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 : **BAS01ATEX7169**

4 Equipment or Protective System: **MTL4041B REPEATER POWER SUPPLY: 4/20mA**

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 0703/02/307

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.

HSE Health & Safety Executive

Electrical Equipment Certification Service
Health and Safety Executive
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I M CLEARE
DIRECTOR
26 July 2001

13 Schedule

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15 Description of Equipment or Protective System

MTL4041B Repeater Power Supply : 4/20mA designed to provide a floating d.c. supply for energising a 4/20mA two or three wire transmitter in the hazardous area and repeating this current in the safe area whilst restricting the transfer of energy from unspecified safe-area apparatus to an intrinsically safe circuit by the limitation of voltage and current. Three transformers provide galvanic isolation between the hazardous and non-hazardous area circuitry.

LED indication is provided to indicate power-on.

Connector CON2, pins 7 to 14

U_m = 250V

Connector CON1, pins 2/3 wrt 4/5

U_o = 28V
I_o = 93mA
P_o = 0.65W

Connector CON1, pins 6 wrt 4/5

U_o = 1.1V
I_o = 53mA
P_o = 15mW

Connector CON1, pins 2/3 wrt 6

U_o = 28V
I_o = 87mA
P_o = 0.61W

$C_i = 0$
$L_i = 0$

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
Connector CON1, pins 2/3 wrt 4/5				
IIC	0.083	3.05 (4.20)		56
IIB	0.650	9.15 (12.6)		210
IIA	2.150	24.4 (33.6)		444

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GROUP	CAPACITANCE in µF	INDUCTANCE OR in mH	L/R RATIO in µH/ohm
Connector CON1, pins 6 wrt 4/5			
IIC	100	13.06	2436
IIB	1000	49.77	8931
IIA	1000	105.05	18140
Connector CON1, pins 2/3 wrt 6			
IIC	0.083	3.05 (4.20)	60
IIB	0.650	9.15 (12.6)	222
IIA	2.150	24.4 (33.6)	469

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 a decrease in value of the output current limiting resistor. This has the effect of increasing the output current. The variant is to be designated as an MTL 4041P High Power Repeater Power Supply: 4/20mA.

Connector CON2, pins 7 to 14

U_m = 250V

Connector CON1, pins 2/3 wrt 4/5

U_o = 28V
I_o = 116.6mA
P_o = 0.82W

Connector CON1, pins 6 wrt 4/5

U_o = 1.1V
I_o = 53mA
P_o = 15mW

Connector CON1, pins 2/3 wrt 6

U_o = 28V
I_o = 107mA
P_o = 0.75W

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C_i = 0
L_i = 0

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
Connector CON1, pins 2/3 wrt 4/5			
IIC	0.083	1.82 (2.51)	44
IIB	0.650	5.46 (7.53)	170
IIA	2.150	14.5 (20.0)	359
Connector CON1, pins 6 wrt 4/5			
IIC	100	13.06	2436
IIB	1000	49.77	8931
IIA	1000	105.05	18140
Connector CON1, pins 2/3 wrt 6			
IIC	0.083	1.82 (2.51)	48
IIB	0.650	5.46 (7.53)	184
IIA	2.150	14.5 (20.0)	388

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 the connection of an external intrinsically safe source with output parameters U_o = 30V, I_o = 121mA, having a source resistance of U_o/I_o, to pin 6 with respect to pins 4 and 5 of either the MTL4041B or the MTL4041P. Output Pins 2 and 3 must not be used when this external source is connected to Pin 6 w.r.t. 4/5.

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the hazardous area cables must not exceed the values as detailed in the certificate relating to the external intrinsically safe source.

16 **Report No.**

01(C)0221 (held on EECS 0703/02/300)

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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

Number	Sheet	Issue	Date	Description
CI4041-2	2	6	05.01	MTL4041B Parts List
CI4041-2	3	5	10.96	MTL4041B Circuit Diagram
CI4041-2	4	4	10.96	MTL4041B Component Layout
CI4041-2	5	2	09.95	MTL4041B General Assembly
CI4041-2	6	1	03.93	MTL4041B Internal Construction
CI4041-2	7	5	10.96	MTL4041B PCB Track Layout
CI4041-2	8	4	10.93	MTL4041B Transformer Winding Details
CI4041-2	9	1	05.01	MTL4041B 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
CI4000-2	1	2	11.92	MTL4000 Series 2-core IS Transformer
CI4000-2	2	2	11.92	MTL4000 Series 2-core IS Transformer

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

DRAWINGS ASSOCIATED WITH VARIATION 0.1

Number	Sheet	Issue	Date	Description
CI4041-3	2	5	05.01	MTL4041P Parts List
CI4041-3	3	4	10.96	MTL4041P Circuit Diagram
CI4041-3	4	4	10.96	MTL4041P Component Layout

13 **Schedule**

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Number	Sheet	Issue	Date	Description
CI4041-3	5	2	09.95	MTL4041P General Assembly
CI4041-3	6	1	10.93	MTL4041P Internal Construction
CI4041-3	7	5	10.96	MTL4041P PCB Track Layout
CI4041-3	8	1	10.93	MTL4041P Transformer Winding Details
CI4041-3	9	1	05.01	MTL4041P Certification Label

BASEEFA List Keywords
2ISOLBAR