



EC-TYPE EXAMINATION CERTIFICATE

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

EC-Type Examination Certificate Number : **BAS01ATEX7158**

Equipment or Protective System: **MTL5051 INTRINSICALLY SAFE SERIAL DATA COMMUNICATIONS ISOLATOR**

Manufacturer: **MEASUREMENT TECHNOLOGY LIMITED**

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

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

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)0220 dated 18 December 2001 (held on EECS 0703/02/299)

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.

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.

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.

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

Ex II (1) GD [EEEx ia] IIC (-20°C ≤ T_a ≤ +60°C)

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

File No: **EECS 0703/02/333**

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.



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P M CLEARE
DIRECTOR
29 April 2002

Re-issued 5 July 2002 to correct drawing numbers.

CERTATEX/EQUIPCAT1-2P, Issue 1, Dated September 1998



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15 Description of Equipment or Protective System

An MTL5051 Intrinsicly Safe Serial Data Communications Isolator is designed to provide a fully floating d.c. supply for hazardous area mounted instrumentation. Communications is provided by voltage and current switching, or current loops, or RS232 in the hazardous area and by RS232 or RS422 in the safe area.

The MTL5051 apparatus comprises a single isolating transformer, two opto-isolators with five hazardous area output circuits, each of which is protected with zener diode / resistance combinations to provide voltage and current limitations. The above together with other electronic circuitry is mounted on a single multi-layer printed circuit board and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non hazardous area connections.

CON 3, Pins 7, 8, 9; CON 4, Pins 10, 11, 12 and CON 5, Pins 13 &14

$U_m = 250V$

The circuit connected to the safe area terminals on CON 3, CON 4 and CON 5 is designed to operate from a d.c. supply voltage of up to 35V.

CON 1 pins 2, 3; CON 2 pin 4 w.r.t CON 1 pin 1

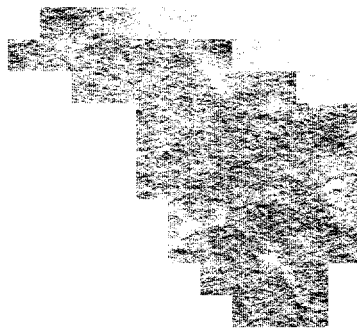
$U_o = 14V$
 $I_o = 192mA$
 $P_o = 0.80W$
 $C_i = 0$
 $L_i = 0$

CON 1 pins 2, 3; w.r.t CON 1 pin 1

$U_o = 14V$
 $I_o = 108mA$
 $P_o = 0.45W$
 $C_i = 0$
 $L_i = 0$

CON 1 pin 2; CON 2 pins 5, 6 w.r.t CON 1 pin 1

$U_o = 20V$
 $I_o = 139mA$
 $P_o = 0.46W$
 $C_i = 0$
 $L_i = 0$





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CON 1 pin 3; CON 2 pin 4 w.r.t CON 1 pin 1

$U_o = 14V$
 $I_o = 88mA$
 $P_o = 0.35W$
 $C_i = 0$
 $L_i = 0$

CON 2 pins 5, 6 w.r.t CON 1 pin 1

$U_o = 15V$
 $I_o = 35mA$
 $P_o = 0.07W$
 $C_i = 0$
 $L_i = 0$

CON 1 pins 2, 3; CON 2 pins 4, 5, 6 w.r.t CON 1 pin 1

$U_o = 20V$
 $I_o = 227mA$
 $P_o = 0.81W$
 $C_i = 0$
 $L_i = 0$

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 for each channel:

| GROUP | CAPACITANCE | INDUCTANCE | OR | L/R RATIO |
|---|-------------|------------|----|-----------------|
| | (μF) | (mH) | | ($\mu H/ohm$) |
| <u>CON 1 pins 2, 3; CON 2 pin 4 w.r.t CON 1 pin 1</u> | | | | |
| IIC | 0.73 | 0.92 | | 55 |
| IIB | 4.6 | 2.75 | | 229 |
| IIA | 17.0 | 7.34 | | 465 |
| <u>CON 1 pins 2, 3; w.r.t CON 1 pin 1</u> | | | | |
| IIC | 0.73 | 3.19 | | 97 |
| IIB | 4.6 | 13.46 | | 371 |
| IIA | 17.0 | 27.05 | | 783 |
| <u>CON 1 pin 2; CON 2 pins 5, 6 w.r.t CON 1 pin 1</u> | | | | |
| IIC | 0.22 | 1.89 | | 53 |
| IIB | 1.41 | 8.38 | | 208 |
| IIA | 5.50 | 16.68 | | 431 |
| <u>CON 1 pin 3; CON 2 pin 4 w.r.t CON 1 pin 1</u> | | | | |
| IIC | 0.73 | 4.80 | | 118 |
| IIB | 4.6 | 19.61 | | 440 |
| IIA | 17.0 | 40.04 | | 929 |



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| GROUP | CAPACITANCE | INDUCTANCE | OR | L/R RATIO |
|---|-------------|------------|----|----------------|
| | (μ F) | (mH) | | (μ H/ohm) |
| CON 2 pins 5, 6 w.r.t CON 1 pin 1 | | | | |
| IIC | 0.58 | 29.37 | | 265 |
| IIB | 3.55 | 107.86 | | 1008 |
| IIA | 14.0 | 225.16 | | 1891 |
| CON 1 pins 2, 3; CON 2 pins 4, 5, 6 w.r.t CON 1 pin 1 | | | | |
| IIC | 0.22 | 0.36 | | 33 |
| IIB | 1.41 | 1.09 | | 138 |
| IIA | 5.50 | 2.89 | | 277 |

Equipment referred to in this certificate having the same type number as items in BASEEFA Certificate No Ex 98D2009 may be used as a direct substitute in a system provided that the cable parameters used are within the limits shown on this certificate.

16 Report No

01(C)0220

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)0220 Clause 5.1.1.3 |
| 1.2.2 | Components for incorporation or replacement | Report No 01(C)0220 Clause 5.1.2.2 |
| 1.2.5 | Additional means of protection | Report No 01(C)0220 Clause 5.1.2.5 |
| 1.2.7 | Protection against other hazards | Report No 01(C)0220 Clause 5.1.2.7 |
| 1.4.2 | Withstanding attack by aggressive substances | Report No 01(C)0220 Clause 5.1.4.2 |

19 DRAWINGS

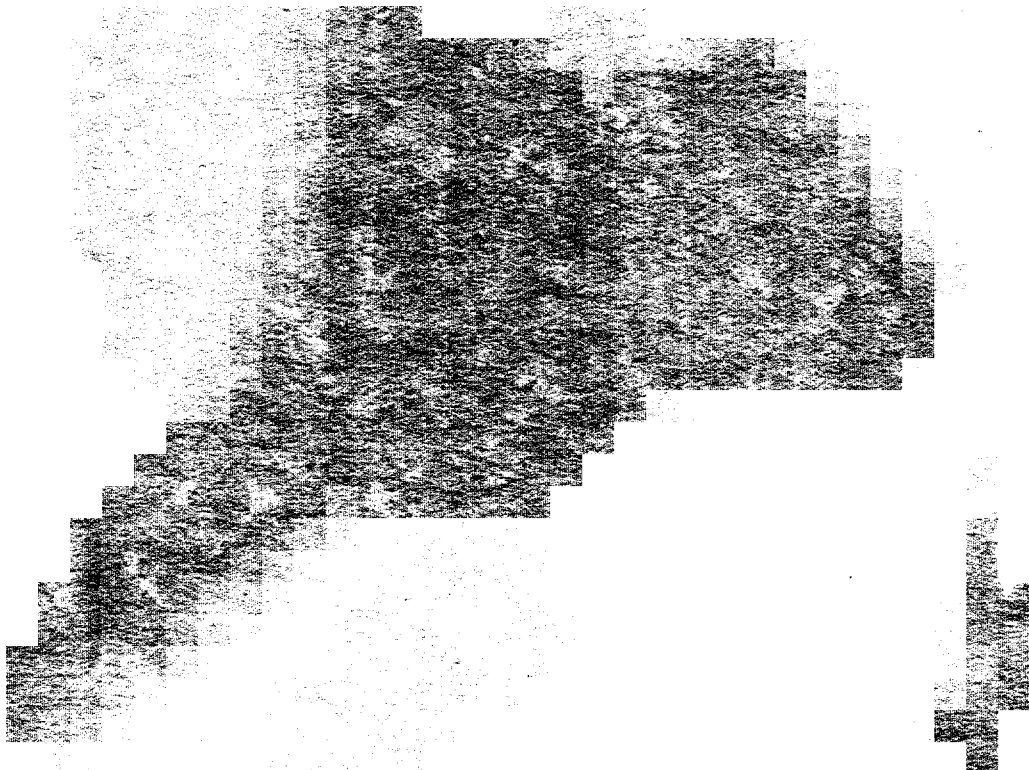
| Number | Sheet | Issue | Date | Description |
|--------|-------|-------|-------|--------------------------|
| CI5051 | 1 | 1 | 10.97 | MTL5051 Parts List |
| CI5051 | 2 | 2 | 02.98 | MTL5051 Circuit Diagram |
| CI5051 | 3 | 3 | 02.98 | MTL5051 Component Layout |
| CI5051 | 4 | 3 | 11.01 | MTL5051 General Assembly |
| CI5051 | 5 | 4 | 10.98 | MTL5051 PCB Track Layout |



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| Number | Sheet | Issue | Date | Description |
|----------|-------|-------|-------|-------------------------------------|
| CI5051 | 6 | 1 | 10.97 | MTL5051 Transformer Winding Details |
| CI5000-8 | 1 | 2 | 10.00 | IS Transformer TFR310 |
| CI5000-8 | 2 | 2 | 10.00 | IS Transformer TFR310 |



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BASEEFA List Keywords
2ISOLBAR