Factory Mutual Research

1151 Boston-Providence Turnpike
P.O. Box 9102
Norwood, Massachusetts 02062

CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following company:

Measurement Technology Limited
Power Court, Luton
Bedfordshire, England LU1 3JJ

For:

ANALOG MULTIPLEXER TRANSMITTER. Model MTL831B

IS/I/1/ABCD - SCI-245/5; Entity
NI/I/2/ABCD

Max. Entity Parameters: Per installation drawing.

Equipment Ratings: Intrinsically Safe apparatus for Class I, Division 1, Group A, B, C and D in accordance with entity requirements and MTL Installation Drawing SCI-245; nonincendive for Class I, Division 2, Group A, B, C and D hazardous indoor locations.

Manufactured By: Measurement Technology Limited
Power Court, Luton
Bedfordshire, England LU1 3JJ

FACTORY MUTUAL RESEARCH CORPORATION

This certifies that the equipment described has been found to comply with the following Factory Mutual Research Corporation Approval Standards:

Approval Standard Class 3600 - 1989
Approval Standard Class 3610 - 1988
Approval Standard Class 3611 - 1986
Approval Standard Class 3810 - 1989

Approval Job Identification: 5B0A8.AX Issue Date: September 2, 1997

Related Approval Job Identification: None.

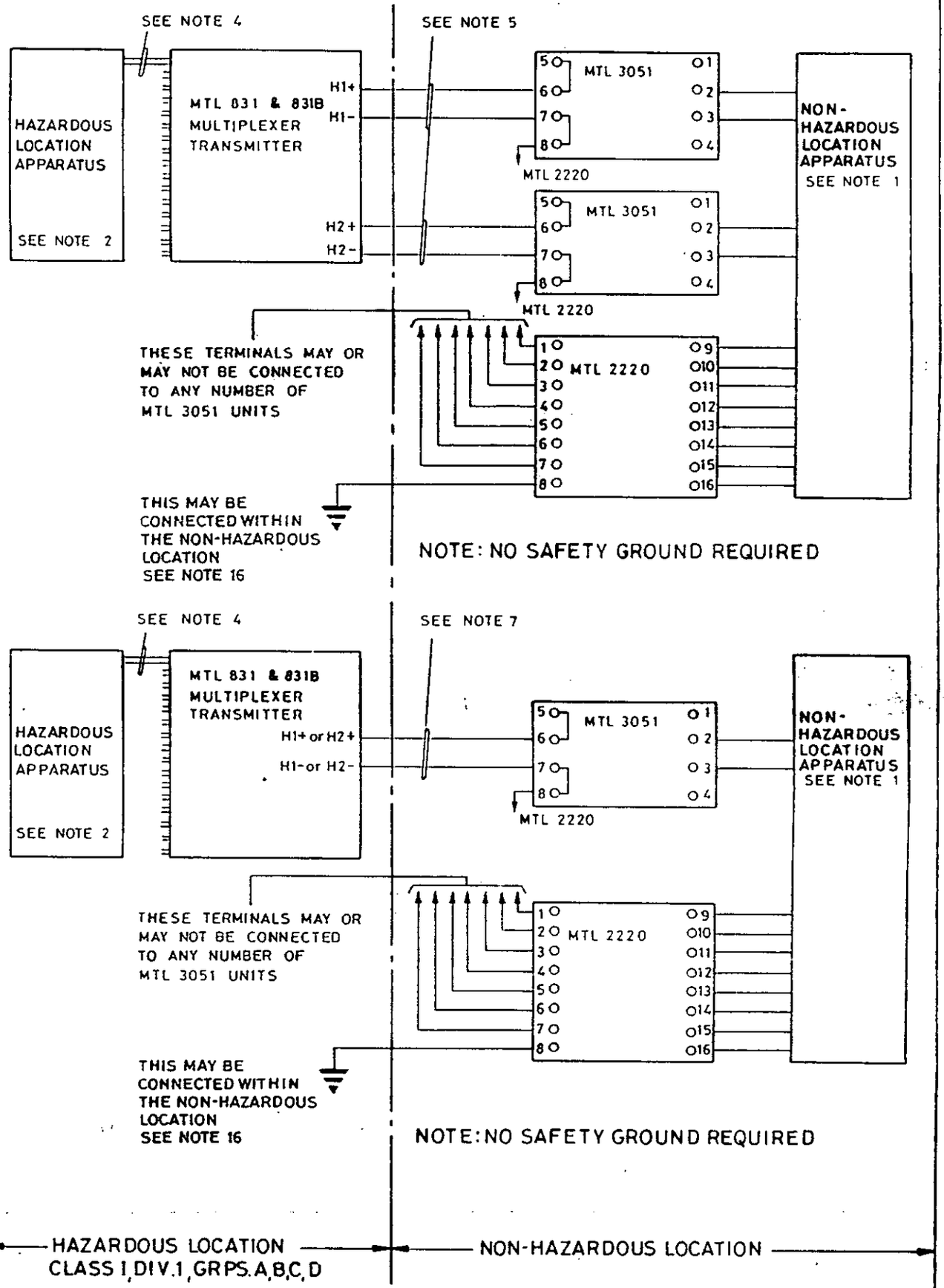
Subsequent Revision Reports/Date Approval Amended: None

Factory Mutual Research Corporation

Frank J. McGowan, Manager
Instrumentation Section
Approval Division

10/1/97
Date

Dimensions in mm | Do not Scale | Third Angle Projection

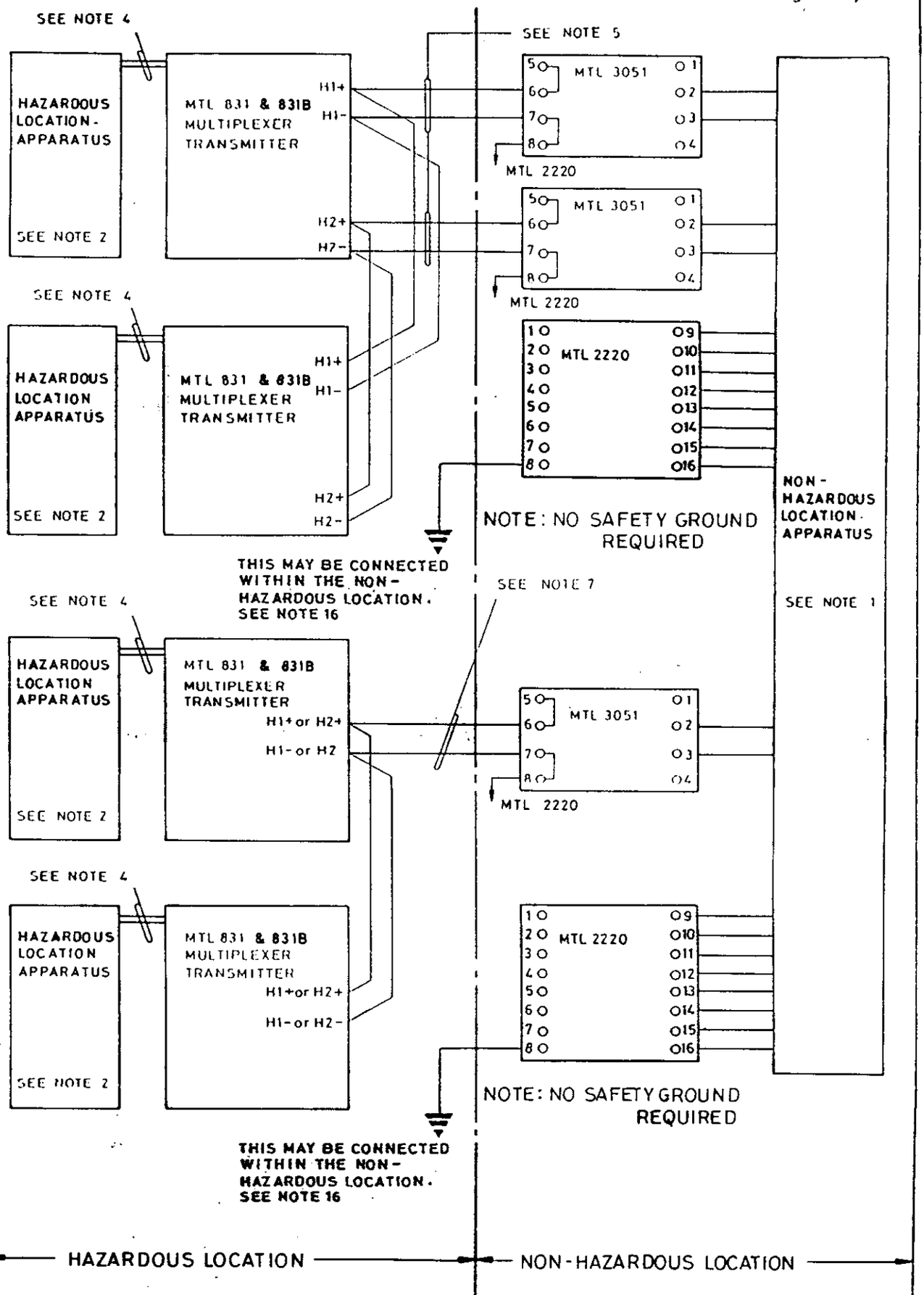


Iss.	Date Drawn	Modification	Chk
1	11.89/DRG	See Sheet 9	
2	11.90 DRG		
3	12.90 ACW		
4	3.92 P.S.	MTL 831B added.	
5	9.96 P.S.		

Certifying Authority : FACTORY MUTUAL	Scale
Tolerance unless otherwise stated ±	Sheet 1 of 10
Title INSTALLATION FOR THE MTL 831 & 831B MULTIPLEXER TRANSMITTER	Drg. No. SCI-245

Size A4

Dimensions in mm | Do not Scale | Third Angle Projection

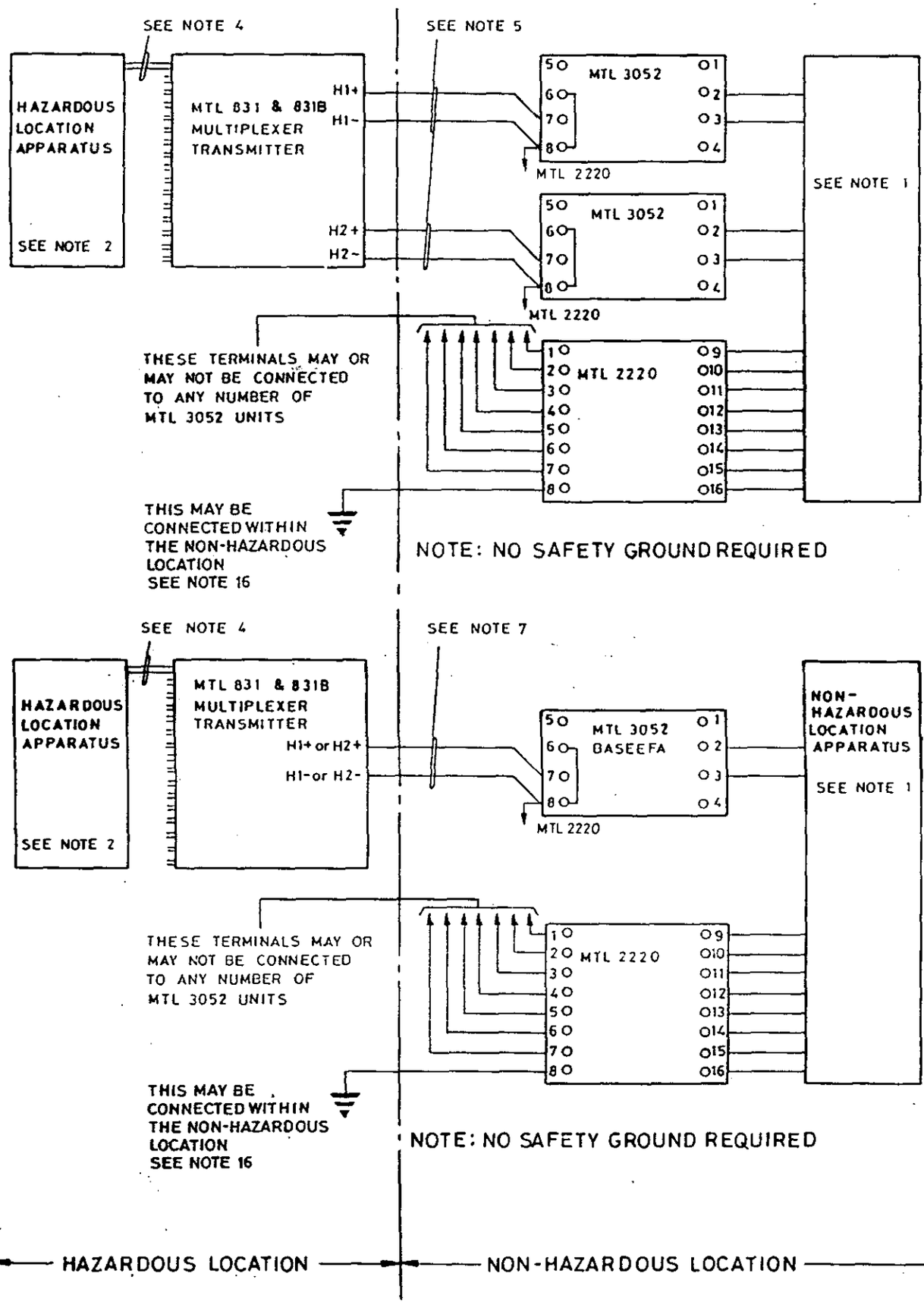


Iss.	Date Drawn	Modification
1	11.89/DRG	
2	11.90 DRG.	
3	12.90 ACW	See Sheet 9
4	3.92 P.S.	
5	9.96 P.S.	MTL 831B added.

Certifying Authority : FACTORY MUTUAL	Scale
Tolerance unless otherwise stated ±	Sheet 2 of 10
Title INSTALLATION FOR THE MTL 831 & 831B MULTIPLEXER TRANSMITTER	Drg. No. SCI - 245

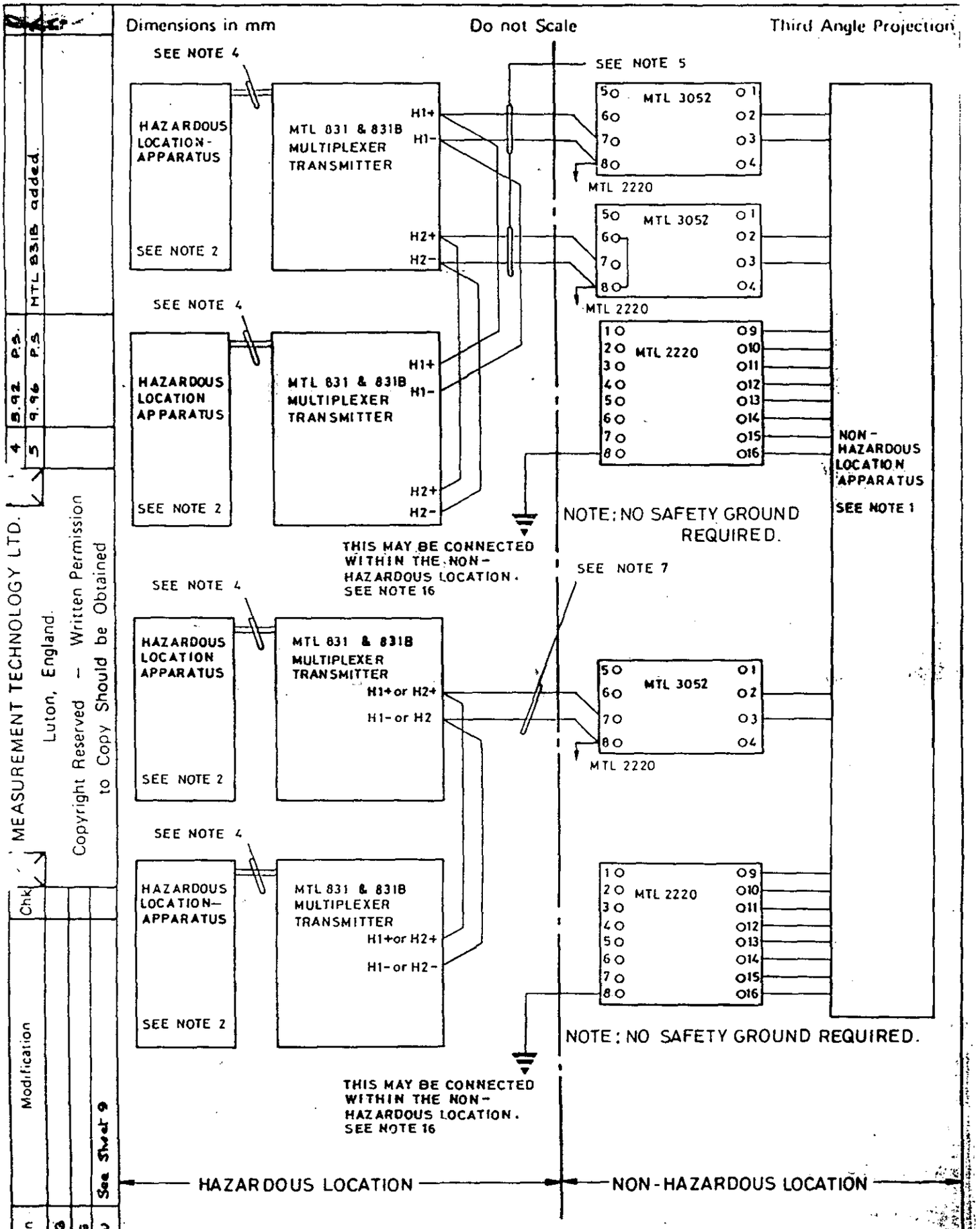
Size A4

Dimensions in mm | Do not Scale | Third Angle Projection



Iss.	Date Drawn	Modification	Chk
1	11.89/DRG		
2	11.90 DRG		
3	12.90 ACW	See Sheet 9	
4	3.92 P.S.		
5	9.96 P.S.	MTL 831B added.	

Certifying Authority : FACTORY MUTUAL	Scale
Tolerance unless otherwise stated ±	Sheet 3 of 10
Title INSTALLATION FOR THE MTL 831 & 831B MULTIPLEXER TRANSMITTER	Drg. No. SCI - 245

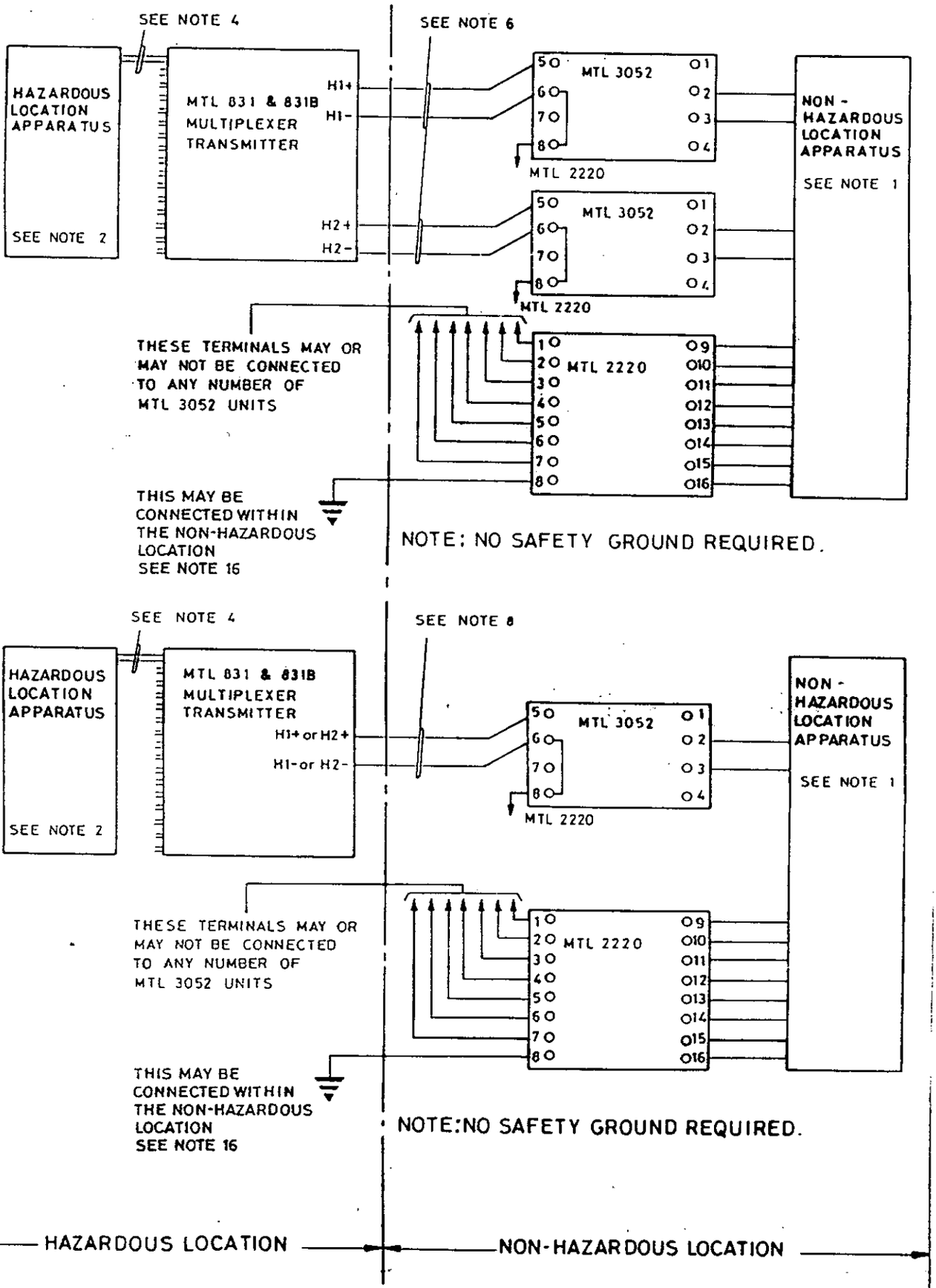


Iss.	Date Drawn	Modification	Chk
1	11.89/DRG		
2	11.90 DRG		
3	12.90 ACW	See Sheet 9	
4	8.92 P.S.	MTL 831B added.	
5	9.96 P.S.		

Certifying Authority : FACTORY MUTUAL	Scale
Tolerance unless otherwise stated ±	Sheet 4 of 10
Title INSTALLATION FOR THE MTL 831 & 831B MULTIPLEXER TRANSMITTER	Drg. No. SCI-245

Size A4

Dimensions in mm | Do not Scale | Third Angle Projection



Iss	Date Drawn	Modification	Chk
1	11.89/DRG.		
2	11·90 DRG.		
3	12.90 ACW	See Sheet 9	
4	3.92 P.S.	MTL 831B added.	
5	9.96 P.S.		

Certifying Authority : FACTORY MUTUAL

Tolerance unless otherwise stated ±

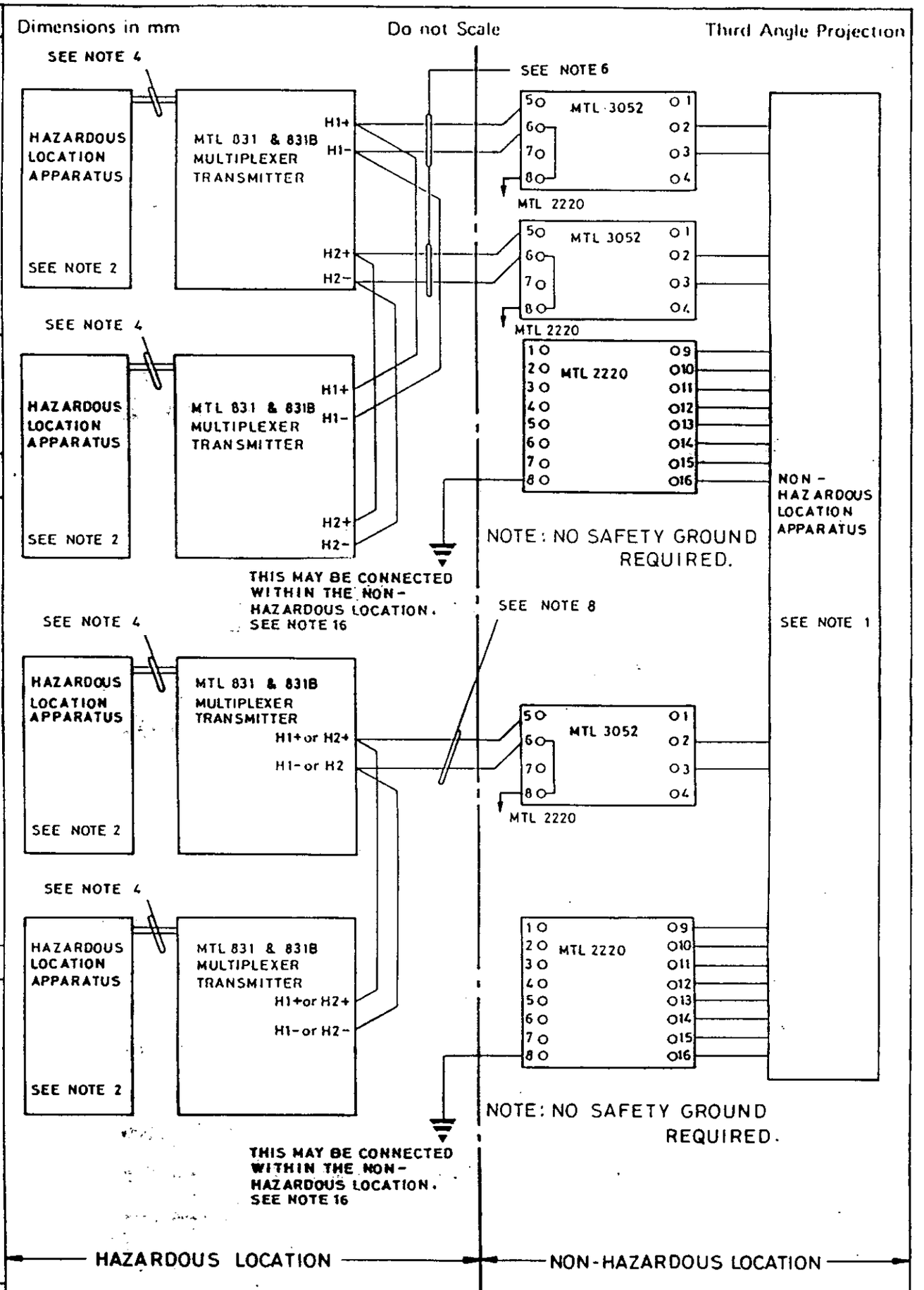
Title: INSTALLATION FOR THE MTL 831 & 831B MULTIPLEXER TRANSMITTER

Scale

Sheet 5 of 10

Dwg. No. SCI-245

Size A4



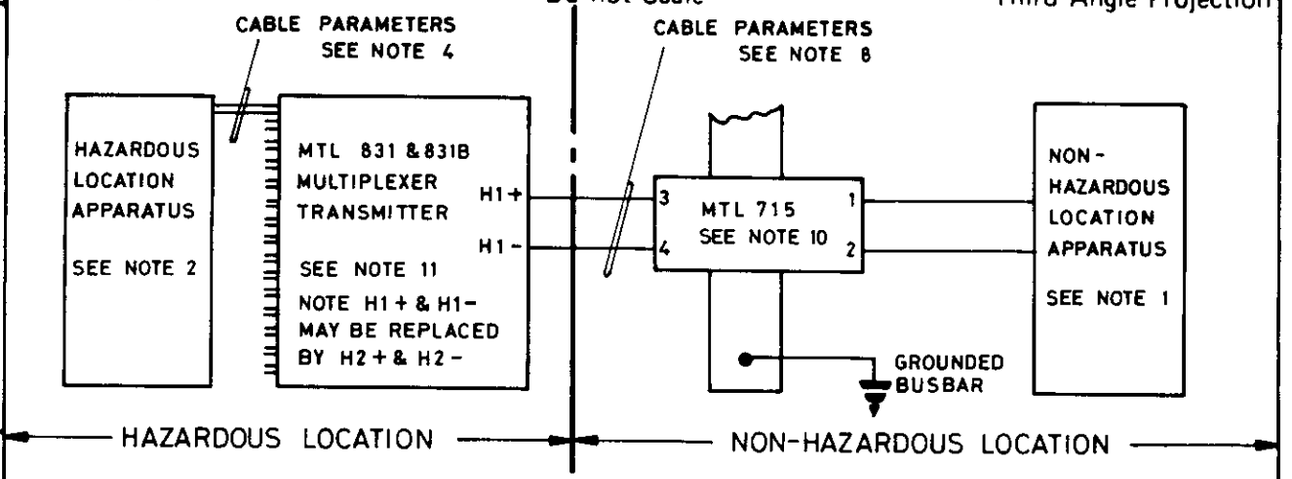
MEASUREMENT TECHNOLOGY LTD. Luton, England.

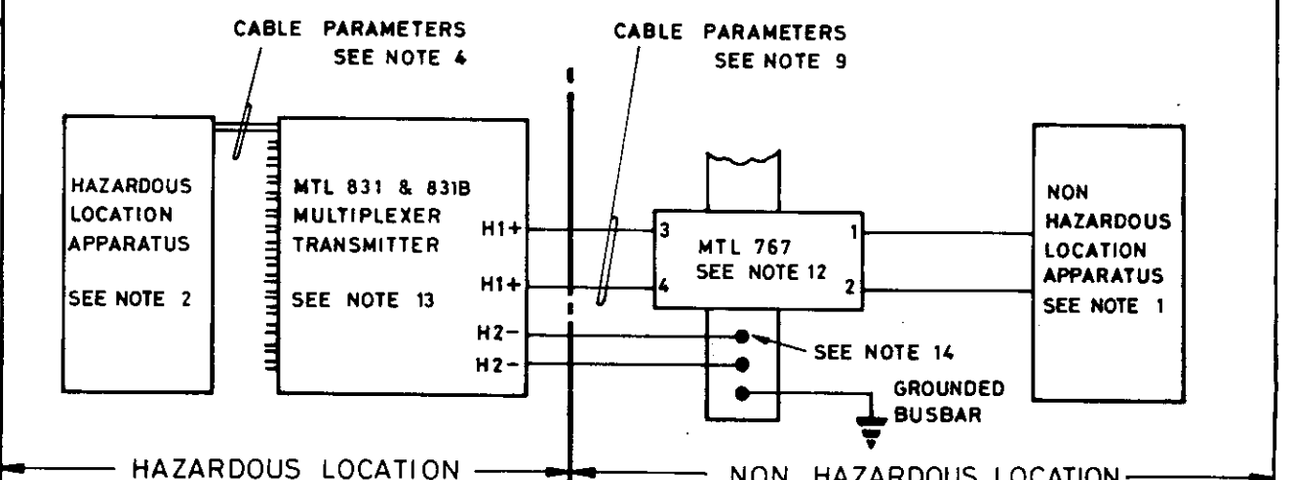
Iss.	Date Drawn	Modification	Chk
1	11.89/DRG.		
2	11.90 DRG		
3	12.90 ACW	See Sheet 9	
4	3.92 P.S.		
5	9.96 P.S.	MTL 831B added.	

Certifying Authority FACTORY MUTUAL	Scale
Tolerance unless otherwise stated ±	Sheet 6 of 10
Title INSTALLATION FOR THE MTL 831 & 831B MULTIPLEXER TRANSMITTER	Drg. No. SCI - 245

Size A4

Dimensions in mm | Do not Scale | Third Angle Projection





Note 1 The Non-Hazardous Location or Control Room mounted equipment should not use or generate more than 250 volts rms.

Note 2 The Hazardous Location mounted equipment may be switches. Other apparatus such as THCs, switches and non-inductive resistors may be used if the auto-ignition temperature of the hazardous location is greater than T4 (135°C.275°F). Certified devices with the correct Entity Conect parameters may also be used.

Note 3 When there is a ground connection then the circuit in the Hazardous Location must be capable of withstanding a test voltage of 500 volts rms with respect to ground or frame of the apparatus for a period of one minute without breakdown (dc resistance and impedance at 60Hz shall not be less than 100K). Otherwise there is no need for this requirement.

Note 4 The following cable parameters must not be exceeded.

Group	Capacitance µF	Inductance mH
A + B	0.8	120
C	2.4	360
D	6.4	960

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1	11.89/DRG		
2	11.90 DRG		
3	12.90 ACW	See Sheet 9	
4	3.92 P.S.		
5	9.96 P.S.	MTL 831B added.	

Certifying Authority: FACTORY MUTUAL | Scale N/A

Tolerance unless otherwise stated ± | Sheet 7 of 10

Title INSTALLATION FOR THE MTL 831 & 831B MULTIPLEXER TRANSMITTER | Drg. No. SCI-245

Note 5

Group	Capacitance µF	Inductance mH
A + B	0.11	1.3
C	0.33	3.9
D	0.88	10.4

Note 6

Group	Capacitance µF	Inductance mH
C	0.33	1.75
D	0.88	4.6

Note 7

Group	Capacitance µF	Inductance mH
A + B	0.75	5.2
C	2.25	15.6
D	6.00	41.6

Note 8 The following cable parameters must not be exceeded (MTL 715):-

Group	Capacitance µF	Inductance mH
A + B	0.75	1.65
C	2.25	4.95
D	6.0	13.2

Note 9 The following cable parameters must not be exceeded (MTL 767):-

Group	Capacitance µF	Inductance mH
A + B	0.5	0.32
C	1.5	0.96
D	4.0	2.56

Note 10 The MTL 715 may be replaced by ½ MTL 767. In this case the connection shown to terminal 4 must be taken separately to the busbar.

Note 11 An additional MTL 831 Multiplexer may be connected in parallel with H1+ and H1- without affecting the cable parameters.

Note 12 The MTL 767 may be replaced by two MTL 715 barriers of the same polarity.

Note 13 An additional MTL 831 Multiplexer may be connected in parallel with H1+, H2+, H1- and H2- without affecting the cable paramters.

Iss.	Date/Drawn	Modification	Chk
1	11.89/DRG		
2	11.90 DRG		
3	12.90 ACW	See Sheet 9	
4	3.92 P.S.		

Certifying Authority : FACTORY MUTUAL

Scale N/A

Tolerance unless otherwise stated ±

Sheet 8 of 10

Title
INSTALLATION FOR THE MTL 831 MULTIPLEXER TRANSMITTER

Drg. No.
SCI-245

Note 14 For single highway operation, the busbar connections to the transmitter may be omitted and H1- connected to terminal 4 on the MTL 767 in place of H2+.

Note 15 Where the hazardous location cable is part of a multicore, it must comply with the requirements of ANSI/ISA RP12.6.

Note 16 For guidance on the installation see ANSI/ISA RP12.6.

Note 17 When all the inputs I1 to I16 are interconnected the following cable parameters must not be exceeded:-

Group	Capacitance µF	Inductance mH
A + B	0.8	35
C	2.4	105
D	6.4	280

Note 18 The input circuit of the MTL 831 may be connected as shown on sheet 10 when the cable parameters in Note 17 above apply. This input circuit can be used for all the circuit configurations shown elsewhere on this drawing.

Note 19 When a single barrier or interface is connected to H1+ and H1- or H2+ and H2-, the Entity Parameters are Vmax = 30volts, Imax = 300mA, Pmax = 1.2W, Ci = 0nF, Li = 0mH.

When two barriers or interfaces are connected, one to H1+ and H1-, one to H2+ and H2-, the Entity Parameters are Vmax = 20volts, Imax = 150mA, Pmax = 1.2W, Ci = 0nF, Li = 0mH, for each input.

Note 20 The Entity Parameters for each pair of terminals I1 to I16 are as follows for Groups A and B.

Voc = 13.5 volts
Isc = 15mA
Ca = 0.9µA
La = 150mH

Is	Date	Drn	Modification
1	11.89	DRG	
2	11.90	DRG	
3	12.90	ACW	Notes 19 & 20 added.
4	3.92	PS	

Certifying Authority: FACTORY MUTUAL

Scale N/A

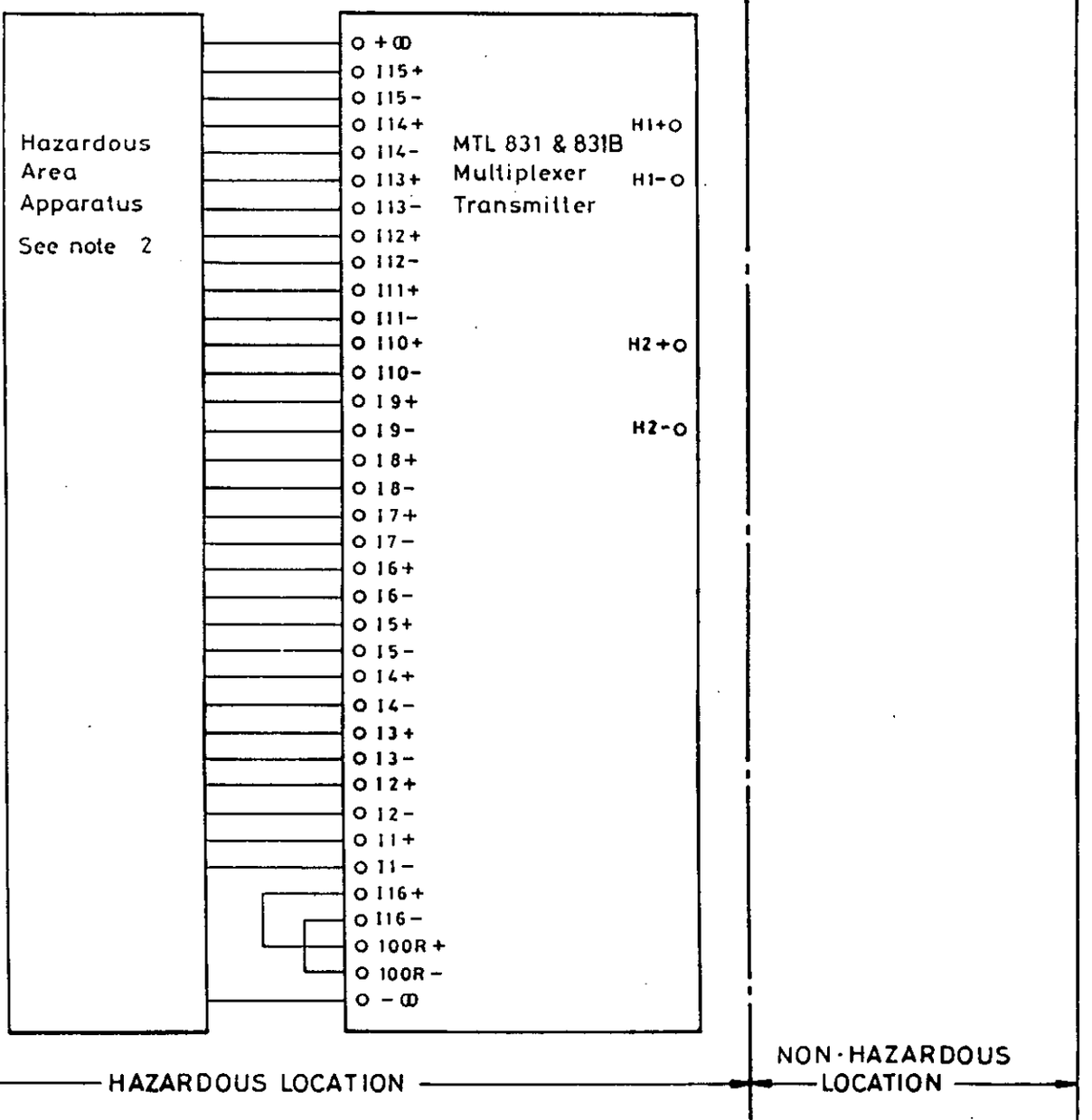
Tolerance unless otherwise stated ±

Sheet 9 of 10

Title
INSTALLATION FOR THE MTL 831 MULTIPLEXER TRANSMITTER

Drg. No.
SCI-245

Dimensions in mm | Do not Scale | Third Angle Projection



Iss.	Date/Drawn	Modification
1	11.89 / DRG.	
2	11.90 DRG	
3	12.90 AOW	See Sheet 9
4	3.92 P.S.	
5	9.96 P.S.	MTL 831B added.
C		

Certifying Authority : FACTORY MUTUAL

Tolerance unless otherwise stated ±

Title INSTALLATION FOR THE MTL 831 & 831B TRANSMITTER

Scale N/A

Sheet 10 of 10

Drg. No. SCI - 245

Size A4