1 **UK-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 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: **BAS21UKEX0477**

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 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)0386/28**

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:

Ⓔx II (1) GD **[Ex ia Ga] IIC (-20°C ≤ T_a ≤ +60°C)**
[Ex ia Da] IIIC (-20°C ≤ T_a ≤ +60°C)

Ⓔx I (M1) **[Ex ia Ma] I (-20°C ≤ T_a ≤ +60°C)**

SGS Baseefa Customer Reference No. **0703** Project File No. **21/0386**

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UKAS PRODUCT CERTIFICATION
0191

R S SINCLAIR
TECHNICAL MANAGER
On behalf of SGS Baseefa Limited

13 **Schedule**

14 **Certificate Number BAS21UKEX0477**

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 dc 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 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)

U_o = 6.6V C_i = 0
I_o = 42mA L_i = 0
P_o = 69.3mW

Hazardous Area Terminals 1, 2 & 3 (Channel 1)
or
Hazardous Area Terminals 4, 5 & 6 (Channel 2 – MTL4576 model only)

U_o = 6.6V C_i = 0
I_o = 28mA L_i = 0
P_o = 46.2mW

Hazardous Area Terminals 3 w.r.t. 1 (Channel 1)
or
Hazardous Area Terminals 6 w.r.t. 4 (Channel 2 – MTL4576 model only)

U_o = 1.2V U_i = 5V
I_o = 4mA C_i = 0
P_o = 1.2mW L_i = 0

Programming / Configuration Port (Jack Socket)

U_o = 6.68V U_i = 9.1V
I_o = 12mA C_i = 0
P_o = 17.7mW L_i = 0

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 OR (mH)	L/R RATIO (µH/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:

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 ≥ 1% of the L_o value and
- the total C_i of the external circuit (excluding the cable) is ≥ 1% of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

21(C)0386/28

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
CI4576-1	7 of 7	4	8.21	MTL4576 Certification Label Details - BASEEFA

These drawings are held with BAS21UKEX0477 (prime).

For other current drawings not re-submitted for this assessment, see BAS09ATEX0117 - Issue 4