



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx BAS 04.0026 issue No.:4

Status: Current

Date of Issue: 2016-10-12 Page 1 of 4

Certificate history:

Issue No. 4 (2016-10-12)
Issue No. 3 (2015-2-5)
Issue No. 2 (2009-5-6)
Issue No. 1 (2005-4-20)

Applicant: **Eaton Electric Limited**
Great Marlings
Butterfield
Luton
Bedfordshire
LU2 8DL
United Kingdom

Equipment: **MTL774x Series Switch / Proximity Input Barriers**
Optional accessory:

Type of Protection: **Intrinsic Safety**

Marking: **[Ex ia Ga] IIC (-20°C ≤ Ta ≤ +60°C)**
[Ex ia Da] IIIC (-20°C ≤ Ta ≤ +60°C)

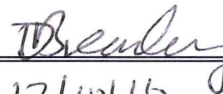
Approved for issue on behalf of the IECEx
Certification Body:

R S Sinclair

PP DBREANLES

Position: Technical Manager

Signature:
(for printed version)


12/10/16

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

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





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Manufacturer: **Eaton Electric Limited**
Great Marlings
Butterfield
Luton
Bedfordshire
LU2 8DL
United Kingdom

Additional Manufacturing location(s):

MTL Instruments PVT Ltd
No 3 Old Mahabalipuram
Road
Sholinganallur
Chennai
India

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Explosive atmospheres - Part 0: General requirements
Edition: 6.0

IEC 60079-11 : 2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition: 6.0

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

IECEx ATR:
UK/BAS/04/0438
GB/BAS/ExTR14.0350/00
GB/BAS/ExTR16.0248/00

File Reference:
04/0438
11/0301
16/0371



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The MTL774x Series Switch / Proximity Input Barriers are designed to restrict the transfer of energy from unspecified non-hazardous area equipment to intrinsically safe circuits by limitation of voltage and current and provide isolation by using relay or open collector solid state interfaces.

The barriers consists of electronic components on a single printed circuit board encapsulated within a moulded plastic enclosure which incorporates one or two pairs of sockets at each end of the barrier. Circuits are connected to the socket via plugs which incorporate a screw terminal. When fitted with the screw terminals the enclosure meets the requirements of IP20. The barrier is connected to earth via a spring mounted foot on to a DIN rail or alternatively a single high integrity screw terminal.

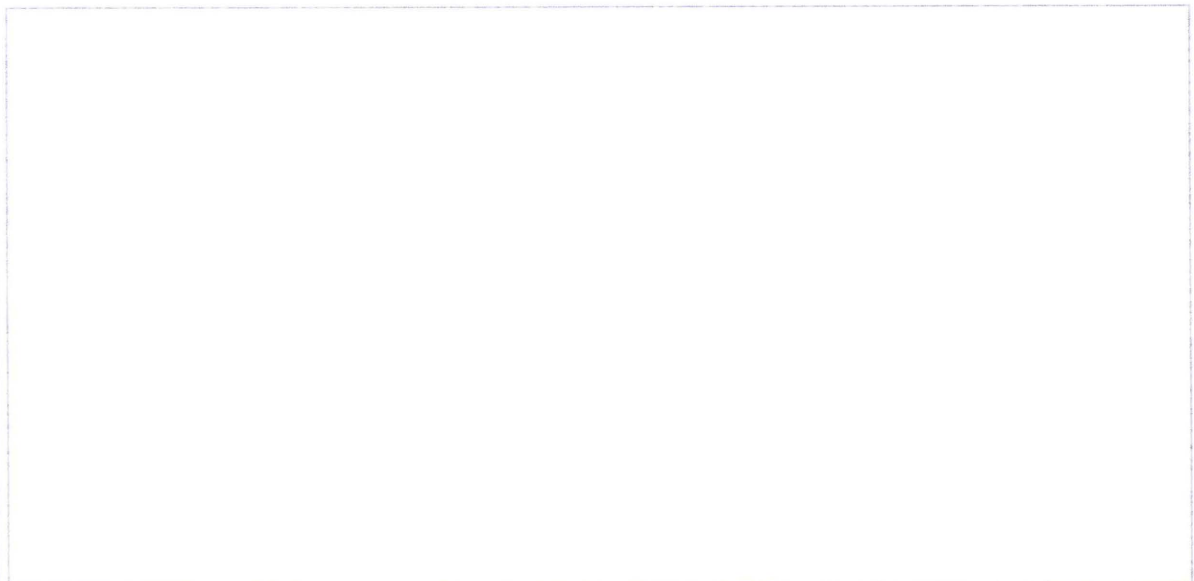
The range consists of single or dual channel barriers with either relay or open collector solid state interfaces. The following models are in the range:-

MTL7741: Single Channel Switch / Proximity Input Barrier with Relay Contact Interface.
MTL7742: Single Channel Switch / Proximity Input Barrier with Open Collector Solid State Interface
MTL7743: Dual Channel Switch / Proximity Input Barrier with Relay Contact Interface.
MTL7744: Dual Channel Switch / Proximity Input Barrier with Open Collector Solid State Interface.
MTL7745: Single Channel Switch / Proximity Input Barrier providing Line Fault Detection

All the above barriers may have non-hazardous supply provided by a power bus. Adjacent barriers maybe connected together via power bus (PB) terminals.

For Barrier parameters see data in the Annex.

CONDITIONS OF CERTIFICATION: NO





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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Variation 4.1

To permit the manufacturer's name to be changed on the certificate and equipment marking. No other changes are made to the equipment design.

ExTR: GB/BAS/ExTR16.0248/00	File Reference: 16/0371
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MTL774x Switch / Proximity Barriers

Input Parameters

For all versions of the MTL774x Switch / Proximity Barriers

Single Channel - Terminal 1 wrt 2 (including DIN Rail Foot)

Dual Channel - Terminal 1 & 2 wrt to DIN Rail Foot

$$U_m = 250V$$

Output Parameters

Type	Description	DC/AC		U_o (V)	I_o (mA)	P_o (W)	C_i (μF)
MTL7741	10V, 19mA	+ (PB)	b	10	19	0.039	0.135
MTL7742	10V, 19mA	+ (PB)	b	10	19	0.039	0.135
MTL7743	10V, 19mA	+ (PB)	b4	10	19	0.039	0.135
	10V, 19mA		b4	10	19	0.039	0.135
			b3	10	38	0.078	0.270
MTL7744	10V, 19mA	+ (PB)	b4	10	19	0.039	0.135
	10V, 19mA		b4	10	19	0.039	0.135
			b3	10	38	0.078	0.270
MTL7745	10V, 19mA	+ (PB)	b	10	19	0.039	0.135

Reference to data in the standard shows that with the maximum supply current and voltage as defined in the above table, such a value has a factor of safety of at least 1.5 for Group IIC.

Notes for Barriers:

1. + (PB) - Positive polarity shunt zener diode barrier which may have the non-hazardous supply provided by a power bus. Adjacent barriers are connected together via a bus power terminals
2. Circuit configuration for output parameters
 - b - Both channels of a dual channel barrier connected in parallel, with respect to earth.
 - b3 - Four channels of a four channel barrier connected in parallel, with respect to earth.
 - b4 - Either pair of channels of a four channel barrier interconnected, with earth return.
(For MTL7743 and MTL7744: CON1, 1 and CON1, 2 of CON4, 1 and CON4, 2).

The MTL7741 (safe area terminals 2, 5, & 6), MTL7743 (safe area terminals 1, 2, 5, & 6) and MTL7745 (safe area terminals 2, 5, & 6) are connected to relay change-over contacts which can switch up to 125V a.c. / 0.5A or 30V d.c. / 1A.

The MTL7742 (safe area terminals 5 & 6) and MTL7744 (safe area terminals 1, 2 & 5, 6) are connected to an opto-isolator which may have an input source of up to 35V and 56mA.

Load Parameters

The capacitance or either the inductance or the inductance to resistance ratio (L/R) of the load connected to the output terminals must not exceed the following values.

Type	ac/dc		IIC			IIB**			IIA		
			C (μ F)	L (mH)	L/R (μ H/ Ω)	C (μ F)	L (mH)	L/R (μ H/ Ω)	C (μ F)	L (mH)	L/R (μ H/ Ω)
MTL7741	+	b	2.86	96	748	19.86	365	2,992	99.86	696	5,984
MTL7742	+	b	2.86	96	748	19.86	365	2,992	99.86	696	5,984
MTL7743	+	b4	2.86	96	748	19.86	365	2,992	99.86	696	5,984
		b4	2.86	96	748	19.86	365	2,992	99.86	696	5,984
		b3	2.73	25	374	19.73	91	1,496	99.73	193	2,992
MTL7744	+	b4	2.86	96	748	19.86	365	2,992	99.86	696	5,984
		b4	2.86	96	748	19.86	365	2,992	99.86	696	5,984
		b3	2.73	25	374	19.73	91	1,496	99.73	193	2,992
MTL7745	+	b	2.86	96	748	19.86	365	2,992	99.86	696	5,984

** Group IIB parameters also applicable for associated apparatus [Ex ia Dc] 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 and 600nF for Group IIC.

Variation 1.1

To permit the use of the following load parameters when connecting to an Ex ic System. These parameters give a factor of safety of at least 1 for Gas Group IIC.

The capacitance or either the inductance or the inductance to resistance ratio (L/R) of the load connected to the output terminals must not exceed the following values.

Type	ac/dc		IIC			IIB**			IIA		
			C (μ F)	L (mH)	L/R (μ H/ Ω)	C (μ F)	L (mH)	L/R (μ H/ Ω)	C (μ F)	L (mH)	L/R (μ H/ Ω)
MTL7741	+	b	19.86	221	3,789	449.8	846	6,736	1,000	1,000	13,473
MTL7742	+	b	19.86	221	3,789	449.8	846	6,736	1,000	1,000	13,473
MTL7743	+	b4	19.86	221	3,789	449.8	846	6,736	1,000	1,000	13,473
		b4	19.86	221	3,789	449.8	846	6,736	1,000	1,000	13,473
		b3	19.73	55.4	842	449.7	210	3,368	1,000	413	6,736

Type	ac/dc		IIC			IIB**			IIA		
			C (μ F)	L (mH)	L/R (μ H/ Ω)	C (μ F)	L (mH)	L/R (μ H/ Ω)	C (μ F)	L (mH)	L/R (μ H/ Ω)
MTL7744	+	b4	19.86	221	3,789	449.8	846	6,736	1,000	1,000	13,473
		b4	19.86	221	3,789	449.8	846	6,736	1,000	1,000	13,473
		b3	19.73	55.4	842	449.7	210	3,368	1,000	413	6,736
MTL7745	+	b	19.86	221	3,789	449.8	846	6,736	1,000	1,000	13,473

** Group IIB parameters also applicable for associated apparatus [Ex ic Dc] 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.