

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 1**

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 Baseefa, Notified Body number 1180, 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.

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<sub>a</sub> ≤ +70°C)  
[Ex ia Da] IIIC (-40°C ≤ T<sub>a</sub> ≤ +70°C)

⊕ I (MI) [Ex ia Ma] I (-40°C ≤ T<sub>a</sub> ≤ +70°C)

SGS Baseefa Customer Reference No. **0703**

Project File No. **18/0341**

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**SGS Baseefa Limited**

Rockhead Business Park, Staden Lane,  
Buxton, Derbyshire SK17 9RZ

Telephone +44 (0) 1298 766600 Fax +44 (0) 1298 766601  
e-mail [baseefa@sgs.com](mailto:baseefa@sgs.com) web site [www.sgs.co.uk/sgsbaseefa](http://www.sgs.co.uk/sgsbaseefa)  
Registered in England No. 4305578.

Registered address: Rossmore Business Park, Ellesmere Port, Cheshire, CH65 3EN



R S SINCLAIR

TECHNICAL MANAGER

On behalf of SGS Baseefa Limited

D BREARLEY  
Certification  
Manager

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## Schedule

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Certificate Number Baseefa19ATEX0022X – Issue 1

### 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 (MTL4-BSIS IS Module 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.

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.

### 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)

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

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 ( $\mu$ F)	INDUCTANCE (mH)	OR	L/R RATIO ( $\mu$ H/ohm)
<b>Hazardous Area Terminals 4 w.r.t. 3 (IS Power Jumper Link not Fitted)</b>				
IIC	0.095	4.29		58
IIB*	0.73	17.1		235
IIA	2.45	34.3		471
I	4.3	56.3		774
<b>Hazardous Area Terminals 4 w.r.t. 3 (IS Power Jumper Link Fitted)</b>				
IIC	0.095	2.00		39
IIB*	0.73	8.40		157
IIA	2.45	16.4		315
I	4.3	56.3		517
<b>Hazardous Area Terminals 4 w.r.t. 2 (IS Power Jumper Link not Fitted)</b>				
IIC	0.094	4.29		58
IIB*	0.72	17.1		235
IIA	2.44	34.3		471
I	4.29	56.3		774
<b>Hazardous Area Terminals 4 w.r.t. 2 (IS Power Jumper Link Fitted)</b>				
IIC	0.094	2.00		39
IIB*	0.72	8.40		157
IIA	2.44	16.4		315
I	4.29	56.3		517
<b>Hazardous Area Terminals 2 w.r.t. 3</b>				
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
<b>Hazardous Area Terminals 1 w.r.t. 2</b>				
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

GROUP	CAPACITANCE ( $\mu\text{F}$ )	INDUCTANCE (mH)	OR	L/R RATIO ( $\mu\text{H}/\text{ohm}$ )
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] IIC

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  $600\text{nF}$  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.

## 16 Report Number

See Certificate History

## 17 Specific Conditions of Use

- 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.
- 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 EN 60079-11: 2012. This must be taken into account when installing the equipment.

## 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
CI4910-1	1 of 1	2	7.19	IS Base Certification Circuit Diagram
CI4910-2	1 & 2	2	7.19	IS Base Parts List
CI4910-3	1 of 1	2	6.19	IS Base Track Layout
CI4910-4	1 of 1	2	7.19	IS Base Component Layout
CI4931-1	1 of 1	2	6.19	Circuit Diagram ADIO Isolator
CI4931-2	1 to 5	2	7.19	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

The above drawings are associated and held with IECEx Certificate No. IECEx BAS19.0018X Iss. 1

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
CI4900-1	1 & 2	1	4.19	General Assembly
CI4910-5	1 of 1	1	4.19	Certification Marking – MTL4-BSIS
CI4910-6	1 of 1	1	4.19	Final Assembly – IS Base
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
CI4940-6	1 of 1	1	4.19	Final Assembly - 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).

Certificate No.	Date	Comments
Baseefa19ATEX0022X Issue 1	30 August 2019	<p>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.</p> <p>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.</p>
For drawings applicable to each issue, see original of that issue.		