

IECEx Certificate of Conformity

тм		of Conformity	
	INTERNATIONAL IEC Certification for rules and de	ELECTROTECHNICAL COMMISS System for Explosive Atmosphere tails of the IECEx Scheme visit www.iecex.com	SION s
Certificate No.:	IECEx BAS 23.0014	Page 1 of 3	Certificate history:
Status:	Current	Issue No: 0	
Date of Issue:	2023-05-05		
Applicant:	Eaton Electric Limited Great Marlings Butterfield Luton Bedfordshire LU2 8DL United Kingdom		
Equipment:	MTL4500 & MTL5500 Series Gal	vanic Isolators – Analogue Output modules	
Optional accessory:			
Type of Protection:	Intrinsic Safety		
Marking:	[Ex ia Ga] IIC [Ex ia Da] IIIC [Ex ia Ma] I		
	-20°C ≤ Ta ≤ +60°C – All Models -20°C ≤ Ta ≤ +65°C – MTL5546Y-	T Model only	
Approved for issue o Certification Body:	n behalf of the IECEx	Mr R S Sinclair	
Position:		Technical Manager	
Signature: (for printed version)		RSS-Qui	
Date: (for printed version)		5/5/2023	
 This certificate and s This certificate is not The Status and auth 	chedule may only be reproduced in full. transferable and remains the property of th enticity of this certificate may be verified by	the issuing body. visiting www.iecex.com or use of this QR Code.	
Certificate issued SGS Baseefa Rockhead Busir Staden Lane Buxton, Derbys	l by: Limited ness Park hire, SK17 9RZ		SGS

SGS Baseefa Limited **Rockhead Business Park** Staden Lane Buxton, Derbyshire, SK17 9RZ **United Kingdom**



IECEx Certificate of Conformity

TW		
Certificate No .:	IECEx BAS 23.0014	Page 2 of 3
Date of issue:	2023-05-05	Issue No: 0
Manufacturer:	Eaton Electric Limited Great Marlings Butterfield Luton Bedfordshire LU2 8DL United Kingdom	
Manufacturing locations:	Eaton Electric Limited Great Marlings Butterfield Luton Bedfordshire LU2 8DL United Kingdom	MTL Instruments PVT Limited No 3 Old Mahabalipuram Road, Sholinganallur, Chennai, 600 119 India
This certificate is iss IEC Standard list be found to comply with Rules, IECEx 02 and	ued as verification that a sample(s low and that the manufacturer's qu the IECEx Quality system require d Operational Documents as amer	s), representative of production, was assessed and tested and found to comply with the Jality system, relating to the Ex products covered by this certificate, was assessed and ments.This certificate is granted subject to the conditions as set out in IECEx Scheme ided
STANDARDS : The equipment and a to comply with the fo	any acceptable variations to it spe Ilowing standards	cified in the schedule of this certificate and the identified documents, was found
IEC 60079-0:2017 Edition:7.0	Explosive atmospheres - Part 0	: Equipment - General requirements
IEC 60079-11:2011 Edition:6.0	Explosive atmospheres - Part 1	1: Equipment protection by intrinsic safety "i"
	This Certificate does not in other than those	dicate compliance with safety and performance requirements expressly included in the Standards listed above.
TEST & ASSESSME A sample(s) of the e	ENT REPORTS: quipment listed has successfully m	net the examination and test requirements as recorded in:
Test Report:		
GB/BAS/ExTR23.00	20/00	
Quality Assessment	Reports:	
GB/BAS/QAR06.002	22/10 GB/BAS/0	QAR07.0017/10



IECEx Certificate of Conformity

Certificate No.: IECEx BAS 23.0014

Page 3 of 3

Date of issue:

Issue No: 0

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

2023-05-05

This certificate covers the following types:

- MTL4546 / MTL4546C / MTL4546Y / MTL4546S Single Channel Isolating Driver, 4/20mA for Smart I/P Converters.
- MTL4549, MTL4549C & MTL4549Y 2 Channel Isolating Driver, 4/20mA for Smart I/P Converters.
- MTL4545Y Isolating Driver, 4/20mA for Smart I/P Converters.
- MTL5546 / MTL5546Y / MTL5546Y-T Single Channel Isolating Driver, 4/20mA for Smart I/P Converters.
- MTL5549 & MTL5549Y 2 Channel Isolating Driver, 4/20mA for Smart I/P Converters.

See Certificate Annex for a description of the types of equipment and electrical parameters

SPECIFIC CONDITIONS OF USE: NO

Annex:

IECEx BAS 23.0014 Annex.pdf

SGS Baseefa Limited Rockhead Business Park Staden Iane, Buxton, Derbyshire SK17 9RZ United Kingdom		SGS
ANNEX to IECEx BAS 23.0014	Issue No. 0	Date: 3 May 2023

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

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 handheld communicator. The equipment restricts the transfer of energy from unspecified nonhazardous 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

Uo	=	28V	Ci	=	0
lo	=	93mA	Li	=	0
Po	=	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	INDUCTANCE	OR	L/R RATIO
	(μF)	(mH)		(µH/ohm)
IIC	0.083	4.2		56
IIB*	0.65	12.6		210
IIA	2.15	33.6		444
1	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_0 value or
 - the total C_i of the external circuit (excluding the cable) is < 1% of the $C_{\scriptscriptstyle 0}$ 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 $\ge 1\%$ of the L_0 value and the total Q of the external circuit (excluding the cable) is $\ge 1\%$ of the L_0 value and
 - the total C_i of the external circuit (excluding the cable) is $\ge 1\%$ of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu F$ 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

U₀	=	22V	Ci	=	0
lo	=	100mA	Li	=	0
Ρo	=	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
1	6.00	44.3		848

* 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 L₀ value or
 the total C_i of the external circuit (excluding the cable) is < 1% of the C₁ 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 $\ge 1\%$ of the L_o value and the total C_i of the external circuit (excluding the cable) is $\ge 1\%$ 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.



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

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 nonhazardous 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

Llanardavia Area Tarminala		(Channal O)
Hazardous Area Terminais 3) W.I.L. 4 ((Channel Z)

U₀	=	28V	Ci	=	0
lo	=	93mA	Li	=	0
P₀	=	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_0 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 $\ge 1\%$ of the L_0 value and
 - the total C_i of the external circuit (excluding the cable) is $\ge 1\%$ of the C₀ value.

The reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu F$ for Groups IIB, IIA & I and 600nF for Group IIC.

SGS Baseefa Limited Rockhead Business Park Staden lane, Buxton, Derbyshire SK17 9RZ United Kingdom		SGS
ANNEX to IECEx BAS 23.0014	Issue No. 0	Date: 3 May 2023

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

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

Uo	=	28V	Ci	=	0
lo	=	93mA	Li	=	0
Po	=	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:

- 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 L₀ value or
 the total C_i of the external circuit (excluding the cable) is < 1% of the C₀ 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 $\ge 1\%$ 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.

SGS Baseefa Limited Rockhead Business Park Staden Iane, Buxton, Derbyshire SK17 9RZ United Kingdom		SGS
ANNEX to IECEx BAS 23.0014	Issue No. 0	Date: 3 May 2023

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

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 nonhazardous 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.

Input/Output Parameters

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

U₀	=	28V	Ci	=	0
lo	=	93mA	Li	=	0
Po	=	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
	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_0 value or
 - the total $C_{\rm i}$ of the external circuit (excluding the cable) is < 1% of the $C_{\rm 0}$ value.

SGS Baseefa Limited Rockhead Business Park Staden lane, Buxton, Derbyshire SK17 9RZ United Kingdom		SGS
ANNEX to IECEx BAS 23.0014	Issue No. 0	Date: 3 May 2023

- 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 $\ge 1\%$ of the L_0 value and the total C_i of the external circuit (excluding the cable) is $\ge 1\%$ of the C_0 value.

The reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu F$ for Groups IIB, IIA & I and 600nF for Group IIC.

SGS Baseefa Limited Rockhead Business Park Staden lane, Buxton, Derbyshire SK17 9RZ United Kingdom		SGS
ANNEX to IECEx BAS 23.0014	Issue No. 0	Date: 3 May 2023

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

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)

U₀	=	28V	Ci	=	0
lo	=	93mA	Li	=	0
Po	=	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	INDUCTANCE	OR	L/R RATIO
	(µF)	(mH)		(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_0 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 $\ge 1\%$ of the L_0 value and
 - the total C_i of the external circuit (excluding the cable) is $\ge 1\%$ of the C₀ value.

The reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu F$ for Groups IIB, IIA & I and 600nF for Group IIC.