BOREAL

Build + Design Walk-Through

Laser Based–Open Path Gas Detection

#1 - Select your Target Gas

For simplicity, the default alarm thresholds are shown at the equivalent 'ppm' level for path lengths greater than 20 m (60 ft).

HF — Hydrogen Fluoride
Hi-Alarm: 3 ppm
HiHi-Alarm: 9 ppm
IDLH: 30 ppm

H_2S — Hydrogen Sulfide
Hi-Alarm: 10 ppm
HiHi-Alarm: 40 ppm
IDLH: 100 ppm

NH_3 — Ammonia
Hi-Alarm: 25 ppm
HiHi-Alarm: 50 ppm
IDLH: 300 ppm

CO_2 — Carbon Dioxide
Hi-Alarm: 20,000 ppm
HiHi-Alarm: 30,000 ppm
IDLH: 40,000 ppm

CO — Carbon Monoxide
Hi-Alarm: 100 ppm
HiHi-Alarm: 200 ppm
IDLH: 1,200 ppm

CH_4 — Methane
Pre-Alarm: 40% LEL-m
Hi-Alarm: 1 LEL-m
HiHi-Alarm: 3 LEL-m

HCN — Hydrogen Cyanide
Hi-Alarm: 4.7 ppm
HiHi-Alarm: 10 ppm
IDLH: 50 ppm

HCl — Hydrogen Chloride
Hi-Alarm: 2 ppm
HiHi-Alarm: 5 ppm
IDLH: 50 ppm

C_2H_4 — Ethylene
Pre-Alarm: 5% of LEL-m
Hi-Alarm: 20% of LEL-m
HiHi-Alarm: 40% of LEL-m

#2 – Select your Path Length

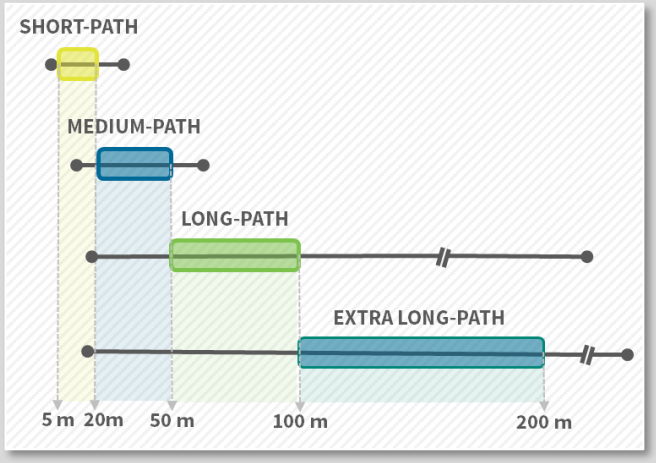
Suggested Path Length: Consideration has been given to optimizing the ability to obtain & maintain optical alignment.

Short-Path (IMOS)
Suggested Path Length: 5-20 m (15-60 ft)

Medium-Path (Wafer)
Suggested Path Length: 20-50 m (60-150 ft)

Long-Path (Cornercube)
Suggested Path Length: 50-100 m (150-300 ft)

Extra Long-Path (Cornercube)
Suggested Path Length: 100-200 m (300-600 ft)



#3 – Mounting Height/Structure

Suggested Mounting Structure: End-User to confirm the Mechanical Suitability with their own Geo-Technical and Wind-Loading Study.

Laser Based – Open Path Gas Detection is *typically mounted* at a height between **2m (7ft) - 4m (13ft).**

Suggested Mount Size for Short-Path
>4" Post @ 7' Height or >6" Post @ 13' Height

Suggested Mount Size for Medium-Path
>6" Post @ 7' Height and >8" Post @ 13' Height

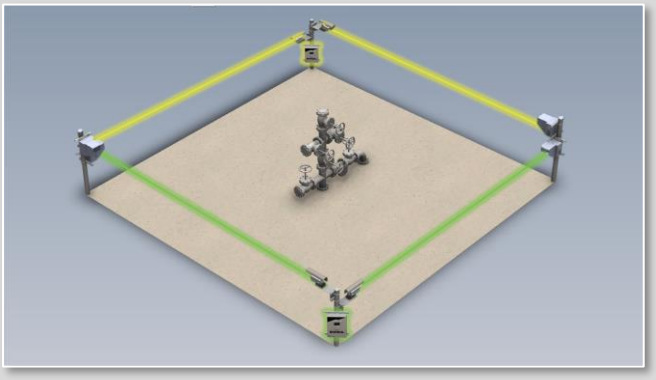
Suggested Mount Size for Long-Path
>8" Post @ 7' Height and >10" Post @ 13' Height

Suggested Mount Size for Ultra Long-Path
>10" Post @ 7' Height and >12" Post @ 13' Height

16646 114 Ave NW, Edmonton, AB, CA T5M 3R8 P +1.780.488.5173 E info@boreal-laser.com W boreal-laser.com REMOTE PRECISION. SURE DECISION.

#4 – Optimize Installation

Reference: Center for Chemical Process Safety – Continuous Monitoring for Hazardous Releases



It is often **more economical to minimize the length of cable** runs between the GasFinder3-MC and the Open Path (OPX) Heads. Two (2) GasFinder3-MC's will be ideal for perimeter monitoring.

Increase your Probability of Detection
With the area and perimeter monitoring strategies

Detector Siting Relative to Source
It is seldom appropriate to mount close to source

Travel of Plume in Low Wind Conditions
Plume may travel >30m (>100ft) in 15-30 seconds

Beware of Potential Optical Obstructions
Such as cranes, forklifts, trucks, people, etc.

#5 – Power + Communication

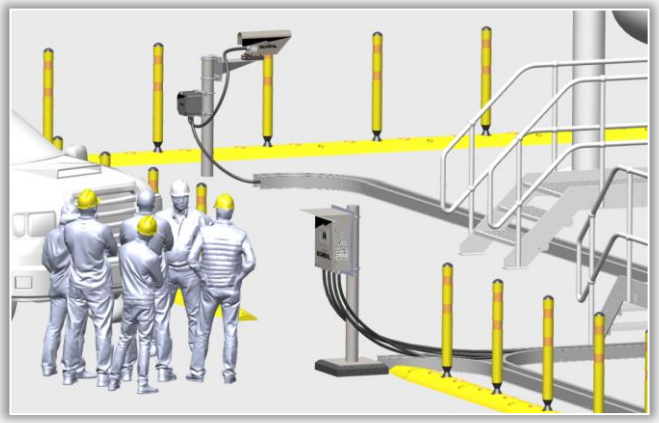
Note: Each of the Open Path (OPX) Heads have their own individual outputs and a DCS/PCS recognizes them as a singular device.

The GasFinder3-MC is Powered by 24 VDC
20 Watts normal operation (4A cartridge fuse)

HART 7 over Analog Outputs
Up to 2 loops per path (e.g., ppm(-m) & light level)

Relay Outputs (24 V, 1A Max)
Up to 3 relays per path (e.g., Hi, HiHi, and Fault)

MODBUS Communication Protocol
Includes RS-485 or can be available with TCP/IP



The **GasFinder3-MC has sufficient room to terminate cabling** for power, communication, and from the Open Path (OPX) Heads.

#6 – Select your Cable Lengths

Cabling is **quoted in 10 m (30 ft) increments,** but actual lengths can be ordered if specified at the time of order.

Up to Four (4) Open Path (OPX) Heads
Can be connected to one (1) GasFinder3-MC

Allowable Lengths of Cabling to GasFinder
Installations range from 5 – 300 m (15 – 1,000 ft)

Specific Cabling Used
Single Mode Fiber Optic and CAT6/5e Cabling

Cable Jacketing Options
Flex Conduit (<30m) & Standard or Armored (>30m)