel 2 – MTL4576 only)				
IIC	11.0	22.6		384
IIB*	250	90.7		1,539
IIA	500	181.4		2,121
I	500	297.6		2,121
Hazardous area terminals 3 w.r.t. 1 (channel 1) or terminals 6 w.r.t. 4 (Channel 2 – MTL4576 only)				
IIC	50	500		1,666
IIB*	500	500		1,666
IIA	500	500		1,666
I	500	500		1,666
Programming / Configuration Port (Jack Socket)				
IIC	0.478	79.4		448
IIB*	2.88	317.9		1,412
IIA	11.6	635.8		1,412
I	15.8	1,000		1,412

* 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 $1\mu F$ for Groups IIB, IIA & I and $600nF$ 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
CI4576-1	7 of 7	3	7.16	MTL4576 Certification Label Details – Baseefa

The above drawing is associated and held with IECEx BAS 09.0042 Iss. 4

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
CI4576-1	1 of 7	1	6.09	Parts List for MTL4576
CI4576-1	2 of 7	2	8.09	Certification Drawing for MTL4576 & 5576
CI4576-1	3 of 7	2	8.09	Certification Drawing for MTL4576 & 5576
CI4576-1	4 of 7	2	8.09	MTL4576 Track Layout
CI4576-1	5 of 7	3	1.13	MTL4576 Component Layout
CI4576-1	6 of 7	1	5.09	PCB Detail for TPL301
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	MTL 4500 Case

The above drawings are associated and held with IECEx Certificate No. IECEx BAS 09.0042

20 Certificate History

Certificate No.	Date	Comments
Baseefa09ATEX0117	2 July 2009	The release of the prime certificate. The associated test and assessment against the requirements of EN 60079-0: 2006, EN 60079-11: 2007 and EN 61241-11: 2006 is documented in Certification Test Report No. GB/BAS/ExTR09.0064/00.
Baseefa09ATEX0117/1	6 November 2009	To permit minor changes to the circuit and PCB layout not affecting the original assessment. The associated test and assessment is documented in Certification Report No. GB/BAS/ExTR09.0197/00.

Certificate No.	Date	Comments
Baseefa09ATEX0117/2	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 MTL4576 Two Channel & MTL4575B Single Channel Temperature 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>
Baseefa09ATEX0117/3	28 March 2014	<p>i) To permit minor component and drawing changes not affecting the original assessment.</p> <p>ii) To permit the correction of the parameters for the Programming / Configuration Port (Jack Socket).</p> <p>iii) To confirm the current designs of the MTL4576 Two Channel & MTL4575B Single Channel Temperature Converters have been reviewed against the requirements of EN 60079-0: 2012 EN 60079-11: 2012 in respect of the differences from EN 60079-0: 2009, EN 60079-11: 2007 and 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 assessment is documented in Certification Report No. GB/BAS/ExTR14.0065/00.</p>
Baseefa09ATEX0117 Issue 4	26 September 2016	<p>This issue of the certificate incorporates previously issued primary & supplementary certificates into one certificate and confirms the current designs meet the requirements of EN 60079-0: 2012 + A11: 2013 & EN 60079-11: 2012.</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.		