



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 **Baseefa09ATEX0155 – Issue 6**
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: **MTL4541S, MTL4541T, MTL4544S & MTL4544D Repeater Power Supplies,
4/20mA**
- 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. Baseefa09ATEX0155 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 :

Ex II (1) GD [Ex ia Ga] IIC ($-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$)
[Ex ia Da] IIIC ($-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$)
Ex I (M1) [Ex ia Ma] I ($-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$)

SGS Baseefa Customer Reference No. **0703**

Project File No. **16/0371**

This document is issued by the Company subject to its General Conditions for Certification Services accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and the Supplementary Terms and Conditions accessible at <http://www.sgs.com/SGSBaseefa/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. It does not necessarily indicate that the equipment may be used in particular industries or circumstances. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, schedule included, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS Baseefa Limited
Rockhead Business Park, Staden Lane,
Buxton, Derbyshire SK17 9RZ
Telephone +44 (0) 1298 766600 Fax +44 (0) 1298 766601
e-mail baseefa@sgs.com web site www.sgs.co.uk/baseefa
Registered in England No. 4305578.

Registered address: Rossmore Business Park, Ellesmere Port, Cheshire, CH65 3EN

R S SINCLAIR
TECHNICAL MANAGER
On behalf of SGS Baseefa Limited

13

Schedule

14

Certificate Number Baseefa09ATEX0155 – Issue 6

15 Description of Product

The MTL4544S 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 MTL4544S 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 MTL4541S Single Channel Repeater Power Supply, 4/20mA for ‘Smart’ Transmitters is a depopulated version of the MTL4544S and has only one channel populated.

The MTL4544D 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 MTL4544S but is populated with only one hazardous area transmitter connection and two non-hazardous area outputs fitted.

The MTL4541T Single Channel Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters is similar to the MTL4541S but is fitted with different voltage and current limitation components and therefore has different output parameters.

MTL4541S, MTL4544S & MTL4544D 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 – MTL4544S 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 – MTL4544S 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 EN 60079-11: 2012, when terminals 3 w.r.t. 1 or terminals 6 w.r.t. 4 (MTL4544S 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 EN 60079-11: 2012 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 – MTL4544S 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.

Load Parameters

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 (μ F)	INDUCTANCE (mH)	OR	L/R RATIO (μ H/ohm)
Hazardous Area Terminals 2 w.r.t. 1 or 5 w.r.t. 4 (MTL4544S 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 (MTL4544S 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 (MTL4544S 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

* 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.

- 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 600nF for Group IIC.

MTL4541T Input / Output Parameters

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

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

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

Hazardous Area Terminals 2 w.r.t. 1

$$\begin{array}{ll} U_o = 22\text{V} & C_i = 0 \\ I_o = 167\text{mA} & L_i = 0 \\ P_o = 0.92\text{W} & \end{array}$$

Hazardous Area Terminals 3 w.r.t. 1

$$\begin{array}{lll} U_o = 1.0\text{V} & U_i = 30\text{V} & C_i = 0 \\ I_o = 53\text{mA} & I_i = 121\text{mA} & L_i = 0 \\ P_o = 14\text{mW} & \end{array}$$

Although the apparatus does not comply with the simple apparatus requirements of Clause 5.7 of EN 60079-11: 2012, when terminals 3 w.r.t. 1 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 EN 60079-11: 2012 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 terminal 2 must not be used when the source is connected.

Hazardous Area Terminals 2 w.r.t. 3

$$\begin{array}{ll} U_o = 22\text{V} & C_i = 0 \\ I_o = 145\text{mA} & L_i = 0 \\ P_o = 0.80\text{W} & \end{array}$$

Load Parameters

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:

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
<u>Hazardous Area Terminals 2 w.r.t. 1</u>				
IIC	0.165	0.91		39
IIB*	1.14	5.5		147
IIA	4.20	10.7		322
I	6.00	16.4		517

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
Hazardous Area Terminals 3 w.r.t. 1				
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				
IIC	0.165	1.49		45
IIB*	1.14	7.5		174
IIA	4.20	14.9		381
I	6.00	22.5		575

* 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 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
CI4541-3	8 of 8	4	7.16	MTL45541S, MTL4541T, MTL4544S, MTL4544D Certification Label Details – Baseefa

The above drawing is associated and held with IECEx BAS 09.0070 Iss. 6

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
CI4541-3	1 of 8	2	6.10	Parts List for MTL4541S, MTL5541S, MTL4544S, MTL5544S, MTL4544D, MTL5544D
CI4541-3	2 of 8	2	10.12	Circuit Diagram for the MTL4541S, MTL5541S, MTL4544S, MTL5544S, MTL4544D, MTL5544D, MTL4541T
CI4541-3	3 of 8	2	10.12	Circuit Diagram for the MTL4541S, MTL5541S, MTL4544S, MTL5544S, MTL4544D, MTL5544D, MTL4541T
CI4541-3	4 of 8	1	6.09	Track Layout for MTL4541S, MTL4541T, MTL5541S, MTL4544S, MTL5544S, MTL4544D, MTL5544D
CI4541-3	5 of 8	3	1.14	Component Layout for MTL4541S, MTL4541T, MTL5541S, MTL4544S, MTL5544S, MTL4544D, MTL5544D
CI4541-3	6 of 8	1	6.09	PCB Detail for TPL300
CI4541-3	7 of 8	1	6.09	PCB Detail for TPL301
CI4541T-1	1 of 1	1	1.13	Parts List for MTL4514T
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 09.0070

20 Certificate History

Certificate No.	Date	Comments
Baseefa09ATEX0155	9 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/ExTR09.0103/00.
Baseefa09ATEX0155/1	28 June 2010	<ul style="list-style-type: none"> i) To permit minor component changes to all models of the equipment not affecting the original assessment. ii) To permit the addition of output parameters for Hazardous Area Terminals 2 w.r.t. 3 (Channel 1) & 5 w.r.t. 6 (Channel 2 – MTL4544S model only) to all models of the equipment. iii) To confirm the current designs of the MTL4541S, MTL4544S & MTL4544D Repeater Power Supplies, 4/20mA 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. iv) To permit the notes associated with the load parameters of all models specified on the original certificate schedule to be revised. <p>The associated test and assessment is documented in Certification Report No. GB/BAS/ExTR10.0100/00.</p>

Certificate No.	Date	Comments
Baseefa09ATEX0155/2	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>The associated test and assessment is documented in Certification Report No. GB/BAS/ExTR10.0298/00.</p>
Baseefa09ATEX0155/3	6 August 2012	<p>To confirm the current designs of the MTL4541S, MTL4544S & MTL4544D Repeater Power Supplies, 4/20mA have been reviewed against the requirements of IEC 60079-0: 2011 and 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/ExTR12.0181/00.</p>
Baseefa09ATEX0155/4	4 March 2013	<p>i) To permit minor component changes to the current design to form the MTL4541T Single Channel Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters.</p> <p>ii) To confirm the current designs of the MTL4541S, MTL4541T, MTL4544S & MTL4544D Repeater Power Supplies, 4/20mA have been reviewed against the requirements of EN 60079-0: 2012 in respect of the differences from IEC 60079-0: 2011 and none of the differences affect the equipment.</p> <p>The associated assessment is documented in Certification Report No. GB/BAS/ExTR13.0022/00.</p>
Baseefa09ATEX0155/5	27 January 2014	<p>i) To permit minor component changes to the MTL4541T Single Channel Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters not affect the original assessment.</p> <p>ii) To permit minor drawing changes not affecting the original assessment.</p> <p>The associated assessment is documented in Certification Report No. GB/BAS/ExTR14.0019/00.</p>
Baseefa09ATEX0155 Issue 6	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.		