

1 **EU - TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres
Directive 2014/34/EU**

3 EU - Type Examination Certificate Number: **SGS23ATEX0017 – Issue 1**

4 Product: **MTL4500 & MTL5500 Series Galvanic Isolators – Digital In modules**

5 Manufacturer: **Eaton Electric Limited**

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

7 This re-issued certificate extends EU Type Examination Certificate No. **SGS23ATEX0017** 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.

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	-20°C ≤ Ta ≤ +60°C – All Models
	[Ex ia Da] IIIC	
 I (M1)	[Ex ia Ma] I	-20°C ≤ Ta ≤ +65°C – MTL5514-T Model only

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

Project File No. **23/0502**

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Mikko Välimäki
SGS Fimko Oy

Schedule 1 - MTL4501-SR Failsafe Switch / Proximity Detector Interface

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14

Certificate Number SGS23ATEX0017 – Issue 1

15 Description of Product

The MTL4501-SR Failsafe Switch / Proximity Detector Interface is designed to provide an interface between unspecified non-hazardous area apparatus and an intrinsically safe circuit in the hazardous area. The apparatus is intended to provide a galvanically isolated fail-safe safe-area output whilst monitoring a fail-safe proximity switch detector located in the hazardous area. Line Fault Detection (LFD) in the apparatus is provided by volt-free relay contact output on the non-hazardous area side of the apparatus. Two transformers and a relay provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The apparatus comprises two isolating transformers, a relay, fuses, zener diodes and resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. LED indication is provided for power-on, the output status and line fault detection.

Input / Output Parameters

Non-Hazardous Area Terminals 7, 8, 10, 11, 13 & 14

$$U_m = 253V \text{ r.m.s.}$$

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

The non-hazardous area terminals 10 & 11 are connected to relay contacts which can switch up to 253V r.m.s, 2A r.m.s and 100VA

Hazardous Area Terminals 1 & 2

$$\begin{aligned} U_o &= \pm 9.7V & C_i &= 0 \\ I_o &= 30mA & L_i &= 0 \\ P_o &= 0.07W \end{aligned}$$

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 for either channel:

GROUP	CAPACITANCE (μ F)	INDUCTANCE (mH)	OR	L/R RATIO (μ H/ohm)
IIC	3.5	39		475
IIB*	24	145		1,829
IIA	170	299		3,093
I	320	501		6,414

* 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 $\geq 1\%$ 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 1µF for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

See Certificate History.

17 Specific Conditions of Use

None

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

No new drawings submitted for this issue of certificate for the product range described by Schedule 1.

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
CI4501-1	1 of 6	2	4.14	Parts List for the MTL4501-SR and MTL5501-SR
CI4501-1	2 of 6	1	03.08	Certification Diagram for MTL4501-SR MTL5501-SR
CI4501-1	3 of 6	1	5.08	MTL4501 Track Layout
CI4501-1	4 of 6	2	1.13	MTL4501 Component Layout
CI4501-1	5 of 6	1	4.08	PCB Detail for TPL308
CI4501-1	6 of 6	4	2.23	MTL4501 Certification Label Details - Baseefa
CI4500-3	1 of 1	1	12.10	MTL4500 and MTL5500 – Alternative Zener Diode (Panjit)
CI4500-6	1 of 1	1	20.12.10	MTL4500 and MTL5500 – Conformal Coating
CI4500-100	1 of 1	2	1.13	MTL 4500 Case

The above drawings are associated with BAS23UKEX0024 and held with IECEx BAS 23.0011.

For certificate history for MTL4501-SR Failsafe Switch / Proximity Detector, see Baseefa08ATEX0081 Issue 4.

**Schedule 2 - MTL4504 / MTL4511 / MTL4514 / MTL4514B /
MTL4516 / MTL4516C / MTL4517 Switch / Proximity Detector
Interface**

13

14

Certificate Number SGS23ATEX0017 – Issue 1

15 Description of Product

The MTL4504 / MTL4511 / MTL4514 / MTL4514B / MTL4516 / MTL4516C / MTL4517 Switch / Proximity Detector Interface are designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to up to two intrinsically safe circuits by limitation of voltage and current. Relays and a transformer provide galvanic isolation between the hazardous and non-hazardous area circuitry.

Each channel of the interface monitors either a detector or switch located in the hazardous area and controls non-hazardous area loads via relays. Some models of the interface are fitted with independent phase reverse controls and Line Fault Detection (LFD) circuitry allow an alarm condition to be signalled for either state, set by switches on the side of the interface.

The apparatus comprises an isolating transformer, relays, zener diodes and current limiting resistors to provide voltage and current limitation on each channel. These, together with other electronic components are mounted on a single printed circuit board and housed in a plastic enclosure. Polarised plugs and sockets are provided for connection to the hazardous and non-hazardous area. LED indication is provided to indicate Power-on, state of the outputs and LFD status.

The above listed models are all built on a common printed circuit board. The differences between the models relates to the configuration of the relays and non-hazardous connections via the fitting and removal of relays and soldered and component links. The model configurations are as follows: -

Model Range

Model No.	
MTL4504	Single Channel Switch / Proximity Detector Interface with Line Fault Detection (LFD) & Phase Reversal
MTL4511	Single Channel Switch / Proximity Detector Interface
MTL4514	Single Channel Switch / Proximity Detector Interface with Line Fault Detection (LFD) Alarm
MTL4514B	Single Channel Switch / Proximity Detector Interface with Line Fault Detection (LFD) & Phase Reversal
MTL4516	Dual Channel Switch / Proximity Detector Interface
MTL4516C	Dual Channel Switch / Proximity Detector Interface
MTL4517	Dual Channel Switch / Proximity Detector Interface with Line Fault Detection (LFD) Alarm

Input / Output Parameters

Non-Hazardous Area Terminals 7 to 14

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to non-hazardous area terminals pins 13 & 14 are designed to operate from a d.c. supply voltage of up to 35V.

Non-hazardous area terminals pins 7 to 12 are connected to relay contacts which can switch up to 253V r.m.s, 2A r.m.s and 100VA.

Hazardous Area Terminals 1 w.r.t. 2 / 3 (Channel 1)

Hazardous Area Terminals 4 w.r.t. 5 / 6 (Channel 2)*

$$\begin{aligned} U_o &= 10.5V & C_i &= 0 \\ I_o &= 14mA & L_i &= 0 \\ P_o &= 37mW \end{aligned}$$

* For MTL4516, MTL4516C & MTL4517 Models only

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)
IIC	2.41	175		983
IIB**	16.8	680		1,333
IIA	75.0	1,000		1,333
I	95.0	1,000		1,333

** 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 \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.

16 Report Number

See Certificate History.

17 Specific Conditions of Use

None

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

No new drawings submitted for this issue of certificate for the product range described by Schedule 2.

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
CI4516-1	1 of 6	2	9.08	Parts List for MTL4516
CI4516-1	2 of 6	5	10.11	Circuit Diagram for MTL4516

Number	Sheet	Issue	Date	Description
CI4516-1	3 of 6	3	12.07	MTL4516 Track Layout
CI4516-1	4 of 6	6	10.12	MTL4516 Component Layout
CI4516-1	5 of 6	2	1.07	PCB Detail for TPL308
CI4516-1	6 of 6	8	2.23	MTL4516 Certification Label Details - Baseefa
CI4500-3	1 of 1	1	12.10	MTL4500 and MTL5500 – Alternative Zener Diode (Panjit)
CI4500-6	1 of 1	1	20.12.10	MTL4500 and MTL5500 – Conformal Coating
CI4500-7	1 of 1	2	1.11	MTL4500 Relay Encapsulant
CI4500-100	1 of 1	2	1.13	MTL 4500 Case

The above drawings are associated with BAS23UKEX0024 and held with IECEx BAS 23.0011.

For certificate history for MTL4504 / MTL4511 / MTL4514 / MTL4514B / MTL4516 / MTL4516C / MTL4517 Switch / Proximity Detector Interface, see Baseefa06ATEX0175 Issue 9.

Schedule 3 - MTL4510 / MTL4510B / MTL4513 Switch / Proximity Detector Interface

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Certificate Number SGS23ATEX0017 – Issue 1

15 Description of Product

The MTL4510 Switch / Proximity Detector Interface is designed to restrict the transfer of energy from the unspecified non-hazardous area apparatus to four intrinsically safe circuits by limitation of voltage and current. An isolating transformer and an opto-coupler provide galvanic isolation between the hazardous and non-hazardous area circuitry. Each channel of the MTL4510 monitors either a detector or a switch in the hazardous area and controls a non-hazardous area load via a solid state output.

The apparatus comprises an isolating transformer, an opto-coupler, zener diodes and resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a single printed circuit board (PCB) and housed in moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. LED indication is provided to indicate power-on, the status of each output and Line Fault Detection (LFD).

The MTL4510B Multifunction Digital Input Interface has the same hazardous area circuitry and parameters as the MTL4510 but has a different configuration via the removal of a link in the non-hazardous area circuitry.

The MTL4513 Switch / Proximity Detector Interface is a depopulated version of the MTL4510, using the same PCB and enclosure having only two channels populated.

Input / Output Parameters

Non-Hazardous Area Terminals 7 to 14

$$U_m = 253V$$

The circuit connected to non-hazardous area terminals 7 to 14 are designed to operate from a d.c. supply voltage of 35V d.c.

Hazardous Area Terminals 1 w.r.t. 2 (Channel 1)

Hazardous Area Terminals 3 w.r.t. 2 (Channel 2)

Hazardous Area Terminals 4 w.r.t. 5 (Channel 3)*

Hazardous Area Terminals 6 w.r.t. 5 (Channel 4)*

$$\begin{aligned} U_o &= 10.5V \\ I_o &= 14mA \\ P_o &= 37mW \\ C_i &= 0 \\ L_i &= 0 \end{aligned}$$

* For MTL4510 & MTL4510B Models only

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)
IIC	2.41	175		983
IIB**	16.8	680		1,333
IIA	75.0	1,000		1,333
I	95.0	1,000		1,333

** 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 $\geq 1\%$ 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.

16 Report Number

See Certificate History.

17 Specific Conditions of Use

None

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

No new drawings submitted for this issue of certificate for the product range described by Schedule 3.

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
CI4510-1	1 of 7	2	6.07	Parts List for MTL4510 and MTL4513
CI4510-1	2 of 7	2	05-07	Circuit Diagram for the MTL 4510/4513
CI4510-1	3 of 7	2	05-07	Circuit Diagram for the MTL 4510/4513
CI4510-1	4 of 7	2	5.07	MTL4510 Track Layout
CI4510-1	5 of 7	3	1.13	MTL4510 Component Layout
CI4510-1	6 of 7	2	1.07	PCB Detail for TPL308
CI4510-1	7 of 7	5	2.23	MTL4510 Certification Label Details - Baseefa
CI4500-3	1 of 1	1	12.10	MTL4500 and MTL5500 – Alternative Zener Diode (Panjit)
CI4500-6	1 of 1	1	20.12.10	MTL4500 and MTL5500 – Conformal Coating
CI4500-100	1 of 1	2	1.13	MTL 4500 Case

The above drawings are associated with BAS23UKEX0024 and held with IECEx BAS 23.0011.

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For certificate history for MTL4510 / MTL4510B / MTL4513 Switch / Proximity Detector Interface, see Baseefa06ATEX0172 Issue 6.

**Schedule 4 – MTL4514D Single Channel Switch / Proximity
Detector Interface with Dual Output, Line Fault Detection & Phase
Reversal**

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Certificate Number SGS23ATEX0017 – Issue 1

15 Description of Product

The MTL4514D Single Channel Switch / Proximity Detector Interface with Dual Output, Line Fault Detection & Phase Reversal is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to an intrinsically safe circuit by limitation of voltage and current. Relays and a transformer provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The interface monitors either a detector or switch located in the hazardous area and controls two non-hazardous area loads via relays. The interface is also fitted with independent phase reversal controls and Line Fault Detection (LFD) circuitry allowing an alarm condition to be signalled for either state, set by switches on the side of the interface.

The apparatus comprises an isolating transformer, relays, Zener diodes and current limiting resistors to provide voltage and current limitation.

These, together with other electronic components are mounted on a single printed circuit board and housed in a plastic enclosure. Polarised plug and socket connections are provided for connection to the hazardous and non-hazardous area. LED indication is provided to indicate Power-on, state of the output and LFD status.

Input / Output Parameters

Non-Hazardous Area Terminals 7 to 14

$$U_m = 253V$$

The circuit connected to non-hazardous area terminals pins 13 & 14 are designed to operate from a d.c. supply voltage of up to 35V d.c.

Non-hazardous area terminals pins 7, 8, 10 & 11 are connected to relay contacts which can switch up to 253V r.m.s, 2A r.m.s and 100VA.

Hazardous Area Terminals 1 w.r.t. 2 / 3

$$\begin{array}{ll} U_o = 10.5V & C_i = 0 \\ I_o = 14mA & L_i = 0 \\ P_o = 37mW & \end{array}$$

The capacitance and either the inductance or inductance to resistance ratio (L/R) of the hazardous area terminals must not exceed the following values:

GROUP	CAPACITANCE (μ F)	INDUCTANCE (mH)	OR	L/R RATIO (μ H/ohm)
IIC	2.41	175		983
IIB**	16.8	680		1,333
IIA	75.0	1,000		1,333
I	95.0	1,000		1,333

** 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 $\geq 1\%$ 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.

16 Report Number

See Certificate History.

17 Specific Conditions of Use

None

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

No new drawings submitted for this issue of certificate for the product range described by Schedule 4.

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
CI4500-100	1 of 1	2	1.13	MTL 4500 Case
CI4514D-1	1 of 1	1	10.13	MTL4514D Circuit Diagram
CI4514D-2	1 & 2	1	11.13	MTL4514D Parts List
CI4514D-3	1 of 1	1	10.13	MTL4514D Track Layout
CI4514D-4	1 of 1	1	11.13	MTL4514D Component Layout
CI4514D-5	1 of 1	1	10.13	PCB Detail for TPL308
CI4514D-6	1 of 1	4	2.23	MTL4514D Certification Label Details - Baseefa

The above drawings are associated with BAS23UKEX0024 and held with IECEx BAS 23.0011.

For certificate history for MTL4514D Single Channel Switch / Proximity Detector Interface with Dual Output, Line Fault Detection & Phase Reversal, see Baseefa13ATEX0241 Issue 1.

Schedule 5 – MTL4514N / MTL4514X Switch / Proximity Detector Interface with Line Fault Detection Alarm

13

Interface with Line Fault Detection Alarm

14

Certificate Number SGS23ATEX0017 – Issue 1

15 Description of Product

The MTL4514N / MTL4514X Switch / Proximity Detector Interface with Line Fault Detection alarm are designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to an intrinsically safe circuit by limitation of voltage and current. Relays and a transformer provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The interface monitors either a detector or switch located in the hazardous area and control a non-hazardous area loads via relay. The interface is also fitted with independent phase reversal controls and Line Fault Detection (LFD) circuitry allowing an alarm condition to be signalled for either state, set by switches on the side of the interface. The interface has identification circuitry fitted on the non-hazardous area side of the circuit which allows it to be identified when fitted on specific backplanes.

The apparatus comprises an isolating transformer, relays, zener diodes and current limiting resistors to provide voltage and current limitation. These, together with other electronic components are mounted on a single printed circuit board and housed in a plastic enclosure. Polarised plug and socket connections are provided for connection to the hazardous and non-hazardous area. LED indication is provided to indicate Power-on, state of the output and LFD status.

Input / Output Parameters

Non-Hazardous Area Terminals 7 to 14

$$U_m = 253V$$

The circuit connected to non-hazardous area terminals pins 13 & 14 are designed to operate from a d.c. supply voltage of up to 35V d.c.

Non-hazardous area terminals pins 7 to 12 are connected to relay contacts which can switch up to 253V r.m.s, 2A r.m.s and 100VA.

Hazardous Area Terminals 1 w.r.t. 2 / 3

$$\begin{aligned} U_o &= 10.5V & C_i &= 0 \\ I_o &= 14mA & L_i &= 0 \\ P_o &= 37mW \end{aligned}$$

The capacitance and either the inductance or inductance to resistance ratio (L/R) of the hazardous area terminals must not exceed the following values:

GROUP	CAPACITANCE (μ F)	INDUCTANCE (mH)	OR	L/R RATIO (μ H/ohm)
IIC	2.41	175		983
IIB**	16.8	680		1,333
IIA	75.0	1,000		1,333
I	95.0	1,000		1,333

** 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 $\geq 1\%$ 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.

16 Report Number

See Certificate History.

17 Specific Conditions of Use

None

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
CI4514X-1	1 of 1	1	10.23	Circuit Diagram for MTL 4514X
CI4514X-2	1 to 2	1	10.23	Parts List for MTL 4514X
CI4514X-3	1 of 1	1	11.23	MTL 4514X Track Layout
CI4514X-4	1 of 1	1	11.23	MTL 4514X Component Layout
CI4514X-5	1 of 1	1	11.23	PCB Detail for TPL308
CI4514X-6	1 of 1	1	11.23	MTL 4514X Certification Label Details – BASEEFA – Ex i

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
CI4500-100	1 of 1	2	1.13	MTL 4500 Case
CI4514N-1	1 of 1	1	11.14	Circuit Diagram for MTL4514N
CI4514N-2	1 & 2	1	11.14	Parts List for MTL4514N
CI4514N-3	1 of 1	1	11.14	MTL4514N Track Layout
CI4514N-4	1 of 1	1	11.14	MTL4514N Component Layout
CI4514N-5	1 of 1	1	11.14	PCB Detail for TPL308
CI4514N-6	1 of 1	3	2.23	MTL4514N Certification Label Details – Baseefa – Ex i

The above drawings are associated with BAS23UKEX0024 and held with IECEX Certificate No. IECEX BAS 23.0011.

For certificate history for MTL4514N Switch / Proximity Detector Interface with Line Fault Detection Alarm, see Baseefa14ATEX0387 Issue 1.

Schedule 6 – MTL5501-SR Failsafe Switch / Proximity Detector Interface

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Certificate Number SGS23ATEX0017 – Issue 1

15 Description of Product

The MTL5501-SR Failsafe Switch / Proximity Detector Interface is designed to provide an interface between unspecified non-hazardous area apparatus and intrinsically safe circuit in the hazardous area. The apparatus is intended to provide a galvanically isolated fail-safe safe-area output whilst monitoring a fail-safe proximity switch detector located in the hazardous area. Line Fault Detection (LFD) in the apparatus is provided by volt-free relay contact output on the non-hazardous area side of the apparatus. Two transformers and a relay provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The apparatus comprises two isolating transformers, a relay, fuses, zener diodes and resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. LED indication is provided for power-on, the output status and line fault detection.

Input / Output Parameters

Non-Hazardous Area Terminals 7, 8, 10, 11, 13 & 14

$$U_m = 253V \text{ r.m.s.}$$

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

The non-hazardous area terminals 10 & 11 are connected to relay contacts which can switch up to 253V r.m.s, 2A r.m.s and 100VA

Hazardous Area Terminals 1 & 2

$$\begin{aligned} U_o &= \pm 9.7V & C_i &= 0 \\ I_o &= 30mA & L_i &= 0 \\ P_o &= 0.07W \end{aligned}$$

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 ($\mu H/ohm$)
IIC	3.5	39		475
IIB*	24	145		1,829
IIA	170	299		3,093
I	320	501		6,414

* 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 $\geq 1\%$ 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.

16 Report Number

See Certificate History.

17 Specific Conditions of Use

None

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

No new drawings submitted for this issue of certificate for the product range described by Schedule 6.

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
CI5501-1	1 of 1	4	2.23	MTL5501 Certification Label Details & DIN Rail Fittings - Baseefa
CI4501-1	1 of 6	2	4.14	Parts List for the MTL4501-SR and MTL5501-SR
CI4501-1	2 of 6	1	03.08	Certification Diagram for MTL4501-SR MTL5501-SR.
CI4501-1	3 of 6	1	5.08	MTL4501 Track Layout
CI4501-1	4 of 6	2	1.13	MTL4501 Component Layout
CI4501-1	5 of 6	1	4.08	PCB Detail for TPL308
CI4500-3	1 of 1	1	12.10	MTL4500 and MTL5500 – Alternative Zener Diode (Panjit)
CI4500-5	1 of 1	1	11.10	MTL5500 - Alternative DIN Rail Mechanism
CI4500-6	1 of 1	1	20.12.10	MTL4500 and MTL5500 – Conformal Coating
CI4500-7	1 of 1	2	1.11	MTL4500 Relay Encapsulant
CI5500-100	1 of 1	3	1.13	New 5500 Outline

The above drawings are associated with BAS23UKEX0024 and held with IECEx Certificate No. IECEx BAS 23.0011.

For certificate history for MTL5501-SR Failsafe Switch / Proximity Detector Interface, see Baseefa08ATEX0082 Issue 4.

Schedule 7 – MTL5510 / MTL5510B / MTL5513 Switch / Proximity Detector Interface

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Certificate Number SGS23ATEX0017 – Issue 1

15 Description of Product

The MTL5510 Switch / Proximity Detector Interface is designed to restrict the transfer of energy from the unspecified non-hazardous area apparatus to four intrinsically safe circuits by limitation of voltage and current. An isolating transformer and an opto-coupler provide galvanic isolation between the hazardous and non-hazardous area circuitry. Each channel of the MTL5510 monitors either a detector or a switch in the hazardous area and controls a non-hazardous area load via a solid state output.

The apparatus comprises an isolating transformer, an opto-coupler, zener diodes and resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a single printed circuit board (PCB) and housed in moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. LED indication is provided to indicate power-on, the status of each output and Line Fault Detection (LFD).

The MTL5510B Multifunction Digital Input Interface has the same hazardous area circuitry and parameters as the MTL5510 but has a different configuration via the removal of a link in the non-hazardous area circuitry.

The MTL5513 Switch / Proximity Detector Interface is a depopulated version of the MTL5510, using the same PCB and enclosure having only two channels populated.

Input / Output Parameters

Non-Hazardous Area Terminals 7 to 14

$$U_m = 253V$$

The circuit connected to non-hazardous area terminals 7 to 14 are designed to operate from a d.c. supply voltage of 35V d.c.

Hazardous Area Terminals 1 w.r.t. 2 (Channel 1)

Hazardous Area Terminals 3 w.r.t. 2 (Channel 2)

Hazardous Area Terminals 4 w.r.t. 5 (Channel 3)*

Hazardous Area Terminals 6 w.r.t. 5 (Channel 4)*

$$\begin{aligned} U_o &= 10.5V \\ I_o &= 14mA \\ P_o &= 37mW \\ C_i &= 0 \\ L_i &= 0 \end{aligned}$$

* For MTL5510 & MTL5510B Models only

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)
IIC	2.41	175		983
IIB**	16.8	680		1,333
IIA	75.0	1,000		1,333
I	95.0	1,000		1,333

** 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 $\geq 1\%$ 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.

16 Report Number

See Certificate History.

17 Specific Conditions of Use

None

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

No new drawings submitted for this issue of certificate for the product range described by Schedule 7.

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
CI5510-1	1 of 1	4	2.23	MTL5510 Certification Label Details & DIN Rail Fittings - Baseefa
CI4510-1	1 of 7	2	6.07	Parts List for MTL4510 and MTL4513
CI4510-1	2 of 7	2	05-07	Circuit Diagram for the MTL 4510/4513
CI4510-1	3 of 7	2	05-07	Circuit Diagram for the MTL 4510/4513
CI4510-1	4 of 7	2	5.07	MTL4510 Track Layout
CI4510-1	5 of 7	3	1.13	MTL4510 Component Layout
CI4510-1	6 of 7	2	1.07	PCB Detail for TPL308
CI4500-3	1 of 1	1	12.10	MTL4500 and MTL5500 – Alternative Zener Diode (Panjit)
CI4500-5	1 of 1	1	11.10	MTL5500 - Alternative DIN Rail Mechanism
CI4500-6	1 of 1	1	20.12.10	MTL4500 and MTL5500 – Conformal Coating
CI5500-100	1 of 1	3	1.13	New 5500 Outline

The above drawings are associated with BAS23UKEX0024 and held with IECEx Certificate No. IECEx BAS 23.0011.

For certificate history for MTL5510 / MTL5510B / MTL5513 Switch / Proximity Detector Interface, see Baseefa07ATEX0210 Issue 3.

**Schedule 8 – MTL5511 / MTL5514 / MTL5514-T / MTL5516C /
13 MTL5517 Switch / Proximity Detector Interface**

14 **Certificate Number SGS23ATEX0017 – Issue 1**

15 Description of Product

The MTL5511 / MTL5514 / MTL5514-T / MTL5516C / MTL5517 Switch / Proximity Detector Interface are designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to up to two intrinsically safe circuits by limitation of voltage and current. A transformer and relays provide galvanic isolation between the hazardous and non-hazardous area circuitry.

Each channel of the interface monitors either a detector or switch located in the hazardous area and controls non-hazardous area loads via relays. Some models of the interface are fitted with independent phase reverse controls and Line Fault Detection (LFD) circuitry allow an alarm condition to be signalled for either state, set by switches on the side of the interface.

The apparatus comprises an isolating transformer, relays, zener diodes and current limiting resistors to provide voltage and current limitation on each channel. These, together with other electronic components are mounted on a single printed circuit board and housed in a plastic enclosure. Polarised plugs and sockets are provided for connection to the hazardous and non-hazardous area. LED indication is provided to indicate Power-on, state of the outputs and LFD status.

The above listed models are all built on a common printed circuit board. The differences between the models relates to the configuration of the relays and non-hazardous connections via the fitting and removal of relays and soldered and component links.

The MTL5514-T Single Channel Switch / Proximity Detector Interface with Line Fault Detection (LFD) Alarm is of similar construction to the MTL5514 variant of the equipment with the same input and output parameters, but has an extended ambient temperature range of -20°C to +65°C.

Model Range:

Model No.	
MTL5511	Single Channel Switch / Proximity Detector Interface
MTL5514	Single Channel Switch / Proximity Detector Interface with Line Fault Detection (LFD) Alarm
MTL5514-T	Single Channel Switch / Proximity Detector Interface with Line Fault Detection (LFD) Alarm
MTL5516C	Two Channel Switch / Proximity Detector Interface
MTL5517	Two Channel Switch / Proximity Detector Interface with Line Fault Detection (LFD) Alarm

Input / Output Parameters

Non-Hazardous Area Terminals 7 to 14

$$U_m = 253V \text{ r.m.s.}$$

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

Non-hazardous area terminals 7 to 12 are connected to relay contacts which can switch up to 253V r.m.s, 2A r.m.s. and 100VA.

Hazardous Area Terminals 1 w.r.t. 2 / 3 (Channel 1)

Hazardous Area Terminals 4 w.r.t. 5 / 6 (Channel 2)*

$$\begin{aligned} U_o &= 10.5V & C_i &= 0 \\ I_o &= 14mA & L_i &= 0 \\ P_o &= 37mW \end{aligned}$$

* For MTL5516C & MTL5517 Models only

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)
IIC	2.41	175		983
IIB**	16.8	680		1,333
IIA	75.0	1,000		1,333
I	95.0	1,000		1,333

** 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 $\geq 1\%$ 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 1μ F for Groups IIB, IIA & I and 600nF for Group IIC.

16 Report Number

See Certificate History.

17 Specific Conditions of Use

None

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

No new drawings submitted for this issue of certificate for the product range described by Schedule 8.

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
CI5514-T-1	1 of 1	3	2.23	MTL5514-T Certification Label Details & DIN Rail Fittings - Baseefa
CI4514-T-1	1 of 1	1	3.17	Circuit Diagram for MTL5514-T
CI4514-T-2	1 of 1	1	3.17	Parts List for MTL5514-T
CI4514-T-3	1 of 1	1	3.17	MTL5514-T Track Layout

Number	Sheet	Issue	Date	Description
CI4514-T-4	1 of 1	1	3.17	MTL5514-T Component Layout
CI4514-T-6	1 of 1	1	3.17	PCB Detail for TPL308
CI4516-1	1 of 6	2	9.08	Parts List for MTL4516
CI4516-1	2 of 6	5	10.11	Circuit Diagram for MTL4516
CI4516-1	3 of 6	3	12.07	MTL4516 Track Layout
CI4516-1	4 of 6	6	10.12	MTL4516 Component Layout
CI4516-1	5 of 6	2	1.07	PCB Detail for TPL308
CI4500-3	1 of 1	1	12.10	MTL4500 and MTL5500 – Alternative Zener Diode (Panjit)
CI4500-5	1 of 1	1	11.10	MTL5500 - Alternative DIN Rail Mechanism
CI4500-6	1 of 1	1	20.12.10	MTL4500 and MTL5500 – Conformal Coating
CI4500-7	1 of 1	2	1.11	MTL4500 Relay Encapsulant
CI5500-100	1 of 1	3	1.13	New 5500 Outline
CI5516-1	1 of 1	6	2.23	MTL5516C Certification Label Details & DIN Rail Fittings - Baseefa

The above drawings are associated with BAS23UKEX0024 and held with IECEx Certificate No. IECEx BAS 23.0011.

For certificate history for MTL5511 / MTL5514 / MTL5514-T / MTL5516C / MTL5517 Switch / Proximity Detector Interface, see Baseefa07ATEX0211 Issue 7.

Schedule 9 – MTL5514D Single Channel Proximity Detector

13 Interface with Dual Output, Line Fault Detection & Phase Reversal

14 Certificate Number SGS23ATEX0017 – Issue 1

15 Description of Product

The MTL5514D Single Channel Switch / Proximity Detector Interface with Dual Output, Line Fault Detection & Phase Reversal is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to an intrinsically safe circuit by limitation of voltage and current. Relays and a transformer provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The interface monitors either a detector or switch located in the hazardous area and controls two non-hazardous area loads via relays. The interface is also fitted with independent phase reversal controls and Line Fault Detection (LFD) circuitry allowing an alarm condition to be signalled for either state, set by switches on the side of the interface.

The apparatus comprises an isolating transformer, relays, zener diodes and current limiting resistors to provide voltage and current limitation.

These, together with other electronic components are mounted on a single printed circuit board and housed in a plastic enclosure. Polarised plug and socket connections are provided for connection to the hazardous and non-hazardous area. LED indication is provided to indicate Power-on, state of the output and LFD status.

Input / Output Parameters

Non-Hazardous Area Terminals 7 to 14

$$U_m = 253V \text{ r.m.s.}$$

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

Non-hazardous area terminals pins 7 to 12 are connected to relay contacts which can switch up to 253V r.m.s, 2A r.m.s. and 100VA.

Hazardous Area Terminals 1 w.r.t. 2 / 3

$$\begin{aligned} U_o &= 10.5V & C_i &= 0 \\ I_o &= 14mA & L_i &= 0 \\ P_o &= 37mW \end{aligned}$$

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the hazardous area terminals must not exceed the following values:

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
IIC	2.41	175		983
IIB**	16.8	680		1,333
IIA	75.0	1,000		1,333
I	95.0	1,000		1,333

** 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 $\geq 1\%$ 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.

16 Report Number

See Certificate History.

17 Specific Conditions of Use

None

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

No new drawings submitted for this issue of certificate for the product range described by Schedule 9.

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
CI5514D-1	1 of 1	4	2.23	MTL5514D Certification Label Details – Baseefa
CI4514D-1	1 of 1	1	10.13	MTL4514D Circuit Diagram
CI4514D-2	1 & 2	1	11.13	MTL4514D Parts List
CI4514D-3	1 of 1	1	10.13	MTL4514D Track Layout
CI4514D-4	1 of 1	1	11.13	MTL4514D Component Layout
CI4514D-5	1 of 1	1	10.13	PCB Detail for TPL308
CI5500-100	1 of 1	3	1.13	New 5500 Outline

The above drawings are associated with BAS23UKEX0024 and held with IECEx Certificate No. IECEx BAS 23.0011.

For certificate history for MTL5514D Single Channel Proximity Detector Interface with Dual Output, Line Fault Detection & Phase Reversal, see Baseefa13ATEX0242 Issue 1.

20 Certificate History

Certificate No.	Date	Comments
SGS23ATEX0017	03 May 2023	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 IECEX ExTR GB/BAS/ExTR23.0017/00 and held with Project No. 22/0560.
SGS23ATEX0017 Issue 1	18 December 2023	To permit the introduction of the MTL4514X Switch / Proximity Detector Interface with Line Fault Detection Alarm to the certification (see schedule 5). The associated test and assessment is documented in ExTR GB/SGS/ExTR23.0149/00 and held with Project No. 23/0502
For drawings applicable to each issue, see original of that issue.		