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 : **BAS01ATEX7145**

4 Equipment or Protective System: **MTL5015 TWO CHANNEL SWITCH/PROXIMITY DETECTOR INTERFACE WITH LINE FAULT DETECTION AND PHASE REVERSAL**

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

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 ($-20°C \leqslant T_a \leqslant +60°C$)

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

File No: EECS 0703/02/320

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

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pp I M CLEARE
DIRECTOR
29 April 2002

Re-issued 5 July 2002 to correct drawing numbers.

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7145**

15 **Description of Equipment or Protective System**

An MTL5015 Two Channel Switch/Proximity Detector Interface with line fault detection and phase reversal enables two safe area loads to be controlled by two switches or proximity detectors located in the hazardous area. Two floating solid state on/off switches compatible with logic circuits are provided for connection in the safe area circuit. The MTL5015 is designed to restrict the transfer of energy from unspecified safe-area apparatus to two independent intrinsically safe circuits by the limitation of voltage and current.

LED indication is provided to indicate power-on, line-fault and the status of each output. Switches permit the operator to specify the line fault detection and phase reversal requirements.

The MTL5015 apparatus comprises of three isolating transformers which provide galvanic isolation between the hazardous area and the non-hazardous area circuitry and two independent detection circuits each with zener diode/diode/resistance combinations to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for the hazardous area 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 CON 3, CON 4 and CON 5 are designed to operate from a d.c. supply voltage of up to 35V.

Channel 1, CON 1, pins 2/3 wrt 1
Or
Channel 2, CON 2, pins 5/6 wrt 4

U_o = 10.5V
I_o = 14mA
P_o = 37mW

C_i = 0
L_i = 0

Each channel may be considered as a separate Intrinsically Safe circuit.

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:

13 Schedule

14 EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7145

GROUP	CAPACITANCE in μF	INDUCTANCE in mH	OR	L/R RATIO in μH/ohm
IIC	2.41	175		983
IIB	16.8	680		1333
IIA	75	1000		1333

Equipment referred to in this certificate having the same type number as items in BASEEFA Certificate No Ex 97D2266 may be used as a direct substitute in a system provided that the cable parameters used are within the limits shown on this certificate.

VARIATION 0.1

To permit the removal of components associated with the second channel thus forming the MTL5012 One Channel Switch/Proximity Detector Interface with line fault detection and phase reversal.

Channel 1, CON 1, pins 2/3 wrt 1

$U_o = 10.5V$
$I_o = 14mA$
$P_o = 37mW$

$C_i = 0$
$L_i = 0$

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the hazardous area load must not exceed the values for a single channel of an MTL 5015 above.

VARIATION 0.2

To permit the connection of MTL5000 Ring Terminal assemblies in place of the safe and hazardous area screw terminals. The enclosure remains IP20 whether or not the Ring Terminal is fitted. The following MTL5000 Ring Terminals may be connected to the MTL5015 and MTL5012. Blanking covers may be removed if necessary.

Hazardous Area Terminal	MTL5015 pins	1, 2, 4, 5
	HAZ-RT-1-5	1, 2, 3, 4
Safe Area Terminal	MTL5015 pins	8, 9, 11, 12
	SAF-RT-8-12	5, 6, 7, 8

Hazardous Area Terminal	MTL5012 pins	1, 2, 3
	HAZ-RT-1-3	1, 2, 3
Safe Area Terminal	MTL5012 pins	11, 12
	SAF-RT-11-12	7, 8

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7145**

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
CI5015	1	2	11.01	MTL5015 Parts List
CI5015	2	1	04.97	MTL5015 Circuit Diagram
CI5015	3	1	04.97	MTL5015 Component Layout
CI5015	4	2	11.01	MTL5015 General Assembly
CI5015	5	1	04.97	MTL5015 PCB Track Layout
CI5015	6	2	11.01	MTL5015 Transformer Winding Details
*CI5000-2	1	3	07.00	IS Transformer TFR300
*CI5000-2	2	3	07.00	IS Transformer TFR300
**CI5000-6	1	5	07.00	IS Transformer TFR309
**CI5000-6	2	5	07.00	IS Transformer TFR309

Drawings marked * are associated with and are held on BASEEFA Certificate BAS01ATEX7157
Drawings marked ** are associated with and are held on BASEEFA Certificate BAS01ATEX7147

Drawing associated with Variation 0.1

Number	Sheet	Issue	Date	Description
CI5012	1	2	11.01	MTL5012 Parts List
CI5012	2	1	04.97	MTL5012 Circuit Diagram

13 **Schedule**

14 **EC-TYPE EXAMINATION CERTIFICATE N° BAS01ATEX7145**

Number	Sheet	Issue	Date	Description
CI5012	3	1	04.97	MTL5012 Component Layout
CI5012	4	2	11.01	MTL5012 General Assembly
CI5012	5	1	04.97	MTL5012 PCB Track Layout
CI5012	6	2	11.01	MTL5012 Transformer Winding Details

Drawing associated with Variation 0.2

Number	Sheet	Issue	Date	Description
***CI5000-12	1 to 4	1	02.02	MTL5000 Ring Terminal

Drawing marked *** is associated with and held on BASEEFA Certificate BAS01ATEX7144

BASEEFA List Keywords
2ISOLBAR