

# MSA Model Ultima<sup>®</sup> OPIR-5 Open Path Detector:

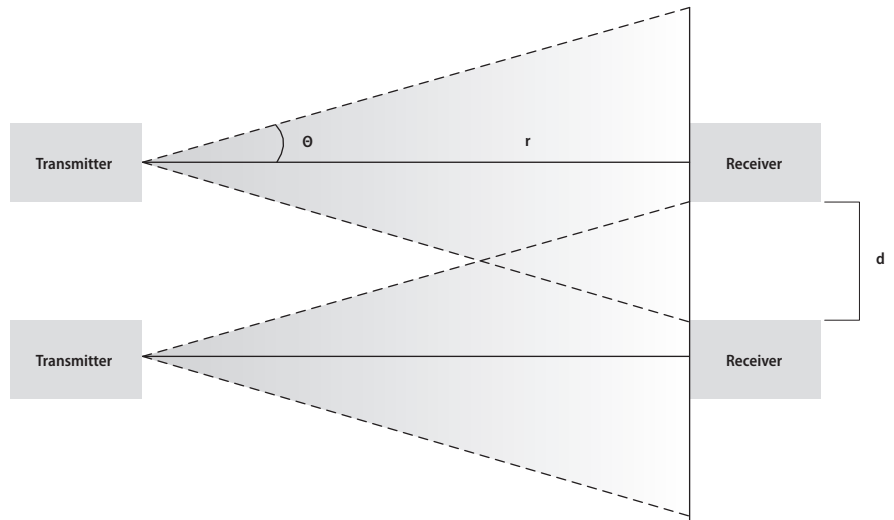


## Minimum Separation Distances Between Adjacent Open Path Infrared (IR) Gas Detectors

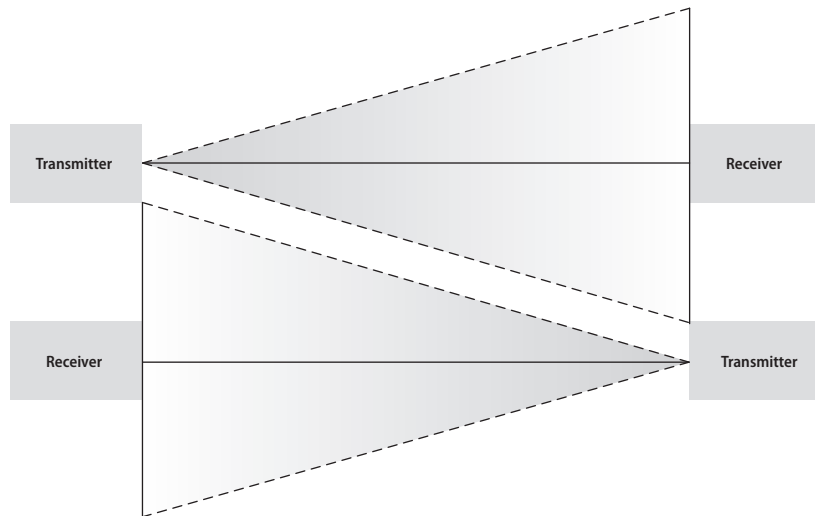
### Overview

MSA Model Ultima OPIR-5 Open Path IR Gas Detector provides continuous monitoring of combustible gas concentrations. The system consists of an IR source and receiver for both 0 to 5000 ppm·meter and 0 to 5 LEL·meter ranges. Dual detection technology offers capability to detect both small (ppm·meter) and large (LEL·meter) gas leaks.

An advantage of open path infrared gas detectors is that they perform continuous, real-time gas analysis along an open path, allowing for improved chance of detection of small or concentrated leaks when the gas of interest is not well mixed within the environment. Unlike point source detectors however, open path instruments are installed within an unconstrained volume, and as a result, light from other open path detectors may interfere with gas concentration measurement. This scenario is more likely when two or more receivers are installed in close proximity, as shown in **Figure 1**. To prevent light interference measurement errors, adjacent detectors should be installed with receivers at opposite ends (**Figure 2**).



**Figure 1.** Separation distance *d* between adjacent open path detectors



**Figure 2.** Installation of open path detectors with receivers in opposite orientations

If receivers are installed side by side, gas detectors should be separated by distance that accounts for spread of the beam over the open path length. **Table 1** provides minimum separation distance by open path length for OPIR-5 Detectors assuming transmitter orientation so that the detector is barely aligned, minimum separation is given by  $d = 2r \tan \theta \cos \theta$  where  $r$  is open path length and  $\theta$  is misalignment tolerance angle.

For OPIR-5 Detector systems without a visible light filter, minimum separation distance can be easily gauged by observing the flash as one moves to one side of the receiver. The point at which the flash is no longer visible defines approximate separation of the detector to that side.

With its tremendous detection distance and ability to detect extremely small leaks, the MSA Ultima OPIR-5 IR Open Path Detector is a perfect candidate for an additional layer of safety within your safety system.

LINE OF SIGHT DISTANCE M (FT)	MINIMUM SEPARATION, M (FT)	LINE OF SIGHT DISTANCE M (FT)	MINIMUM SEPARATION, M (FT)
10 (33)	0.5 (2)	110 (361)	5.8 (19)
20 (66)	1.0 (3)	120 (394)	6.3 (21)
30 (98)	1.6 (5)	130 (427)	6.8 (22)
40 (131)	2.1 (7)	140 (459)	7.3 (24)
50 (164)	2.6 (9)	150 (492)	7.9 (26)
60 (197)	3.1 (10)	160 (525)	8.4 (27)
70 (230)	3.7 (12)	170 (558)	8.9 (29)
80 (262)	4.2 (14)	180 (591)	9.4 (31)
90 (295)	4.7 (15)	190 (623)	9.9 (33)
100 (328)	5.2 (17)	200 (656)	10.5 (34)

**Table 1.** Minimum separation distance between adjacent OPIR-5 Open Path Detectors

Note: This bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.



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**MSA Corporate Center**  
1000 Cranberry Woods Drive  
Cranberry Township, PA 16066 USA  
Phone 724-776-8600  
[www.MSAafety.com](http://www.MSAafety.com)

**U.S. Customer Service Center**  
Phone 1-800-MSA-INST  
Fax 1-800-967-0398

**MSA Canada**  
Phone 1-800-672-2222  
Fax 1-800-967-0398

**MSA Mexico**  
Phone 01 800 672 7222  
Fax 52 - 44 2227 3943

**MSA International**  
Phone 724-776-8626  
Toll Free 1-800-672-7777  
Fax 724-741-1559

**Offices and representatives worldwide**

For further information: