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## 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:

#### ***MTL5000 Series Associated Intrinsically Safe Isolating Barriers***

##### ***MTL5081. Millivolt Isolator***

AIS/I,II,III/1/ABCDEFGF – SCI-859/1, Entity; NI/II/2/ABCD/T6 Ta = 60°C

I/O/[AEx ia] IIC – SCI-859/1 Entity; I/2/IIC/T6/Ta = 60°C

Entity Parameters:

Terminals 1 and 2:

Voc(Uo) = 1.0 Vdc, Isc(Io) = 48 mA, Po = 12mW, Ca(Co) = 100  $\mu$ F, La(Lo) = 15 mH, La/Ra(Lo/Ro) = 2972 $\mu$ H/ $\Omega$

*Special Condition of Use:*

1. Must be installed in suitable equipment enclosure in accordance with ANSI/ISA S82.01 & S82.03

##### ***MTL5082. Resistance Isolator***

AIS/I,II,III/1/ABCDEFGF – SCI-860/1, Entity; NI/II/2/ABCD/T6 Ta = 60°C

I/O/[AEx ia] IIC – SCI-860/1, Entity; I/2/IIC/T6 Ta = 60°C

Entity Parameters:

Terminals 1 & 3;

Voc(Uo) = 1.1 V, Isc(Io) = 4 mA, Po = 1 mW, Ca(Co) = 13.5  $\mu$ F, La(Lo) = 153.5 mH, La/Ra(Lo/Ro) = 998 $\mu$ H/ $\Omega$

Terminals 1, 3, 4 & 5;

Vt(Uo) = 6.6 V, It(Io) = 27 mA, Po = 0.05W, Ca(Co) = 22  $\mu$ F, La(Lo) = 487 mH, La/Ra(Lo/Ro) = 322  $\mu$ H/ $\Omega$

*Special Condition of Use:*

1. Must be installed in suitable equipment enclosure in accordance with ANSI/ISA S82.01 & S82.03

##### ***MTL5040. 4/20mA Loop Isolator***

AIS/I,II,III/1/ABCDEFGF – SCI-764/1, Entity; NI/II/2/ABCD/T5 Ta = 60°C

I/O/[AEx ia] IIC – SCI-764/1 Entity; I/2/IIC/T5 Ta = 60°C

Entity Parameters:

Terminals 1 and 2 or 4 and 5;

Vt(Uo) = 28 Vdc, It(Io) = 93 mA, Po = 0.65W, Ca(Co) = 0.083  $\mu$ F, La(Lo) = 4.3 mH, La/Ra(Lo/Ro) = 56 $\mu$ H/ $\Omega$

*Special Condition of Use:*

1. Must be installed in suitable equipment enclosure in accordance with ANSI/ISA S82.01 & S82.03

**MTL5314. 4/20mA Trip Amplifier for 2 or 3 -wire Transmitters**

AIS/I,II,III/1/ABCDEFG – SCI-799/1, Entity; NI/I/2/ABCD/T5 Ta = 60°C

I/0/[AEx ia] IIC – SCI-799/1 Entity; I/2/IIC/T5 Ta = 60°C

Entity Parameters:

Terminals 1 and 2;

Voc(Uo) = 28 Vdc, Isc(Io) = 93 mA, Po = 0.65W, Ca(Co) = 0.083 μF, La(Lo) = 4.3 mH, La/Ra(Lo/Ro) = 56μH/Ω

*Special Condition of Use:*

1. Must be installed in suitable equipment enclosure in accordance with ANSI/ISA S82.01 & S82.03

Equipment Ratings: Associated Intrinsically Safe apparatus with connections to Class I, II, III Division 1, Group A, B, C, D, E, F and G; for Class I, II and III, Division 1, applicable Groups A, B, C, D, E, F and G; Class I, Zone 0, [AEx ia] IIC per "Entity" requirements in accordance with the respective installation drawings, and non-incendive for Class I, Division 2, Groups A, B, C and D; Class I, Zone 2, Group IIC hazardous (classified) indoor locations

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

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

Approval Standard Class 3600 - 1998

Approval Standard Class 3610 - 1999

Approval Standard Class 3611 - 1999

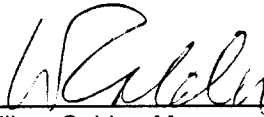
Approval Standard Class 3810 - 1989

Approval Job Identification: J.I. 3005457 Issue Date: June 8, 2000

Related Approval Job Identification: J.I. 2Z7A9.AX  
J.I. 3Z9A8.AX  
J.I. 3Z1A8.AX  
J.I. 1D8A9.AX  
J.I. 6D1A9.AX  
J.I. 3000682

Subsequent Revision Reports/Date Approval Amended: None

Factory Mutual Research

  
William Calder, Manager  
Instrumentation Section  
Approval Division

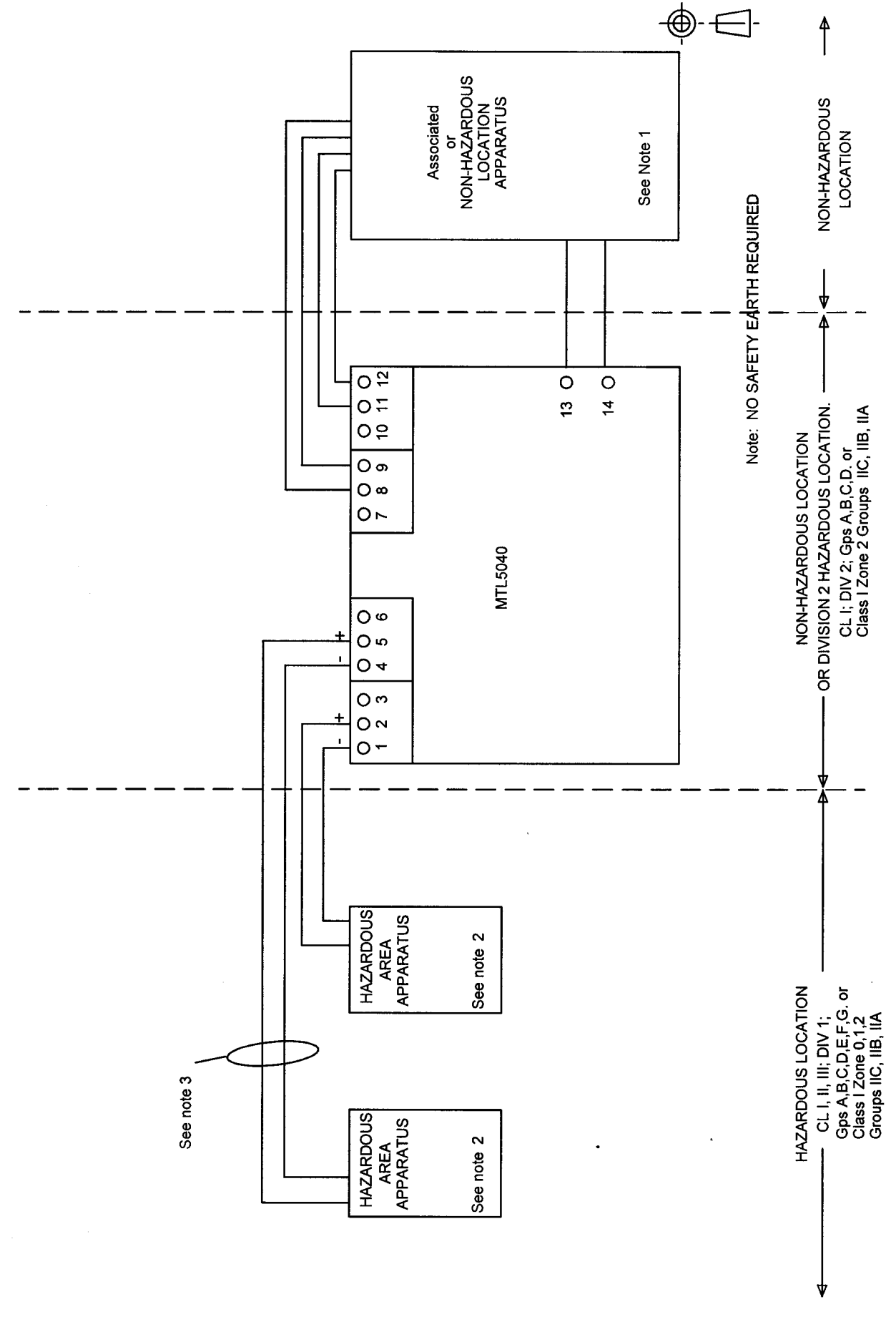
14 June 00  
Date

Dimensions in mm

Do Not Scale

Third Angle Projection

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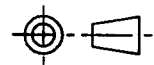
System Certificate No: N/A		Scale	N/A
Certifying Authority: Factory Mutual		Sheet	1 of 2
Title MTL5040 Loop Isolator 4/20mA		Drg. No.	SCI-764

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Dimensions in mm

Do Not Scale

Third Angle Projection



Note 1

The Non-Hazardous Location (or Control Room) equipment must not generate or use more than 250 volts r.m.s

Note 2

The Hazardous Location equipment may be switches or thermocouples. Other apparatus such as RTD's, LED's and non-inductive resistors may also be used if the autoignition temperatures of the hazardous location is greater than T4 (275°F or 135°C). Certified devices with the correct Entity Concept parameters may also be used.

Note 3

Entity Concept Parameters for each channel of the MTL5040 ie channel 1 (Terminals 1 and 2), channel 2 (Terminals 4 & 5) are as follows :-

Terminals 1 Wrt 2    Voc (Uo) = 28V,    Isc (Io) = 93mA,    Po = 0.65W  
 Terminals 4 Wrt 5    Voc (Uo) = 28V,    Isc (Io) = 93mA,    Po = 0.65W

Groups A and B (IIC)	Ca (Co) = 0.083 μF	La (Lo) = 4.3 mH	La / Ra (Lo / Ro) = 56 μH / Ω
Groups C and E (IIB)	Ca (Co) = 0.650 μF	La (Lo) = 17.7 mH	La / Ra (Lo / Ro) = 210 μH / Ω
Groups D,F and G (IIA)	Ca (Co) = 2.15 μF	La (Lo) = 36.0 mH	La / Ra (Lo / Ro) = 444 μH / Ω

Note 4

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

Note 5

The MTL5040 is Associated Apparatus and when mounted in the appropriate enclosure (See notes 6 and 7) is suitable for installation in the following area:-

- Non-Hazardous Locations
- Class I, Division 2, Groups A,B,C and D, Hazardous Locations
- Class II, Division 2, Groups F and G Hazardous Locations
- Class III, Division 2, Hazardous Locations
- Class I, Zone 2, Groups IIC, IIB, IIA, Hazardous Locations

Note 6

Associated Apparatus must be installed in accordance with the National Electrical Code in an enclosure meeting the requirements of ANSI/ISA-S82.

Note 7

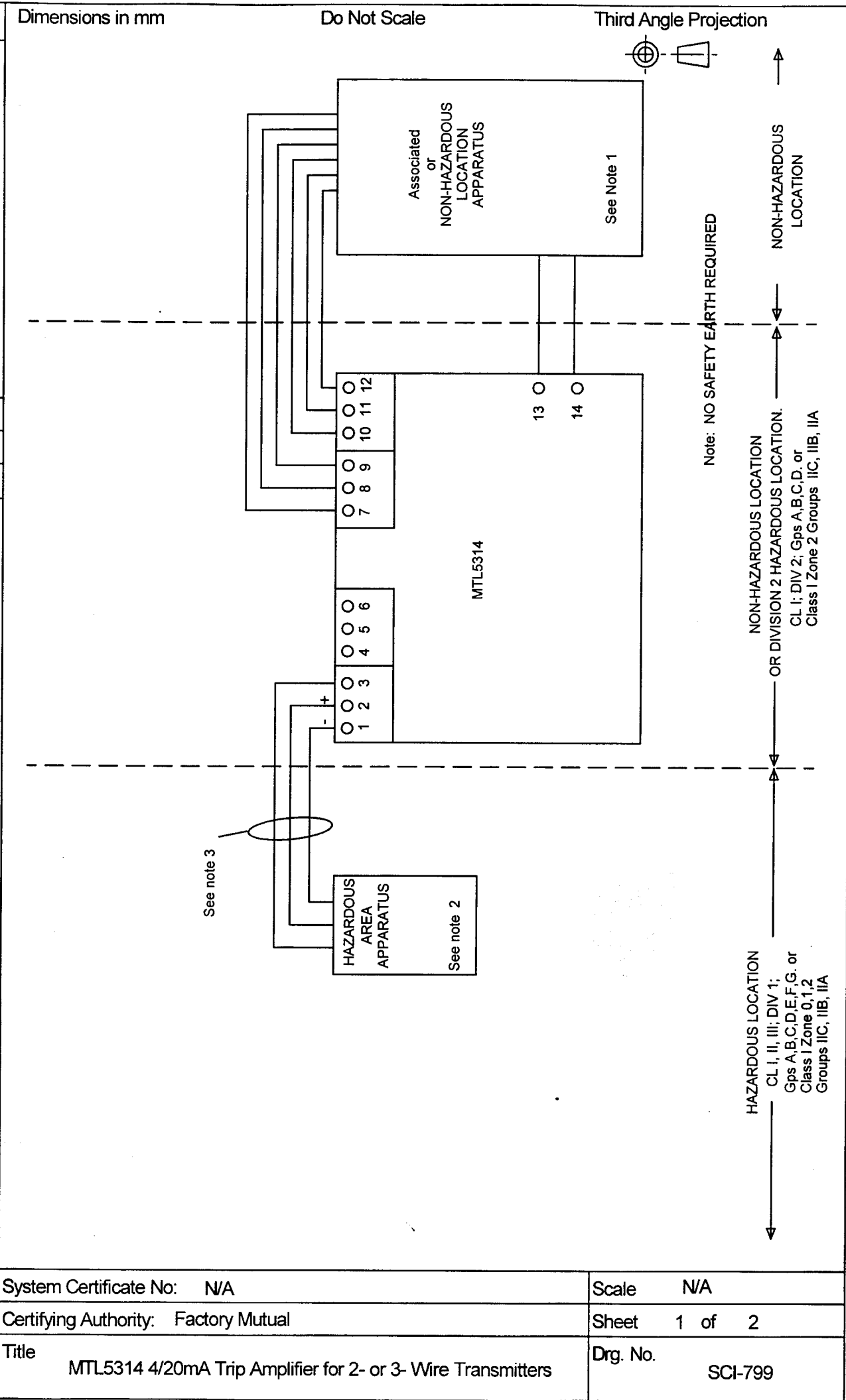
Use FMR Approved or NRTL Listed dust-ignition proof enclosure(s) Appropriate for the environmental protection in class II, Division 2, Groups F and G; Class III, Division 2 Hazardous Locations.

Note 8

When the MTL5040 is installed in Division 2 Hazardous locations, a warning label must be prominently affixed near the unit(s) which warns that the connectors of the MTL5040 must not be removed or inserted unless the area is known to be non-hazardous.

System Certificate No:    N/A		Scale    N/A
Certifying Authority:    Factory Mutual		Sheet    2 of    2
Title MTL5040 Loop Isolator 4/20mA		Drg. No. SCI-764

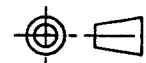
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Dimensions in mm

Do Not Scale

Third Angle Projection



Note 1

The Non-Hazardous Location (or Control Room) equipment must not generate or use more than 250 volts r.m.s

Note 2

The Hazardous Location equipment may be switches or thermocouples. Other apparatus such as RTD's, LED's and non-inductive resistors may also be used if the autoignition temperatures of the hazardous location is greater than T4 (275°F or 135°C). Certified devices with the correct Entity Concept parameters may also be used.

Note 3

Entity Parameters for terminals 1, 2 & 3 of the MTL5314 are as follows :-

$$Vt (Uo) = 28V, It (Io) = 93mA, Po = 0.65W$$

Groups A and B (IIC)	Ca (Co) = 0.083 $\mu$ F	La (Lo) = 4.3 mH	La / Ra (Lo / Ro) = 56 $\mu$ H / $\Omega$
Groups C and E (IIB)	Ca (Co) = 0.650 $\mu$ F	La (Lo) = 17.7 mH	La / Ra (Lo / Ro) = 210 $\mu$ H / $\Omega$
Groups D,F and G (IIA)	Ca (Co) = 2.15 $\mu$ F	La (Lo) = 36.0 mH	La / Ra (Lo / Ro) = 444 $\mu$ H / $\Omega$

Note 4

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

Note 5

The MTL5314 is Associated Apparatus and when mounted in the appropriate enclosure (See notes 6 and 7) is suitable for installation in the following area:-

Non-Hazardous Locations

Class I, Division 2, Groups A,B,C and D, Hazardous Locations

Class II, Division 2, Groups F and G Hazardous Locations

Class III, Division 2, Hazardous Locations

Class I, Zone 2, Groups IIC, IIB, IIA, Hazardous Locations

Note 6

Associated Apparatus must be installed in accordance with the National Electrical Code in an enclosure meeting the requirements of ANSI/ISA-S82.

Note 7

Use FMR Approved or NRTL Listed dust-ignition proof enclosure(s) Appropriate for the environmental protection in class II, Division 2, Groups F and G; Class III, Division 2 Hazardous Locations.

Note 8

When the MTL5314 is installed in Division 2 Hazardous locations, a warning label must be prominently affixed near the unit(s) which warns that the connectors of the MTL5314 must not be removed or inserted unless the area is known to be non-hazardous.

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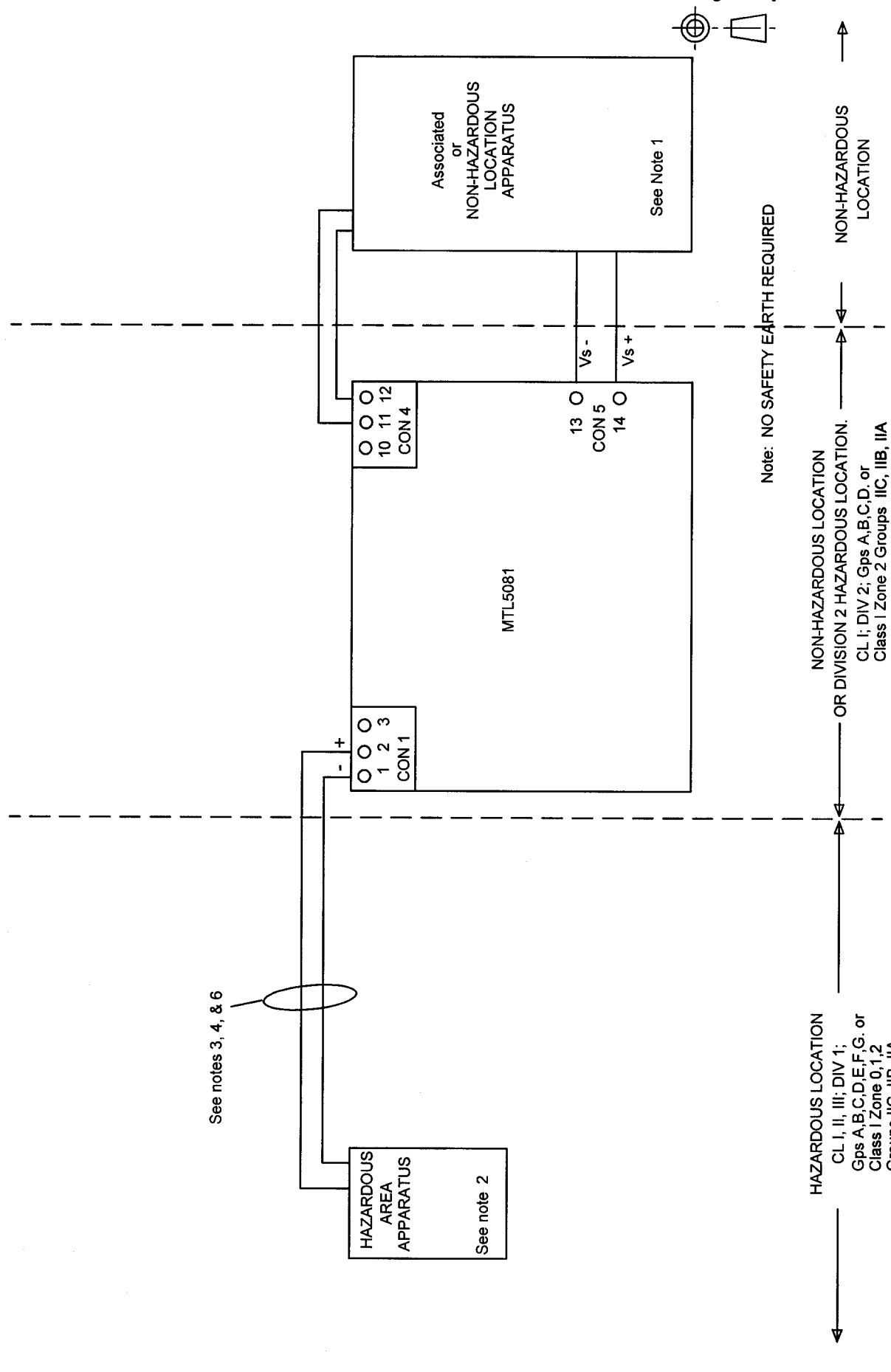
System Certificate No:	N/A	Scale	N/A
Certifying Authority:	Factory Mutual	Sheet	2 of 2
Title	MTL5314 4/20mA Trip Amplifier for 2- or 3- Wire Transmitters	Drg. No.	SCI-799

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Dimensions in mm

Do Not Scale

Third Angle Projection



See notes 3, 4, & 6

Note: NO SAFETY EARTH REQUIRED

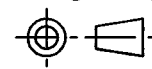
System Certificate No: N/A		Scale	N/A
Certifying Authority: Factory Mutual		Sheet	1 of 2
Title MTL5081 Millivolt Isolator		Drng. No.	SCI-859

Chd

Dimensions in mm

Do Not Scale

Third Angle Projection



Note 1

The Non-Hazardous Location (or Control Room) equipment must not generate or use more than 250 volts r.m.s

Note 2

The Hazardous Location equipment may be switches or thermocouples. Other apparatus such as RTD's, LED's and non-inductive resistors may also be used if the autoignition temperatures of the hazardous location is greater than T4 (275°F or 135°C). Certified devices with the correct Entity Concept parameters may also be used.

Note 3

Entity Parameters for terminals 1 and 2 of the MTL5081 are as follows:-

Voc (Uo) = 1.0V, Isc (Io) = 48mA, Po = 12mW

Groups A and B (IIC)	Ca (Co) = 100 µF	La (Lo) = 15 mH	La / Ra (Lo / Ro) = 2972 µH / Ω
Groups C and E (IIB)	Ca (Co) = 1000µF	La (Lo) = 60 mH	La / Ra (Lo / Ro) = 11,889 µH / Ω
Groups D,F and G (IIA)	Ca (Co) = 1000 µF	La (Lo) = 120 mH	La / Ra (Lo / Ro) = 23,799 µH / Ω

Note 4

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

Note 5

The MTL5081 is Associated Apparatus and when mounted in the appropriate enclosure (See notes 6 and 7) is suitable for installation in the following area:-

- Non-Hazardous Locations
- Class I, Division 2, Groups A,B,C and D, Hazardous Locations
- Class II, Division 2, Groups F and G Hazardous Locations
- Class III, Division 2, Hazardous Locations
- Class I, Zone 2, Group IIC, IIB, IIA, Hazardous Locations

Note 6

Associated Apparatus must be installed in accordance with the National Electrical Code in an enclosure meeting the requirements of ANSI/ISA-S82.

Note 7

Use FMR Approved or NRTL Listed dust-ignition proof enclosure(s) Appropriate for the environmental protection in class II, Division 2, Groups F and G; Class III, Division 2 Hazardous Locations.

Note 8

When the MTL5081 is installed in Division 2 Hazardous locations, a warning label must be prominently affixed near the unit(s) which warns that the connectors of the MTL5081 must not be removed or inserted unless the area is known to be non-hazardous.

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System Certificate No:	N/A	Scale	N/A
Certifying Authority:	Factory Mutual	Sheet	2 of 2
Title	MTL5081 Millivolt Isolator	Drg. No.	SCI-859

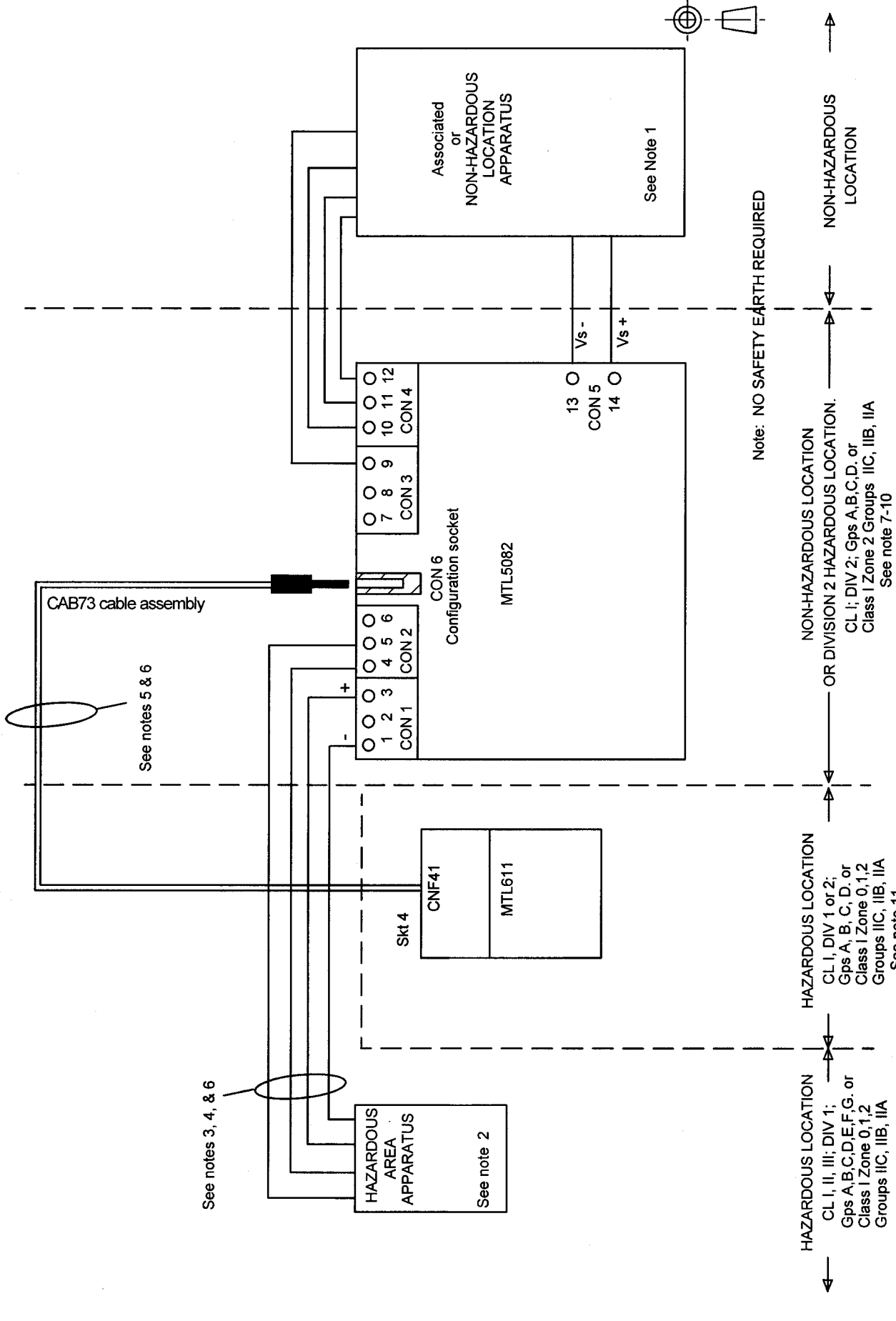


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Dimensions in mm

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Third Angle Projection

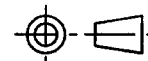


System Certificate No: N/A		Scale	N/A
Certifying Authority: Factory Mutual		Sheet	1 of 3
Title MTL5082 Resistance Isolator		Drg. No.	SCI-860

Dimensions in mm

Do Not Scale

Third Angle Projection

Note 1

The Non-Hazardous Location (or Control Room) equipment must not generate or use more than 250 volts r.m.s

Note 2

The Hazardous Location equipment may be switches or thermocouples. Other apparatus such as RTD's, LED's and non-inductive resistors may also be used if the autoignition temperatures of the hazardous location is greater than T4 (275°F or 135°C). Certified devices with the correct Entity Concept parameters may also be used.

Note 3

Entity Parameters for terminals 5,4 & 3 and 1 of the MTL5082 are as follows:-

$$V_t (U_o) = 6.6V, I_t (I_o) = 27mA, P_o = 0.05W$$

Groups A and B (IIC)	Ca (Co) = 22 $\mu$ F	La (Lo) = 48.7 mH	La / Ra (Lo / Ro) = 322 $\mu$ H / $\Omega$
Groups C and E (IIB)	Ca (Co) = 500 $\mu$ F	La (Lo) = 178.4 mH	La / Ra (Lo / Ro) = 1250 $\mu$ H / $\Omega$
Groups D,F and G (IIA)	Ca (Co) = 1000 $\mu$ F	La (Lo) = 363.7 mH	La / Ra (Lo / Ro) = 1705 $\mu$ H / $\Omega$

Note 4

Entity Parameters for terminals 3 and 1 only of the MTL5082 are as follows:-

$$V_{oc} (U_o) = 1.1V, I_{sc} (I_o) = 4mA, P_o = 1mW$$

Groups A and B (IIC)	Ca (Co) = 13.5 $\mu$ F	La (Lo) = 153.5 mH	La / Ra (Lo / Ro) = 998 $\mu$ H / $\Omega$
Groups C and E (IIB)	Ca (Co) = 240 $\mu$ F	La (Lo) = 591.4 mH	La / Ra (Lo / Ro) = 1563 $\mu$ H / $\Omega$
Groups D,F and G (IIA)	Ca (Co) = 1000 $\mu$ F	La (Lo) = 1000 mH	La / Ra (Lo / Ro) = 1563 $\mu$ H / $\Omega$

Note 5

The following cable parameters must not be exceeded:-

Groups A and B (IIC)	Ca (Co) = 0.67 $\mu$ F	La (Lo) = 66.6 mH	La / Ra (Lo / Ro) = 314 $\mu$ H / $\Omega$
Groups C and E (IIB)	Ca (Co) = 4.18 $\mu$ F	La (Lo) = 247.4 mH	La / Ra (Lo / Ro) = 1198 $\mu$ H / $\Omega$
Groups D,F and G (IIA)	Ca (Co) = 15.8 $\mu$ F	La (Lo) = 489.1 mH	La / Ra (Lo / Ro) = 1198 $\mu$ H / $\Omega$

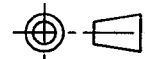
These figures apply when the MTL611/CNF41 and MTL5082 are interconnected as shown on sheet 1 of this drawing.

System Certificate No: N/A		Scale N/A
Certifying Authority: Factory Mutual		Sheet 2 of 3
Title MTL5082 Resistance Isolator		Drg. No. SCI-860

Dimensions in mm

Do Not Scale

Third Angle Projection



Note 6

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

Note 7

The MTL5082 is Associated Apparatus and when mounted in the appropriate enclosure (See notes 8 and 9) is suitable for installation in the following area:-

Non-Hazardous Locations

Class I, Division 2, Groups A,B,C and D, Hazardous Locations

Class II, Division 2, Groups F and G Hazardous Locations

Class III, Division 2, Hazardous Locations

Class I, Zone 2, Groups IIC, IIB, IIA, Hazardous Locations

Note 8

Associated Apparatus must be installed in accordance with the National Electrical Code in an enclosure meeting the requirements of ANSI/ISA-S82.

Note 9

Use FMR Approved or NRTL Listed dust-ignition proof enclosure(s)

Appropriate for the environmental protection in class II, Division 2,

Groups F and G; Class III, Division 2 Hazardous Locations.

Note 10

When the MTL5082 is installed in Division 2 Hazardous locations, a warning label must be prominently affixed near the unit(s) which warns that the connectors of the MTL5082 must not be removed or inserted unless the area is known to be non-hazardous.

Note 11

The MTL611 Hand Held Communicator and CNF41 Interface are FM approved under approval No JI, 1W5A1.AX. The MTL 611 and CNF41 Interface may also be used in the Non-Hazardous Division 1 or Division 2 Hazardous locations.

Cable parameters in note 5 must be applied in all cases.

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System Certificate No:	N/A	Scale	N/A
Certifying Authority:	Factory Mutual	Sheet	3 of 3
Title	MTL5082 Resistance Isolator	Drg. No.	SCI-860