MTL5000 Range Interface units

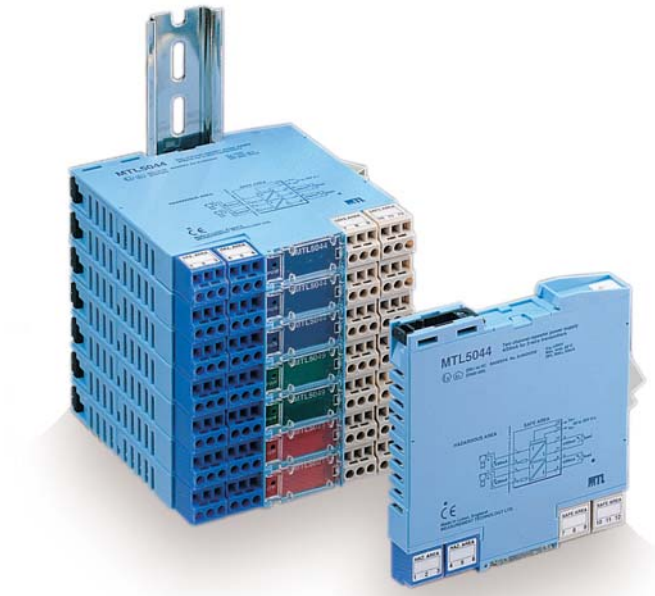

Figure 1.1: MTL5000 Range isolators

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 orcolumns, 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*

Table 6.10

Output current (A2)	Current reading (A1) (MTL5041)	Current reading (A1) (MTL5042)	Voltage (terminal 2 with respect to terminal 1) (MTL5041)	Voltage (terminal 2 with respect to terminal 1) (MTL5042)
4 to 20mA	<±20µA	<±10µA	—	—
20mA	—	—	>16.5V	>16.5V

6.19 MTL5043 repeater power supply dual output, 4 to 20mA for 2-wire transmitters

The MTL5043 provides fully-floating dc supplies for a single conventional 2-wire 4 to 20mA transmitter located in a hazardous area and driving two safe-area loads. The MTL5043 design changed to add HART functionality at the end of 2003.

6.19.1 Wiring connections (earlier non-HART version)

See figure 6.40 for wiring connections.

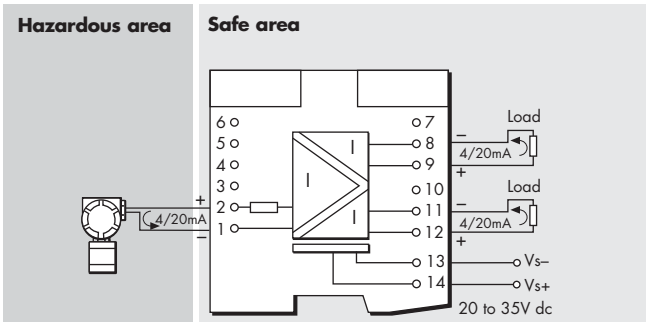

Figure 6.40: MTL5043 wiring diagram and connections

Terminal	Function
1	Input –ve
2	Input +ve
8	Output –ve (Ch 2)
9	Output +ve (Ch 2)
11	Output –ve (Ch 1)
12	Output +ve (Ch 1)
13	Supply –ve
14	Supply +ve

6.19.2 Wiring connections (HART version)

See figure 6.41 for wiring connections.

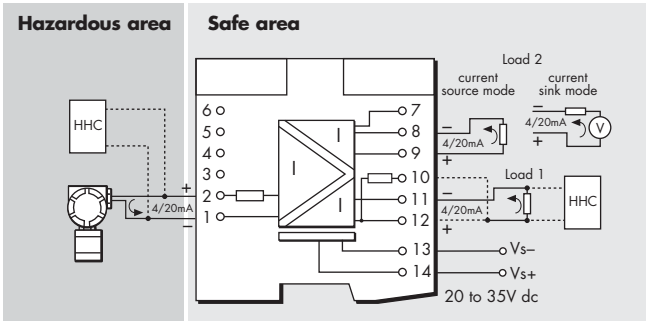

Figure 6.41: MTL5043 wiring diagram and connections

Terminal	Function
1	Input –ve
2	Input +ve
7	Output –ve (Ch 2 passive current sink)
8	Output –ve (Ch 2 active/+ve current sink)
9	Output +ve (Ch 2 active)
10	Output +ve (Ch 1 via 220Ω for HART apps.)
11	Output –ve (Ch 1)
12	Output +ve (Ch 1)
13	Supply –ve
14	Supply +ve

6.19.3 Testing

Make the safe- and hazardous-area connections shown in figure 6.42 and, using RVI to vary the output current, carry out the following checks:

Output current (A2)	Current reading (A1)	Voltage terminal 2 with respect to terminal 1)
4 to 20mA	<±20µA	—
20mA	—	>16.5V

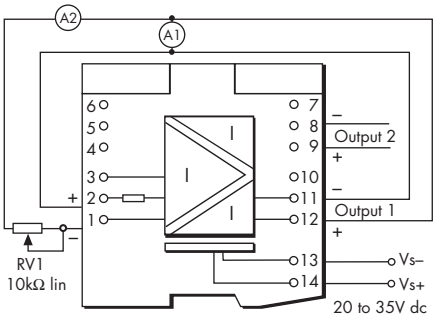

Figure 6.42: Test circuit for MTL5043

6.20 MTL5044 repeater power supply

The MTL5044 provides fully-floating dc supplies for two conventional 2-wire 4 to 20mA transmitters located in a hazardous area and repeating the current in two floating circuits to drive two safe-area loads.

6.20.1 Wiring connections

See figure 6.43 for wiring connections.

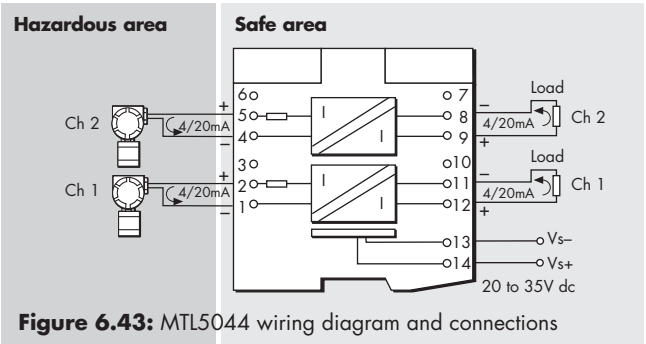

Figure 6.43: MTL5044 wiring diagram and connections

Terminal	Function
1	Input –ve (Ch 1)
2	Input +ve (Ch 1)
4	Input –ve (Ch 2)
5	Input +ve (Ch 2)
8	Output –ve (Ch 2)
9	Output +ve (Ch 2)
11	Output –ve (Ch 1)
12	Output +ve (Ch 1)
13	Supply -ve
14	Supply +ve