

HAZARDOUS (CLASSIFIED) LOCATION

MTL647 LOCATIONS:
 Class I, Division 1, Groups A, B, C, D
 Class II, Division 1, Groups E, F & G
 Class III
 Class I, Zone 0, Group IIC

MTL646 LOCATIONS:
 Class I, Division 1, Groups A, B, C, D
 Class I, Zone 0, Group IIC

MTL647 and MTL646 Entity Parameters

Terminals 1 & 2
 $U_i = 25V$ dc
 $I_i = 108mA$
 $P_i = 0.58W$
 $C_i = 0.01\mu F$
 $L_i = 0.02mH$

Terminals 4 & 2
 $U_i = 14V$ dc
 $I_i = 108mA$
 $P_i = 0.45W$
 $C_i = 0$
 $L_i = 0$

Terminals S1 to S7 (combined parameters)
 $U_i = 0$ $U_o = 14.7V$ dc
 $I_i = 0$ $I_o = 146.7mA$ dc
 $P_i = 0$ $P_o = 0.58W$
 $C_i = 0.54\mu F$ $C_o = 0.08\mu F$
 $L_i = 0.3mH$ $L_o = 1.1mH$

Terminals A1 & A2; A3 & A4;
 $U_i = 28V$ dc $U_o = 1.49V$ dc
 $I_i = 200mA$ dc $I_o = 1\mu A$ dc
 $P_i = 0.85W$ $P_o = 3\mu W$
 $C_i = 0.04\mu F$ $C_o = 1000\mu F$
 $L_i = 0.02mH$ $L_o = 1000mH$

SEE NOTE 7

NON-HAZARDOUS (UNCLASSIFIED) LOCATION

SEE NOTE 1

MTL647 or MTL646
 SEE NOTES 8 & 9

SEE NOTE 12

SEE NOTE 14

3
2
1

MTL5051
SEE NOTE 4

1
2

MTL5025
SEE NOTE 5

ALARM A1
A2

SEE NOTE 14

SEE NOTE 6

ALARM A3
A4

SEE NOTE 14

SEE NOTE 6

NON HAZARDOUS LOCATION EQUIPMENT

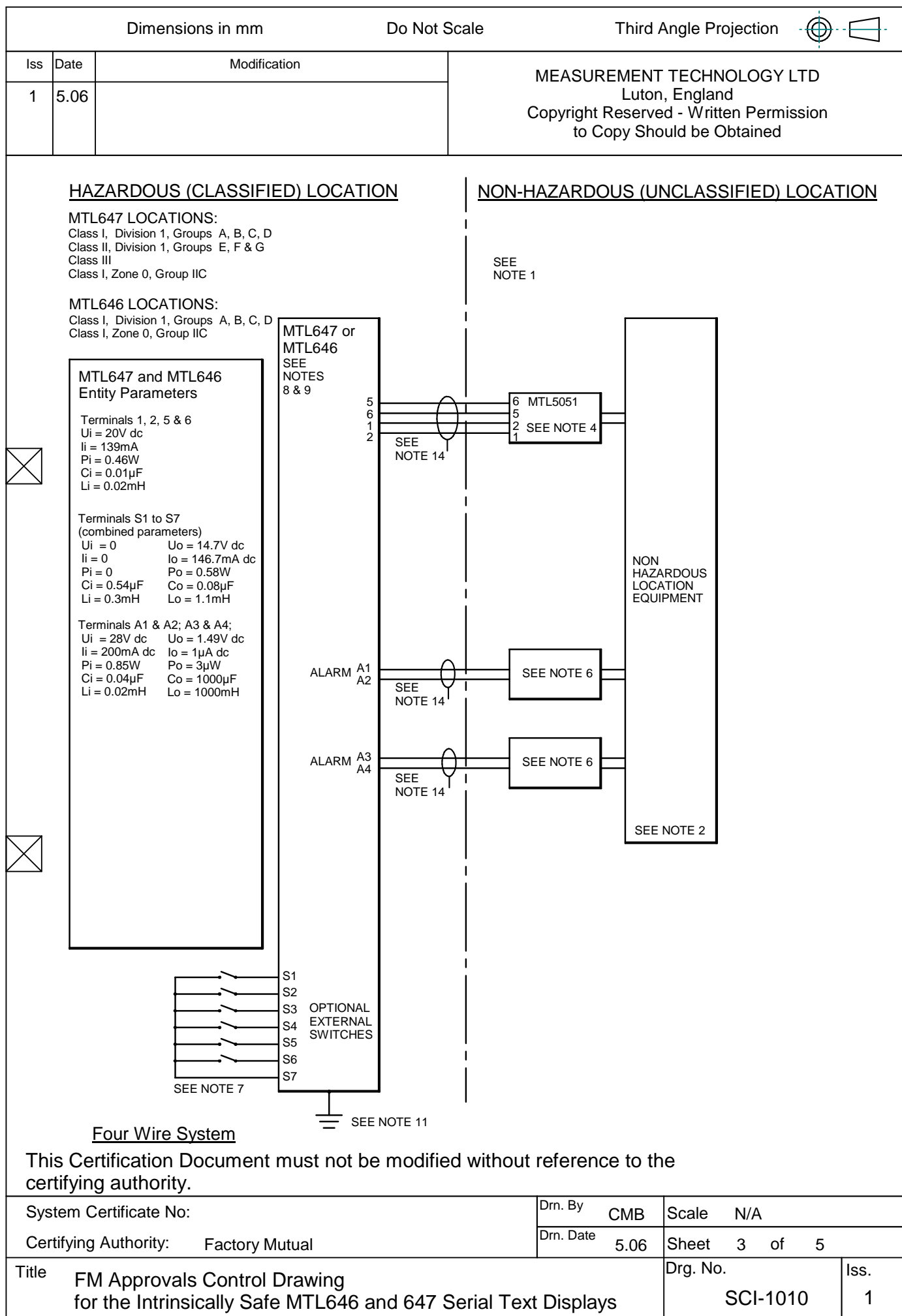
SEE NOTE 2

SEE NOTE 11

Three Wire System

This Certification Document must not be modified without reference to the certifying authority.

System Certificate No: Certifying Authority: Factory Mutual	Drn. By	CMB	Scale	N/A
	Drn. Date	5.06	Sheet	2 of 5
Title FM Approvals Control Drawing for the Intrinsically Safe MTL646 and 647 Serial Text Displays			Drg. No. <div style="text-align: center; font-weight: bold;">SCI-1010</div>	Iss. <div style="text-align: center; font-weight: bold;">1</div>



Dimensions in mm			Do Not Scale		Third Angle Projection																									
Iss	Date	Modification	MEASUREMENT TECHNOLOGY LTD Luton, England Copyright Reserved - Written Permission to Copy Should be Obtained																											
1	5.06																													
<p>Notes:</p> <ol style="list-style-type: none"> 1. The associated intrinsically safe barriers must be FM approved and the manufacturers' installation drawings shall be followed when installing this equipment. 2. The unclassified location equipment connected to the associated intrinsically safe barriers shall not use or generate more than 250V rms or 250V dc. 3. Installation shall be in accordance with ANSI/ISA RP 12.06.01 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the National Electrical Code ANSI/NFPA 70. 4. MTL5051 Serial-Data Communications Isolator FM File J.I. 3000682 5. MTL5025 Solenoid / Alarm Driver FM File J.I. 3Z9A8.AX 6. One single channel or one channel of a dual channel associated intrinsically safe barrier or galvanic isolator with entity parameters complying with the following requirements: <table style="margin-left: 40px; margin-top: 10px;"> <tr> <td style="text-align: right;">Vo or Vt</td> <td style="text-align: left;">equal to or less than</td> <td style="text-align: right;">Vi</td> </tr> <tr> <td style="text-align: right;">Io or It</td> <td style="text-align: left;">equal to or less than</td> <td style="text-align: right;">Ii</td> </tr> <tr> <td style="text-align: right;">La</td> <td style="text-align: left;">equal to or greater than</td> <td style="text-align: right;">Lcable + Li</td> </tr> <tr> <td style="text-align: right;">Ca</td> <td style="text-align: left;">equal to or greater than</td> <td style="text-align: right;">Ccable + Ci</td> </tr> </table> 7. Hazardous (classified) location equipment may be simple apparatus e.g. mechanically activated switches OR FM approved equipment with entity parameters complying with following requirements: <table style="margin-left: 40px; margin-top: 10px;"> <tr> <td style="text-align: right;">Vo or Vt</td> <td style="text-align: left;">equal to or less than</td> <td style="text-align: right;">Vi</td> </tr> <tr> <td style="text-align: right;">Io or It</td> <td style="text-align: left;">equal to or less than</td> <td style="text-align: right;">Ii</td> </tr> <tr> <td style="text-align: right;">La</td> <td style="text-align: left;">equal to or greater than</td> <td style="text-align: right;">Lcable + Li</td> </tr> <tr> <td style="text-align: right;">Ca</td> <td style="text-align: left;">equal to or greater than</td> <td style="text-align: right;">Ccable + Ci</td> </tr> </table> 8. To maintain IP66 protection between the MTL646 and the mounting panel: <div style="margin-left: 40px; margin-top: 10px;"> <p>Four panel mounting clips should be used</p> <p>Minimum panel thickness should be 2mm (0.08inches) Steel 3mm (0.12inches) Aluminium</p> <p>Outside panel finish should be smooth, free from particle inclusions, runs or build-up around cut-out.</p> <p>Panel cut-out should be 66.2 x 136.0mm -0.0 +0.5 (2.60 x 5.35 inches -0.00 +0.02)</p> <p>Edges of panel cut-out should be deburred and clean</p> <p>Each panel mounting clip should be tightened to between: 20 and 22cNm (1.77 to 1.95 inLb)</p> </div> 							Vo or Vt	equal to or less than	Vi	Io or It	equal to or less than	Ii	La	equal to or greater than	Lcable + Li	Ca	equal to or greater than	Ccable + Ci	Vo or Vt	equal to or less than	Vi	Io or It	equal to or less than	Ii	La	equal to or greater than	Lcable + Li	Ca	equal to or greater than	Ccable + Ci
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<p>9. When installed in a hazardous (classified) location the MTL647 Serial Text Display shall be fitted with cable glands / conduit hubs selected from the following table</p> <p>Metallic glands and hubs must be grounded - see note 10.</p> <table border="1" style="margin: 10px auto; border-collapse: collapse; width: 80%;"> <thead> <tr> <th style="width: 15%;">Class</th> <th style="width: 85%;">Permitted gland or conduit hub</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Class I</td> <td>Any metallic or plastic cable gland or conduit hub that provides the required environmental protection.</td> </tr> <tr> <td style="text-align: center;">Class II and III</td> <td> Crouse - Hinds Myler hubs ST-1 STA-1 SSTG-1 STG-1 STAG-1 MHUB-1 HUB 1 O-Z / Gedrey Hubs CHM-50DT CHMG-50DT Killark Glands CMCXAA050 MCR050 MCX050 </td> </tr> </tbody> </table> <p>10. In addition to the supplied bonding plate, when metallic 2 or 3 glands or conduit hubs are fitted to a MTL647 Serial Text Display, all metallic glands or conduit hubs must be connected together and grounded.</p> <p>11. WARNING: The MTL647 and MTL646 Serial Text Display are manufactured from conductive plastic per Article 250 of the National Electrical Code the enclosures shall be grounded using the 'E' terminal on the terminal block.</p> <p>12. Up to four MTL647 and/or MTL646 Serial Text Displays may be connected to one system.</p> <p>13. Up to two MTL647 and/or MTL646 Serial Text Displays may be connected to one system.</p> <p>14. Separate intrinsically safe circuit wiring shall comply with either :</p> <ul style="list-style-type: none"> a. All conductors of each circuit shall be within a grounded metal shield. b. The conductors of each intrinsically safe circuit shall have insulation with a minimum thickness of 0.25mm (0.01in). 									Class	Permitted gland or conduit hub	Class I	Any metallic or plastic cable gland or conduit hub that provides the required environmental protection.	Class II and III	Crouse - Hinds Myler hubs ST-1 STA-1 SSTG-1 STG-1 STAG-1 MHUB-1 HUB 1 O-Z / Gedrey Hubs CHM-50DT CHMG-50DT Killark Glands CMCXAA050 MCR050 MCX050									
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