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: **Baseefa06ATEX0155 – Issue 9**

3.1 In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.

4 Product: **MTL452* Series Solenoid / Alarm Drivers**

5 Manufacturer: **Eaton Electric Limited**

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

7 This re-issued certificate extends EC Type Examination Certificate No. Baseefa06ATEX0155 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 Baseefa, Notified Body number 1180, 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 60079-0: 2012 + A11: 2013 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 :

Ⓔx II (1) GD [Ex ia Ga] IIC (-20°C ≤ T_a ≤ +60°C)
[Ex ia Da] IIIC (-20°C ≤ T_a ≤ +60°C)

Ⓔx I (M1) [Ex ia Ma] I (-20°C ≤ T_a ≤ +60°C)

SGS Baseefa Customer Reference No. **0703** Project File No. **16/0371**

SGS Baseefa Limited
Rockhead Business Park, Staden Lane,
Buxton, Derbyshire SK17 9RZ
Telephone +44 (0) 1298 766600 Fax +44 (0) 1298 766601
e-mail baseefa@sgs.com web site www.sgs.co.uk/baseefa
Registered in England No. 4305578.
Registered address: Rossmore Business Park, Ellesmere Port, Cheshire, CH65 3EN

R S SINCLAIR
TECHNICAL MANAGER
On behalf of SGS Baseefa Limited

13 **Schedule**

14 **Certificate Number Baseefa06ATEX0155 – Issue 9**

15 **Description of Product**

The MTL452* Series Solenoid / Alarm Drivers are designed to control and monitor IS apparatus located in the hazardous area and restrict the transfer of energy from unspecified apparatus in the non-hazardous area to an intrinsically safe circuit in the hazardous area by limitation of voltage and current. A transformer and opto-isolators provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The apparatus comprise an isolating transformer, opto-isolators, duplicated zener diode chains and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections.

The MTL452* Series Solenoid / Alarm Drivers comprise a number of different models denoted by * in the model number. All models are built on common PCB's and configured having certain features such as Line Fault Detection (LFD) and Phase Reversal facilities. There are also models in the range that provide loop power or have low current hazardous area outputs. All models have LED indication dependant on the model configuration.

The following models have been assessed and are covered by this certificate: -

MTL4521	Loop Powered Solenoid / Alarm Driver
MTL4521L	Loop Powered Solenoid / Alarm Driver
MTL4523	Solenoid / Alarm Driver with Line Fault Detection Alarm
MTL4523R	Solenoid / Alarm Driver with Line Fault Detection Alarm
MTL4523L	Loop Powered Solenoid / Alarm Driver with Line Fault Detection Alarm
MTL4523V	Solenoid / Alarm Driver with Line Fault Detection Alarm
MTL4523VL	Solenoid / Alarm Driver with Line Fault Detection Alarm
MTL4524	Solenoid / Alarm Driver with Override
MTL4524S	Solenoid / Alarm Driver with Override
MTL4525	Solenoid / Alarm Driver with Override (Low Current Output)

Input/Output Parameters

MTL4521, MTL4523, MTL4523R, MTL4523L, MTL4523V, MTL4524 & MTL4524S Models

Non-Hazardous Area Terminals 7 to 14

U_m = 253V r.m.s.

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

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

U_o = 25V
I_o = 147mA
P_o = 0.92W
C_i = 0
L_i = 0

MTL4521L & MTL4523VL Models
Non-Hazardous Area Terminals 7 to 14

U_m = 253V r.m.s.

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

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

U_o = 25V
I_o = 108mA
P_o = 0.68W
C_i = 0
L_i = 0

MTL4525 model only
Non-Hazardous Area Terminals 7 to 14

U_m = 253V r.m.s.

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

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

U_o = 25V
I_o = 83.3mA
P_o = 0.52W
C_i = 0
L_i = 0

Load Parameters

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

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR L/R RATIO (µH/ohm)
MTL4521, MTL4523, MTL4523R, MTL4523L, MTL4523V, MTL4524 & MTL4525 Models			
IIC	0.11	1.4	40
IIB*	0.84	7.2	159
IIA	2.97	14.4	328
I	4.87	20.2	478
MTL4521L & MTL4523VL Models			
IIC	0.11	3.04	52
IIB*	0.84	12.19	210
IIA	2.97	24.38	421
I	4.87	40.0	691
MTL4525 Model			
IIC	0.11	5.3	68
IIB*	0.84	21.8	254
IIA	2.97	44.7	536
I	4.87	64.9	814

* 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

GB/BAS/ExTR16.0237/00

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	Compliance
1.2.7	Protection against other hazards (LVD type requirements, etc.)	Manufacturer responsibility
1.2.8	Overloading of equipment (protection relays, etc.)	User/Installer responsibility
1.4.1	External effects	User/Installer responsibility
1.4.2	Aggressive substances, etc.	User/Installer responsibility

19 Drawings and Documents

New drawings submitted for this issue of certificate:

Number	Sheet	Issue	Date	Description
CI4521-1	6 of 6	5	7.16	MTL4521 Certification Label Details – Baseefa
CI4521-11	6 of 6	3	7.16	MTL4521L Certification Label Details – Baseefa
CI4523-1	6 of 6	4	7.16	MTL4523V & MTL4523VL Certification Label Details

The above drawings are associated and held with IECEx BAS 06.0033 Iss. 10

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
CI4521-1	1 of 6	2	2.14	Parts List for MTL452X
CI4521-1	2 of 6	5	7.10	Circuit Diagram for MTL452X
CI4521-1	3 of 6	3	2.10	MTL452X Track Layout
CI4521-1	4 of 6	4	1.13	MTL452X Component Layout
CI4521-1	5 of 6	2	1.07	PCB Detail for TPL301
CI4521-11	1 of 6	2	2.14	Parts List for MTL4521L
CI4521-11	2 of 6	1	2.10	Circuit Diagram for MTL4521L
CI4521-11	3 of 6	1	2.10	MTL4521L Track Layout
CI4521-11	4 of 6	2	1.13	MTL4521L Component Layout
CI4521-11	5 of 6	1	2.10	PCB Detail for TPL301
CI4523-1	1 of 6	2	2.14	Parts List for MTL4523V
CI4523-1	2 of 6	2	11.11	Circuit Diagram for MTL4523V
CI4523-1	3 of 6	1	8.10	MTL4523V Track Layout
CI4523-1	4 of 6	2	1.13	MTL4523V Component Layout
CI4523-1	5 of 6	1	8.10	PCB Detail for TPL301
CI4523-2	1 of 3	2	11.11	Circuit Diagram for MTL4523V
CI4523-2	2 of 3	1	8.10	MTL4523V Track Layout
CI4523-2	3 of 3	2	1.13	MTL4523V Component Layout

Number	Sheet	Issue	Date	Description
CI4500-3	1 of 1	1	12.10	MTL4500 & MTL5500 – Alternative Zener Diodes (Panjit)
CI4500-6	1 of 1	1	20.12.10	MTL4500 & MTL5500 – Conformal Coating
CI4500-100	1 of 1	2	1.13	MTL4500 Case

The above drawings are associated and held with IECEx Certificate No. IECEx BAS 06.0033

20 Certificate History

Certificate No.	Date	Comments
Baseefa06ATEX0155	16 November 2006	The release of the prime certificate. The associated test and assessment against the requirements of EN 60079-0: 2004, EN 50020: 2002, IEC 61241-0: 2004 and IEC 61241-11: 2005 is documented in Certification Report No. 05(C)0863/3.
Baseefa06ATEX0155/1	31 January 2007	To permit minor changes to the transformer PCB not affecting the original assessment.
Baseefa06ATEX0155/2	4 July 2007	To permit minor changes to the layout and conformal coating of the PCB.
Baseefa06ATEX0155/3	12 November 2007	i) To permit minor changes to the label drawing not affecting the original assessment. ii) To confirm the current design of the equipment meets the requirements of EN 60079-0: 2006 and EN 60079-11: 2007. The associated test and assessment is documented in Certification Report No. GB/BAS/ExTR07.0121/00.
Baseefa06ATEX0155/4	3 March 2010	i) To permit minor circuit and PCB changes to form the MTL4521L Loop Powered Solenoid / Alarm Driver. ii) To permit the use of the MTL4521L PCB as an alternative to the current MTL452* PCB in all models of the equipment. iii) To confirm the current designs of all variants of the MTL452* Series Solenoid / Alarm Drivers have been reviewed against the requirements of EN 60079-0: 2009 in respect of the differences from EN 60079-0: 2006, and with exception of the marking, none of the differences affect the equipment. In accordance with the requirements of EN 60079-0: 2009, the equipment markings were revised to include the Equipment Protection Level (EPL) markings. iv) To permit the notes associated with the load parameters of all models specified in the original schedule to be revised. The associated test and assessment is documented in Certification Report No. GB/BAS/ExTR10.0025/00.
Baseefa06ATEX0155/5	17 August 2010	i) To permit minor circuit changes to form the MTL4523V Solenoid / Alarm Driver with Line Fault Detection Alarm variant. ii) To permit a minor drawing change not affecting the original assessment. The associated test and assessment is documented in Certification Report No. GB/BAS/ExTR10.0197/00.

Certificate No.	Date	Comments
Baseefa06ATEX0155/6	31 January 2011	i) To permit the alternative fitting of 1SMB3EZ** zener diodes in place of 1SMB59**BT3 components currently fitted. ii) An alternative method of applying the conformal coating to the PCB fitted in the equipment not affecting the original assessment. The associated test and assessment is documented in Certification Report No. GB/BAS/ExTR10.0298/00.
Baseefa06ATEX0155/7	6 December 2011	To permit minor circuit changes to form the MTL4523VL Solenoid / Alarm Driver with Line Fault Detection Alarm variant. The associated test and assessment is documented in Certification Report No. GB/BAS/ExTR11.0302/00.
Baseefa06ATEX0155/8	5 March 2014	To permit: - i) Minor component and drawing changes not affecting the original assessment. ii) To confirm the current designs of all variants of the MTL452* Series Solenoid / Alarm Drivers have been reviewed against the requirements of EN 60079-0: 2012 and EN 60079-11: 2012 in respect of the differences from EN 60079-0: 2009, EN 60079-11: 2007 & EN 61241-11: 2006 and none of the differences affect the equipment. In accordance with EN 60079-11: 2012, the Group I capacitive load parameters were corrected and the associated load parameter notes were updated. The associated test and assessment is documented in Certification Report No. GB/BAS/ExTR14.0043/00.
Baseefa06ATEX0155 Issue 9	26 September 2016	This issue of the certificate incorporates previously issued primary & supplementary certificates into one certificate and confirms the current designs meet the requirements of EN 60079-0: 2012 + A11: 2013 & EN 60079-11: 2012. The certificate also permits the manufacturer's name to be changed on page 1 of the certificate and on the equipment marking. The associated assessment is documented in Certification Report No. GB/BAS/ExTR16.0237/00.
For drawings applicable to each issue, see original of that issue.		