

## MTL5000 Range Interface units



Figure 1.1: MTL5000 Range isolators

### WARNING

This manual describes the use and installation of safety equipment. This equipment must be installed, operated and maintained only by trained competent personnel and in accordance with all appropriate international, national and local standard codes of practice and site regulations for intrinsically safe apparatus and in accordance with the instructions contained here.

### ATEX

If the country of installation is governed by the Essential Health and Safety Requirements (Annex II) of the EU Directive 2014/34/EU [the ATEX Directive - safety of apparatus] then MTL document **INA5000** must be consulted before installation.

### CERTIFICATION DATA

The MTL web site <http://www.mtl-inst.com> contains documentation regarding intrinsic safety certification for many locations around the world. Consult this data for information relevant to your local certifying authority.

### REPAIR

These products **MUST NOT be repaired**. Faulty or damaged products must be replaced with an equivalent certified product.

## 1 INTRODUCTION

This instruction manual explains how to install, connect, test and maintain MTL5000 range of isolating interface units (isolators).

## 2 DESCRIPTION

MTL5000 range of isolators provide intrinsically safe (IS) communication and signal conditioning for a wide range of hazardous-area devices. Total ac and dc isolation exists between input, output and power supply on separately powered units, and between input and output on loop-powered units. No IS earth is required. DIN-rail mounting and plug-in signal and power connectors simplify installation and maintenance. Units are powered from a 20 to 35V dc supply, or, in some cases, from the signal itself.

## 3 INSTALLATION

Mount all MTL5000 range isolators on low-profile (7mm) or high-profile (15mm) type T35 (top-hat) DIN-rail to EN50022, BS5584, DIN46277. This is available from MTL, in 1 metre lengths (THR2 DIN rail). Install isolators within the safe area unless they are enclosed in approved flameproof, pressurised or purged enclosures and ensure that the local environment is clean and free of dirt and dust. Note the ambient temperature considerations of section 3.1.7.

It is recommended that, in normal practice, the DIN rail is earthed to ensure personnel safety in the event of mains being put accidentally on the rail.

### 3.1 Installing unenclosed isolators

On new installations, if isolators are mounted in several rows or columns, mount alternate rows or columns so that units face in opposite directions. This allows safe- and hazardous-area wiring looms to be shared.

See figure 3.1 for isolator dimensions.

**Note:** All MTL products are tested for electrical safety to EN 61010 to comply with the EC Low Voltage Directive

### 6.1.2 Testing

Make the safe- and hazardous-area connections shown in figure 6.2 and check status LEDs and relay contacts as follows:

Input switch	Phase reverse switch	Status LED	Relay contacts
Closed	Normal	On	Closed
Closed	Reverse	Off	Open
Open	Normal	Off	Open
Open	Reverse	On	Closed

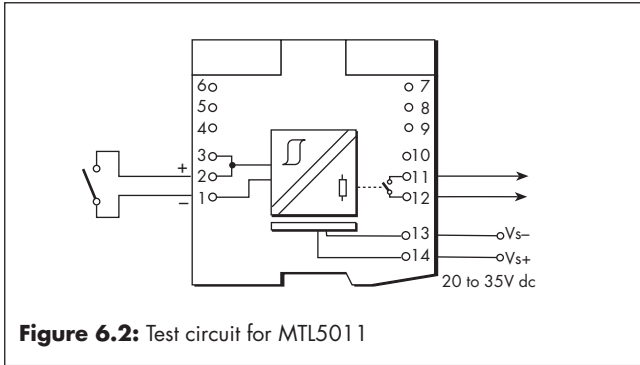


Figure 6.2: Test circuit for MTL5011

## 6.2 MTL5011B single-pole changeover relay single-channel switch/proximity detector with line fault detection and phase reversal

The MTL5011B is similar to the MTL5011 but with added line fault detection (LFD) facilities.

### 6.2.1 Wiring connections

See figure 6.3 for wiring connections.

**Note:** Reactive loads must be adequately suppressed.

### 6.2.2 Line fault detection

(See section 3.1.4 for definition of a line fault)

Input line faults (open- or short-circuit) are indicated by an LED and the de-energising of the output relay. LFD is enabled/disabled by a switch located on top of the module. Note that if the LFD facility is enabled for switch inputs, the resistors shown in figures 6.3 and 6.4 MUST be fitted.

### 6.2.3 Testing

Make the safe- and hazardous-area connections shown in figure 6.4 and check the status of the output contacts as shown in table 6.1

Table 6.1

Phase reverse switch	Line fault detection	Input switch (SW)	Output relay (11-12)	Output relay (10-11)	Channel LED (yellow)	Line fault LED (red)
Normal	Off	a	Closed	Open	On	Off
Reverse	Off	a	Open	Closed	Off	Off
Reverse	Off	Open	Closed	Open	On	Off
Normal	On	Open	Open	Closed	Off	On
Normal	On	a	Open	Closed	On	On
Normal	On	b	Open	Closed	Off	Off
Normal	On	c	Closed	Open	On	Off

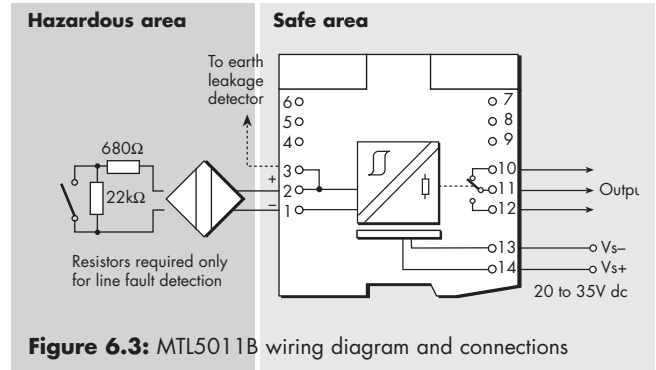


Figure 6.3: MTL5011B wiring diagram and connections

Terminal	Function
1	Input -ve
2	Input +ve
3	Earth leakage detection
10	Normally-closed contact
11	Common
12	Normally-open contact
13	Supply -ve
14	Supply +ve

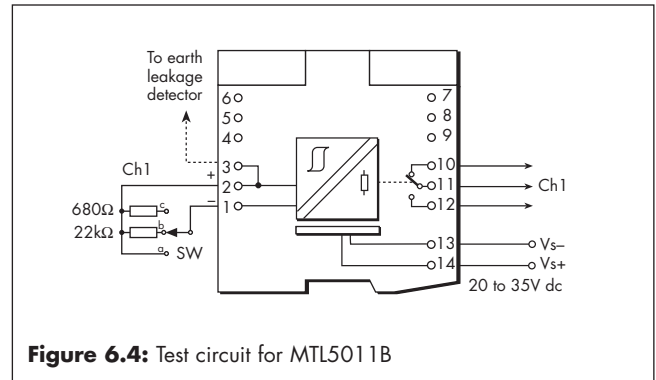


Figure 6.4: Test circuit for MTL5011B

## 6.3 MTL5012 solid-state single-channel switch/proximity detector with line fault detection and phase reversal

The MTL5012 enables a safe-area load to be controlled, through a solid-state output, by a switch or proximity detector in a hazardous area. Line fault detection (LFD) and output phase reversal (see 3.1.3) facilities are included.