



British Approvals Service for Electrical Equipment in Flammable Atmospheres

1. **CERTIFICATE OF CONFORMITY**

2. BAS No Ex 832392

3. This certificate is issued for the intrinsically safe electrical system:

MTL 2000 SERIES AND MTL 2220 SYSTEM

4. submitted for certification by:

MEASUREMENT TECHNOLOGY LIMITED
of Luton, Bedfordshire

5. This electrical system and any acceptable variation thereto is specified in the Schedule to this Certificate and the documents therein referred to.

6. BASEEFA confirms that the system has been found to comply with European Standard BS 5501:Part 9:1982 EN50 039

Relevant examination and test requirements are recorded in confidential Test Report Nos:-

a) 79(i)103 dated 11.2.80 (held on File SFA 16/2/030) MTL 2210B and MTL 2211

b) 80(i)84 dated 13.2.81 (held on File SFA 12/372/033) MTL 2212

c) 80(i)85 dated 19.3.81 and Addendum No 1 dated 16.9.81 (held on File SFA 12/372/034) MTL 2241 and MTL 2242

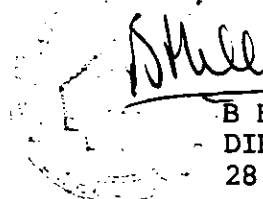
d) 79(i)102 dated 14.2.80 (held on File SFA 16/2/032) MTL 2220.

7. This system is coded

EEx ia IIC

8. The supplier and/or user, of the intrinsically safe electrical system referred to in this certificate, has the responsibility to ensure that the system conforms to the specification laid down in the Schedule to this certificate and has satisfied routine verifications and tests specified therein.

File No : SFA/12/372/052



B HILL

DIRECTOR

Sheet 1/4

28 September 1983

This certificate is granted subject to conditions applicable to the Approval Service, it does not necessarily indicate that the apparatus may lawfully be used in particular industries or circumstances.

CERTIFICATE OF CONFORMITY

SCHEDULE

NUMBER Ex 832392

DATED 28 September 1981

SYSTEM

AN MTL 2000 SERIES AND MTL 2220 SYSTEM comprises:-

1. Apparatus located in a non-hazardous area (Safe Area).
 - 1.1 MTL 2210B Single Channel Switch Operated Relay
(Certificate No Ex 802334)
 - 1.2 MTL 2211 Two Channel Switch Operated Relay
(Certificate No Ex 802333)
 - 1.3 MTL 2212 Three Channel Switch Operated Relay
(Certificate No Ex 802206)
 - 1.4 MTL 2241 Single Channel Solenoid/Alarm Driver
(Certificate No Ex 812280)
 - 1.5 MTL 2242 Four Channel Solenoid Driver
(Certificate No Ex 802208)
 - 1.6 MTL 2220 Earth Leakage Detector
(Certificate No Ex 802327)
 - 1.7 Apparatus which is unspecified except that it must not be supplied from nor contain in normal or abnormal conditions a source of potential with respect to earth in excess of 250 volts r.m.s. or 250 volts d.c.
2. Apparatus which may be located in a Hazardous Area.
 - 2.1 Apparatus meeting the requirements of BS 5501: Part 1: 1977 EN50 014 Clause 1.3 which must be installed in accordance with BS 5501: Part 7: 1977 EN50 020 Clause 4.1 and 5.
 - 2.2 Apparatus which has been certified by BASEEFA as conforming to the requirements of intrinsically safe apparatus as defined in BS 5501: Part 7: 1977 EN50 020 with the coding EEx ia IIC and having the following parameters:-
 - U_{max} :in equal to or greater than 28 volts
 - I_{max} :in equal to or greater than 93 milliamperes
 - W_{max} :in equal to or greater than 0.65 watts
 - C_{eq} equal to or less than 100 pF
 - L_{eq} equal to or less than 100 μ H

CERTIFICATE OF CONFORMITY

SCHEDULE

NUMBER Ex 832392

DATED 28 September 198

3. Permissible Interconnecting Cables.

3.1 The Capacitance and Inductance or Inductance to Resistance (L/R) ratio of the cables connected to the output (hazardous area) terminals of the apparatus located in the non-hazardous area must not exceed the following values:

FACTOR OF SAFETY OF 1.5

MODEL	GROUP	CAPACITANCE in μF	INDUCTANCE OR L/R RATIO	
			in mH	in $\mu\text{H}/\text{ohm}$
MIL 2210B	IIC	0.9	69	600
	IIB	2.7	207	1800
	IIA	7.2	552	4800
MIL 2211	IIC	0.9	69	600
	IIB	2.7	207	1800
	IIA	7.2	552	4800
MIL 2212	IIC	0.7	4.5	76
	IIB	2.1	13.5	228
	IIA	5.6	36.0	608
MIL 2241	IIC	0.08	4.2	55
	IIB	0.24	12.6	165
	IIA	0.64	33.6	440
MIL 2242	IIC	0.08	4.2	55
	IIB	0.24	12.6	165
	IIA	0.64	33.6	440

FACTOR OF SAFETY OF 3 : For switches with no supplementary protection located in Zone 0

MODEL	GROUP	CAPACITANCE in μF	INDUCTANCE OR L/R RATIO	
			in mH	in $\mu\text{H}/\text{ohm}$
MIL 2210B	IIC	0.13	18	150
	IIB	0.39	54	450
	IIA	1.04	144	1200
MIL 2211	IIC	0.13	18	150
	IIB	0.39	54	450
	IIA	1.04	144	1200

CERTIFICATE OF CONFORMITY

SCHEDULE

NUMBER Ex 832392

DATED 28 September 19:

FACTOR OF SAFETY OF 3 : For switches with no supplementary
(contd) protection located in Zone 0

MODEL	GROUP	CAPACITANCE in μF	INDUCTANCE OR L/R RATIO	
			in mH	in $\mu\text{H}/\text{ohm}$
MTL 2212	IIC	0.1	1.1	19.6
	IIB	0.3	3.3	58.8
	IIA	0.8	8.8	156.8
MTL 2241	IIC	0.066	NOT PERMITTED	
	IIB		4.5	55
	IIA		12.0	147
MTL 2242	IIC	0.066	NOT PERMITTED	
	IIB		4.5	55
	IIA		12.0	147

DRAWINGS

<u>Number</u>	<u>Issue</u>	<u>Date</u>	<u>Description</u>
SCI-80 Sheet 1	1	2.83	Installation diagram for the MTL 2000 Series and the MTL 2220
SCI-80 Sheet 2	1	2.83	Installation diagram for the MTL 2000 Series and the MTL 2220

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Iss.	1
Date/Drawn	2.23/DRG
Modification	

HAZARDOUS AREA

SAFE AREA

HAZARDOUS AREA APPARATUS SEE NOTE 2

Optional link may be located in hazardous area

MTL2220

1	0	09
2	0	010
3	0	011
4	0	012
5	0	013
6	0	014
7	0	015
8	0	016

MTL2210B
BASEEFA
No. EX802334
Tamb = 60°C

HAZARDOUS AREA APPARATUS SEE NOTE 2

MTL2220

1	0	09
2	0	010
3	0	011
4	0	012
5	0	013
6	0	014
7	0	015
8	0	016

MTL2211
BASEEFA
No. EX802333
Tamb = 60°C

HAZARDOUS AREA APPARATUS SEE NOTE 2

MTL2220

1	0	09
2	0	010
3	0	011
4	0	012
5	0	013
6	0	014
7	0	015
8	0	016

MTL2212
BASEEFA
No. EX802206
Tamb = 60°C

HAZARDOUS AREA APPARATUS SEE NOTE 2

MTL2220

1	0	09
2	0	010
3	0	011
4	0	012
5	0	013
6	0	014
7	0	015
8	0	016

MTL2241
BASEEFA
No. EX812280
Tamb = 60°C

HAZARDOUS AREA APPARATUS SEE NOTE 3

MTL2220

1	0	09
2	0	010
3	0	011
4	0	012
5	0	013
6	0	014
7	0	015
8	0	016

MTL2242
BASEEFA
No. EX802208
Tamb = 60°C

HAZARDOUS AREA APPARATUS SEE NOTE 3

MTL2220

1	0	09
2	0	010
3	0	011
4	0	012
5	0	013
6	0	014
7	0	015
8	0	016

MTL2220
BASEEFA
No. 802327
Tamb = 60°C

These may or may not be connected to any number of units

This connection may be made in the safe area.

SAFE AREA APPARATUS SEE NOTE 1

NOTE
No Safety Earth required.

Tolerance unless otherwise stated ±

Sheet 1 of 2

Title
INSTALLATION DIAGRAM FOR THE MTL2000 SERIES
AND MTL2220

Dr. No.
SCI - 80

Dimensions in mm

Do not Scale

Third Angle Projection

Drg.No.

SCI-80

Note 1 Safe Area apparatus - unspecified except that it must not be supplied from nor contain under normal or abnormal conditions a source of potential with respect to earth in excess of 250V r.m.s. or 250V d.c.

Note 2 Hazardous area apparatus - must meet the requirements of Clause 1.3 of BS 5501:Part 1:1977: EN 50 014 and must be selected and installed to meet the requirements of BS 5501:Part 7:1977:EN 50 020, in particular with respect to clauses 5 and 4.1

Note 3 Any BASEEFA certified apparatus to EEx ia IIC with the following parameters:- $U_{max:in} > 28$ volts, $I_{max:in} > 93$ mA, $W_{max:in} > 0.65$ watts $C_{eq} < 100$ pF, $L_{eq} < 100$ μH.

Note 4 Where the hazardous area cables are part of a multicore, they must be part of a Type A or Type B multicore cable (as defined in Clause 5.3 of BS 5501:Part 9:1982:EN 50 039). The peak voltage of any circuit contained within the multicore must not exceed 60 volts.

Note 5 The following Group IIC cable parameters must not be exceeded. The figures in () apply to switches without any supplementary protection in Zone 0.

Model	Capacitance	Inductance	or	L/R ratio
MTL 2210B	0.9 (0.13) μF	69(18) mH		600 (150) μH/Ω
MTL 2211	0.9 (0.13) μF	69(18) mH		600 (150) μH/Ω
MTL 2212	0.7 (0.1) μF	4.5(1.1) mH		76 (19.6) μH/Ω
MTL 2241	0.08 (-) μF	4.2(-) mH		55 (-) μH/Ω
MTL 2242	0.08(-) μF	4.2(-) mH		55 (-) μH/Ω

The values for Group IIB and IIA are 3 and 8 times the values shown for Group IIC.

Note 6 Any number and combination of units may be connected to the MTL 2220

Note 7 The installation must comply with any national requirements. (In the UK to BS5345:Part 4:1977)

Certifying Authority:- BASEEFA

Certificate No.Ex832
Code EEx ia IIC

Used on	Scale
Tolerance unless otherwise stated †	Sheet 2 of 2
Title Installation diagram for the MTL 2000 Series and the MTL 2220	Drg. No. SCI-80

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Modification

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