

---

**DOCUMENT CONTROL NUMBER /**

---

**SYSTEM 800 - INTRINSICALLY SAFE MX ADDRESSABLE  
FIRE DETECTION SYSTEM  
SERVICE AND MAINTENANCE INSTRUCTIONS**

<b>1. GENERAL</b>	<b>3</b>
<b>2. CERTIFICATION REQUIREMENTS</b>	<b>3</b>
<b>3. QUARTERLY / HALF YEARLY SERVICE</b>	<b>3</b>
<b>4. HIGH VOLTAGE INSULATION TESTS</b>	<b>4</b>
<b>5. FAULT FINDING PROCEDURES</b>	
5.1 HAZARDOUS AREA DETECTION CIRCUIT	4
5.2 HAZARDOUS AREA SOUNDER CIRCUIT	4
5.3 TESTING OF EXI800 INTERFACE MODULE	4
<b>6. TESTING OF GALVANIC ISOLATORS</b>	<b>4</b>
6.1 MTL5021 ISOLATING SOUNDER DRIVER	4
6.2 PEPPERL + FUCHS KFD0-CS-EX1.54 GALVANIC ISOLATOR	4
<b>7. I.S. INTERCONNECTION WIRING DIAGRAMS</b>	<b>5</b>

## LIST OF FIGURES

<b>Fig. 1</b>	<b>MTL5021 Isolating Sounder Driver</b>	<b>4</b>
<b>Fig. 2</b>	<b>Pepperl+Fuchs KFD0-CS-Ex1.54 Galvanic Isolator</b>	<b>4</b>
<b>Fig. 3 a)</b>	<b>I.S. Interconnecting Diagram to MX Addressable Fire Detection Systems</b>	<b>6</b>
<b>Fig. 3 b)</b>	<b>I.S. Interconnecting Diagram to MX Addressable Fire Detection Systems</b>	<b>7</b>
<b>Fig. 4</b>	<b>S271i+ Wiring Diagram for Hazardous Areas</b>	<b>8</b>

---

## SYSTEM 800 - INTRINSICALLY SAFE MX ADDRESSABLE FIRE DETECTION SYSTEM

### SERVICE AND MAINTENANCE INSTRUCTIONS

#### 1. GENERAL

The following work must be carried out by Thorn Security Limited Service Engineers or suitably trained personnel.

---

#### WARNING:

**ALL MAINTENANCE PRACTICES EMPLOYED MUST, IN ADDITION TO THOSE STATED HERE, MEET THE SAFETY AND INSPECTION REQUIREMENTS SPECIFIED IN THE MAINTENANCE SECTION OF EN BS 60079-14. ALL ELECTRICAL EQUIPMENT, INCLUDING MEASURING INSTRUMENTS, USED IN THE HAZARDOUS AREA MUST FIRST BE ACCEPTABLE TO THE CUSTOMER'S SAFETY OFFICER.**

**THERE IS A POSSIBILITY THAT THE NATURE OF THE HAZARD HAS CHANGED OR BEEN CHANGED SINCE THE LAST SERVICING. THE SYSTEM DOCUMENTATION SHOULD BE CHECKED BEFORE ANY SERVICING IS PERFORMED. IF DURING SERVICING A RISK IS FOUND, WHICH IS NOT COVERED OR DOCUMENTED, ACTION MUST BE TAKEN IN ACCORDANCE WITH EN BS 60079-14 TO RECTIFY THE SITUATION.**

**ANY WORK CARRIED OUT ON DETECTION OR SOUNDER CIRCUITS MUST COMPLY WITH THE REQUIREMENTS OF 17A-13-I, INSTALLATION INSTRUCTIONS.**

---

#### 2. CERTIFICATION REQUIREMENTS

The Intrinsically Safe systems used for the protection of low voltage fire detection systems produced by Thorn Security Limited have been certified category 'ia' by the British Approvals Service for Electrical Equipment in Flammable Atmospheres (BASEEFA).

- System 800 (BASEEFA\*\*\*\*\*) can be used for a Gas Group IIC hazard in a Zone 0, Zone 1 or Zone 2 environment.
- Sounder System (BASEEFA Ex872028) can be used for a Gas Group IIC hazard in a Zone 0, Zone 1 or Zone 2 environment.

For information on Gas Groups and Zones refer to publication 26A-01-G1, Use of Electrical Equipment in Fire Detection and Extinguishing Systems for the Protection of Hazardous Areas.

For information concerning the equipment which can be used in the systems refer to 17A-13-I, Installation Instructions.

#### 3. QUARTERLY / HALF YEARLY SERVICE

---

#### WARNING:

**NO DEVICES LIKELY TO CAUSE/CONTAIN A SPARK OR FLAME MUST BE USED TO TEST DETECTORS IN THE HAZARDOUS AREA.**

---

All service and maintenance must be carried out in accordance with the 'Routine Inspections' procedures detailed in EN BS 60079-14. In addition the following must be carried out.

- a) Ensure that all devices in the Hazardous Area still meet the certification requirements for the type of risk concerned.
- b) Check that all detection devices and sounders in the Hazardous area and the zener barriers/isolating I.S. interface units inside the I.S. interface housing are as specified (refer to 17A-13-I, Installation Instructions).
- c) Carry out the service procedures for the type of control equipment used. Where sounders are sited in the Hazardous Area, check that a sounder circuit fault is raised when:
  - i) The 24V d.c. supply is disconnected at the sounder interface, or
  - ii) the sounder EOL device is disconnected at the sounder interface.

Where apparatus is removed for maintenance, any exposed conductors which remain in position must be mechanically and electrically secured in an appropriate manner so as to prevent the occurrence of an unsafe condition.

If it is known that a Safety Barrier has been subjected to an excessive voltage or current, it should be removed from service and returned to the service branch.

# I.S. SYSTEM 800

17A-13-S

1 1/03

## 4. HIGH VOLTAGE INSULATION TESTS

### WARNING:

**HIGH VOLTAGE INSULATION TESTS MUST ONLY BE PERFORMED USING AN INTRINSICALLY SAFE INSULATION TESTER MEETING THE REQUIREMENTS OF EN BS 60079-14.**

## 5. FAULT FINDING PROCEDURES

### 5.1 HAZARDOUS AREA DETECTION CIRCUIT

Locate and rectify any cable fault, by quartering the circuit, or any detector malfunction by replacement. Ensure that all detectors or callpoints replaced meet the requirements laid down in 17A-13-I Installation Instructions.

### 5.2 HAZARDOUS AREA SOUNDER CIRCUIT

A sounder circuit fault indication requires that the following checks be made:

- Locate and rectify any wiring fault or sounder disconnection.

### 5.3 TESTING OF EXI800 INTERFACE MODULE

If both the Safe and Hazardous Area wiring has been proven and detection devices on the Safe side raise an alarm at the Control Panel, but not those on the Hazardous side, disconnect the EXI800 and replace with a new unit.

## 6. TESTING OF GALVANIC ISOLATORS

Simple on-site tests may be carried out on suspect Pepperl+Fuchs KFD0-CS-Ex1.54 Galvanic Isolators and MTL5021 Isolating Sounder Drivers.

When disconnecting units from the installation for testing purposes, care must be taken to keep the Hazardous and Safe Area wiring segregated. Hazardous Area leads insulated and secured. Safe Area leads should be insulated and secured.

Ensure that all testing is carried out in accordance with the relevant instructions contained in EN BS 60079-14.

### 6.1 MTL5021 ISOLATING SOUNDER DRIVER

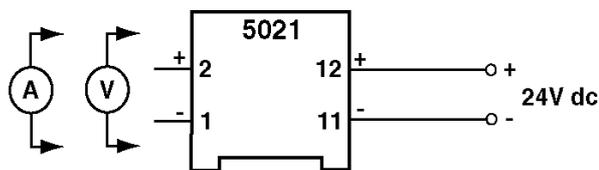


Fig. 1

Proceed as follows:

- Remove any existing connections and then apply 24V d.c. to terminals 12 [+ve] & 11 [-ve].
- Check that the open-circuit output voltage across terminals 2 [+ve] & 1 [-ve] is in the range 22 to 24V.
- Measure the short-circuit output current between terminals 1 & 2, this should be in the range 45 to 52mA.

### 6.2 PEPPERL + FUCHS KFD0-CS-EX1.54 GALVANIC ISOLATOR

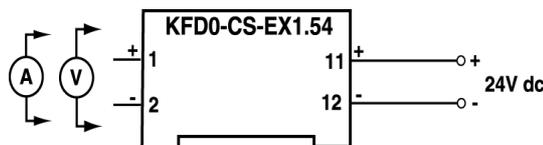


Fig. 2

Proceed as follows:

- Remove any existing connectors and then apply 24V dc to terminals 11 (+ve) and 12 (-ve).
- Check that the open circuit output voltage across terminals 1 (+ve) and 2 (-ve) is in the range 21 to 23V.
- Measure the short circuit output current between terminals 1 & 2, this should be in the range 55 to 65mA.

## **7. I.S INTERCONNECTION WIRING DIAGRAMS**

Figures 3a) and 3b) show the I.S. wiring diagrams for the Thorn Security MX Addressable Fire (Fully Floating) Detection System.

Figure 4 shows the I.S. interconnection diagram for the S271i+ Triple IR Flame Detector.

MK/jm/an 4<sup>nd</sup> December 2002

# I.S. SYSTEM 800

17A-13-S

1 1/03

- NOTES: 1. ALL SCREEN JUNCTIONS TO BE INSULATED FROM LOCAL EARTH.  
2. THIS SUPPLY MAY BE PROVIDED FROM THE CONTROLLER OR FROM AN EXTERNAL SOURCE ISOLATED FROM THE MX PSU.

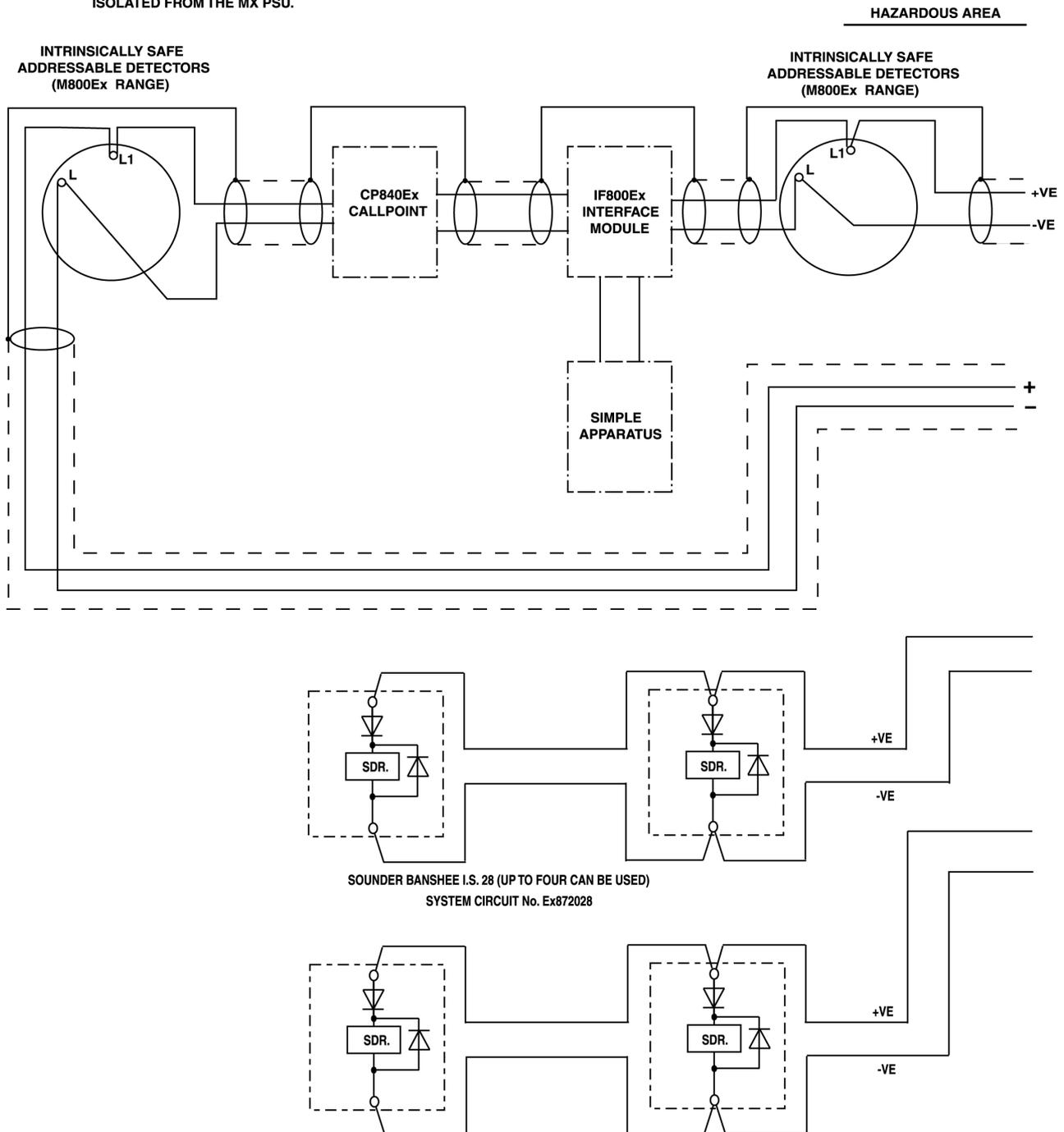


Fig. 3a) I.S. Interconnection Diagram to MX Addressable Fire (Fully Floating) Detection Systems

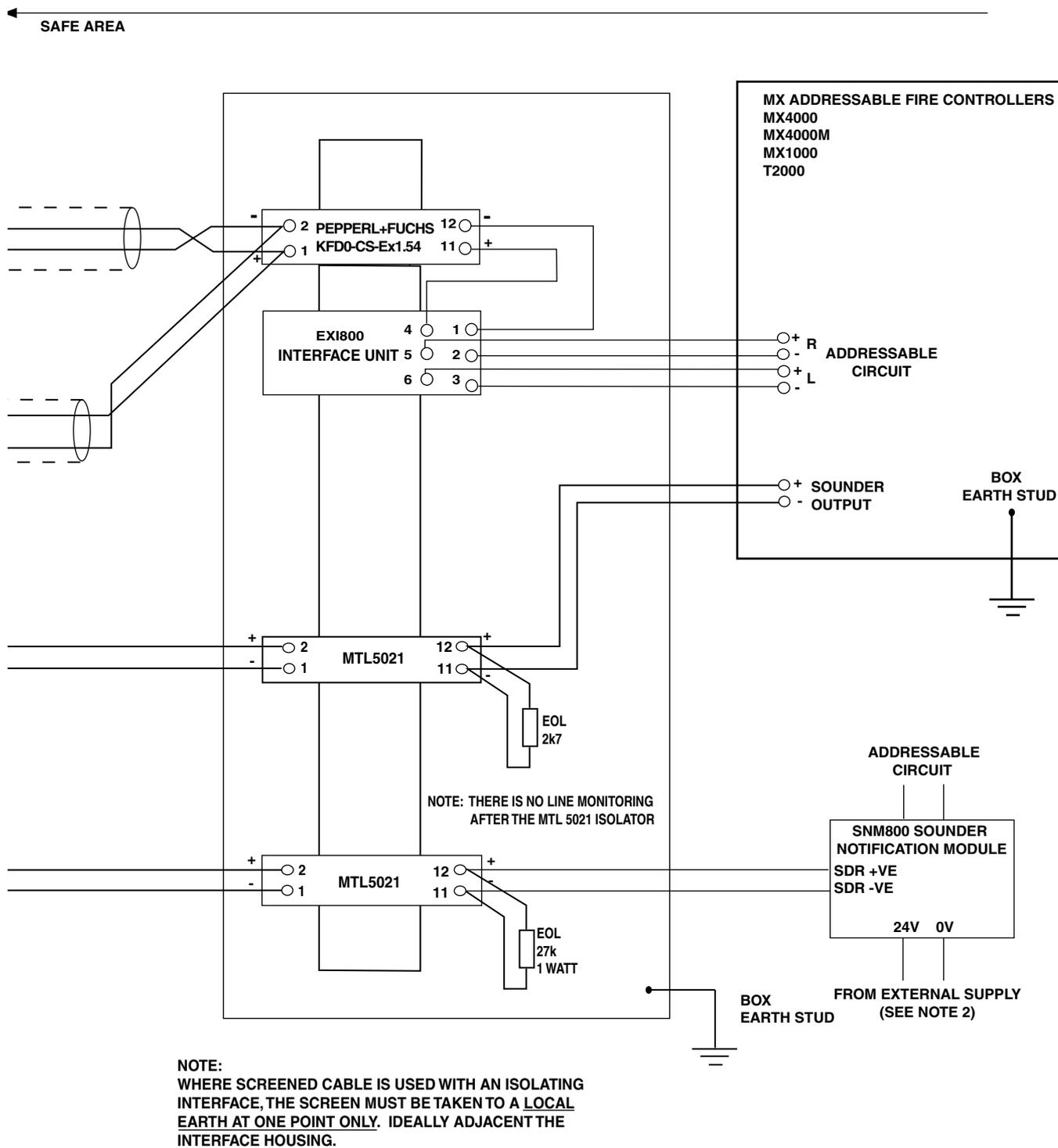


Fig. 3b) I.S. Interconnection Diagram to MX Addressable Fire (Fully Floating) Detection Systems

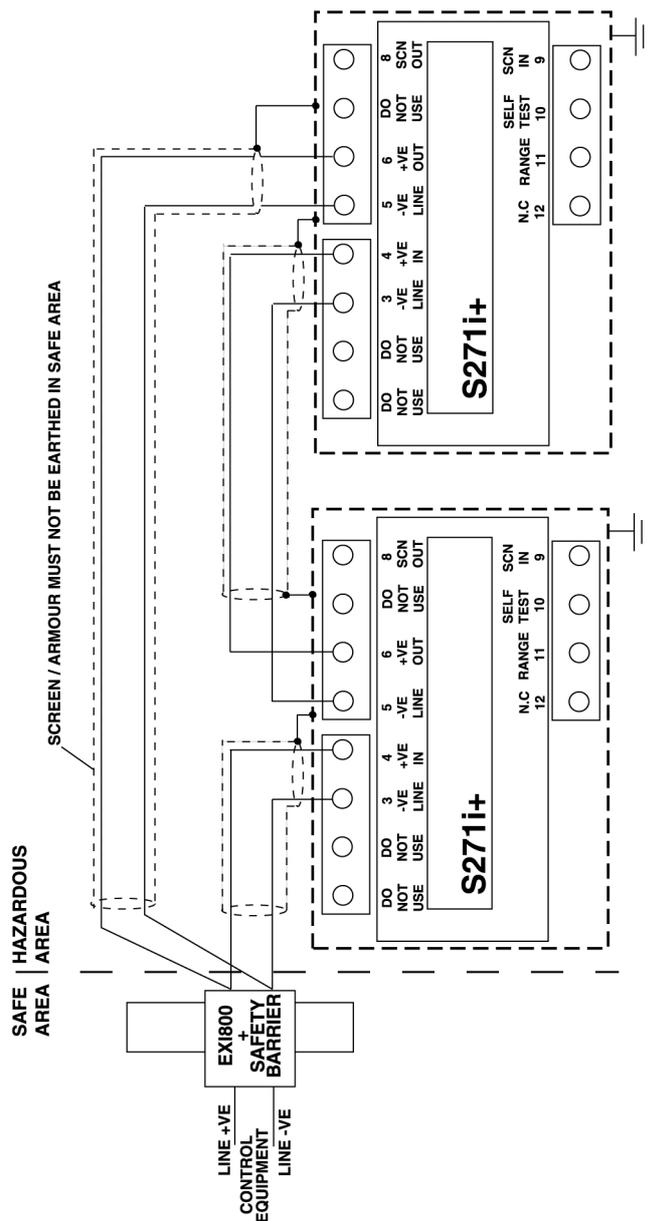


Fig. 4 S271i+ Wiring Diagram for Hazardous Areas