

1 **EU - 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 Equipment and Protective Systems with respect to the risks of explosion Directive 2014/34/EU**

3 EU - Type Examination Certificate Number: **Baseefa19ATEX0022X – Issue 4**

4 Product: **MTL SUM5 Universal Isolator**

5 Manufacturer: **Eaton Electric Limited**

6 Address: **Great Marlings, Butterfield, Luton, Bedfordshire, LU2 8DL**

7 This re-issued certificate extends EU Type Examination Certificate No. Baseefa19ATEX0022X to apply to product designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

8 SGS Fimko Oy, Notified Body number 0598, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, 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 Annex II to the Directive.

8.1 The original certificate was issued by SGS Baseefa Ltd (UK Notified Body 1180). It, and any supplements previously issued by SGS Baseefa Ltd have been transferred to the supervision of SGS Fimko Oy (EU Notified Body 0598). The original certificate number is retained.

The examination and test results are recorded in confidential Report No. **See Certificate History**

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 EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive 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 :

⊕ II (1)GD [Ex ia Ga] IIC (-40°C ≤ T_a ≤ +70°C)
[Ex ia Da] IIIC (-40°C ≤ T_a ≤ +70°C)

⊕ I (M1) [Ex ia Ma] I (-40°C ≤ T_a ≤ +70°C)

SGS Fimko Oy Customer Reference No. **0703**

Project File No. **20/0305**

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Schedule

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Certificate Number Baseefa19ATEX0022X – Issue 4

15 Description of Product

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 equipment 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, which can either be standard type (MTL4-BSIS IS Module Base) or relay output type (MTL4-BSISR IS Module Relay Base).

The Interface Module comprises an isolating transformer, opto-isolator circuits that provide galvanic isolation between the hazardous and non-hazardous area circuitry and zener diode / 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 are 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 arrangements 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. Two Base Module variants are available, the standard MTL4-BSIS IS Module Base and the MTL4-BSISR IS Module Relay Base.

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 MTL4-BSISR IS Module Relay Base provides a galvanically isolated SPDT relay contacts suitable for switching an intrinsically safe source of up to 30V. The relay contacts are rated 30V and 1A.

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 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. There are two variants of Plug-in Surge Module, the MTL4-SD Plug-In Surge Module designed to be fitted to the MTL4-BSIS IS Module Base, and the MTL4-SDR Plug-In Relay Surge Module designed to be fitted to the MTL4-BSISR IS Module Relay Base.

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.

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)

$$\begin{array}{ll} U_o = 26.5V & C_i = 0 \\ I_o = 90mA & L_i = 0 \\ P_o = 0.6W & \end{array}$$

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

$$\begin{array}{ll} U_o = 26.5V & C_i = 0 \\ I_o = 136mA & L_i = 0 \\ P_o = 0.9W & \end{array}$$

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

$$\begin{array}{ll} U_o = 26.5V & C_i = 0.5nF \\ I_o = 90mA & L_i = 0 \\ P_o = 0.6W & \end{array}$$

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

$$\begin{array}{ll} U_o = 26.5V & C_i = 0.5nF \\ I_o = 136mA & L_i = 0 \\ P_o = 0.9W & \end{array}$$

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

$$\begin{array}{ll} U_o = 10V & C_i = 0.5nF \\ I_o = 0.13mA & L_i = 0 \\ P_o = <1mW & \end{array}$$

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

$$\begin{array}{ll} U_o = 10V & C_i = 0.5nF \\ I_o = 14mA & L_i = 0 \\ P_o = 35mW & \end{array}$$

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

$$\begin{array}{ll} U_o = 10V & C_i = 0.5nF \\ I_o = 0.13mA & L_i = 0 \\ P_o = <1mW & \end{array}$$

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)

$$\begin{aligned} U_o &= 26.5V & C_i &= 0.5nF \\ I_o &= 90mA & L_i &= 0 \\ P_o &= 0.6W \end{aligned}$$

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

$$\begin{aligned} U_o &= 26.5V & C_i &= 0.5nF \\ I_o &= 136mA & L_i &= 0 \\ P_o &= 0.9W \end{aligned}$$

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

$$\begin{aligned} U_o &= 26.5V & C_i &= 0.5nF \\ I_o &= 90mA & L_i &= 0 \\ P_o &= 0.6W \end{aligned}$$

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

$$\begin{aligned} U_o &= 26.5V & C_i &= 0.5nF \\ I_o &= 136mA & L_i &= 0 \\ P_o &= 0.9W \end{aligned}$$

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 (μ F)	INDUCTANCE (mH)	OR	L/R RATIO (μ H/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

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
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:

- 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 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.

Input & Output Parameters – MTL4-BSISR IS Module Relay Base & MTL4-ADIO Interface Module

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

$U_m = 30\text{V}$

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.

Relay Contact Connections - Hazardous Area Terminals 1 (NO), 2 (NC) & 3 (COM)

$$\begin{aligned} U_i &= 30\text{V} & U_o &= 0 \\ C_i &= 0 & I_o &= 0 \\ L_i &= 0 & & \end{aligned}$$

The relay contacts are rated to maximum 30V and 1A.

16 Report Number

See Certificate History

17 Specific Conditions of Use

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 modules the equipment is not capable of withstanding the 500V dielectric strength test required by clause 6.3.13 of EN 60079-11: 2012. This must be taken into account when installing the equipment.
3. MTL4-BSISR IS Module Relay Base only: The circuits connected to these modules are limited to overvoltage category I/II/III (non mains/mains circuits) as defined in IEC 60664-1.

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
1.2.7	Protection against other hazards (LVD type requirements, etc.)
1.2.8	Overloading of equipment (protection relays, etc.)
1.4.1	External effects
1.4.2	Aggressive substances, etc.

19 Drawings and Documents

New drawings submitted for this issue of certificate:

Number	Sheet	Issue	Date	Description
CI4900-1	1 & 2	2	3.21	General Assembly
CI4910-6	1 of 1	3	3.21	Final Assembly – IS & GP Base
CI4911-1	1 of 1	1	1.21	BSISR Circuit Diagram
CI4911-2	1 of 1	1	7.20	ISR Base Parts List
CI4911-3	1 of 1	1	3.21	ISR Base Track Layout
CI4911-4	1 of 1	1	7.20	ISR Base Component Layout
CI4911-5	1 of 1	1	4.19	Certification Markings – MTL4-BSISR
CI4940-6	1 of 1	2	3.21	Final Assembly - Surge Module
CI4942-1	1 of 1	1	06-Dec-18	UI Surge Module Relay Schematic
CI4942-2	1 of 1	1	1-March-2021	Parts List – Surge Module
CI4942-3	1 of 1	1	12.18	Track Layout – Surge Module Relay
CI4942-4	1 of 1	1	12.18	Component Layout – Surge Module Relay
CI4942-5	1 of 1	1	4.19	Certification Marking – Surge Module Relay

The above drawing is associated and held with IECEx Certificate No. IECEx BAS 19.0018X Iss. 4

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
CI4910-1	1 of 1	3	10.20	UI Base Certification Circuit Diagram
CI4910-2	1 & 2	3	9.20	IS & GP Base Parts List
CI4910-3	1 of 1	2	6.19	IS Base Track Layout
CI4910-4	1 of 1	3	9.20	IS & GP Base Component Layout

Number	Sheet	Issue	Date	Description
CI4910-5	1 of 1	1	4.19	Certification Marking – MTL4-BSIS
CI4931-1	1 of 1	2	6.19	Circuit Diagram ADIO Isolator
CI4931-2	1 to 5	3	12.19	MTL4-ADIO Isolator Parts List
CI4931-3	1 & 2	2	6.19	ADIO Isolator Track Layout
CI4931-4	1 & 2	2	6.19	ADIO Isolator Component Layout
CI4931-5	1 of 1	1	4.19	Certification Marking – MTL4-ADIO
CI4931-6	1 & 2	1	4.19	Transformer Details – ADIO Isolator
CI4931-7	1 of 1	1	4.19	Final Assembly – ADIO Isolator
CI4940-1	1 of 1	1	06-Dec-18	UI Surge Module Schematic
CI4940-2	1 of 1	1	4.19	Parts List – Surge Module
CI4940-3	1 of 1	1	4.19	Track Layout – Surge Module
CI4940-4	1 of 1	1	4.19	Component Layout – Surge Module
CI4940-5	1 of 1	1	4.19	Certification Marking – Surge Module

The above drawings are associated and held with IECEx Certificate No. IECEx BAS 19.0018X

20 Certificate History

Certificate No.	Date	Comments
Baseefa19ATEX0022X	20 June 2019	The release of the prime certificate. The associated test and assessment against the requirements of EN IEC 60079-0: 2018 and EN 60079-11: 2012 is documented in Certification Report No. GB/BAS/ExTR19.0047/00 (held with IECEx BAS 19.0018X Iss. 0, Project File 18/0341.
Baseefa19ATEX0022X Issue 1	30 August 2019	This issue of the certificate permits 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 associated test and assessment is documented in Certification Report No. GB/BAS/ExTR19.0192/00 (held with IECEx BAS 19.0018X Iss. 1), Project File No. 18/0341.
Baseefa19ATEX0022X Issue 2	12 February 2020	This issue of the certificate permits minor component changes to the MTL4-ADIO Universal Analogue / Digital Interface Module part of the equipment not affecting the original assessment. The associated test and assessment is documented in Certification Report No. GB/BAS/ExTR19.0345/00 (held with IECEx BAS 19.0018X Iss. 2), Project File No. 19/0707.
Baseefa19ATEX0022X Issue 3	12 November 2020	This issue of the certificate permits minor drawing changes not affecting the previous assessment. The associated test and assessment is documented in Certification Report No. GB/BAS/ExTR20.0159/00 (held with IECEx BAS 19.0018X Iss. 3), Project File No. 20/0529.

Certificate No.	Date	Comments
Baseefa19ATEX0022X Issue 4	12 March 2021	<p>This issue of the certificate permits the addition of the of the MTL4-BSISR IS Module Relay Base and associated optional MTL4-SDR Relay Surge Module to the range.</p> <p>The MTL4-BSISR IS Module Relay Base in combination with the MTL4-ADIO Interface Module provides digital interface to equipment located in the hazardous area with connection made via galvanically isolated SPDT relay contacts capable of switching up to 30V and 1A.</p> <p>The optional MTL4-SDR Relay Surge Module is designed to be fitted to the MTL4-BSISR IS Module Relay Base to provide surge protection to the hazardous area relay contacts connections.</p> <p>The equipment description has been updated to list the input and output parameters associated with the new MTL4-BSISR IS Module Relay Base and existing MTL4-ADIO Interface Module. The Specific Conditions of Use have been revised to add condition relating to the limitation of the circuit that can be connected to the MTL4-BSISR IS Module Relay Base and MTL4-ADIO Interface Module to overvoltage category I/II/III (non mains/mains circuits) as defined in IEC 60664-1.</p> <p>The associated test and assessment is documented in Certification Report No. GB/BAS/ExTR21.0/0027/00 (held with IECEx BAS 19.0018X Iss. 4), Project File No. 20/0305.</p>
For drawings applicable to each issue, see original of that issue.		