

# CERTIFICATE OF CONFORMITY



1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
2. **Certificate No:** FM16US0427
3. **Equipment:** *Shunt Diode Barriers*  
(Type Reference and Name)  
706, 708, 707, 707, 707, 787S, 787S, 787S, 758, 758, 758, 758...  
*Model MTL791. Fieldbus Barrier.*  
*MTL787SP*  
710±, 710ac, 715±, 722±, 728±, 728ac, 751ac, 755ac, 760ac, 761ac, 764±...  
*MTL700P Series. Shunt Diode Barrier Assembly.*
4. **Name of Listing Company:** Eaton Electric Limited
5. **Address of Listing Company:** Great Marlings, Butterfield, Luton,  
Bedfordshire LU2 8DL, United Kingdom
6. The examination and test results are recorded in confidential report number:  
3045568 dated 1<sup>st</sup> July 2013
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:  
FM Class 3600:2011, FM Class 3610:2010, FM Class 3611:2004
8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

**Certificate issued by:**

  
\_\_\_\_\_  
J. E. Marquedant  
Manager, Electrical Systems

5 December 2016  
\_\_\_\_\_  
Date

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://www.approvalguide.com)

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FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA  
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10. Equipment Ratings:

**706, 708, 707, 707, 707, 787S, 787S, 787S, 758, 758, 758, 758...**

Associated intrinsically safe apparatus with connections for Class I, II and III, Division 1, applicable Groups A, B, C, D, E, F and G, per "Entity" requirements in accordance with installation drawing SCI-167, SCI-168, hazardous (classified) indoor locations.

**Model MTL791. Fieldbus Barrier.**

Associated intrinsically safe apparatus with connections for Class I, II and III, Division 1, applicable Groups A, B, C, D, E, F and G, per "Entity" requirements in accordance with installation drawing SCI-609. Nonincendive for installation in Class I, Division 2, Groups A, B, C and D, hazardous (classified) indoor locations.

**MTL787SP**

**MTL700P Series. Shunt Diode Barrier Assembly.**

Associated intrinsically safe apparatus with connections for Class I, II and III, Division 1, applicable Groups A, B, C, D, E, F and G, per "Entity" requirements in accordance with installation drawing SCI-326. Nonincendive for installation in Class I, Division 2, Groups A, B, C and D, hazardous (classified) indoor locations.

**710±, 710ac, 715±, 722±, 728±, 728ac, 751ac, 755ac, 760ac, 761ac, 764±...**

Associated intrinsically safe apparatus with connections for Class I, II and III, Division 1, applicable Groups A, B, C, D, E, F and G, per "Entity" requirements in accordance with installation drawing SCI-88, hazardous (classified) indoor locations.

11. The marking of the equipment shall include:

**706, 708, 707, 707, 707, 787S, 787S, 787S, 758, 758, 758, 758...**

AIS / I,II,III / 1 / ABCDEFG - SCI-167; SCI-168; Entity

**Model MTL791. Fieldbus Barrier.**

AIS / I,II,III / 1 / ABCDEFG - SCI-609; Entity\*

NI / 1 / 2 / ABCD

**MTL787SP**

AIS / I,II,III / 1 / ABCDEFG - SCI-326; Entity

NI / 1 / 2 / ABCD

**710±, 710ac, 715±, 722±, 728±, 728ac, 751ac, 755ac, 760ac, 761ac, 764±...**

AIS / I,II,III / 1 / ABCDEFG - SCI-88; Entity

**MTL700P Series. Shunt Diode Barrier Assembly.**

AIS / I,II,III / 1 / ABCDEFG - SCI-326; Entity

NI / 1 / 2 / ABCD

12. Description of Equipment:

**General** – The MTL700 Series Shunt Zener Diode Barriers are designed to restrict the transfer of energy  
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from unspecified safe area equipment to intrinsically safe equipment by limitation of voltage and current.

**Construction** – The barriers consist of electronic components on a single printed circuit board encapsulated within a moulded plastic enclosure.

**706, 708, 707, 707, 707, 787S, 787S, 787S, 758, 758, 758, 758...**

Max Entry Parameters							
Model	Terminal	$V_t$ (V)	$I_t$ (mA)	$V_{oc}$ (V)	$I_{sc}$ (mA)	$C_a$ ( $\mu$ F)	$L_a$ (mH)
706	3 to Gnd.	–	–	28.1	93.0	0.12	4.0
708	3 to Gnd.	–	–	28.1	93.0	0.12	4.0
707	3 to Gnd.	–	–	28.1	93.0	0.12	4.0
707	4 to Gnd.	–	–	0.6	38.3	1000	22.0
707	3 & 4	28.7	93.0	–	–	0.11	4.0
787S	3 to Gnd.	–	–	28.5	93.0	0.11	4.0
787S	4 to Gnd.	–	–	1.2	0	1000	1000
787S	3 & 4	29.7	93.5	–	–	0.10	4.0
758	3 to Gnd.	–	–	8.1	742	6.0	0.05
758	4 to Gnd.	–	–	8.1	742	6.0	0.05
758	3 & 4 to Gnd	–	–	8.1	1480	6.0	0.02
758	3 & 4	8.7	1480	–	–	5.0	0.02

**Model MTL791. Fieldbus Barrier.**

Max Entry Parameters:  $V_t = 22$  V dc,  $I_t = 233$  mA,  $C_a = 0.24$   $\mu$ F,  $L_a = 0.31$  mH,  $L/R = 31$   $\mu$ H/ $\Omega$ ,  $P_o = 1.18$  W.

**MTL787SP**

Dual Channel With Separate Ground Returns

Each Channel

Model No.	$V_{oc}$ (V)	$I_{sc}$ (mA)	$C_a$ ( $\mu$ F)	$L_a$ (mH)
MTL787SP				
Return	+25.9	0	0.17	1000
Signal	+25.9	110	0.17	2.93

Dual Channel With or Without Common Ground Return (to same or separate devices)

Model No.	$V_t$ (V)	$I_t$ (mA)	$C_a$ ( $\mu$ F)	$L_a$ (mH)
MTL787SP	+28.9	115	0.13	2.70

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**710±, 710ac, 715±, 722±, 728±, 728ac, 751ac, 755ac, 760ac, 761ac, 764±...**

Model	Terminal	Max Entity Parameters					
		$V_t$ (V)	$I_t$ (mA)	$V_{oc}$ (V)	$I_{sc}$ (mA)	$C_a$ ( $\mu F$ )	$L_a$ (mH)
710±	3 to Gnd.	–	–	10.03	189	3	1.0
710ac	3 to Gnd.	–	–	10.03	189	3	1.0
715±	3 to Gnd.	–	–	15.06	146	0.7	1.4
722±	3 to Gnd.	–	–	22.08	146	0.2	1.4
728±	3 to Gnd.	–	–	28.12	93	0.12	4.0
728ac	3 to Gnd.	–	–	28.12	93	0.12	4.0
751ac	3 to Gnd.	–	–	0.96	89	1000	4.5
751ac	4 to Gnd.	–	–	0.96	89	1000	4.5
751ac	3 & 4	1.92	0.178	–	–	1000	1.2
755ac	3 to Gnd.	–	–	2.96	296	1000	0.4
755ac	4 to Gnd.	–	–	2.96	296	8976	0.4
755ac	3 & 4	5.92	592	–	–	150	0.1
760ac	3 to Gnd.	–	–	10.03	189	3	0.9
760ac	4 to Gnd.	–	–	10.03	189	3	0.9
760ac	3 & 4	10.03	377	–	–	3	0.2
761ac	3 to Gnd.	–	–	9.04	99	3.10	3.5
761ac	4 to Gnd.	–	–	9.04	99	3.10	3.5
761ac	3 & 4	18.08	198	–	–	0.40	1.0
764±	3 to Gnd.	–	–	12.05	12	1.50	200
764±	4 to Gnd.	–	–	12.05	12	1.50	200
764±	3 & 4	13.65	24	–	–	1.00	60
764ac	3 to Gnd.	–	–	12.05	12.0	1.50	200
764ac	4 to Gnd.	–	–	12.05	12.0	1.50	200
764ac	3 & 4	24.1	24	–	–	0.18	60
765ac	3 to Gnd.	–	–	15.08	147	0.70	1.3
765ac	4 to Gnd.	–	–	15.08	147	0.70	1.3
765ac	3 & 4	15.08	293	–	–	0.70	1.4
766ac	3 to Gnd.	–	–	12.05	80	1.50	5.6
766ac	4 to Gnd.	–	–	12.05	80	1.50	5.6
766ac	3 & 4	24.1	160	–	–	0.18	1.5
767±	3 to Gnd.	–	–	15.15	147	0.70	1.7
767±	4 to Gnd.	–	–	15.15	147	0.70	1.7

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767±	3 & 4	16.75	294	–	–	0.50	0.4
768±	3 to Gnd.	–	–	22.13	147	0.20	1.7
768±	4 to Gnd.	–	–	22.13	147	0.20	1.7
768±	3 & 4	**Groups C&D only*		–	–	–	–
772ac	3 to Gnd.	–	–	22.13	73	0.20	6
772ac	4 to Gnd.	–	–	22.13	73	0.20	6
772ac	3 & 4	22.13	146	–	–	0.20	1.8
778ac	3 to Gnd.	–	–	28.23	46	0.12	14
778ac	4 to Gnd.	–	–	28.23	46	0.12	14
778ac	3 & 4	28.23	93	–	–	0.12	4.2
779±	3 to Gnd.	–	–	28.17	93	0.12	4
779±	4 to Gnd.	–	–	28.17	93	0.12	4
779±	3 & 4	**Groups C&D only*		–	–	–	–
787±	3 to Gnd.	–	–	28.54	94	0.11	4
787±	4 to Gnd.	–	–	28	0	0.12	500
787±	3 & 4	30.14	88.5	–	–	0.10	4
788±	3 to Gnd.	–	–	28.15	93	0.12	4
788±	4 to Gnd.	–	–	10.04	189	3.00	1
788±	3 & 4	28.95	282	–	–	0.11	0.5
796±	3 to Gnd.	–	–	26.1	86	0.14	4.7
796±	4 to Gnd.	–	–	20.5	51	0.30	13
796±	3 & 4	27.7	137	–	–	0.13	2

**MTL700P Series. Shunt Diode Barrier Assembly.**

Single Channel With Ground Return

<i>Model No.</i>	<i>V<sub>oc</sub></i> (V)	<i>I<sub>sc</sub></i> (mA)	<i>C<sub>a</sub></i> (μF)	<i>L<sub>a</sub></i> (mH)
MTL710P+	+9.0	267	4.89	0.22
MTL710P–	–9.0	267	4.89	0.22
MTL715P+	+13.7	264	1.04	0.23
MTL722P+	+20.1	194	0.33	0.53
MTL728P+	+26.3	112	0.16	2.86

Dual Channel With Separate Ground Returns

Each Channel

<i>Model No.</i>	<i>V<sub>oc</sub></i> (V)	<i>I<sub>sc</sub></i> (mA)	<i>C<sub>a</sub></i> (μF)	<i>L<sub>a</sub></i> (mH)
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MTL761P	±9.0	25.0	4.89	54.8
MTL766P	±11.5	149	1.87	1.25

Dual Channel With or Without Common Ground Return (to same or separate devices)

<i>Model</i>	$V_t$ (V)	$I_t$ (mA)	$C_a$ ( $\mu F$ )	$L_a$ (mH)
MTL761P	±18.0	50.0	0.43	14.4
MTL766P	±23.0	297	0.22	0.20

13. **Specific Conditions of Use:**

None

14. **Test and Assessment Procedure and Conditions:**

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

15. **Schedule Drawings**

A copy of the technical documentation has been kept by FM Approvals.

16. **Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
5 <sup>th</sup> December 2016	<b>Original Issue</b> Report Reference: – RR207104 dated 5 <sup>th</sup> December 2016 Description of the Change: Company name change. Certificate created.

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