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 19.0018X

Issue No: 1

Certificate history:
Issue No. 1 (2019-08-30)
Issue No. 0 (2019-06-20)

Status: **Current**

Date of Issue: **2019-08-30**

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

Equipment: **MTL SUM5 Universal Isolator**

Optional accessory:

Type of Protection: **Intrinsic Safety**

Marking:

[Ex ia Ga] IIC (-40°C ≤ Ta ≤ +70°C)
[Ex ia Da] IIIC (-40°C ≤ Ta ≤ +70°C)
[Ex ia Ma] I (-40°C ≤ Ta ≤ +70°C)

Approved for issue on behalf of the IECEx Certification Body:

R S Sinclair

D BREARLEY
Certification Manager

Position:

Technical Manager

Signature:
(for printed version)

Date:

2/9/19

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 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 : 2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

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/ExTR19.0047/00 GB/BAS/ExTR19.0192/00

Quality Assessment Report:

GB/BAS/QAR06.0022/08 GB/BAS/QAR07.0017/07

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The MTL SUM5 Universal Isolator is designed to provide a digital or analogue interface for equipment located in the hazardous area and repeat the signals in the non-hazardous area, whilst restricting the transfer of energy from unspecified non-hazardous area equipment to the intrinsically safe by means of limitation of voltage and current.

The MTL SUM5 Universal Isolator comprises two interconnected modules, an Interface Module (MTL4-ADIO Universal Analogue / Digital Interface Module), and a Base Module (MTL4-BSIS IS Module Base).

The Interface Module comprises an isolating transformer and opto-isolators circuits that provide galvanic isolation between the hazardous and non-hazardous area circuitry, zener diode and resistor arrangements providing voltage and current limitation. The above, together with other electronic components are mounted on a single printed circuit board and housed in a moulded plastic enclosure. The internal connections between the Interface Module and associated Base Module is made via an edge-connect type plug and socket arrangement.

The Base Module provides the external hazardous area connection via four screw terminals along one side of the base with the non-hazardous area connections being made via a polarised plug connection at the bottom of the base designed to connect to an associated backplane. The Interface Module clips to the other side of the Base Module. In addition to providing the connection facilities, the Base Module also contain additional Zener diode and current limiting resistor arrangement to provide further voltage and current limitation on the hazardous area side of the circuit. The Base Module is fitted with Loop Disconnect above the Interface Module that allows the hazardous area terminals to be isolated. The Base Module is also fitted with a RFID circuit to allow identification of the Isolator when fitted in a system.

The MTL4-BSIS IS Module Base is additionally fitted with an IS Power Jumper Link on the top edge of the module to allow the output current of the hazardous area outputs to be changed depending on the configuration of the isolator.

The MTL SUM5 Universal Isolator can optionally be fitted with Surge protection on the hazardous area connections by the fitting of a Plug-In Surge Module (MTL4-SD Plug-In Surge Module) that plugs into the top of the Base Module. An earth screw connection facility is provided at the bottom of the Base Module to allow for connection to earth arrangement on the backplane required for surge protection.

The configuration of the MTL SUM5 Universal Isolator as either an analogue input or output, or digital input or output, is dependent on the Interface module fitted, the position of the IS Power Jumper Link on the Base Module (where applicable) and the software configuration of the Interface Module fitted.

See Certificate Annex for electrical parameters.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The non-hazardous area connections of the equipment must be supplied from either safety extra low-voltage (SELV) or protective extra low-voltage (PELV) circuits; for example, equipment complying with the requirements of either the IEC 60950 series, IEC 61010-1 or a technically equivalent standard.

2. When fitted with the optional surge module the equipment is not capable of withstanding the 500V dielectric strength test required by clause 6.3.13 of IEC 60079-11: 2011. This must be taken into account when installing the equipment.

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

Variation 1.1

To permit minor circuit, component and PCB changes to the MTL4-BSIS IS Module Base and MTL4-ADIO Universal Analogue / Digital Interface Module parts of the equipment. As a result of these changes, minor changes were made to the output parameters of the equipment. The Certificate Annex (now Issue 1) has been updated with the revised parameters.

ExTR: **GB/BAS/ExTR19.0192/00** File Reference: **18/0341**

Annex:

IECEx BAS 19.0018X Annex Iss. 1.pdf

MTL SUM5 Universal Isolator
Input & Output Parameters – MTL4-BSIS IS Module Base & MTL4-ADIO Interface Module

Non-Hazardous Area Connector CON1, Pins 1 to 6 & 9 to 12

U_m = 30V

The non-hazardous Connector CON1, pins 1 to 6, & 9 to 12 are designed to operate from a d.c. supply voltage of up to 30V supplied from either safety extra low-voltage (SELV) or protective extra low-voltage circuits; for example equipment complying with the requirements of either the IEC 60950 series, IEC 61010-1 or a technically equivalent standard.

Digital O/P Configuration - Hazardous Area Terminals 4 w.r.t. 3 (IS Power Jumper Link not Fitted)

U_o = 26.5V C_i = 0
I_o = 90mA L_i = 0
P_o = 0.6W

Digital O/P Configuration - Hazardous Area Terminals 4 w.r.t. 3 (IS Power Jumper Link Fitted)

U_o = 26.5V C_i = 0
I_o = 136mA L_i = 0
P_o = 0.9W

Analogue O/P Configuration – Hazardous Area Terminals 4 w.r.t. 2 (IS Power Jumper Link not Fitted)

U_o = 26.5V C_i = 0.5nF
I_o = 90mA L_i = 0
P_o = 0.6W

Analogue O/P Configuration – Hazardous Area Terminals 4 w.r.t. 2 (IS Power Jumper Link Fitted)

U_o = 26.5V C_i = 0.5nF
I_o = 136mA L_i = 0
P_o = 0.9W

Digital I/P Configuration – Hazardous Area Terminals 2 w.r.t. 3

U_o = 10V C_i = 0.5nF
I_o = 0.13mA L_i = 0
P_o = <1mW

The hazardous area terminals 2 w.r.t. 3 are also considered suitable for the connection of an external intrinsically safe source with a U_o = 30V and I_o = 100mA. When an intrinsically safe source is connected to these terminals 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 1 & 4 must not be used when a source is connected to these terminals.

Digital I/P Configuration – Hazardous Area Terminals 1 w.r.t. 2

U_o = 10V C_i = 0.5nF
I_o = 14mA L_i = 0
P_o = 35mW

Analogue I/P Configuration – Hazardous Area Terminals 2 w.r.t. 3

U_o = 10V C_i = 0.5nF
I_o = 0.13mA L_i = 0
P_o = <1mW

The hazardous area terminals 2 w.r.t. 3 are also considered suitable for the connection of an external intrinsically safe source with a U_o = 30V and I_o = 100mA. When an intrinsically safe source is connected to these terminals 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 1 & 4 must not be used when a source is connected to these terminals.

Analogue I/P Configuration – Hazardous Area Terminals 4 w.r.t 2 (IS Power Jumper Link not Fitted)

U_o = 26.5V C_i = 0.5nF
I_o = 90mA L_i = 0
P_o = 0.6W

Analogue I/P Configuration – Hazardous Area Terminals 4 w.r.t 2 (IS Power Jumper Link Fitted)

U_o = 26.5V C_i = 0.5nF
I_o = 136mA L_i = 0
P_o = 0.9W

Analogue I/P Configuration – Hazardous Area Terminals 2 & 4 w.r.t 3 (IS Power Jumper Link not Fitted)

U_o = 26.5V C_i = 0.5nF
I_o = 90mA L_i = 0
P_o = 0.6W

Analogue I/P Configuration – Hazardous Area Terminals 2 & 4 w.r.t 3 (IS Power Jumper Link Fitted)

U_o = 26.5V C_i = 0.5nF
I_o = 136mA L_i = 0
P_o = 0.9W

Load Parameters

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 (µH/ohm)
Hazardous Area Terminals 4 w.r.t. 3 (IS Power Jumper Link not Fitted)			
IIC	0.095	4.29	58
IIB*	0.73	17.1	235
IIA	2.45	34.3	471
I	4.3	56.3	774
Hazardous Area Terminals 4 w.r.t. 3 (IS Power Jumper Link Fitted)			
IIC	0.095	2.00	39
IIB*	0.73	8.40	157
IIA	2.45	16.4	315
I	4.3	56.3	517
Hazardous Area Terminals 4 w.r.t. 2 (IS Power Jumper Link not Fitted)			
IIC	0.094	4.29	58
IIB*	0.72	17.1	235
IIA	2.44	34.3	471
I	4.29	56.3	774
Hazardous Area Terminals 4 w.r.t. 2 (IS Power Jumper Link Fitted)			
IIC	0.094	2.00	39
IIB*	0.72	8.40	157
IIA	2.44	16.4	315
I	4.29	56.3	517
Hazardous Area Terminals 2 w.r.t. 3			
IIC	3.0	1,000	109,401
IIB*	20.0	1,000	437,606
IIA	100	1,000	875,213
I	180	1,000	1,435,897
Hazardous Area Terminals 1 w.r.t. 2			
IIC	3.0	172.4	1,015
IIB*	20.0	656.4	4,063
IIA	100	1,000	8,126
I	180	1,000	13,333
Hazardous Area Terminals 2 & 4 w.r.t. 3 (IS Power Jumper Link not Fitted)			
IIC	0.094	4.29	58
IIB*	0.72	17.1	235
IIA	2.44	34.3	471
I	4.29	56.3	774
Hazardous Area Terminals 2 & 4 w.r.t. 3 (IS Power Jumper Link Fitted)			
IIC	0.094	2.00	39
IIB*	0.72	8.40	157
IIA	2.44	16.4	315
I	4.29	56.3	517

* 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.

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