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: **SGS23ATEX0020 – Issue 1**

4 Product: **MTL4500 & MTL5500 Series Galvanic Isolators – Analogue Output 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. SGS23ATEX0020 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** **[Ex ia Da] IIIC**	**-20°C ≤ Ta ≤ +60°C – All Models** **-20°C ≤ Ta ≤ +65°C – MTL5546Y-T Model only**
I (M1)	**[Ex ia Ma] I**	

SGS Fimko Oy Customer Reference No. **0703** Project File No. **24/0524**

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Schedule 1 – MTL4546 / MTL4546C / MTL4546Y / MTL4546S Single Channel Isolating Driver, 4/20mA for Smart I/P Converters

Certificate Number SGS23ATEX0020 – Issue 1

15 Description of Product

The MTL4546 / MTL4546C / MTL4546Y / MTL4546S Single Channel Isolating Driver, 4/20mA for Smart I/P Converters accepts a 4/20mA signal from a controller located in the non-hazardous area to drive a load in the hazardous area. It permits bi-directional transmission of digital signal to and from an operator station or hand-held communicator. The equipment restricts the transfer of energy from unspecified non-hazardous area equipment to an intrinsically safe circuit by limitation of voltage and current. Three transformers provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The apparatus comprises a power transformer, two signal transformers, zener diodes and current limiting resistors to provide 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. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections.

The MTL4546, MTL4546C & MTL4546Y models in terms of intrinsic safety are identical. The difference between them is the MTL4546C & MTL4546Y have the Line Fault Detection (LFD) facility disabled. The MTL4546S uses the same PCB and enclosure but the PCB is populated with different voltage and current limitation components, and therefore has different output parameters to the other variants.

Input/Output Parameters

MTL4546, MTL4546C & MTL4546Y Single Channel Isolating Driver, 4/20mA for Smart I/P Converters

Non-Hazardous Area Terminals 11, 12, 13 & 14

U_m = 253V r.m.s.

The circuit connected to non-hazardous area terminals 11 to 14 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 2 w.r.t. 1

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

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	0.083	4.2	56
IIB*	0.65	12.6	210
IIA	2.15	33.6	444
I	3.76	53.7	668

* 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.

MTL4546S Single Channel Isolating Driver, 4/20mA for Smart I/P Converters

Non-Hazardous Area Terminals 11, 12, 13 & 14

U_m = 253V r.m.s.

The circuit connected to non-hazardous area terminals 11 to 14 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 2 w.r.t. 1

U_o = 22V C_i = 0
I_o = 100mA L_i = 0
P_o = 0.55W

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	0.165	3.55	64
IIB*	1.14	14.6	258
IIA	4.20	30.5	517
I	6.00	44.3	848

* 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.

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
CI4546-1	4 of 7	7	11.24	MTL4546 Component Layout

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
CI4546-1	1 of 7	3	10.08	Parts List for MTL4546
CI4546-1	2 of 7	6	10.12	Circuit Diagram for the MTL 4546
CI4546-1	3 of 7	3	6.07	MTL4546 Track Layout
CI4546-1	5 of 7	2	1.07	PCB Detail for TPL300 and TPL302
CI4546-1	6 of 7	2	1.07	PCB Detail for TPL301
CI4546-1	7 of 7	8	2.23	MTL4546 Certification Label Details - Baseefa
CI4546S-1	1 of 1	1	1.13	Parts List for MTL4546S
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 BAS23UKEX0027 and held with IECEx BAS 23.0014.

For certificate history for MTL4546 / MTL4546C / MTL4546Y / MTL4546S Single Channel Isolating Driver, 4/20mA for Smart I/P Converters, see Baseefa06ATEX0157 Issue 9.

13 Schedule 2 – MTL4549, MTL4549C & MTL4549Y 2 Channel Isolating Driver, 4/20mA for Smart I/P Converters

14 Certificate Number SGS23ATEX0020 – Issue 1

15 Description of Product

The MTL4549, MTL4549C & MTL4549Y 2 Channel Isolating Driver, 4/20mA for Smart I/P Converters, accepts up to two separate 4/20mA signals from controllers located in the non-hazardous to drive loads in the hazardous area. It permits bi-directional transmission of digital signals to and from an operator station or hand-held communicator. The apparatus restricts the transfer of energy from unspecified non-hazardous area apparatus to intrinsically safe circuits by limitation of voltage and current. Three transformers on each channel provide galvanic isolation between the hazardous and non-hazardous area circuitry.

Each channel of the apparatus comprises a power transformer, two current transformers, zener diodes and current limiting 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.

The MTL4549, MTL4549C & MTL4549Y models in terms of intrinsic safety are identical. The difference between them is the MTL4549C & MTL4549Y have the Line Fault Detection (LFD) facility disabled.

Input/Output Parameters

Non-Hazardous Area Terminals 8, 9, 11, 12, 13 & 14

U_m = 253V r.m.s.

The circuit connected to non-hazardous area terminals 8, 9, 11, 12, 13 & 14 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 2 w.r.t. 1 (Channel 1)
or
Hazardous Area Terminals 5 w.r.t. 4 (Channel 2)

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

Each channel must be considered as a separate intrinsically safe circuit

Load Parameters

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

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR L/R RATIO (µH/ohm)
IIC	0.083	4.2	56
IIB*	0.65	12.6	210
IIA	2.15	33.6	444
I	3.76	53.7	668

*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.

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

Number	Sheet	Issue	Date	Description
CI4549-1	1 of 8	2	7.08	Parts List for MTL4549
CI4549-1	2 of 8	4	7.08	Circuit Diagram for the MTL4549
CI4549-1	3 of 8	4	7.08	Circuit Diagram for the MTL4549
CI4549-1	4 of 8	3	11.07	MTL4549 Track Layout
CI4549-1	5 of 8	6	1.13	MTL4549 Component Layout
CI4549-1	6 of 8	2	1.07	PCB Detail for TPL300 and TPL302
CI4549-1	7 of 8	2	1.07	PCB Detail for TPL301
CI4549-1	8 of 8	7	2.23	MTL4549 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 BAS23UKEX0027 and held with IECEx BAS 23.0014.
For certificate history for MTL4549, MTL4549C & MTL4549Y 2 Channel Isolating Driver, 4/20mA for Smart I/P Converters, see Baseefa06ATEX0158 Issue 7.

13 Schedule 3 - MTL4545Y Isolating Driver, 4/20mA for Smart I/P Converters

14 Certificate Number SGS23ATEX0020 – Issue 1

15 Description of Product

The MTL4545Y Isolating Driver, 4/20mA for Smart I/P Converters accepts a 4/20mA signal from a controller located in the non-hazardous area to drive a load in the hazardous area. It permits bi-directional transmission of a digital signal to and from an operator station or hand-held communicator. The equipment restricts the transfer of energy from unspecified non-hazardous area equipment to an intrinsically safe circuit by limitation of voltage and current. Three transformers provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The apparatus comprises a power transformer, two signal transformers, zener diodes and current limiting resistors to provide voltage and current limitation. The above, together with electronic components are mounted on a single printed circuit board and housed in a moulded plastic enclosure. Polarised plug and sockets are provided for hazardous and non-hazardous area connections. A LED is fitted to provide power on indication.

Input/Output Parameters

Non-Hazardous Area Terminals 8, 9, 12, 13 & 14

U_m = 253V

The apparatus is designed to operate on the above terminals from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 2 w.r.t. 1

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

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	0.083	4.2		56
IIB**	0.65	12.6		210
IIA	2.15	33.6		444
I	3.76	53.7		668

** 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.

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

Number	Sheet	Issue	Date	Description
CI4500-100	1 of 1	2	1.13	MTL 4500 Case
CI4545Y-1	1 of 1	1	8.14	Circuit Diagram for the MTL 4545Y
CI4545Y-2	1 & 2	1	8.14	MTL4545Y Parts List
CI4545Y-3	1 of 1	1	8.14	MTL4545Y Track Layout
CI4545Y-4	1 of 1	1	8.14	MTL4545Y Component Layout
CI4545Y-5	1 of 1	1	8.14	PCB Detail for TPL300
CI4545Y-6	1 of 1	1	8.14	PCB Detail for TPL301
CI4545Y-7	1 of 1	3	2.23	MTL4545Y Certification Label Details – Baseefa – Ex i

The above drawings are associated with BAS23UKEX0027 and held with IECEx BAS 23.0014.
For certificate history for MTL4545Y Isolating Driver, 4/20mA for Smart I/P Converters, see Baseefa15ATEX0033 Issue 1.

13 Schedule 4 – MTL5546 / MTL5546Y / MTL5546Y-T / MTL5546S Single Channel Isolating Driver, 4/20mA for Smart I/P Converters

14 Certificate Number SGS23ATEX0020 – Issue 1

15 Description of Product

The MTL5546 / MTL5546Y Single Channel Isolating Driver, 4/20mA for Smart I/P Converters accepts a 4/20mA signal from a controller located in the non-hazardous area to drive a load in the hazardous area. It permits bi-directional transmission of digital signals to and from an operator station or hand-held communicator. The apparatus restricts the transfer of energy from unspecified non-hazardous area apparatus to an intrinsically safe circuit by limitation of voltage and current. Three transformers provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The apparatus comprises a power transformer, two current transformers, zener diodes and current limiting 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.

The MTL5546 & MTL5546Y models in terms of intrinsic safety are identical. The difference between them is the MTL5546Y has the Line Fault Detection (LFD) facility disabled.

The MTL5546Y-T Single Channel Isolating Driver, 4/20mA for Smart I/P Converters is of a similar construction to the MTL5546Y variant of the equipment with the same input and output parameters, but has an extended ambient temperature range of -20°C to +65°C.

The MTL5546S Single Channel Isolating Driver, 4/20mA for Smart I/P Converters is of an identical construction to the MTL4546S variant with the same input and output parameters but is made in a housing for mounting on a DIN rail.

Input/Output Parameters

MTL5546 / MTL5546Y / MTL5546Y-T Single Channel Isolating Driver, 4/20mA for Smart I/P Converters

Non-Hazardous Area Terminals 11 to 14

U_m = 253V r.m.s.

The circuit connected to non-hazardous area terminals 11 to 14 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 2 w.r.t. 1

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

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	0.083	4.2	56
IIB*	0.65	12.6	210
IIA	2.15	33.6	444
I	3.76	53.7	668

* 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.

MTL5546S Single Channel Isolating Driver, 4/20mA for Smart I/P Converters

Non-Hazardous Area Terminals 11, 12, 13 & 14

U_m = 253V r.m.s.

The circuit connected to non-hazardous area terminals 11 to 14 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 2 w.r.t. 1

U_o = 22V C_i = 0
I_o = 100mA L_i = 0
P_o = 0.55W

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	0.165	3.55		64
IIB*	1.14	14.6		258
IIA	4.20	30.5		517
I	6.00	44.3		848

* 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.

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
CI4546-1	4 of 7	7	11.24	MTL4546 Component Layout
CI5546-1	1 of 1	7	11.24	MTL5546 Certification Label Details & DIN Rail Fittings - Baseefa

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
CI4546Y-T-1	1 of 1	1	3.17	Circuit Diagram for the MTL 5546Y-T
CI4546Y-T-2	1 of 1	1	3.17	Parts List for MTL5546Y-T
CI4546Y-T-3	1 of 1	1	3.17	MTL5546Y-T Track Layout
CI4546Y-T-4	1 of 1	1	3.17	MTL5546Y-T Component Layout
CI4546Y-T-6	1 of 1	1	3.17	PCB Detail for TPL300 and TPL302
CI4546Y-T-7	1 of 1	1	3.17	PCB Detail for TPL301
CI5546Y-T-1	1 of 1	3	2.23	MTL5546 Certification Label Details & DIN Rail Fittings - Baseefa
CI4546-1	1 of 7	3	10.08	Parts List for MTL4546
CI4546-1	2 of 7	6	10.12	Circuit Diagram for the MTL 4546
CI4546-1	3 of 7	3	6.07	MTL4546 Track Layout
CI4546-1	5 of 7	2	1.07	PCB Detail for TPL300 and TPL302
CI4546-1	6 of 7	2	1.07	PCB Detail for TPL301
CI4546S-1	1 of 1	1	1.13	Parts List for MTL4546S
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 BAS23UKEX0027 and held with IECEx BAS 23.0014.
For certificate history for MTL5546 / MTL5546Y / MTL5546Y-T Single Channel Isolating Driver, 4/20mA for Smart I/P Converters, see Baseefa07ATEX0214 Issue 6.

13 Schedule 5 – MTL5549 & MTL5549Y 2 Channel Isolating Driver, 4/20mA for Smart I/P Converters

14 Certificate Number SGS23ATEX0020 – Issue 1

15 Description of Product

The MTL5549 & MTL5549Y 2 Channel Isolating Driver, 4/20mA for Smart I/P Converters accepts up to two separate 4/20mA signals from controllers located in the non-hazardous to drive loads in the hazardous area. It permits bi-directional transmission of digital signals to and from an operator station or hand-held communicator. The apparatus restricts the transfer of energy from unspecified non-hazardous area apparatus to intrinsically safe circuits by limitation of voltage and current. Three transformers on each channel provide galvanic isolation between the hazardous and non-hazardous area circuitry.

Each channel of the apparatus comprises a power transformer, two current transformers, zener diodes and current limiting 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.

The MTL5549 & MTL5549Y models in terms of intrinsic safety are identical. The difference between them is the MTL5549Y has the Line Fault Detection (LFD) facility disabled.

Input/Output Parameters

Non-Hazardous Area Terminals 8, 9, 11, 12, 13 & 14

U_m = 253V r.m.s.

The circuit connected to non-hazardous area terminals 8, 9, 11, 12, 13 & 14 is designed to operate from a d.c. supply voltage of up to 35V.

Hazardous Area Terminals 2 w.r.t. 1 (Channel 1)
or
Hazardous Area Terminals 5 w.r.t. 4 (Channel 2)

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

Each channel must be considered as a separate intrinsically safe circuit

Load Parameters

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

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR L/R RATIO (µH/ohm)
IIC	0.083	4.2	56
IIB*	0.65	12.6	210
IIA	2.15	33.6	444
I	3.76	53.7	668

*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.

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

Number	Sheet	Issue	Date	Description
CI5549-1	1 of 1	6	2.23	MTL5549 Certification Label Details & DIN Rail Fittings - Baseefa
CI4549-1	1 of 8	2	7.08	Parts List for MTL4549
CI4549-1	2 of 8	4	7.08	Circuit Diagram for the MTL4549
CI4549-1	3 of 8	4	7.08	Circuit Diagram for the MTL4549
CI4549-1	4 of 8	3	11.07	MTL4549 Track Layout
CI4549-1	5 of 8	6	1.13	MTL4549 Component Layout
CI4549-1	6 of 8	2	1.07	PCB Detail for TPL300 and TPL302
CI4549-1	7 of 8	2	1.07	PCB Detail for TPL301
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 BAS23UKEX0027 and held with IECEx Certificate No. IECEx BAS 23.0014.

For certificate history for MTL5549 & MTL5549Y 2 Channel Isolating Driver, 4/20mA for Smart I/P Converters, see Baseefa07ATEX0215 Issue 4.

20 Certificate History

Certificate No.	Date	Comments
SGS23ATEX0020	3 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 Test Report No. GB/BAS/ExTR23.0020/00. Project File No. 22/0560.
SGS23ATEX0020 Issue 1	5 December 2024	This issue of the certificate permits the addition of the MTL5546S Single Channel Isolating Driver, 4/20mA for Smart I/P Converters variant to the range covered by the certificate. The associated assessment is documented in Certification Report No. GB/SGS/ExTR24.0207/00, Project File No. 24/0524.
For drawings applicable to each issue, see original of that issue.		