Frequently Asked Questions
Mining IR (MIR) fixed methane gas detector

What is the MIR instrument?

The MIR gas detector is a fixed, point-type infrared combustible gas detector that is designed and approved for use in underground mines by the U.S. MSHA (Mine Safety Health Administration) Code of Federal Regulations, Title 30, part 18 (mine equipment and accessories).

The MIR housing is constructed of rugged, e-coated aluminum, factory-fit with a variety of junction-box and transmitter options, and use a non-dispersive infrared (NDIR) optical bench to accurately measure methane gas from 0-5% by volume (0-100% LEL). The MIR is an extension of the industry-leading PIR9400 infrared gas detector.

In mining applications, why is the MIR required instead of the standard PIR9400?

The PIR9400 family of gas detectors are approved for surface-use applications only, while the MIR complies with MSHA requirements for underground gas detection. In addition, MIR product features address the specific needs of underground installations, including these:

- A filter specially designed for dusty underground mine environments.

- Reduced cross-sensitivity to light hydrocarbons such as ethane and ethylene by the use of special optical filters not available on other detectors.

- Factory-fitted with a U9500 Infiniti transmitter with digital display or standard termination box. The U9500 transmitters are known as globally-approved, explosion-proof fixed gas detectors that provide an on-board LCD display, non-intrusive calibration, and exceptional diagnostics.

- Optional U9500 transmitter display indicates detected methane concentration in the range of 0-5% methane by volume, instead of 0-100% LFL. In the mining industry, 0-5% is standard.

- MIR includes special, factory-fit brass cable glands that are required by MSHA.

- The MIR also includes special fastener clamps as a secondary means of securing underground cabling (also required by MSHA).
How is the MIR filter different from that on the PIR9400?

The MIR filter includes an internal Porex® porous filter membrane and an external filter constructed of polythalamide. The design is both water resistant and dust resistant.

Two filter choices are available: 180 micron pore size and 90 micron pore size. The 180 micron filter is not as fine as the 90 micron, but has a faster response time. Use the 180 micron filter in situations where fast response time is required, but dust is not fine. The 90 micron filter keeps fine dust out of the instrument, but has a slower response time. In areas of fine dust, use the 90 micron filter.

How can I tell if the MIR filter is fouled or blocked? Can the MIR filter be cleaned? If so, how?

Use the windbag to apply methane calibration gas, if slow to respond as compared to clean then change the filter. Do not clean the MIR weather baffle; replace it on a maintenance schedule.

Are there replacement parts other than the filter?

No.

What type of cable packing-gland assembly has been approved by MSHA for the transmitter/termination box?

Refer to Appendix B in the MIR instruction manual for detailed information on MSHA-approved cable packing glands for this instrument. The MIR instrument includes factory-fitted brass cable adapters that are required by MSHA. The field cabling adapter provides a female 1 1/8”-12 UN thread and (to retain MSHA approval) the installer must use MSHA-approved cable, packing glands, and accessories manufactured by Mining Controls Incorporated.

Can the MIR be used for detection of gases other than methane?

The MIR is specially designed and approved for methane detection in the mining environment, although it will detect other hydrocarbon gases. The instrument will not provide a linear signal output to these other hydrocarbons, and therefore it is not recommended for use in detecting non-methane hydrocarbon gases. See the instruction manual for details.
Can non-underground customers use MIR instead of a PIR9400?

Yes, however it is designed and approved for methane detection in the underground mining environment. Our standard PIR9400 and PIRECL instruments are generally recommended for use in above-ground hydrocarbon gas detection applications.

What is the black covering of the MIR made of?

The black covering is the same material as the j-box; it’s E-Coat for environmental protection. The covering provides excellent corrosion resistance for environmental durability.

Can I install the MIR on a mining machine?

At this time, MIR is only approved as an accessory. To use it on a machine, it must be tested to the Title 30 CFR, part 27 (methane monitoring systems) standard.

Can a customer change or modify the physical configuration of the MIR?

No. MSHA requires that only factory-authorized personnel may disassemble the unit, and the changes to the instrument design are not permitted without MSHA approval. It is acceptable to open the Infiniti gas transmitter to connect the field conductors in accordance with the instruction manual.

What is the warranty for the MIR?

The warranty is 18 months after date of manufacture, or within twelve months after date of installation, whichever occurs first.

Should the detector be mounted vertically or horizontally?

Mount the MIR with the long axis horizontal, as shown in the instructions.

What calibration gas or accessories do I need?

Methane, 50% LFL, 2.5% by volume.

Calibration bag.