



## UK-TYPE EXAMINATION CERTIFICATE

- 1
- 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 Product and Protective Systems with respect to the risks of explosion**  
**UKSI 2016:1107 (as amended) – Schedule 3A, Part 1**
- 3 UK-Type Examination Certificate Number: **BAS21UKEX0444**
- 4 Product: **MTL5541 / MTL5541-T / MTL5544 Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters**
- 5 Manufacturer: **Eaton Electric Limited**
- 6 Address: **Great Marlings, Butterfield, Luton, Bedfordshire, LU2 8DL**
- 7 This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- 8 SGS Baseefa, Approved Body number 1180, in accordance with Regulation 43 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), 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 Schedule 1 of the Regulations.
- The examination and test results are recorded in confidential Report No. **21(C)0386/05**
- 9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:  
**EN IEC 60079-0: 2018 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 UK-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Regulations 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:
- |   |                  |                        |   |
|---|------------------|------------------------|---|
|  | <b>II (1) GD</b> | <b>[Ex ia Ga] IIC</b>  |   |
|   |                  | <b>[Ex ia Da] IIIC</b> | <b>See Certificate Schedule for ambient temperature range</b> |
|  | <b>I (M1)</b>    | <b>[Ex ia Ma] I</b>    |   |

SGS Baseefa Customer Reference No. **0703**

Project File No. **21/0386**

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R S SINCLAIR  
TECHNICAL MANAGER  
On behalf of SGS Baseefa Limited

13 **Schedule**

14 **Certificate Number BAS21UKEX0444**

15 **Description of Product**

The MTL5544 Two Channel Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters is designed to provide a floating d.c. supply for energising two conventional 2 or 3-Wire 4/20mA transmitters or a 'smart' transmitter 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 the means of limitation of voltage and current. 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 MTL5544 Two Channel Repeater Power Supply, 4/20mA for 2 or 3-Wire 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. A power indicator LED is fitted to the top of the equipment.

The MTL5541 Single Channel Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters is a depopulated version of the MTL5544 and has only one channel populated.

The MTL5541-T Single Channel Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters is of similar construction to the MTL5541 variants of the equipment with the same input and output parameters, but has an extended ambient temperature range.

The following table details the ambient temperature ranges of each variant of the equipment.

Model Variant	Ambient Temperature Range
MTL5541 Single Channel Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters	$-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$
MTL5541-T Single Channel Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters	$-20^{\circ}\text{C} \leq T_a \leq +65^{\circ}\text{C}$
MTL5544 Two Channel Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters	$-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$

**Input / Output Parameters**

Non-Hazardous Area Terminals 7 to 14 (10 to 14 on MTL5541 model)

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

The circuit connected to non-hazardous area terminals is designed to operate 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 – MTL5544 Model Only)

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

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

or

Hazardous Area Terminals 6 w.r.t. 4 (Channel 2 – MTL5544 Model only)

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

When an 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 above source is connected to these terminals.

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

or

Hazardous Area Terminals 5 w.r.t. 6 (Channel 2 – MTL5544 Models Only)

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

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 load connected must not exceed the following values:

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				
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				
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				
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.
- 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.

The values of  $L_o$  and  $C_o$  determined by this method shall not be exceeded by the sum of all the  $L_i$  plus cable inductances in the circuit and the sum of all of the  $C_i$  plus cable capacitances respectively.

**16 Report Number**

21(C)0386/05.

**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
13	Protection against other hazards (LVD type requirements, etc.)	Manufacturer responsibility
14	Overloading of equipment (protection relays, etc.)	User/Installer responsibility
22(1)	External effects	User/Installer responsibility
22(2)	Aggressive substances, etc.	User/Installer responsibility

**19 Drawings and Documents**

Number	Sheet	Issue	Date	Description
CI5541-1	1 of 1	6	8.21	MTL5541 Certification Label Details and DIN rail fittings - BASEEFA
CI5541-T-1	1 of 1	2	8.21	MTL5541-T Certification Label Details and DIN rail fittings - BASEEFA

These drawings are held with BAS21UKEX0444 (prime).

For other current drawings not re-submitted for this assessment, see Baseefa07ATEX0213 Issue 7.