1 # EC-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3 EC-Type Examination Certificate Number : **BAS01ATEX7165**

4 Equipment or Protective System: **MTL4021 SOLENOID/ALARM DRIVER**

5 Manufacturer: **MEASUREMENT TECHNOLOGY LIMITED**

6 Address: **Luton, Bedfordshire, LU1 3JJ**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 The Electrical Equipment Certification Service, notified body number 600 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Report N°

01(C)0221 dated 17 May 2001 (held on EECS 0703/02/300)

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + Amds 1 & 2 **EN 50020: 1994**

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 equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

12 The marking of the equipment or protective system shall include the following:-

Ex II (1) GD **[EEx ia] IIC** **($-20°C \leq T_a \leq +60°C$)**

This certificate may only be reproduced in its entirety and without any change, schedule included.

File No: EECS 0703/02/303

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances.

I M CLEARE
DIRECTOR
30 July 2001

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: +44(0)1298 28000 Fax: +44(0)1298 28244
internet: www.baseefa.com e-mail: baseefa.info.eecs@hsl.gov.uk

Re-issued 16 May 2002 for amendment of output parameters

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7165**

15 **Description of Equipment or Protective System**

An MTL4021 Solenoid/Alarm Driver is designed to drive apparatus such as solenoids and switches and to restrict the transfer of energy from unspecified safe-area apparatus to an intrinsically safe circuit by the limitation of voltage and current. A transformer and an opto-isolator provide galvanic isolation between the hazardous and non-hazardous area circuitry.

Two LEDs are provided to indicate power-on and output.

Connector CON2, pins 7 to 14

U_m = 250V

Connector CON1, pin 1 wrt 4

U_o = 25.50V
I_o = 110mA
P_o = 0.7W

C_i = 0
L_i = 0

It is possible that this voltage may appear at either polarity, therefore, when used with any other source the sum of the voltages must be considered.

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

GROUP	CAPACITANCE in µF	INDUCTANCE in mH	OR	L/R RATIO in µH/ohm
IIC	0.104	1.82 (2.51)		52
IIB	0.800	5.46 (7.53)		201
IIA	2.780	14.5 (20.0)		423

When the external circuit contains no lumped inductance greater than 10µH i.e. the L_i of any attached apparatus is less than 10µH, the cable inductance may be increased to the values within parentheses.

VARIATION 0.1

To permit an increase in value of the output current limiting resistor. This has the effect of reducing the output current. The variant is to be designated as an MTL 4025 Solenoid/Alarm Driver Low Current Output.

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Connector CON2, pins 7 to 14

U_m = 250V

Connector CON1, pin 1 wrt 4

U_o = 25.0V
I_o = 93mA
P_o = 0.58W

C_i = 0
L_i = 0

It is possible that this voltage may appear at either polarity, therefore, when used with any other source the sum of the voltages must be considered.

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

GROUP	CAPACITANCE in µF	INDUCTANCE in mH	OR	L/R RATIO in µH/ohm
IIC	0.104	3.05 (4.20)		62
IIB	0.800	9.15 (12.6)		231
IIA	2.780	24.4 (33.6)		487

When the external circuit contains no lumped inductance greater than 10µH i.e. the L_i of any attached apparatus is less than 10µH, the cable inductance may be increased to the values within parentheses.

VARIATION 0.2

To permit an alternative safe area circuit. The variant is to be designated as an MTL4024 Solenoid/Alarm Driver.

Connector CON2, pins 7 to 14

U_m = 250V

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7165**

Connector CON1, pin 1 wrt 4/6

U_o = 25.5V
I_o = 110mA
P_o = 0.7W

C_i = 0
L_i = 0

It is possible that this voltage may appear at either polarity, therefore, when used with any other source the sum of the voltages must be considered.

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

GROUP	CAPACITANCE in µF	INDUCTANCE in mH	OR	L/R RATIO in µH/ohm
IIC	0.104	1.82 (2.51)		52
IIB	0.800	5.46 (7.53)		201
IIA	2.780	14.5 (20.0)		423

When the external circuit contains no lumped inductance greater than 10µH i.e. the L_i of any attached apparatus is less than 10µH, the cable inductance may be increased to the values within parentheses.

VARIATION 0.3

To permit an alternative safe area input circuit. The variant is designated as an MTL4021S Solenoid/Alarm Driver.

The apparatus code, the input/output and load parameters are identical to those of the MTL4021 Solenoid/Alarm Driver as detailed in the original schedule. The output terminals are now considered to be 1 wrt 4/6.

VARIATION 0.4

To permit minor trackwork changes to the safe area input circuit of the PCB used on the MTL4024 Solenoid/Alarm Driver at Variation 0.2. This connects pins 9, 11 and 13 of CON2 together. The variant is designated as an MTL4024R Solenoid/Alarm Driver.

The apparatus code, the input/output and load parameters are identical to those of the MTL4024 Solenoid/Alarm Driver as detailed in Variation 0.2 above.

13 **Schedule**

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16 **Report No**

01(C)0221

17 **Special Conditions For Safe Use**

None

18 **Essential Health and Safety Requirements**

ESSENTIAL HEALTH & SAFETY REQUIREMENTS not covered by standards listed in Section 9		
Clause	**Subject**	**Compliance**
1.1.3	Changes in characteristics of materials and combinations thereof	Report No 01(C)0221 Clause 5.1.1.3
1.2.2	Components for incorporation or replacement	Report No 01(C)0221 Clause 5.1.2.2
1.2.5	Additional means of protection	Report No 01(C)0221 Clause 5.1.2.5
1.2.7	Protection against other hazards	Report No 01(C)0221 Clause 5.1.2.7
1.4.2	Withstanding attack by aggressive substances	Report No 01(C)0221 Clause 5.1.4.2

19 **DRAWINGS ASSOCIATED WITH ORIGINAL SCHEDULE**

Number	Sheet	Issue	Date	Description
CI4021-1	2	4	05.01	MTL4021 Parts List
CI4021-1	3	6	11.94	MTL4021 Circuit Diagram
CI4021-1	4	7	11.97	MTL4021 Component Layout
CI4021-1	5	2	10.92	MTL4021 General Assembly
CI4021-1	6	1	12.91	MTL4021 Internal Construction
CI4021-1	7	7	11.97	MTL4021 PCB Track Layout
CI4021-1	8	1	12.91	MTL4021 Transformer Winding Details
CI4021-1	9	1	05.01	MTL4021 Certification Label
*CI4000-1	1	2	11.92	MTL4000 Series 2-core IS Transformer
*CI4000-1	2	2	11.92	MTL4000 Series 2-core IS Transformer

Drawings marked * are associated with and held on BASEEFA Certificate BAS01ATEX7163

13 Schedule

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DRAWINGS ASSOCIATED WITH VARIATION 0.1

Number	Sheet	Issue	Date	Description
CI4025-1	2	3	05.01	MTL4025 Parts List
CI4025-1	3	2	11.94	MTL4025 Circuit Diagram
CI4025-1	4	3	11.97	MTL4025 Component Layout
CI4025-1	5	1	10.93	MTL4025 General Assembly
CI4025-1	6	1	10.93	MTL4025 Internal Construction
CI4025-1	7	3	11.97	MTL4025 PCB Track Layout
CI4025-1	8	1	10.93	MTL4025 Transformer Winding Details
CI4025-1	9	1	05.01	MTL4025 Certification Label

DRAWINGS ASSOCIATED WITH VARIATION 0.2

Number	Sheet	Issue	Date	Description
CI4024-1	2	3	05.01	MTL4024 Parts List
CI4024-1	3	2	06.94	MTL4024 Circuit Diagram
CI4024-1	4	2	06.94	MTL4024 Component Layout
CI4024-1	5	2	06.94	MTL4024 General Assembly
CI4024-1	6	2	06.94	MTL4024 Internal Construction
CI4024-1	7	2	06.94	MTL4024 PCB Track Layout
CI4024-1	8	2	06.94	MTL4024 Transformer Winding Details
CI4024-1	9	1	05.01	MTL4024 Certification Label

DRAWINGS ASSOCIATED WITH VARIATION 0.3

Number	Sheet	Issue	Date	Description
CI4021-2	2	3	05.01	MTL4021S Parts List
CI4021-2	3	2	10.94	MTL4021S Circuit Diagram
CI4021-2	4	3	11.97	MTL4021S Component Layout
CI4021-2	5	1	12.93	MTL4021S General Assembly
CI4021-2	6	1	12.93	MTL4021S Internal Construction
CI4021-2	7	3	11.97	MTL4021S PCB Track Layout
CI4021-2	8	1	12.93	MTL4021S Transformer Winding Details
CI4021-2	9	1	05.01	MTL4021S Certification Label

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DRAWINGS ASSOCIATED WITH VARIATION 0.4

Number	Sheet	Issue	Date	Description
CI4024-2	2	2	05.01	MTL4024R Parts List
CI4024-2	3	1	08.94	MTL4024R Circuit Diagram
CI4024-2	4	1	08.94	MTL4024R Component Layout
CI4024-2	5	1	03.94	MTL4024R General Assembly
CI4024-2	6	1	08.94	MTL4024R Internal Construction
CI4024-2	7	2	10.94	MTL4024R PCB Track Layout
CI4024-2	8	1	08.94	MTL4024R Transformer Winding Details
CI4024-2	9	1	05.01	MTL4024R Certification Label

BASEEFA List Keywords
2ISOLBAR

1 # SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number:	**BAS01ATEX7165/1**
4	Equipment or Protective System:	**MTL4021 Solenoid/Alarm Driver**
5	Manufacturer:	**Measurement Technology Limited**
6	Address:	**Luton, Bedfordshire, LU1 3JJ**

7 This supplementary certificate extends EC – Type Examination Certificate No. BAS01ATEX7165 to apply to equipment or protective systems 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.

This supplementary certificate shall be held with the original certificate.

The original certificate was issued by The Electrical Equipment Certification Service, Notified Body Number 0600, which retains responsibility for its original documentation. Baseefa (2001) Ltd., Notified Body Number 1180, is responsible only for the additional work relating to this supplementary certificate and any other supplementary certificate it has issued.

Baseefa (2001) Ltd. Customer Reference No. **0703**

Project File No. **04/0318**

Baseefa (2001) Ltd.
Health and Safety Laboratory Site, Harpur Hill,
Buxton, Derbyshire SK17 9JN
Telephone +44 (0) 1298 28255 Fax +44 (0) 1298 28216
e-mail info@baseefa2001.biz web site www.baseefa2001.biz
Registered in England No. 4305578 at 13 Dovedale Crescent, Buxton, Derbyshire, SK17 9BJ

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.

13 # Schedule

14 ## Certificate Number BAS01ATEX7165/1

15 Description of the variation to the Equipment or Protective System

Variation 1.1

To permit the optional use of printed circuit board PCB363/5 in the MTL4024R Solenoid/Alarm Driver assembly. When this PCB is used, a wire link is to be fitted across terminal pads 9 & 11.

16 Report Number

None

17 Special Conditions for Safe Use

None

18 Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
CI4024-2	10	1	04.04	MTL4024R PCB363/5 Track Layout

1 # SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**

3	Supplementary EC - Type Examination Certificate Number:	**BAS01ATEX7165/2**
4	Equipment or Protective System:	**MTL4021 Solenoid/Alarm Driver**
5	Manufacturer:	**Measurement Technology Limited**
6	Address:	**Luton, Bedfordshire, LU1 3JJ**

7 This supplementary certificate extends EC – Type Examination Certificate No. BAS01ATEX7165 to apply to equipment or protective systems 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.

This supplementary certificate shall be held with the original certificate.

The original certificate was issued by The Electrical Equipment Certification Service, Notified Body Number 0600, which retains responsibility for its original documentation. Baseefa (2001) Ltd., Notified Body Number 1180, is responsible only for the additional work relating to this supplementary certificate and any other supplementary certificate it has issued.

Baseefa Customer Reference No. **0703**

Project File No. **05/0463**

Baseefa
Rockhead Business Park, Staden Lane,
Buxton, Derbyshire SK17 9RZ
Telephone +44 (0) 1298 766600 Fax +44 (0) 1298 766601
e-mail info@baseefa.com web site www.baseefa.com
Baseefa is a trading name of Baseefa (2001) Ltd
Registered in England No. 4305578 at the above address

R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.

13 # Schedule

14 ## Certificate Number BAS01ATEX7165

15 **Description of the variation to the Equipment or Protective System**

Variation 2.1

To permit minor drawing changes that do not affect the original intrinsic safety assessment.

16 **Report Number**

None.

17 **Special Conditions for Safe Use**

None

18 **Essential Health and Safety Requirements**

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 **Drawings and Documents**

Number	Sheet	Issue	Date	Description
CI4024-1	2	4	07.05	MTL4024 Parts List
CI4024-1	4	2	07.05	MTL4024 Component Layout