



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx BAS 09.0042 issue No.: 4

Status: Current

Date of Issue: 2016-09-26 Page 1 of 4

Certificate history:

Issue No. 4 (2016-9-26)
Issue No. 3 (2014-3-28)
Issue No. 2 (2011-1-31)
Issue No. 1 (2009-11-6)
Issue No. 0 (2009-7-2)

Applicant: **Eaton Electric Limited**
Great Marlings
Butterfield
Luton
Bedfordshire
LU2 8DL
United Kingdom

Equipment: MTL4576 Two Channel & MTL4575B Single Channel Temperature Converter
Optional accessory:

Type of Protection: Intrinsic Safety

Marking: [Ex ia Ga] IIC
[Ex ia Da] IIIC
[Ex ia Ma] I
-20°C ≤ Ta ≤ +60°C


Approved for issue on behalf of the IECEx
Certification Body:

R. S. Sinclair

Position:

Technical Manager

Signature:
(for printed version)


27-9-16

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

SGS Baseefa Limited
Rockhead Business Park
Staden Lane
Buxton, Derbyshire, SK17 9RZ
United Kingdom





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Manufacturer: **Eaton Electric Limited**
Great Marlings
Butterfield
Luton
Bedfordshire
LU2 8DL
United Kingdom

Additional Manufacturing location(s):

**MTL Instruments PVT
Limited**
No 3 Old Mahabalipuram
Road
Sholinganallur
Chennai 600119
India

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Explosive atmospheres - Part 0: General requirements
Edition: 6.0

IEC 60079-11 : 2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition: 6.0

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

GB/BAS/ExTR09.0064/00
GB/BAS/ExTR14.0065/00

GB/BAS/ExTR09.0197/00
GB/BAS/ExTR16.0237/00

GB/BAS/ExTR10.0297/00

Quality Assessment Report:

GB/BAS/QAR06.0022/06

GB/BAS/QAR07.0017/05



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

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.

See Annex for electrical parameters.

CONDITIONS OF CERTIFICATION: NO



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Variation 4.1

To permit the manufacturer's name to be changed on the certificate and equipment marking. No other changes are made to the equipment design.

ExTR: GB/BAS/ExTR16.0237/00

File Reference: 16/0371

MTL4576 Two Channel & MTL4575B Single Channel Temperature Converter

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)

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

The capacitance and either the inductance or the 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 ($\mu H/ohm$)
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

GROUP	CAPACITANCE (μ F)	INDUCTANCE (mH)	OR L/R RATIO (μ H/ohm)
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 μ F for Groups IIB, IIA & I and 600nF for Group IIC.