

# TRACETEK Zener Safety Barrier

## APPLICATION GUIDE

TraceTek alarm and locating modules carry a variety of approvals, including Underwriters Laboratories Inc. (UL), Canadian Standards Association (CSA) and FM Approvals (FM), for use in ordinary areas.

Some TraceTek alarm and locating modules are approved for installation in hazardous locations (refer to module data sheets for details). However, when the sensing cable is to be installed in a hazardous area, particularly Class I, Division 1 or Zone 0/1 locations, a protective device such as a zener safety barrier is required between the alarm module and the sensing cable that it monitors. The safety barrier ensures

that, even if the TraceTek module suffers a multiple failure, the energy transferred to the sensing cable (and thus to the hazardous area) will remain below explosive ignition levels, thus reducing the risk of fire or explosion.

Because the TraceTek system uses very low voltage and current levels, and because the sensing cable is a simple passive device, readily available commercial safety barriers can provide the required isolation.

### Application Specifics

Several manufacturers produce zener safety barriers. Pentair Thermal Management has standardized on the MTL-7767+ and MTL-7764+ models

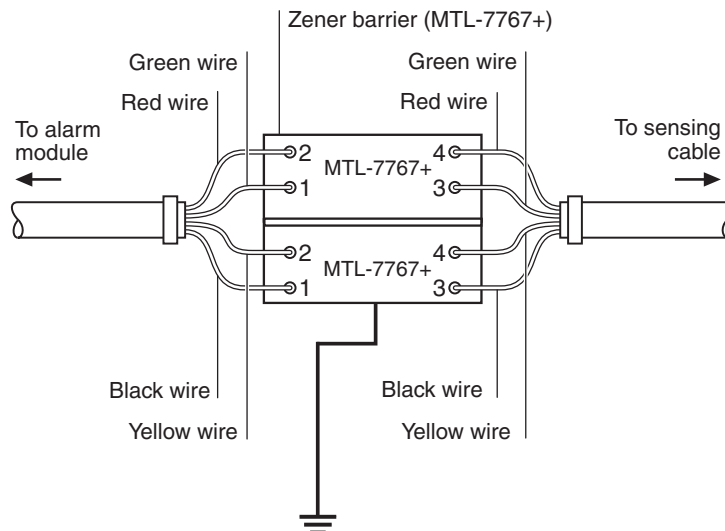
manufactured by MTL Incorporated, which are approved and certified by UL, CSA, FM, BASEEFA and other agencies. Each of the MTL barriers is capable of isolating two wires. Because the TraceTek circuit requires four wires to connect the alarm module to the sensing cable, two of the MTL barriers are necessary.

The barriers can be purchased from TraceTek with the following catalog numbers:

- TT-ZENER-BARRIER-7767 (P000000553)  
Two MTL-7767+ barriers
- TT-ZENER-BARRIER-7764 (P000001524)  
Two MTL-7764+ barriers

### Installation and Wiring:

Below is a typical wiring diagram for using MTL-7767+ barriers with TraceTek alarm and location modules. This wiring diagram also applies to MTL-7764+. Please refer to the specific data sheets and installation instructions of the module you are installing for further details.



**IMPORTANT:** Hazardous Area approvals are carried by the barrier manufacturer. In order to achieve the necessary level of protection, the barrier manufacturer's instructions must be followed exactly.

## Impact on TraceTek System Performance

During all expected modes of TraceTek operation (normal monitoring, leak detection or cable break), each of the four barrier channels appears as a resistor in series between the alarm module and the sensing cable. This has several implications for the performance of the TraceTek system:

1. The MTL barriers will add resistance to each leg of the TraceTek sensor cable. All mapped distances and actual leak locations will be increased by the presence of the barrier. Leak detection sensitivity when using TT1000, TT1100-OHP or TT3000 sensor cable is also impacted.
2. The additional leak location distance for the MTL 7767+ is approximately 9 meters (30 feet) and for the MTL 7764+ is approximately 80 meters (262 feet).
3. Avoid using MTL 7764+ barriers with TTSIM-1A or TTSIM-2 modules when the sensor cable is TT1000, TT1100-OHP or TT3000. Applications using these sensing cables rarely require Zener barriers in any case.
4. Use of MTL 7764+ barriers with TT5000, TT5001, TT7000-HUV, TT-FFS or TT-MINI-PROBE sensors, along with any TraceTek alarm module is not restricted.

## Other Applications

Review the alarm/locating module data sheets and installation instructions for specific information regarding each module's hazardous area ratings and approvals. If the existing approval is not acceptable to the local authorities, MTL-7767+ and MTL-7764+ zener safety barriers can be installed with any TraceTek module as an extra precaution.



[WWW.PENTAIRTHERMAL.COM](http://WWW.PENTAIRTHERMAL.COM)

### NORTH AMERICA

Tel: +1.800.545.6258  
Tel: +1.650.216.1526  
Fax: +1.800.527.5703  
Fax: +1.650.474.7215  
[thermal.info@pentair.com](mailto:thermal.info@pentair.com)

### EUROPE, MIDDLE EAST, AFRICA

Tel: +32.16.213.511  
Fax: +32.16.213.603  
[thermal.info@pentair.com](mailto:thermal.info@pentair.com)

### ASIA PACIFIC

Tel: +86.21.2412.1688  
Fax: +86.21.5426.2937  
[cn.thermal.info@pentair.com](mailto:cn.thermal.info@pentair.com)

### LATIN AMERICA

Tel: +713.868.4800  
Fax: +713.868.2333  
[thermal.info@pentair.com](mailto:thermal.info@pentair.com)

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