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 09.0072 issue No.:3

Status: **Current**

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

Certificate history:
Issue No. 3 (2016-9-26)
Issue No. 2 (2014-3-28)
Issue No. 1 (2011-1-31)
Issue No. 0 (2010-1-29)

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

Equipment:
MTL4532 Pulse Isolator
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)

Date: 27-9-16

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.

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 Edition: 6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-11 : 2011 Edition: 6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

*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/ExTR09.0104/00 GB/BAS/ExTR10.0282/00 GB/BAS/ExTR14.0065/00
GB/BAS/ExTR16.0237/00

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 MTL4532 Pulse Isolator is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to a switch, proximity detector, current pulse transmitter or voltage pulse transmitter located in the hazardous area by limitation of voltage and current. Transformers, an opto-isolator and a relay provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL4532 Pulse Isolator is designed for connection of a switch, proximity detector, current pulse transmitter or voltage pulse transmitter situated in the hazardous area. The apparatus repeats the pulse signals from the apparatus in the hazardous area onto outputs in the non-hazardous area. An alarm circuit provides a relay contact output in the non-hazardous area to indicate a failure.

The apparatus comprises isolating transformers, an opto-isolator, a relay, 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.

See annex for electrical parameters.

CONDITIONS OF CERTIFICATION: NO

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

Variation 3.1

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**

Annex: IECEx BAS 09.0072 Annex Issue 2.pdf

MTL4532 Pulse Isolator

Input / Output Parameters

Non-Hazardous Area Terminals 7 to 14

U_m = 253V r.m.s.

The circuit connected to non-hazardous area terminals 7, 8, 9, 10, 13 & 14 is designed to operate from a d.c. supply voltage of up to 35V.

Non-hazardous area terminals 11 & 12 are connected to relay contacts which can switch up to 250V r.m.s. or 5A r.m.s. or 100VA.

Hazardous Area Terminals 2 w.r.t. 1, Hazardous Area Terminals 6 w.r.t. 1 or Hazardous Area Terminals 6 w.r.t. 3

U_o = 10.5V C_i = 0
I_o = 14mA L_i = 0
P_o = 37mW

Hazardous Area Terminals 3 w.r.t. 1

U_o = 1.1V U_i = 30V C_i = 0
I_o = 53mA I_i = 100mA L_i = 0
P_o = 15mW

Although the apparatus does not comply with the simple apparatus requirements of Clause 5.7 of IEC 60079-11: 2006, 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 IEC 60079-11: 2006 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, 4, 5 and 6 must not be used when the source is connected.

Hazardous Area Terminals 5 w.r.t. 1

U_o = 10.5V C_i = 0
I_o = 1.1mA L_i = 0
P_o = 2.9mW

Hazardous Area Terminals 4 w.r.t. 3

U_o = 28V C_i = 0
I_o = 93mA L_i = 0
P_o = 0.65W

Hazardous Area Terminals 4 & 3 w.r.t. 1

U_o = 28V C_i = 0
I_o = 93mA at 28V L_i = 0
I_o = 146mA at 2.9V
P_o = 0.65W

Hazardous Area Terminals 5 & 4 w.r.t. 1

U_o = 28V C_i = 0
I_o = 93mA at 28V L_i = 0
I_o = 94mA at 27.5V
P_o = 0.65W

Programming / Configuration Port (Jack Socket)

U_o = 8V P_o = 27mW C_i = 0
I_o = 15mA U_i = 9.1V L_i = 0

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 (µF)	INDUCTANCE (mH)	OR L/R RATIO (µH/ohm)
Hazardous Area Terminals 2 w.r.t. 1, Hazardous Area Terminals 6 w.r.t. 1 or Hazardous Area Terminals 6 w.r.t. 3			
IIC	2.41	181.4	967
IIB*	16.8	725.6	1,333
IIA	75.0	1,000	1,333
I	95.0	1,000	1,333
Hazardous Area Terminals 3 w.r.t. 1			
IIC	100	12.6	2,439
IIB*	1,000	50.6	9,757
IIA	1,000	101.2	19,515
I	1,000	166.1	32,018
Hazardous Area Terminals 5 w.r.t. 1			
IIC	2.41	1,000	12,313
IIB*	16.8	1,000	49,254
IIA	75.0	1,000	98,508
I	95.0	1,000	161,616
Hazardous Area Terminals 4 w.r.t. 3			
IIC	0.083	4.2	55
IIB*	0.65	12.6	210
IIA	2.15	33.6	444
I	3.76	53.7	668
Hazardous Area Terminals 4 & 3 w.r.t. 1			
IIC	0.083	1.66	55
IIB*	0.65	6.67	210
IIA	2.15	13.3	444
I	3.76	21.8	668

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR L/R RATIO (µH/ohm)
Hazardous Area Terminals 5 & 4 w.r.t. 1			
IIC	0.083	4.02	55
IIB*	0.65	16.0	210
IIA	2.15	32.1	444
I	3.76	52.8	668
Programming / Configuration Port (Jack Socket)			
IIC	0.367	60.7	360
IIB*	2.15	243.0	1,441
IIA	8.8	486.1	1,484
I	12.32	797.5	1,484

*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.