



# IECEX Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: **IECEX ITA 08.0009X** issue No.: **1**

Status: **Current**

Certificate history:  
Issue No. 1 (2011-7-19)  
Issue No. 0 (2008-10-13)

Date of Issue: **2011-07-19** Page 1 of 4

Applicant: **Cooper Electrical Australia Limited**  
59 Kirby Street  
Rydalmere, NSW 2116  
**Australia**

Electrical Apparatus: **MTL45xx and 55xx range of Barrier Isolator Interfaces**  
Optional accessory:


Type of Protection: **[Ex ia] I/II B/IIC (Tamb -20oC to +60oC)**

Marking: **[Ex ia] I/II B/IIC (Tamb -20oC to +60oC)**  
**IECEX ITA 08.0009X**

Approved for issue on behalf of the IECEx  
Certification Body:

Position: Certification Authority

Signature:  
(for printed version)

  
\_\_\_\_\_  
19.07.2011

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

**International Testing and Certification Services Pty. Ltd**  
4 - 6 Second Street  
Bowden SA 5007  
Australia

**ITACS<sup>®</sup>**



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Manufacturer: **Measurement Technology Limited**  
Great Marlings  
Butterfield  
Luton,  
LU2 8DL  
**United Kingdom**

Manufacturing location(s):  
**MTL India Pvt Limited**  
Nó 3 Old Mahabalipuram Road  
Sholinganallur  
Chennai 600119  
India

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

#### STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

<b>IEC 60079-0 : 2004</b> Edition: 4.0	Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
<b>IEC 60079-11 : 2006</b> Edition: 5	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
<b>IEC 61241-0 : 2004</b> Edition: 1	Electrical apparatus for use in the presence of combustible dust - Part 0: General requirements
<b>IEC 61241-11 : 2005</b> Edition: 1	Electrical apparatus for use in the presence of combustible dusts - Part 11: Protection by intrinsic safety 'iD'

*This Certificate does not indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

#### TEST & ASSESSMENT REPORTS:

*A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in*

#### Test Report:

GB/BAS/ExTR08.0064/00 --- GB/BAS/ExTR08.0065/00 --- GB/BAS/ExTR08.0223/00 --- GB/BAS/ExTR09.0012/00 ---  
GB/BAS/ExTR09.0060/00 --- GB/BAS/ExTR09.0064/00 --- GB/BAS/ExTR09.0064/01 --- GB/BAS/ExTR09.0103/00 ---  
GB/BAS/ExTR09.0104/00 --- GB/BAS/ExTR09.0188/00 --- GB/BAS/ExTR09.0197/00 --- GB/BAS/ExTR09.0214/00

#### Quality Assessment Report:

GB/BAS/QAR06.0022/03  
GB/BAS/QAR07.0017/02



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## Schedule

### EQUIPMENT:

*Equipment and systems covered by this certificate are as follows:*

The MTL 45 xx and 55xx range of Barrier Isolator Interfaces are designed to restrict the transfer of energy from the unspecified non-hazardous area apparatus to intrinsically safe circuits by limitation of voltage and current. Isolating transformer(s), opto-coupler(s) and relay(s), where applicable provide galvanic isolation between the hazardous and non-hazardous area circuitry

Details of Model ranges covered by this certificate along with the product description are detailed in the Annex attached to this Certificate available at the IECEx Certificate Website <http://iecex.iec.ch/>

All Models are suitable for Groups IIA, IIB and IIC with the exception of MTL 5522 which is ONLY suitable for IIA and IIB.

REFER TO ANNEX ATTACHED TO THIS CERTIFICATE, available at the IECEx Certificate Website <http://iecex.iec.ch/> for additional information and list of Certification Drawings.

IECEX Test Reports linked to this Certificate only relate to this Issue 1. For IECEx Test Reports relating to Original Issue, refer to Issue 0 of this certificate.

### CONDITIONS OF CERTIFICATION: YES as shown below:

REFER TO ANNEX ATTACHED TO THIS CERTIFICATE, available at the IECEx Certificate Website <http://iecex.iec.ch/> for details of Conditions of Certification.



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**DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):**

Issue 1 of this Certificate provides for the introduction of other models to the range of MTL 45xx and MTL 55xx series.

REFER TO ANNEX ATTACHED TO THIS CERTIFICATE, available at the IECEx Certificate Website <http://iecex.iec.ch/> for additional information



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## **Additional Information concerning the MTL 55XX range of Barrier Isolator Interfaces**

### Detailed Product Description

**The MTL5510 Switch / Proximity Detector Interface** is designed to restrict the transfer of energy from the unspecified non-hazardous area apparatus to four intrinsically safe circuits by limitation of voltage and current. An isolating transformer and an opto-coupler provide galvanic isolation between the hazardous and non-hazardous area circuitry. Each channel of the MTL5510 monitors either a detector or a switch in the hazardous area and controls a non-hazardous area load via a solid state output.

The apparatus comprises an isolating transformer, an opto-coupler, zener diodes and resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a single printed circuit board (PCB) and housed in moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. LED indication is provided to indicate power-on, the status of each output and Line Fault Detection (LFD).

**The MTL5510B Multifunction Digital Input Interface** has the same hazardous area circuitry and parameters as the MTL5510 but has a different configuration via the removal of a link in the non-hazardous area circuitry.

**The MTL5513 Switch / Proximity Detector Interface** is a depopulated version of the MTL5510, using the same PCB and enclosure having only two channels populated.

**The MTL5511 / MTL5514 / MTL5516C / MTL5517 Switch / Proximity Detector Interface** are designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to up to two intrinsically safe circuits by limitation of voltage and current. A transformer and relays provide galvanic isolation between the hazardous and non-hazardous area circuitry.

Each channel of the interface monitors either a detector or switch located in the hazardous area and controls non-hazardous area loads via relays. Some models of the interface are fitted with independent phase reverse controls and Line Fault Detection (LFD) circuitry allow an alarm condition to be signalled for either state, set by switches on the side of the interface.

The apparatus comprises an isolating transformer, relays, zener diodes and current limiting resistors to provide voltage and current limitation on each channel. These, together with other electronic components are mounted on a single printed circuit board and housed in a plastic enclosure. Polarised plugs and sockets are provided for connection to the hazardous and non-hazardous area. LED indication is provided to indicate Power-on, state of the outputs and LFD status.

The above listed models are all built on a common printed circuit board. The differences between the models relate to the configuration of relays and non-hazardous area connections.

**The MTL5521, 5522, 5523, 5524 and 5525 Series Solenoid / Alarm Drivers** are designed to control and monitor a device located in the hazardous area and restrict the transfer of energy from unspecified apparatus in the non-hazardous area to an intrinsically safe circuit in the hazardous area by the limitation of voltage and current. A transformer and opto-isolators provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The apparatus comprises an isolating transformer, opto-isolators, duplicated zener diode chains and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections.

The MTL552\* Series Solenoid / Alarm Drivers comprise a number of different models denoted by \* in the model number. All models are built on a common PCB and are configured have certain features such as Line Fault Detection



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(LFD) and Phase Reversal facilities. There are also models in the range that are loop powered or have low current hazardous area outputs. All models have LED indication dependent on the model configuration.

The MTL 5522 does NOT comply with IIC requirements.

**The MTL5544 Repeater Power Supply**, 4/20mA for 2 or 3-Wire Transmitters is designed to provide a floating d.c. supply for energising two conventional 2 or 3-Wire 4/20mA transmitters or a 'smart' transmitter in the hazardous area and repeat these currents in the non-hazardous area, whilst restricting the transfer of energy from the unspecified non-hazardous area apparatus to the intrinsically safe circuits by the means of limitation of current and voltage. The apparatus also allows bi-directional signal communication between the hazardous and non-hazardous area by the connection of a hand-held communicator (HHC).

The MTL5544 Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters comprises four isolating transformers that provide galvanic isolation between the hazardous and non-hazardous area circuitry, zener diode chains and resistors providing voltage and current limitation. The above, together with other electronic components, are mounted on a single printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plug and sockets are provided for the hazardous and non-hazardous area connections. All models are fitted with a power indication LED.

The MTL5541 Repeater Power Supply, 4/20mA for 2 or 3-Wire Transmitters is a depopulated version of the MTL5544 and has only one channel populated.

**The MTL5546 Single Channel Isolating Driver**, 4/20mA for Smart I/P Converters accepts a 4/20mA signal from a controller located in the non-hazardous area to drive a load in the hazardous area. It permits bi-directional transmission of digital signals to and from an operator station or hand-held communicator. The apparatus restricts the transfer of energy from unspecified non-hazardous area apparatus to an intrinsically safe circuit by limitation of voltage and current. Three transformers provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The apparatus comprises a power transformer, two current transformers, zener diodes and current limiting resistors 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 hazardous and non-hazardous area connections.

**The MTL5549 2 Channel Isolating Driver**, 4/20mA for Smart I/P Converters accepts up to two separate 4/20mA signals from controllers located in the non-hazardous to drive loads in the hazardous area. It permits bi-directional transmission of digital signals to and from an operator station or hand-held communicator. The apparatus restricts the transfer of energy from unspecified non-hazardous area apparatus to intrinsically safe circuits by limitation of voltage and current. Three transformers on each channel provide galvanic isolation between the hazardous and non-hazardous area circuitry.

Each channel of the apparatus comprise a power transformer, two current transformers, zener diodes and current limiting resistors 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 hazardous and non-hazardous area connections.

**The MTL5575 Temperature Converter** is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to either thermocouples or RTD's located in the hazardous area by limitation of voltage and current. A transformer and opto-isolators provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL5575 Temperature converter is designed for connection to thermocouples or two, three or four wire RTD's situated in the hazardous area. The apparatus converts the low level d.c. signal from the sensor mounted in the hazardous area into a 4/20mA current for driving a load in the non-hazardous area. An optional cold junction compensation plug can be fitted to the hazardous area connections, which alters the internal connections and affects the output parameters.

The apparatus comprises an isolating transformer, opto-isolators, duplicated zener diode chains and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided



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for hazardous and non-hazardous area connections. A jack socket is provided for the connection of a suitably certified data terminal for programming the apparatus.

### ITEMS ADDED DUE TO ISSUE 1 of the Certificate

The **MTL4501-SR** Failsafe Switch / Proximity Detector Interface is designed to provide an interface between unspecified non-hazardous area apparatus and an intrinsically safe circuit in the hazardous area. The apparatus is intended to provide a galvanically isolated fail-safe safe-area output whilst monitoring a fail-safe proximity switch detector located in the hazardous area. Line Fault Detection (LFD) in the apparatus is provided by volt-free relay contact output on the non-hazardous area side of the apparatus. Two transformers and a relay provide galvanic isolation between the hazardous and non-hazardous area circuitry. The apparatus comprises two isolating transformers, a relay, fuses, zener diodes and resistors 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 hazardous and non-hazardous area connections. LED indication is provided for power-on, the output status and line fault detection.

The **MTL5501-SR** Failsafe Switch / Proximity Detector Interface is designed to provide an interface between unspecified non-hazardous area apparatus and intrinsically safe circuit in the hazardous area. The apparatus is intended to provide a galvanically isolated fail-safe safe-area output whilst monitoring a fail-safe proximity switch detector located in the hazardous area. Line Fault Detection (LFD) in the apparatus is provided by volt-free relay contact output on the non-hazardous area side of the apparatus. Two transformers and a relay provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The apparatus comprises two isolating transformers, a relay, fuses, zener diodes and resistors 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 hazardous and non-hazardous area connections. LED indication is provided for power-on, the output status and line fault detection.

The **MTL4526** Two Channel Switch-operated Relay Output is designed to enable two separate intrinsically safe circuits to be switched via relay contacts by on/off switches or logic signals from unspecified apparatus in the non-hazardous area. Configuration switches on the apparatus allow the two relay output channels to be alternatively controlled by one input. Each non-hazardous area input can also be loop powered. Two relays provide galvanic isolation between the hazardous and non-hazardous area circuitry. Each channel of the apparatus comprises a relay, a zener diode and fuse to provide voltage and current limitation to the relay. 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 hazardous and non-hazardous area connections. LED indication is provided for the status of each output channel and power-on.

The **MTL5526** Two Channel Switch-operated Relay Output is designed to enable two separate intrinsically safe circuits to be switched via relay contacts by on/off switches or logic signals from unspecified apparatus in the non-hazardous area. Configuration switches on the apparatus allow the two relay output channels to be alternatively controlled by one input. Each non-hazardous area input can also be loop powered. Two relays provide galvanic isolation between the hazardous and non-hazardous area circuitry. Each channel of the apparatus comprises a relay, a zener diode and fuse to provide voltage and current limitation to the relay. 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 hazardous and non-hazardous area connections. LED indication is provided for the status of each output channel and power-on.



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The **MTL4561** Two Channel Fire / Smoke Detector Interface is designed to provide two separate loop-powered interface channels for the connection of fire and smoke detectors located in the hazardous area to unspecified apparatus in the non-hazardous area whilst restricting the transfer of energy from unspecified non-hazardous area apparatus to the intrinsically safe circuits by limitation of voltage and current.

The **MTL4561** Two Channel Fire / Smoke Detector Interface comprises two isolating transformers that provide galvanic isolation between the hazardous and non-hazardous area circuitry, fuses, zener diodes and resistors providing voltage and current limitation on each channel. The above, together with other electronic components are mounted on a single printed circuit board and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections.

The **MTL5561** Two Channel Fire / Smoke Detector Interface is designed to provide two separate loop-powered interface channels for the connection of fire and smoke detectors located in the hazardous area to unspecified apparatus in the non-hazardous area whilst restricting the transfer of energy from unspecified non-hazardous area apparatus to the intrinsically safe circuits by limitation of voltage and current. The **MTL5561** Two Channel Fire / Smoke Detector Interface comprises two isolating transformers that provide galvanic isolation between the hazardous and non-hazardous area circuitry, fuses, zener diodes and resistors providing voltage and current limitation on each channel. The above, together with other electronic components are mounted on a single printed circuit board and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections.

The **MTL4544A** Two Channel Current Repeater is designed to repeat up to two 4-20mA current signals from separately powered 4/20mA transmitters located in the hazardous area to unspecified apparatus in the non-hazardous area, whilst restricting the transfer of energy from the unspecified non-hazardous area apparatus to the intrinsically safe circuits by the means of limitation of current and voltage. The apparatus also allows bi-directional signal communication between the hazardous and non-hazardous area by connection of a hand-held communicator (HHC). The **MTL4544A** Current Repeater comprises four isolating transformers that provide galvanic isolation between the hazardous and non-hazardous area circuitry, fuses, zener diodes and resistors providing voltage and current limitation on each channel. The above, together with other electronic components are mounted on a single printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plug and sockets are provided for hazardous and non-hazardous area connections. The apparatus is fitted with a Power-on LED indication. The **MTL4541A** Single Channel Current Repeater is a depopulated version of the **MTL4544A** and has only one channel populated. Minor changes to the non-hazardous area circuitry of both models of the apparatus form the **MTL4541AS** Single Channel and **MTL4544AS** Two Channel Current Repeater. These models use the same common PCB and enclosure and in terms of intrinsic safety are identical.

The **MTL5544A** Two Channel Current Repeater is designed to repeat up to two 4-20mA current signals from separately powered 4/20mA transmitters located in the hazardous area to unspecified apparatus in the non-hazardous area, whilst restricting the transfer of energy from the unspecified non-hazardous area apparatus to the intrinsically safe circuits by the means of limitation of current and voltage. The apparatus also allows bi-directional signal communication between the hazardous and non-hazardous area by connection of a hand-held communicator (HHC). The **MTL5544A** Current Repeater comprises four isolating transformers that provide galvanic isolation between the hazardous and non-hazardous area circuitry, fuses, zener diodes and resistors providing voltage and current limitation on each channel. The above, together with other electronic components are mounted on a single printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plug and sockets are provided for hazardous and non-hazardous area connections. The apparatus is fitted with a Power-on LED indication. The **MTL5541A** Single Channel Current Repeater is a depopulated version of the **MTL5544A** and has only one channel populated. Minor changes to the non-hazardous area circuitry of both models of the apparatus form the **MTL5541AS** Single Channel and **MTL5544AS** Two Channel Current Repeater. These models use the same common PCB and enclosure and in terms of intrinsic safety are identical.





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The **MTL4576** Two Channel Temperature Converter is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to either up to two thermocouples or RTD's located in the hazardous area by limitation of voltage and current. A transformer and opto-isolators provide galvanic isolation between the hazardous and non-hazardous area circuitry. The **MTL4576** Two Channel Temperature Converter is designed for connection of thermocouples or two, three or four wire RTD's situated in the hazardous area. The apparatus converts the low level d.c. signal from the sensor mounted in the hazardous area into a 4/20mA current for driving a load in the non-hazardous area. The apparatus comprises an isolating transformer, opto-isolators, duplicated zener diodes chains and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. A jack socket is provided for the connection of a suitably certified data terminal for programming the apparatus. The **MTL4575B** Single Channel Temperature Converter comprises the same circuitry and enclosure as the **MTL4576**, the only difference being it only has one channel for the connection of thermocouples or two, three or four wire RTD's situated in the hazardous area. In terms of intrinsic safety, both the **MTL4576** & **MTL4575B** are identical.

The **MTL5576** Two Channel Temperature Converter is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to either up to two thermocouples or RTD's located in the hazardous area by limitation of voltage and current. A transformer and opto-isolators provide galvanic isolation between the hazardous and non-hazardous area circuitry. The **MTL5576** Two Channel Temperature Converter is designed for connection of thermocouples or two, three or four wire RTD's situated in the hazardous area. The apparatus converts the low level d.c. signal from the sensor mounted in the hazardous area into a 4/20mA current for driving a load in the non-hazardous area. The apparatus comprises an isolating transformer, opto-isolators, duplicated zener diodes chains and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. A jack socket is provided for the connection of a suitably certified data terminal for programming the apparatus. The **MTL5575B** Single Channel Temperature Converter comprises the same circuitry and enclosure as the **MTL5576**, the only difference being it only has one channel for the connection of thermocouples or two, three or four wire RTD's situated in the hazardous area. In terms of intrinsic safety, both the **MTL5576** & **MTL5575B** are identical.

The **MTL4544S** Two Channel Repeater Power Supply, 4/20mA for 'Smart' Transmitters is designed to provide floating d.c. supplies for energising two 'Smart' 4/20mA Transmitters located in the hazardous area and repeat these currents in the non-hazardous area, whilst restricting the transfer of energy from the unspecified non-hazardous area apparatus to the intrinsically safe circuits by means of limitation of current and voltage. The apparatus also allows bi-directional signal communication between the hazardous and non-hazardous area by the connection of a hand-held communicator (HHC). The **MTL4544S** Two Channel Repeater Power Supply, 4/20mA for 'Smart' Transmitters comprises four isolating transformers that provide galvanic isolation between the hazardous and non-hazardous area circuitry, zener diode chains and resistors providing voltage and current limitation. The above, together with other electronic components are mounted on a single printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. LED indication is fitted to indicate power-on. The **MTL4541S** Single Channel Repeater Power Supply, 4/20mA for 'Smart' Transmitters is a depopulated version of the **MTL4544S** and has only one channel populated. The **MTL4544D** Repeater Power Supply, 4/20mA for 2 or 3 Wire Transmitters with two outputs is designed to provide a floating d.c. supplies for energising a 2 or 3-Wire 4/20mA Transmitter located in the hazardous area and repeat the current on two channels in the non-hazardous area, whilst restricting the transfer of energy from the unspecified non-hazardous area apparatus to the intrinsically safe circuits by means of limitation of current and voltage. The apparatus also allows bi-directional signal communication between the hazardous and non-hazardous area by the connection of a hand-held communicator (HHC). The apparatus uses the same printed circuit board and enclosure as the **MTL4544S** but is populated with only one hazardous area transmitter connection and two non-hazardous area outputs fitted.

The **MTL5544S** Two Channel Repeater Power Supply, 4/20mA for 'Smart' Transmitters is designed to provide floating d.c. supplies for energising two 'Smart' 4/20mA Transmitters located in the hazardous area and repeat these currents in the non-hazardous area, whilst restricting the transfer of energy from the unspecified non-hazardous area apparatus to the intrinsically safe circuits by means of limitation of current and voltage. The apparatus also allows bi-



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directional signal communication between the hazardous and non-hazardous area by the connection of a hand-held communicator (HHC). The MTL5544S Two Channel Repeater Power Supply, 4/20mA for 'Smart' Transmitters comprises four isolating transformers that provide galvanic isolation between the hazardous and non-hazardous area circuitry, zener diode chains and resistors providing voltage and current limitation. The above, together with other electronic components are mounted on a single printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. LED indication is fitted to indicate power-on. The MTL5541S Single Channel Repeater Power Supply, 4/20mA for 'Smart' Transmitters is a depopulated version of the MTL5544S and has only one channel populated. The MTL5544D Repeater Power Supply, 4/20mA for 2 or 3 Wire Transmitters with two outputs is designed to provide a floating d.c. supplies for energising a 2 or 3-Wire 4/20mA Transmitter located in the hazardous area and repeat the current on two channels in the non-hazardous area, whilst restricting the transfer of energy from the unspecified non-hazardous area apparatus to the intrinsically safe circuits by means of limitation of current and voltage. The apparatus also allows bi-directional signal communication between the hazardous and non-hazardous area by the connection of a hand-held communicator (HHC). The apparatus uses the same printed circuit board and enclosure as the MTL5544S but is populated with only one hazardous area transmitter connection and two non-hazardous area outputs fitted.

The MTL4532 Pulse Isolator is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to a switch, proximity detector, current pulse transmitter or voltage pulse transmitter located in the hazardous area by limitation of voltage and current. Transformers, an opto-isolator and a relay provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The MTL4532 Pulse Isolator is designed for connection of a switch, proximity detector, current pulse transmitter or voltage pulse transmitter situated in the hazardous area. The apparatus repeats the pulse signals from the apparatus in the hazardous area onto outputs in the non-hazardous area. An alarm circuit provides a relay contact output in the non-hazardous area to indicate a failure.

The apparatus comprises isolating transformers, an opto-isolator, a relay, duplicated zener diodes chains and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. A jack socket is provided for the connection of a suitably certified data terminal for programming the apparatus.

The MTL5532 Pulse Isolator is designed to restrict the transfer of energy from unspecified non-hazardous area apparatus to a switch, proximity detector, current pulse transmitter or voltage pulse transmitter located in the hazardous area by limitation of voltage and current. Transformers, an opto-isolator and a relay provide galvanic isolation between the hazardous and non-hazardous area circuitry. The MTL5532 Pulse Isolator is designed for connection of a switch, proximity detector, current pulse transmitter or voltage pulse transmitter situated in the hazardous area. The apparatus repeats the pulse signals from the apparatus in the hazardous area onto outputs in the non-hazardous area. An alarm circuit provides a relay contact output in the non-hazardous area to indicate a failure. The apparatus comprises isolating transformers, an opto-isolator, a relay, duplicated zener diodes chains and current limiting resistors to provide voltage and current limitation. The above, together with other electronic components are mounted on a printed circuit board (PCB) and housed in a moulded plastic enclosure. Polarised plugs and sockets are provided for hazardous and non-hazardous area connections. A jack socket is provided for the connection of a suitably certified data terminal for programming the apparatus.

The MTL4533 Two Channel Vibration Transducer Interface is designed to restrict the transfer of energy from unspecified apparatus in the non-hazardous area to up to two intrinsically safe vibration transducers by limitation of voltage and current. Two transformers and two opto-isolators provide galvanic isolation between the hazardous and non-hazardous area circuitry. The apparatus comprises two isolating transformer, two opto-isolators and detection circuits with zener diode and resistor 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 hazardous and non-hazardous area connections. The MTL4531 Single Channel Vibration Transducer Interface is a depopulated version of the MTL4533 with only one channel populated.



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The **MTL5533** Two Channel Vibration Transducer Interface is designed to restrict the transfer of energy from unspecified apparatus in the non-hazardous area to up to two intrinsically safe vibration transducers by limitation of voltage and current. Two transformers and two opto-isolators provide galvanic isolation between the hazardous and non-hazardous area circuitry.

The apparatus comprises two isolating transformer, two opto-isolators and detection circuits with zener diode and resistor 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 hazardous and non-hazardous area connections.

The **MTL5531** Single Channel Vibration Transducer Interface is a depopulated version of the MTL5533 with only one channel populated



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**CONDITIONS OF CERTIFICATION.- RELATING TO ORIGINAL ISSUE OF CERTIFICATE**

The parameters listed in the following tables must be taken into account in any installation.

**INPUT PARAMETERS**

<b>Model</b>	<b>Terminals</b>	<b><math>U_m</math></b>	<b>Notes</b>
<b>MTL5510</b>	7 to 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.
<b>MTL5510B</b>	7 to 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.
<b>MTL5513</b>	7 to 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.
<b>MTL5511</b>	7 to 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V. Non-hazardous areas terminals pins 7 to 12 are connected to relay contacts which can switch up to 253V, 2A and 100VA
<b>MTL5514</b>	7 to 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V. Non-hazardous areas terminals pins 7 to 12 are connected to relay contacts which can switch up to 253V, 2A and 100VA
<b>MTL5516C</b>	7 to 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V. Non-hazardous areas terminals pins 7 to 12 are connected to relay contacts which can switch up to 253V
<b>MTL5517</b>	7 to 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V. Non-hazardous areas terminals pins 7 to 12 are connected to relay contacts which can switch up to 253V
<b>MTL5521</b>	7 to 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.
<b>MTL5522</b>	7 to 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.
<b>MTL5523</b>	7 to 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.
<b>MTL5524</b>	7 to 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.
<b>MTL5525</b>	7 to 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.
<b>MTL5541</b>	10 to 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.
<b>MTL5544</b>	7 to 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.
<b>MTL5546</b>	11 to 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.
<b>MTL5549</b>	8,9,11,12,13&14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.
<b>MTL5549Y</b>	8,9,11,12,13&14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.
<b>MTL5575</b>	8,9,11,12,13&14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.



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**INPUT PARAMETERS, Continued**

<b>Model</b>	<b>Terminals</b>	<b><math>U_i</math></b>	<b><math>I_i</math></b>	<b>Notes</b>
<b>MTL5541</b>	3 w.r.t. 1	30 V	121 mA	Where an intrinsically safe source is connected to these terminals it should have a source resistance ( $U_i/I_i$ ) and the capacitance and either the inductance or the inductance to resistance (L/R) ratio of the hazardous area connections must not exceed the values detailed in the Certificate of the intrinsically safe source.  Hazardous area terminals 2 & 5 must not be used when the source is connected to these terminals.
<b>MTL5544</b>	3 w.r.t. 1	30 V	121 mA	Where an intrinsically safe source is connected to these terminals it should have a source resistance ( $U_i/I_i$ ) and the capacitance and either the inductance or the inductance to resistance (L/R) ratio of the hazardous area connections must not exceed the values detailed in the Certificate of the intrinsically safe source.  Hazardous area terminals 2 & 5 must not be used when the source is connected to these terminals.
	6 w.r.t. 4	30 V	121 mA	
<b>MTL5575</b>	Programming/ Configuration Port (Jack Socket)	9.1 V		



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**OUTPUT PARAMETERS**

<u>Output Parameters</u>							
<b>Model</b>	<b>Terminals</b>	<b><math>U_o</math></b>	<b><math>I_o</math></b>	<b><math>P_o</math></b>	<b><math>C_i</math></b>	<b><math>L_i</math></b>	<b>Notes</b>
<b>MTL5510</b>	1 w.r.t. 2	10.5 V	14 mA	37 mW	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
	3 w.r.t. 2	10.5 V	14 mA	37 mW	Negligible	Negligible	
	4 w.r.t. 5	10.5 V	14 mA	37 mW	Negligible	Negligible	
	6 w.r.t. 6	10.5 V	14 mA	37 mW	Negligible	Negligible	
<b>MTL5510B</b>	1 w.r.t. 2	10.5 V	14 mA	37 mW	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
	3 w.r.t. 2	10.5 V	14 mA	37 mW	Negligible	Negligible	
	4 w.r.t. 5	10.5 V	14 mA	37 mW	Negligible	Negligible	
	6 w.r.t. 6	10.5 V	14 mA	37 mW	Negligible	Negligible	
<b>MTL5513</b>	1 w.r.t. 2	10.5 V	14 mA	37 mW	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
	3 w.r.t. 2	10.5 V	14 mA	37 mW	Negligible	Negligible	
<b>MTL5511</b>	1 w.r.t. 2/3	10.5 V	14 mA	37 mW	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
<b>MTL5514</b>	1 w.r.t. 2/3	10.5 V	14 mA	37 mW	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
<b>MTL5516C</b>	1 w.r.t. 2/3	10.5 V	14 mA	37 mW	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
	4 w.r.t. 5/6	10.5 V	14 mA	37 mW	Negligible	Negligible	
<b>MTL5517</b>	1 w.r.t. 2/3	10.5 V	14 mA	37 mW	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
	4 w.r.t. 5/6	10.5 V	14 mA	37 mW	Negligible	Negligible	
<b>MTL5521</b>	2/3 w.r.t. 1	25 V	147 mA	0.92 W	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
<b>MTL5522</b>	2/3 w.r.t. 1	25 V	166 mA	1.04 W	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
<b>MTL5523</b>	2/3 w.r.t. 1	25 V	147 mA	0.92 W	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
<b>MTL5524</b>	2/3 w.r.t. 1	25 V	147 mA	0.92 W	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
<b>MTL5525</b>	2/3 w.r.t. 1	25 V	83.3 mA	0.52 W	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
<b>MTL5541</b>	2 w.r.t. 1	28 V	93 mA	0.65 W	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
	2 w.r.t. 3	28 V	87 mA	0.61 W	Negligible	Negligible	
	3 w.r.t. 1	1.1 V	53 mA	15 mW	Negligible	Negligible	
<b>MTL5544</b>	2 w.r.t. 1	28 V	93 mA	0.65 W	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
	5 w.r.t. 4	28 V	93 mA	0.65 W	Negligible	Negligible	



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<u>Output Parameters</u>							
Model	Terminals	$U_o$	$I_o$	$P_o$	$C_i$	$L_i$	Notes
	3 w.r.t. 1	1.1 V	53 mA	15 mW	Negligible	Negligible	
	6 w.r.t. 4	1.1 V	53 mA	15 mW	Negligible	Negligible	
	5 w.r.t. 6	28 V	87 mA	0.61 W	Negligible	Negligible	
<b>MTL5546</b>	2 w.r.t. 1	28 V	93 mA	0.65 W	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
<b>MTL5549</b>	2 w.r.t. 1	28 V	93 mA	0.65 W	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
	5 w.r.t. 4	28 V	93 mA	0.65 W	Negligible	Negligible	
<b>MTL5549Y</b>	2 w.r.t. 1	28 V	93 mA	0.65 W	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
	5 w.r.t. 4	28 V	93 mA	0.65 W	Negligible	Negligible	
<b>MTL5575</b>	1 to 6	6.6 V	76 mA	0.13 W	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
	3 w.r.t. 1	1.1 V	7 mA	2 mW	Negligible	Negligible	Forming part of the same intrinsically safe circuit.
	3, 2 & 1	6.6 V	10 mA	17 mW	Negligible	Negligible	WITHOUT the cold Junction Compensation (CJC) plug fitted
	Jack Socket	7.2 V	14.6 mA	26 mW	Negligible	Negligible	With or without the cold Junction Compensation (CJC) plug fitted Programming / Configuration Port



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**LOAD PARAMETERS – Relating to Original Issue of this Certificate**

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the hazardous area load connected to hazardous area terminals identified in the following table must not exceed the following values: -

Model	Terminals	GROUP IIC			GROUP IIB*			GROUP IIA			GROUP I		
		Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)
MTL5510	1 w.r.t. 2	2.41	175	983	16.8	680	1,333	75	1,000	1,333	73.1	1,000	1,333
	3 w.r.t. 2	2.41	175	983	16.8	680	1,333	75	1,000	1,333	73.1	1,000	1,333
	4 w.r.t. 5	2.41	175	983	16.8	680	1,333	75	1,000	1,333	73.1	1,000	1,333
	6 w.r.t. 6	2.41	175	983	16.8	680	1,333	75	1,000	1,333	73.1	1,000	1,333
MTL5510B	1 w.r.t. 2	2.41	175	983	16.8	680	1,333	75	1,000	1,333	73.1	1,000	1,333
	3 w.r.t. 2	2.41	175	983	16.8	680	1,333	75	1,000	1,333	73.1	1,000	1,333
	4 w.r.t. 5	2.41	175	983	16.8	680	1,333	75	1,000	1,333	73.1	1,000	1,333
	6 w.r.t. 6	2.41	175	983	16.8	680	1,333	75	1,000	1,333	73.1	1,000	1,333
MTL5513	1 w.r.t. 2	2.41	175	983	16.8	680	1,333	75	1,000	1,333	73.1	1,000	1,333
	3 w.r.t. 2	2.41	175	983	16.8	680	1,333	75	1,000	1,333	73.1	1,000	1,333
MTL5511	1 w.r.t. 2/3	2.41	175	983	16.8	680	1,333	75	1,000	1,333	73.1	1,000	1,333
MTL5514	1 w.r.t. 2/3	2.41	175	983	16.8	680	1,333	75	1,000	1,333	73.1	1,000	1,333
MTL5516C	1 w.r.t. 2/3	2.41	175	983	16.8	680	1,333	75	1,000	1,333	73.1	1,000	1,333
	4 w.r.t. 5/6	2.41	175	983	16.8	680	1,333	75	1,000	1,333	73.1	1,000	1,333
MTL5517	1 w.r.t. 2/3	2.41	175	983	16.8	680	1,333	75	1,000	1,333	73.1	1,000	1,333
	4 w.r.t. 5/6	2.41	175	983	16.8	680	1,333	75	1,000	1,333	73.1	1,000	1,333
MTL5521	2/3 w.r.t. 1	0.11	1.4	40	0.84	7.2	159	2.97	14.4	328	4.28	20.2	478
MTL5522	2/3 w.r.t. 1				0.84	5.6	132	2.97	10.4	286	4.28	16.0	428
MTL5523	2/3 w.r.t. 1	0.11	1.4	40	0.84	7.2	159	2.97	14.4	328	4.28	20.2	478
MTL5524	2/3 w.r.t. 1	0.11	1.4	40	0.84	7.2	159	2.97	14.4	328	4.28	20.2	478
MTL5525	2/3 w.r.t. 1	0.11	5.3	68	0.84	21.8	254	2.97	44.7	536	4.28	64.9	814





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Model	Terminals	GROUP IIC			GROUP IIB*			GROUP IIA			GROUP I		
		Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)
MTL5541	2 w.r.t. 1	0.083	4.2	56	0.65	12.6	210	2.15	33.6	444	3.62	53.7	668
	2 w.r.t. 3	0.083	4.9	59	0.65	20.0	222	2.15	40.9	469	3.6.2	59.1	710
	3 w.r.t. 1	100	12.8	2,438	1000	47.8	8,932	1,000	104.7	18,140	1,000	156.2	28,229
MTL5544	2 w.r.t. 1	0.083	4.2	56	0.65	12.6	210	2.15	33.6	444	3.62	53.7	668
	5 w.r.t. 4	0.083	4.2	56	0.65	12.6	210	2.15	33.6	444	3.62	53.7	668
	3 w.r.t. 1	100	12.8	2,438	1,000	47.8	8,932	1,000	104.7	18,140	1,000	156.2	28,229
	6 w.r.t. 4	100	12.8	2,438	1,000	47.8	8,932	1,000	104.7	18,140	1,000	156.2	28,229
	5 w.r.t. 6	0.083	4.9	59	0.65	20.0	222	2.15	40.9	469	3.62	59.1	710
MTL5546	2 w.r.t. 1	0.083	4.2	56	0.65	12.6	210	2.15	33.6	444	3.6.2	53.7	668
MTL5549	2 w.r.t. 1	0.083	4.2	56	0.65	12.6	210	2.15	33.6	444	3.6.2	53.7	668
	5 w.r.t. 4	0.083	4.2	56	0.65	12.6	210	2.15	33.6	444	3.6.2	53.7	668
MTL5549Y	2 w.r.t. 1	0.083	4.2	56	0.65	12.6	210	2.15	33.6	444	3.6.2	53.7	668
	5 w.r.t. 4	0.083	4.2	56	0.65	12.6	210	2.15	33.6	444	3.6.2	53.7	668
MTL5575	1 to 6	22	6.42	288	500	25.6	1,057	1,000	53.0	2,228	1,000	77.2	3,402
	Jack Skt	0.433	153	349	2.57	591	1,355	10.2	1,000	1,453	12.1	1,000	1,453

Note: The above load parameters apply where:

1. The external circuit contains no combined lumped inductance or capacitance greater than 1% of the above values. OR
2. The inductance and capacitance are distributed as in a cable. OR
3. The external circuit contains only lumped inductance or only lumped capacitance in combination with a cable.

In all other situations e.g. combined lumped inductance and capacitance, up to 50% of each of L and C values is allowed.

\* Group IIB parameters also applicable for associated apparatus [Ex iaD]



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**CONDITIONS OF CERTIFICATION.- RELATING TO ISSUE 1 OF THIS CERTIFICATE**

The parameters listed in the following tables must be taken into account in any installation

<b>INPUT PARAMETERS (Non Hazardous (Safe) Area)</b>			
<b>Model</b>	<b>Terminals</b>	<b><math>U_m</math></b>	<b>Notes</b>
<b>MTL4501-SR MTL5501-SR</b>	7, 8, 10, 11, 13 & 14	253 V	The circuit connected to the non-hazardous area terminals (13 & 14) are designed to be supplied from a d.c. supply voltage of up to 35 V. The non-hazardous area terminals 10 & 11 are connected to relay contacts which can switch up to 2A r.m.s and 100VA.
<b>MTL4526 MTL5526</b>	8, 9, 10, 11, 13 & 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.
<b>MTL4561 MTL5561</b>	8, 9, 11 & 12	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.
<b>MTL4576 / MTL5576</b>	8, 9, 11, 12, 13 & 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.
<b>MTL4541A MTL4541AS MTL4544A MTL4544AS, MTL5541A MTL5541AS MTL5544A MTL5544AS MTL4541S MTL5541S MTL4544S MTL5544S MTL5544D</b>	8, 9, 11, 12, 13 & 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.
<b>MTL4532 / MTL5532</b>	7 to 14	253 V	The circuit connected to the non-hazardous area terminals (8, 9, 11, 12, 13 & 14) are designed to be supplied from a d.c. supply voltage of up to 35 V. Non-hazardous areas terminals pins 7 & 10 are connected to relay contacts which can switch up to 250V r.m.s. or 5A r.m.s or 100VA



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<b>INPUT PARAMETERS (Non Hazardous (Safe) Area)</b>			
<b>Model</b>	<b>Terminals</b>	<b><math>U_m</math></b>	<b>Notes</b>
MTL4531 / MTL5531 / MTL4533 / MTL5533	7, 8, 11, 12, 13 & 14	253 V	The circuit connected to the non-hazardous area terminals are designed to be supplied from a d.c. supply voltage of up to 35 V.

<b>INPUT PARAMETERS (Hazardous Area)</b>				
<b>Model</b>	<b>Terminals</b>	<b><math>U_i</math></b>	<b><math>I_i</math></b>	<b>Notes</b>
MTL4526 / MTL5526	1 w.r.t. 3 & 4 w.r.t. 6	30 V	N/A	The hazardous area side of the circuit contains only the contact circuit of each relay and no capacitive/inductive components.
MTL4576 / MTL5576	Programming/ Configuration Port (Jack Socket)	9.1 V		Ci = Li = Negligible
	6 w.r.t 4	5 V		MTL4576 / MTL 5576 models only Ci = Li = Negligible
MTL4532 / MTL5532	3 w.r.t 1	30 V	100 mA	Ci = Li = Negligible. Where an intrinsically safe source is connected to these terminals it should have a source resistance ( $U_i/I_i$ ) and the capacitance and either the inductance or the inductance to resistance (L/R) ratio of the hazardous area connections must not exceed the values detailed in the Certificate of the intrinsically safe source.
	Programming/ Configuration Port (Jack Socket)	9.1 V		Ci = Li = Negligible
MTL4531 / MTL5531 / MTL4533 / MTL5533	3 w.r.t 2	28 V		Where an intrinsically safe source is connected to these terminals it should have a source resistance ( $U_i/I_i$ ) and the capacitance and either the inductance or the inductance to resistance (L/R) ratio of the hazardous area connections must not exceed the values detailed in the Certificate of the intrinsically safe source.
MTL4533 / MTL5533	*6 w.r.t 5	28V		Ci = Li = Negligible  * Channel 2 only applicable to MTL4544S and MTL5544S. Each Channel must be considered as a separate circuit.



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<b>INPUT PARAMETERS (Hazardous Area)</b>				
Model	Terminals	$U_i$	$I_i$	Notes
MTL4541S MTL4544S MTL4544D MTL5541S MTL5544S MTL5544D	3 w.r.t 1	30 V	121 mA	Where an intrinsically safe source is connected to these terminals it should have a source resistance ( $U_i/I_i$ ) and the capacitance and either the inductance or the inductance to resistance ( $L/R$ ) ratio of the hazardous area connections must not exceed the values detailed in the Certificate of the intrinsically safe source.  $C_i = L_i = \text{Negligible}$
MTL4544S MTL5544S	*6 w.r.t 4	30 V	121 mA	* Channel 2 only applicable to MTL4544S and MTL5544S. Each Channel must be considered as a separate circuit.

**OUTPUT PARAMETERS (Hazardous Area)**

<b>OUTPUT PARAMETERS (Hazardous Area)</b>							
Model	Terminals	$U_o$	$I_o$	$P_o$	$C_i$	$L_i$	Notes
MTL4501-SR MTL5501-SR	1 w.r.t. 2	±9.7 V	30 mA	70 mW	Negligible	Negligible	
MTL4526 / MTL5526	1 w.r.t. 3	0 V	0 mA	0 mW	Negligible	Negligible	$U_i = 30V, C_i = L_i = \text{negligible}$
	4 w.r.t. 6	0 V	0 mA	0 mW	Negligible	Negligible	
MTL4531 / MTL5531 / MTL4533 / MTL5533	3 w.r.t. 1	26.6 V	94 mA	0.66 W	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
MTL4533 / MTL5533	6 w.r.t. 4	26.6 V	94 mA	0.66 W	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
MTL4531 / MTL5531 / MTL4533 / MTL5533	3 w.r.t. 2	1.1 V	0.11 mA	0.03 mW	Negligible	Negligible	Although the apparatus does not itself comply with the simple apparatus requirements of clause 5.7 of IEC 60079-11: 2006, when each hazardous area channel is connected in an intrinsically safe circuit the internal energy, voltage and current of the interface will not add more than the values specified in clause 5.7 to the parameters of the circuit into which it is connected.



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<b>OUTPUT PARAMETERS (Hazardous Area)</b>							
<b>Model</b>	<b>Terminals</b>	$U_o$	$I_o$	$P_o$	$C_i$	$L_i$	<b>Notes</b>
							Each channel must be considered as a separate intrinsically safe circuit.
<b>MTL4533 / MTL5533</b>	6 w.r.t. 5	1.1 V	0.11 mA	0.03 mW	Negligible	Negligible	Although the apparatus does not itself comply with the simple apparatus requirements of clause 5.7 of IEC 60079-11: 2006, when each hazardous area channel is connected in an intrinsically safe circuit the internal energy, voltage and current of the interface will not add more than the values specified in clause 5.7 to the parameters of the circuit into which it is connected.  Each channel must be considered as a separate intrinsically safe circuit.
<b>MTL4561 / MTL5561</b>	2&3 w.r.t. 1	28 V	93 mA	0.65 W	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.
	5&6 w.r.t. 4	28 V	93 mA	0.65 W	Negligible	Negligible	
<b>MTL4532 / MTL5532</b>	2 w.r.t 1 & 6 w.r.t 1 or *6 w.r.t 3	10.5 V	14 mA	37 mW	Negligible	Negligible	Each channel must be considered as a separate intrinsically safe circuit.  *MTL4532 only
	3 w.r.t 1	1.1 V	53 mW	15 mW	Negligible	Negligible	Although the apparatus does not itself comply with the simple apparatus requirements of clause 5.7 of IEC 60079-11: 2006, when each hazardous area channel is connected in an intrinsically safe circuit the internal energy, voltage and current of the interface will not add more than the values specified in clause 5.7 to the parameters of the circuit into which it is connected.  When an external intrinsically safe source is connected to these terminals it should have a source resistance of $U_i / I_i$ and the capacitance and either the inductance or inductance to resistance ratio (L/R) of the hazardous area connections must not exceed the values detailed in the certificate of the intrinsically safe source. Hazardous area terminals 2, 4, 5 and 6 must not be used when the source is connected.
	4&3 w.r.t 1	28 V	93 mA @ 28V 146 mA @ 2.9 V	0.65 W	Negligible	Negligible	
	5&4 w.r.t 1	28 V	93 mA @ 28 V 94 mA @ 27.5 V	0.65 W	Negligible	Negligible	



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<b>OUTPUT PARAMETERS (Hazardous Area)</b>							
<b>Model</b>	<b>Terminals</b>	<b><math>U_o</math></b>	<b><math>I_o</math></b>	<b><math>P_o</math></b>	<b><math>C_i</math></b>	<b><math>L_i</math></b>	<b>Notes</b>
	<b>5 w.r.t. 1</b>	10.5 V	1.1 mA	2.9 mW	Negligible	Negligible	
	<b>4 w.r.t. 3</b>	28 V	93 mA	0.65 W	Negligible	Negligible	
	<b>Jack Socket</b>	7.2 V	15 mA	27 mW	Negligible	Negligible	
<b>MTL4576</b>	<b>1,2,3 &amp; 4</b>	6.6 V	42mA	69.3mW	Negligible	Negligible	Forming part of the same intrinsically safe circuit.
<b>MTL5576</b>	<b>1, 2 &amp; 3</b>	6.6 V	28mA	46.2mW	Negligible	Negligible	
	<b>4, 5 &amp; 6</b>	6.6 V	28mA	46.2mW	Negligible	Negligible	MTL4576 & MTL5576 models only
	<b>3 w.r.t. 1</b>	1.2 V	4 mA	1.2 mW	Negligible	Negligible	
	<b>6 w.r.t. 4</b>	1.2 V	4 mA	1.2 mW	Negligible	Negligible	MTL4576 & MTL5576 models only
	<b>Jack Socket</b>	6.68 V	12 mA	17.7mW	Negligible	Negligible	Programming / Configuration Port
<b>MTL4541A</b> <b>MTL4541AS</b> <b>MTL4544A</b> <b>MTL4544AS</b> <b>MTL5541A</b> <b>MTL5541AS</b> <b>MTL5544A</b> <b>MTL5544AS</b>	<b>2 w.r.t 1</b>	8.6V			Negligible	Negligible	(Diode) Each hazardous area channel is also considered suitable for the connection of an external intrinsically safe source with a $U_o = 30V$ and $I_o = 100mA$ having a source resistance of $U_o/I_o$ to be connected to hazardous area terminals 2 w.r.t. 1 - Channel 1 and 5 w.r.t. 4 – Channel 2. The capacitance and either the inductance or inductance to resistance ratio (L/R) of the hazardous area cable must not exceed the values as detailed in the original schedule or the certificate relating to the external intrinsically safe source. Each channel must be considered as a separate intrinsically safe circuit. Hazardous Area Terminals 5 w.r.t. 1 (Channels 1 & 2 combined with Terminals 2 & 4 connected together – MTL4544A / 4544AS models only) $U_o = 17.2V$ (Diode), $C_i = 0$ $L_i = 0$ The connection of channel 1 and 2 together is also considered suitable for the connection of an external intrinsically safe source with a $U_o = 30V$ and $I_o = 100mA$ having a source resistance of $U_o/I_o$ to be connected to hazardous area terminals 5 w.r.t. 1.





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<b>OUTPUT PARAMETERS (Hazardous Area)</b>							
<b>Model</b>	<b>Terminals</b>	<b><math>U_o</math></b>	<b><math>I_o</math></b>	<b><math>P_o</math></b>	<b><math>C_i</math></b>	<b><math>L_i</math></b>	<b>Notes</b>
<b>MTL4544S</b>	<b>5 w.r.t 4</b>	28 V	93 mA	0.65W	Negligible	Negligible	<p>Although the apparatus does not itself comply with the simple apparatus requirements of clause 5.7 of IEC 60079-11: 2006, when each hazardous area channel is connected in an intrinsically safe circuit the internal energy, voltage and current of the interface will not add more than the values specified in clause 5.7 to the parameters of the circuit into which it is connected.</p> <p>When an external intrinsically safe source is connected to these terminals it should have a source resistance of <math>U_i / I_i</math> and the capacitance and either the inductance or inductance to resistance ratio (L/R) of the hazardous area connections must not exceed the values detailed in the certificate of the intrinsically safe source. Hazardous area terminals 2 and 5 must not be used when the source is connected.</p>
<b>MTL5544S</b>	<b>6 w.r.t 4</b>	1.1 V	53 mA	15 mW	Negligible	Negligible	
	<b>5 w.r.t. 6</b>	28 V	87 mA	0.61 W	Negligible	Negligible	

Each channel must be considered as a separate intrinsically safe circuit





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**LOAD PARAMETERS – Relating to Issue 1 of Certificate IECEX ITA 08.0009X**

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the hazardous area load connected to hazardous area terminals identified in the following table must not exceed the following values: -

Model	Terminals	GROUP IIC			GROUP IIB*			GROUP IIA			GROUP I		
		Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)
<b>MTL4501-SR MTL5501-SR</b>	1 w.r.t. 2	3.5	39	475	24	145	1829	170	299	3093	95	501	6414
<b>MTL4532 MTL5532</b>	2 w.r.t 1 & 6 w.r.t 1 or 6 w.r.t 3	2.41	181.4	967	16.8	725.6	1,333	75	1,000	1,333	66	1,000	1,333
	3 w.r.t. 1	100	12.6	2,439	1,000	50.6	9,757	1,000	101.2	19,515	1,000	166.1	32,018
	4 & 3 w.r.t 1	0.083	1.66	55	0.65	6.67	210	2.15	13.3	444	3.4	21.8	668
	5 & 4 w.r.t 1	0.083	4.02	55	0.65	16.0	210	2.15	32.1	444	3.4	52.8	668
	5 w.r.t 1	2.41	1000	12313	16.8	1000	49254	75	1000	90508	66	1000	161616
	4 w.r.t 3	0.083	4.2	55	0.65	12.6	210	2.15	333.6	444	3.4	53.7	668
	Jack Socket	0.433	60.7	360	2.57	243.0	1,441	10.2	486.1	1,484	12.1	797.5	1484
<b>MTL4531 / MTL5531 / MTL4533* MTL5533*</b>	3 w.r.t. 1 & 6 w.r.t 4*	0.094	4.02	56	0.73	16.09	227	2.42	32.19	455	3.91	52.81	746
	3 w.r.t. 2 & 6 w.r.t 5*	100	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
<b>MTL4561 / MTL5561</b>	2&3 w.r.t. 1	0.083	4.2	56	0.65	12.6	210	2.15	33.6	444	3.42	53.7	668
	5&6 w.r.t. 3	0.083	4.2	56	0.65	12.6	210	2.15	33.6	444	3.42	53.7	668
<b>MTL4576 / MTL5576</b>	1, 2, 3 & 4	22	20.1	513	500	80.6	2052	1000	161.2	4104	1000	264.5	6363
	1, 2 & 3 OR 4, 5, & 6	11	22.6	384	250	90.7	1539	500	181.4	2121	500	297.6	2121
	3 w.r.t. 1 OR 6 w.r.t 4	50	500	1666	500	500	1666	500	500	1666	500	500	1666



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Model	Terminals	GROUP IIC			GROUP IIB*			GROUP IIA			GROUP I		
		Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)
	Jack O/P	0.48	79.4	448	2.88	317.9	1412	11.6	635.8	1412	16	1000	1412
MTL4541A MTL4541AS MTL4544A MTL4544AS MTL5541A MTL5541AS MTL5544A MTL5544AS	2 w.r.t 1	6.2	5.01	1351	55	20.06	5406	1000	40.12	10,813	548	65.82	17740
MTL4544A MTL4544AS MTL5544A MTL5544AS	5 w.r.t. 4	6.2	5.01	1351	55	20.06	5406	1000	40.12	10,813	548	65.82	17740
MTL4544A MTL4544AS MTL5544A MTL5544AS	5 w.r.t 1	0.36	5.01	675	2.11	20.06	2703	8.7	40.12	5406	10.8	65.82	8870
MTL4541S MTL4544S, MTL4544D	2 w.r.t 1	0.083	4.2	56	0.65	12.6	210	2.15	33.6	444	3.62	53.7	668
MTL4544S,	5 w.r.t 4	0.083	4.2	56	0.65	12.6	210	2.15	33.6	444	3.62	53.7	668
MTL4541S MTL4544S, MTL4544D	3 w.r.t 1	100	12.8	2438	1000	47.8	8932	1000	104.7	18140	1000	156.2	28229
MTL4544S,	6 w.r.t 4	100	12.8	2438	1000	47.8	8932	1000	104.7	18140	1000	156.2	28229
MTL4541S MTL4544S,	2 w.r.t 3	100	12.8	2438	1000	47.8	8932	1000	104.7	18140	1000	156.2	28229



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Model	Terminals	GROUP IIC			GROUP IIB*			GROUP IIA			GROUP I		
		Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)	Capacitance (µF)	Inductance (mH)	L/R Ratio (µH/Ω)
<b>MTL4544D</b>													
<b>MTL4544S</b>	5 w.r.t 6	100	12.8	2438	1000	47.8	8932	1000	104.7	18140	1000	156.2	28229

Note: The above load parameters apply where:

1. The external circuit contains no combined lumped inductance or capacitance greater than 1% of the above values. OR
2. The inductance and capacitance are distributed as in a cable. OR
3. The external circuit contains only lumped inductance or only lumped capacitance in combination with a cable.

In all other situations e.g. combined lumped inductance and capacitance, up to 50% of each of L and C values is allowed.

\* Group IIB parameters also applicable for associated apparatus [Ex iaD]



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**CERTIFICATION DRAWINGS – Relating to Original Issue of this Certificate**

Title:	Drawing No.:	Rev level:	Date:
MTL55XX Certification Label Details - ITACS	CI5500-101	1	2008/09
MTL 4500 CASE	CI4500-100	1	2006/08
PARTS LIST FOR MTL4510 AND MTL4513	CI4510-1 Sheet 1	3	2008/09
CIRCUIT DIAGRAM FOR THE MTL4510/4513	CI4510-1 Sheet 2	2	2007/05
CIRCUIT DIAGRAM FOR THE MTL4510/4513	CI4510-1 Sheet 3	2	2007/05
MTL4510 TRACK LAYOUT	CI4510-1 Sheet 4	2	2007/05
MTL4510 COMPONENT LAYOUT	CI4510-1 Sheet 5	2	2007/05
PCB DETAIL FOR TPL308	CI4510-1 Sheet 6	2	2007/01
PARTS LIST FOR MTL4516	CI4516-1 Sheet 1	2	2008/09
CIRCUIT DIAGRAM FOR THE MTL4516	CI4516-1 Sheet 2	3	2007/09
MTL4516 TRACK LAYOUT	CI4516-1 Sheet 3	3	2007/12
MTL4516 COMPONENT LAYOUT	CI4516-1 Sheet 4	3	2007/09
PCB DETAIL FOR TPL308	CI4516-1 Sheet 5	2	2007/01
PARTS LIST FOR MTL452X	CI4521-1 Sheet 1	1	2006/09
CIRCUIT DIAGRAM FOR MTL452X	CI4521-1 Sheet 2	2	2007/05
MTL452X TRACK LAYOUT	CI4521-1 Sheet 3	2	2007/05
MTL452X COMPONENT LAYOUT	CI4521-1 Sheet 4	2	2007/05
PCB DETAIL FOR TPL301	CI4521-1 Sheet 5	2	2007/01
PARTS LIST FOR MTL4541/MTL4544	CI4541-1 Sheet 1	2	2007/07
CIRCUIT DIAGRAM FOR THE MTL 4541/4544	CI4541-1 Sheet 2	4	2007/09
CIRCUIT DIAGRAM FOR THE MTL 4541/4544	CI4541-1 Sheet 3	4	2007/09
MTL4541/MTL4544 TRACK LAYOUT	CI4541-1 Sheet 4	3	2007/11
MTL4541 COMPONENT LAYOUT	CI4541-1 Sheet 5	4	2007/09
PCB DETAIL FOR TPL300	CI4541-1 Sheet 6	2	2007/01
PCB DETAIL FOR TPL301	CI4541-1 Sheet 7	2	2007/01
PARTS LIST FOR MTL4546	CI4546-1 Sheet 1	2	2006/12



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Title:	Drawing No.:	Rev level:	Date:
CIRCUIT DIAGRAM FOR THE MTL 4546	CI4546-1 Sheet 2	4	2007/09
MTL4546 TRACK LAYOUT	CI4546-1 Sheet 3	3	2007/06
MTL4546 COMPONENT LAYOUT	CI4546-1 Sheet 4	4	2007/09
PCB DETAIL FOR TPL300 AND TPL302	CI4546-1 Sheet 5	2	2007/01
PCB DETAIL FOR TPL301	CI4546-1 Sheet 6	2	2007/01
PARTS LIST FOR MTL4549	CI4549-1 Sheet 1	1	2006/09
CIRCUIT DIAGRAM FOR MTL4549	CI4549-1 Sheet 2	3	2007/09
CIRCUIT DIAGRAM FOR MTL4549	CI4549-1 Sheet 3	3	2007/09
MTL4549 TRACK LAYOUT	CI4549-1 Sheet 4	3	2007/11
MTL4549 COMPONENT LAYOUT	CI4549-1 Sheet 5	4	2007/11
PCB DETAIL FOR TPL300 AND TPL302	CI4549-1 Sheet 6	2	2007/01
PCB DETAIL FOR TPL301	CI4549-1 Sheet 7	2	2007/01
PARTS LIST FOR MTL4575	CI4575-1 Sheet 1	2	2008/09
CIRCUIT DIAGRAM FOR THE MTL4575	CI4575-1 Sheet 2	2	2007/05
MTL4575 TRACK LAYOUT	CI4575-1 Sheet 3	2	2007/06
MTL4575 COMPONENT LAYOUT	CI4575-1 Sheet 4	2	2007/06
PCB DETAIL FOR TPL301	CI4575-1 Sheet 5	2	2007/01



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**CERTIFICATION DRAWINGS – Relating to Issue 1 of this Certificate**

Title:	Drawing No.:	Rev. Level:	Date:
MTL55XX Certification Label Details - ITACS	CI5500-101	2	2011/06
PARTS LIST FOR MTL4501-SR AND MTL5501-SR	CI4501-1 Sheet 1	1	2008/04
CIRCUIT DIAGRAM FOR THE MTL4501-SR MTL5501-SR.	CI4501-1 Sheet 2	1	2008/03
MTL4501 TRACK LAYOUT	CI4501-1 Sheet 3	1	2008/05
MTL4501 COMPONENT LAYOUT	CI4501-1 Sheet 4	1	2008/05
PCB DETAIL FOR TPL308	CI4501-1 Sheet 5	1	2008/04
PARTS LIST FOR MTL4526	CI4526-1 Sheet 1	1	2008/04
MTL4526 FINAL ASSEMBLY	CI4526-1 Sheet 2	1	2008/03
MTL4526 TRACK LAYOUT	CI4526-1 Sheet 3	1	2008/04
MTL4526 COMPONENT LAYOUT	CI4526-1 Sheet 4	1	2008/04
PARTS LIST FOR MTL4532	CI4532-1 Sheet 1	1	2009/12
CIRCUIT DIAGRAM FOR THE MTL4532 & MTL5532	CI4532-1 Sheet 2 & 3	1	2009/12
MTL4532 TRACK LAYOUT	CI4532-1 Sheet 4	1	2009/12
MTL4532 COMPONENT LAYOUT	CI4532-1 Sheet 5	1	2009/12
PCB DETAIL FOR TPL300	CI4532-1 Sheet 6	1	2009/05
PCB DETAIL FOR TPL301	CI4532-1 Sheet 7	1	2009/05
PARTS LIST FOR MTL4531 & MTL4533	CI4533-1 Sheet 1	2	2009/10
MTL4533 CIRCUIT DIAGRAM SAFE AREA	CI4533-1 Sheet 2	2	2009/10
MTL4533 CIRCUIT DIAGRAM HAZARDOUS AREA	CI4533-1 Sheet 3	2	2009/10
TRACK LAYOUT FOR MTL4531 AND MTL4533	CI4533-1 Sheet 4	2	2009/10
COMPONENT LAYOUT FOR MTL4531 AND MTL4533	CI4533-1 Sheet 5	5	2009/10
PCB DETAIL FOR TPL301	CI4533-1 Sheet 6	2	2009/06
PCB DETAIL FOR TPL308	CI4533-1 Sheet 7	1	2009/06
PARTS LIST FOR MTL4541A/MTL4544A	CI4541-2 Sheet 1	1	2008/10
CIRCUIT DIAGRAM FOR THE MTL 4544A/4541A	CI4541-2 Sheet 2	1	2008/11
CIRCUIT DIAGRAM FOR THE MTL 4541A/4544A	CI4541-2 Sheet 3	1	2008/11



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Title:	Drawing No.:	Rev. Level:	Date:
MTL4541A/MTL4544A TRACK LAYOUT	CI4541-2 Sheet 4	1	2008/11
MTL4541A & MTL4544A COMPONENT LAYOUT	CI4541-2 Sheet 5	1	2008/11
PCB DETAIL FOR TPL300	CI4541-2 Sheet 6	1	2008/11
PCB DETAIL FOR TPL301	CI4541-2 Sheet 7	1	2008/11
PARTS LIST FOR MTL4541S, MTL5541S, MTL4544S, MTL5544S, MTL4544D, MTL5544D	CI4541-3 Sheet 1	2	2010/06
CIRCUIT DIAGRAM FOR THE MTL4541S, MTL5541S, MTL4544S, MTL5544S, MTL4544D, MTL5544D	CI4541-3 Sheet 2	1	2009/05
CIRCUIT DIAGRAM FOR THE MTL4541S, MTL5541S, MTL4544S, MTL5544S, MTL4544D, MTL5544D	CI4541-3 Sheet 3	1	2009/05
TRACK LAYOUT FOR MTL4541S, MTL5541S, MTL4544S, MTL5544S, MTL4544D, MTL5544D	CI4541-3 Sheet 4	1	2009/06
COMPONENT LAYOUT FOR MTL4541S, MTL5541S, MTL4544S, MTL5544S, MTL4544D, MTL5544D	CI4541-3 Sheet 5	1	2009/06
PCB DETAIL FOR TPL300	CI4541-3 Sheet 6	1	2009/06
PCB DETAIL FOR TPL301	CI4541-3 Sheet 7	1	2009/06
PARTS LIST FOR MTL4561/MTL5561	CI4561-1 Sheet 1	1	2009/03
MTL4561 AND MTL5561 CIRCUIT DIAGRAM	CI4561-1 Sheet 2	2	2009/09
MTL4561 TRACK LAYOUT	CI4561-1 Sheet 3	2	2009/09
MTL4561 COMPONENT LAYOUT	CI4561-1 Sheet 4	2	2009/09
MTL4561 Two Channel fire/smoke detector interface, loop powered TRANSFORMER WINDING DETAILS	CI4561-1 Sheet 5	1	2009/03
PARTS LIST FOR MTL4576	CI4576-1 Sheet 1	1	2009/06
CERTIFICATION DRAWING FOR MTL4576 & 5576	CI4576-1 Sheet 2	2	2009/08
CERTIFICATION DRAWING FOR MTL4576 & 5576	CI4576-1 Sheet 3	2	2009/08
MTL4576 TRACK LAYOUT	CI4576-1 Sheet 4	2	2009/10
MTL4576 COMPONENT LAYOUT	CI4576-1 Sheet 5	2	2009/11
PCB DETAIL FOR TPL301	CI4576-1 Sheet 6	1	2009/05
PCB DETAIL FOR TPL301	CI4576-1 Sheet 7	1	2009/06