



BOREAL

GasFinder3-OP+ ACCESSORIES

- All weather field deployable analyzer
- Long life span and minimal maintenance
- Intuitive data collection and interpretation

RENT

LEASE

OWN

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REMOTE PRECISION. SURE DECISION.

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GasFinder3-OP (OPEN-PATH)



WHAT IT DOES

- The GasFinder3-OP is a field deployable **Open-Path Tunable Diode Laser (OP-TDL)** based gas analyzer system that is primarily used for:
 - Leak Detection:** provides immediate and unambiguous detection of fugitive gas releases in safety applications.
 - Ambient Monitoring:** Continuously monitors gas concentrations over open area and/or point sources for environmental monitoring applications.
- The GasFinder3-OP is used in applications **where a specific target gas has been identified** for leak detection or ambient monitoring applications.
- Can be combined with weather data and an atmospheric dispersion model to **give a measured emission rate.**

CORE SYSTEM COMPONENTS

- GasFinder3-OP (GF3-OP):** is the analyzer or also known as a CCU/Controller.
- Retro-Reflector:** this returns the transmitted laser light back to the GF3-OP for analysis.
- Power Supply:** the GF3-OP is supplied with both 12 VDC Alligator Clamp Battery Cables and a 120-220 VAC Power Supply.
- X-Y Aiming Mount:** this fine adjustment mount enables easy alignment on long path lengths.
- Rain/Dust Hood:** this hood helps prevent condensation and particulates from settling on the window and lowering the light level.
- Retro Heater:** the heater is controlled by a thermostat which helps keep condensation from building on the enclosures window.



GasFinder3-OP



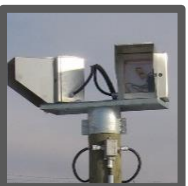
RETRO-REFLECTOR



POWER SUPPLY



X-Y AIMING MOUNT



RAIN/DUST HOOD



RETRO HEATER

HOW IT WORKS

- Boreal's OP-TDL technology **counts every target gas molecule** in the measurement path to give a path integrated **ppm-m** concentration or path average **ppm** concentration.

RETRO-REFLECTOR



TRANSCIVER



- This analyzer utilizes a **mono-static configuration** with the analyzer being a transceiver and having a passive retro-reflector returning the laser light.
- Measure only the target gas and all of the target gas.** Boreal analyzers do not suffer from cross interference and are not affected by humidity.
- The GasFinder3-OP has been designed to be a **easy-to-use field deployable tool** with no post processing software required.
- Boreal Laser has a patented internal reference cell that **does not require routine intervention or zero/span gas** to eliminate drift as this is done automatically and once a minute.

OP-TDL BENEFITS

- Large **spatial resolution** (path lengths up to 750m).
- Can provide **an independent sample or reading every second.**
- Cannot be poisoned** or mechanically **over ranged.**
- No interference** with other gases.
- No memory effects** as each sample is independent from the last.
- Data collection and interpretation** is simple and intuitive.
- Built for ambient **winter and summer** conditions.
- Minimal maintenance and intervention.**
- With no moving parts, the system has a **long life span.**

GASFINDER3 TECHNOLOGY

- All new **digital/ electronics** based platform.
- Sophisticated **self-diagnostics** and **data validation with internal reference cell.**
- Analyzer can easily be **updated through USB port.**
- Practically no temperature related reading drift** over an ambient range of -40C to +50C.
- Reliable and stable operation in **light levels down to 5% of ideal conditions.**
- Significantly increased **data logging capabilities** that can store all of its generated data over a 20 year period.
- Available **Pressure and Temperature compensation.**
- User friendly **touchscreen interface with graphic displays.**

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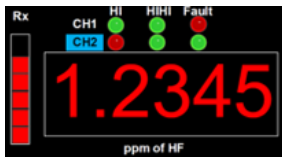
GasFinder3-OP (OPEN-PATH)



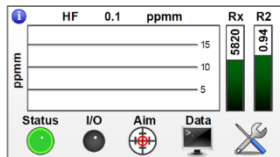
USER INTERFACES

- GasView Software:
 - Windows based software** that communicates over RS-232 serial communication
 - Real-Time Graphical Display:** ppm/time, light level, and active status
 - User configuration:** ppm-m or ppm mode, set path length, and set analyzer/path pressure & temperature
 - Diagnostic Data:** View real-time GasFinder Data (serial string), initiate log file (daily accumulation of all collected data), initiate array transfer (snapshot of waveforms & diagnostic data), and view debug statements
- Human Machine Interface (HMI) **Numerical Display:**
 - Touchscreen** is suitable for both summer and winter applications
 - Real-Time Numerical Display:** ppm, light level, and active status (alarm & fault)
 - User configuration:** user configurable alarm levels
 - Diagnostic Data:** View real-time GasFinder Data (serial string) and view debug statements
- Human Machine Interface (HMI) **Graphical Display:**
 - Real-Time Graphical Display:** ppm/time, light level, R2 confidence factor, and active status
 - User configuration:** set alarm levels
 - Diagnostic Data:** Visualize snapshot of waveforms

Numerical Display



Graphical Display



QUANTITATIVE ADVANTAGE

- Boreal Laser can actively compensate for both the **Universal Gas Law (Physical)** and **Absorption Line Strength Changes (Spectroscopic)**.
- The greatly improved and patented internal laser temperature stability (controlled to +/-0.0001°C) means that there is **practically no temperature related drift over the analyzers temperature change from a range from -40 to 50°C**.
- This means that the GasFinder3-DC provides the **most accurate and representative Raw Uncorrected Results in the industry**.
- Boreal Laser has added the Pressure + Temperature (P+T) Inputs that is used to provide **real-time pressure and temperature values from the active measurement path for dynamic P+T compensation**.

NO INHERENT CALIBRATION

- There is no Boreal Laser requirement for any periodic re-calibration **and if the GasFinder unit continues to operate without fault codes, the system is still within calibration** and will continue to provide accurate and reliable data.
- It is “recommended” that the equipment be returned to the factory every five (5) years. In addition to check-up and calibrations, **there may be hardware, software, firmware, or analysis algorithms updates available** to improve the performance of the analyzer that can only be performed at the factory or with a re-calibration.
- Boreal Laser uses a **tele-communication laser** in our analyzers and they’re spec’d to **last at least 26.6 years**.
- The long-life span combined with no inherent calibrations make the GasFinder3-DC a cost-effective option against almost any gas detection technology, especially if the asset is **amortized over 5,10, or 15 years**.

ON-BOARD DIAGNOSTICS

- Boreal Laser’s GasFinder technology makes use of on-board diagnostics to **ensure the system is functioning properly, responds to real target gas and does not drift**.
- Boreal’s on board diagnostics will:
 - Determine if it gets a **proper response from a real sample** (with the internal reference cell).
 - Make any adjustments necessary to **eliminate drift** (Line-Centre).
 - Collect additional diagnostic information** to ensure the analyzer is operating within required parameters.
 - If any of these conditions is not met then the analyzer will enter a fault condition.

SPECIFICATIONS

- Technology Name:** OP-TDL or “Laser”
- Detection Principle:** TDLAS with WMS
- Dynamic Range:** 5 orders of magnitude
- Response Time:** 1 second per second
- Accuracy:** +/-2% of reading
- Data Output:** 3x 4-20mA & Dry Contact Relays per channel
- User Interface Mediums:** HMI Touchscreen or GasView Software
- Interface Protocols:** Serial (RS-232 & Micro-USB), Ethernet (TCP/IP: FTP or Telnet) and MODBUS (RS-485)
- GF3-DC Weight:** 5.0 kg (11.0 lbs)
- GF3-DC Dimensions:** 260 x 200 x 160mm (10.2 x 7.9 x 6.3in)
- Power Requirement:** 12 VDC @ 20 Watts (120-220 VAC Optional)
- Ambient GF3-DC Temperature:** -40°C to +50°C (-40°F to 122°F)
- Ingress Protection:** IP 65
- Light Source:** Semiconductor Diode Laser w/ ~10mW output
- Eye Safety:** Class I AEL under IEC 60825-1

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BUILD YOUR OWN ASSEMBLY



ANALYZER MODELS

Basic GasFinder3-OP Model:

- Used for temporary measurement campaigns where the end-user will interact with the system primarily through the HMI and GasView interfaces.
- Includes both MODBUS (RS-485) and Serial (RS-232) outputs

Standard GasFinder3-OP Model:

- Used for both temporary and permanent installations where the end-user will want to connect the GasFinder3-OP data to a PLC or a DCS.
- In addition to the Modbus (RS-485) and Serial (RS-232) outputs, the system also has Ethernet and 1x 4-20mA Analog Loop.

Enhanced GasFinder3-OP Model:

- Used for fixed monitoring applications where multiple analog loops and dry contact relays are required.
- This model also enables for external analog loops to be used for pressure and temperature inputs to enable real-time compensation.
- Includes an external Termination Junction Box that houses a 120-220 VAC Power Supply, I/O Module (3x Analog Outputs, 3x Discrete Outputs, & 2x Analog Inputs), Isolators (optional), and Radio Modem (optional).

ANALOG LOOP ISOLATION

Standard: Non-Isolated Active 4-20mA Analog Outputs.

Optional with the Enhanced Model:

Isolation for Analog Loops (Field configurable for Active or Passive)

- Isolation for **one (1)** analog loop
- Isolation for **two (2)** analog loops
- Isolation for **three (3)** analog loops

Note: Isolators used to eliminate ground loops, reduce noise, block transient signals, and enable field powered loops.

DETECTABLE GASES

- The GasFinder3-OP only “sees” the one gas it is meant to detect, which makes it perfect for **leak detection (no false alarms)** and **ambient monitoring (no cross interferences)**.
- Select one gas from the list of gases detectable by OP-TDL:
 - Methane (**CH₄**)
 - Carbon Monoxide (**CO**)
 - Carbon Dioxide (**CO₂**)
 - Hydrogen Sulfide (**H₂S**)
 - Hydrogen Chloride (**HCl**)
 - Hydrogen Fluoride (**HF**)
 - Ammonia (**NH₃**)
 - Hydrogen Cyanide (**HCN**)
 - Acetylene (**C₂H₂**)
 - Ethylene (**C₂H₄**)
- The exact gas specifications are to be confirmed at the time of an application engineering review.
- Some gases may have different ranges that are better suited to particular path lengths and applications.

PATH LENGTH (OPEN PATH)

The Retro-Reflector Array’s have been **optimized for use at particular path lengths** for both returned laser light and alignment stability. The end-user is to select which Path Length Range best represents their application:

Path Length Range	Retro-Reflector Array
1-20 m	Grey Tape
20-45 m	1 Corner Cube
45-75m	3 Corner Cube Array
75-200m	7 Corner Cube Array
200-350m	12 Corner Cube Array
350-500m	19 Corner Cube Array
+500m	Multiple Arrays

Retro Enclosure Material: Fibre Glass is standard with Stainless Steel being optional.

Note: All Retro-Reflectors come standard with heaters and rain/dust hoods to minimize condensation and dust from building on the window.

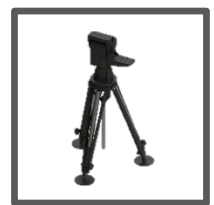
OPTIONAL ACCESSORIES



ANALYZER TRIPOD



RETRO TRIPOD



SCANNER TRIPOD



SCANNER



CONTROL CENTRE



RESPONSE CELL



WHAT IS IMPORTANT TO YOU?



S = Standard O = Optional X = Included in Model - = Not Available within Model	Basic Model (Good)	Standard Model (Better)	Enhanced Model (Best)
Display/Interface Options			
HMI Touchscreen & GasView Software	S	S	S
View Real-Time Serial String Data	S	S	S
HMI Numerical Display	S	S	X
HMI Graphing Display	-	X	X
View Waveforms on HMI	-	-	X
Communication Options			
Update Firmware through USB port	S	S	S
Modbus (RS-485)	S	S	S
Serial (RS-232)	S	S	S
Ethernet (Static IP or DCHP)	-	X	X
1x 4-20mA Loop Output per Channel	-	S	X
3x 4-20mA Loop Outputs per Channel	-	-	X
3x Dry Contact Relays per Channel	-	-	X
2x 4-20mA Inputs (Real-Time P+T Compensation)	-	-	X
Analog Loop Isolation			
Non-Isolated Loops (Active)	S	S	S
One (1) Isolated Analog Loops (Active & Passive)	-	-	O
Two (2) Isolated Analog Loops (Active & Passive)	-	-	O
Three (3) Isolated Analog Loops (Active & Passive)	-	-	O
Retro-Reflector Enclosure Options			
Heated Fibre Glass Retro-Enclosure	S	S	S
Non- Heated Fibre Glass Retro-Enclosure	O	O	O
Heated Stainless Steel Retro-Enclosure	O	O	O
Non-Heated Stainless Steel Retro-Enclosure	O	O	O

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TILT-PAN SCANNER



GasFinder3-DC
w/ OPX Head



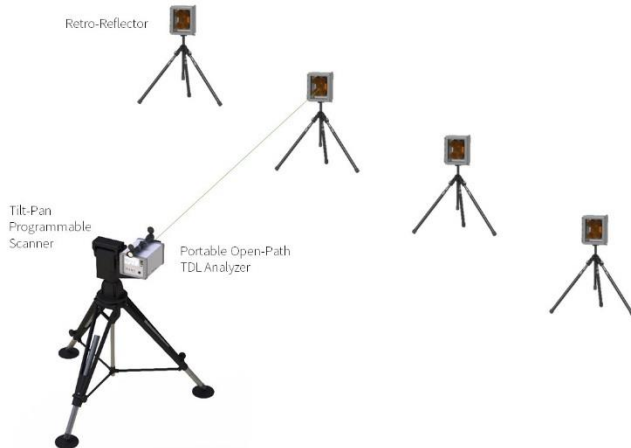
GasFinder3-OP

WHAT IT DOES

- The **Tilt-Pan Scanner** serves two main functions:
 - Allows a single GasFinder or Measurement Head to **monitor multiple active measurement paths** by scanning up to 8 different successive retro-reflectors
 - The **Auto Light Optimization** function maintains optimum optical alignment between the GasFinder and retro-reflector array

HOW IT WORKS

- The Tilt-Pan Scanner is controlled by Boreal's **GasViewMP Software**. The GasViewMP Software can be ran on a Windows based computer or with the Remote Monitoring + Control Centre which has an internal data logger
- The **Total Cycle Time** can be controlled by programming the amount of dwell time on each retro-reflector with the GasViewMP Software
- The scanner can either be mounted on a heavy-duty tripod for **temporary/portable applications** or affixed to a structure for **permanent installations**



CONSIDERATIONS

- The **practical path length limit is 500m** due to step sizing resolution of the Tilt-Pan Scanner:
 - Oversized retro-reflector array(s) are used** to make sure that there is a sufficiently sized target for the scanner to hit
- If your current installation has alignment problems caused by a moving structure, then **the Tilt-Pan Scanner may be a more cost and time effective alternative to mechanical and civil work**

SPECIFICATIONS

TILT-PAN PERFORMANCE

- Max Payload:** 6.8 kg (15 lbs.)
- Pan Speed Range:** 0.006°/sec - 100°/sec
- Tilt Speed Range:** 0.003°/sec - 50°/sec
- Resolution-Pan:** 0.006°
- Resolution-Tilt:** 0.003°

TILT-PAN FEATURES

- Tilt Range:** +30° to -90° from level
- Pan Range:** +/- 188°
- Duty Cycle (Continuous Operation):** Up to 100%
- Max Path Length:** 500m

POWER REQUIREMENTS

- Input Voltage:** 24-30 VDC
- Power Consumption:** 19.8 to 34.5 W

COMMUNICATION

- Base Connector:** 32-pin
- Power:** 24-30 VDC + Shield
- Control:** RS-232, RS-485/422, Ethernet
- Payload Pass Through:** Power, Video 1/2, High-Speed, Other
- Protocol:** DP (ASCII, Binary), Pelco-D, Nexus

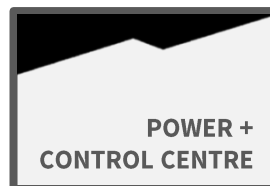
MECHANICAL

- Weight:** 5.44 kg (12 lbs.)
- Dimensions (HxWxL):** 265.7 x 173.7 x 138.43mm (10.5 x 6.8 x 5.5")
- Payload Mounting:** side and/or top

ENVIRONMENTAL

- Operating Temperature:** -30°C to 70°C
- Humidity:** 100% RH
- Ice:** Sustained operation with 0.25" build-up
- Sand/Dust:** Sustained operation
- Wind/Fog/Rain:** IP67
- Area Classification:** General Purpose

CONTROL CENTRE REQUIRED



or



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POWER + CONTROL CENTRE



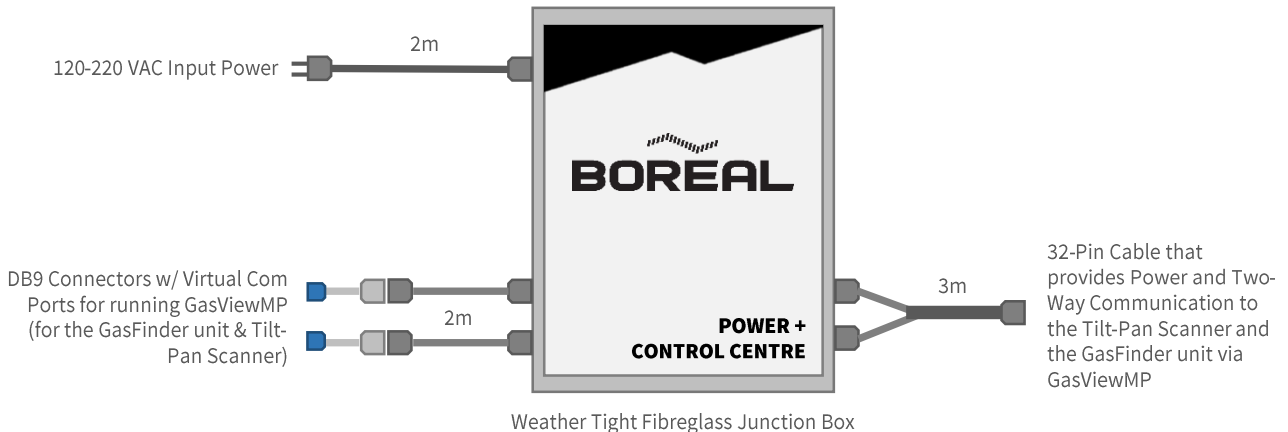
WHAT IT DOES

- The **Power + Control Centre** is one of the two Control Centre options available for communicating with the Tilt-Pan Scanner
- The Power + Control Centre **has two main purposes:**
 - **Supply power** to both the Tilt-Pan Scanner and the GasFinder unit
 - **Enables the supplied GasViewMP Software to communicate locally** with both the Tilt-Pan Scanner and the GasFinder unit

BENEFITS

- The Power + Control Centre is a all-in-one **weather tight enclosure that can be used in the field**
- **This includes everything required to connect and power the Tilt-Pan Scanner to a user supplied data logger** along with the GasViewMP Software
- Allowances for **both DB9 Cables allow for simultaneous communication within the 32-Pin Cable** for both the GasFinder unit and the Tilt-Pan Scanner
- The Power + Control Centre **can be used along with an inverter for DC Power Applications**

FUNCTIONAL LAYOUT



REQUIREMENTS

- While the Power + Control Centre includes the GasViewMP Software it **does not include a Data Logger (Windows based PC)** to run the Tilt-Pan Scanner

COMPLETE MODULE SPECS

- **Weight:** 4.5kg (10 lbs.)
- **Dimensions:** (LxWxH): 280 x 230 x 165 mm (11 x 9 x 6.5 in)
- **Power Requirement:** 100-240 VAC (12 VDC also available)
- **Ambient Temperature:** -30°C to +50°C (-22°F to 122°F)
- **Ingress Protection:** IP 65
- **Hazardous Area Classification:** General Purpose

POWER SUPPLY SPECS

INPUT:

- **Input Voltage:** 100 to 240 VAC
- **Frequency:** 47 to 65 Hz
- **Input Current:** 5 A max. (RMS) @ 115 VAC

OUTPUT 12 VDC:

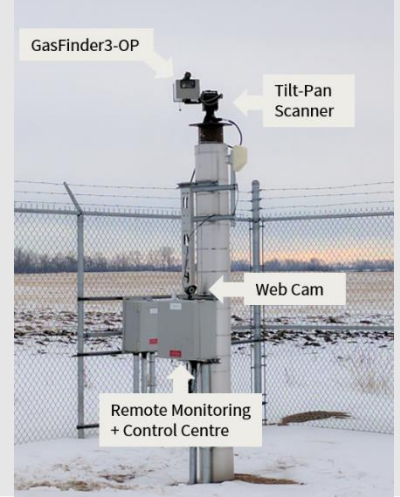
- **Total Power:** 10 to 16.5 V @ 5 A
- **Overload Protection:** Short circuit protection on all outputs
- **Remote Sense:** Reverse connection protected

OUTPUT 24 VDC:

- **Total Power:** 22.5 to 29.5 V @ 4.2 A
- **Overload Protection:** Short circuit protection on all outputs
- **Remote Sense:** Reverse connection protected

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REMOTE MONITORING + CONTROL CENTRE



WHAT IT DOES

- The **Remote Monitoring + Control Centre** is used to **provide power distribution, log data**, and allow **remote communication** (via cell modem) to provide **on-board intelligence** for a number of components that can include:
 - GasViewMP interface software**
 - One (1) or two (2) GasFinder and Tilt-Pan Scanner** assemblies
 - Weather data** (3D sonic anemometer + met station)
 - Relays** (can be used to remotely cycle the power)
 - Webcam** (useful tool for verifying weather conditions)
 - Along with **other Serial based inputs**
- Measurement campaigns can now be **monitored remotely** without having to physically visit the installation
- Depending on the accessories the operator can **remotely intervene** with the installation if necessary

COMPLETE MODULE SPECS

- Weight:** 13.6kg (30 lbs)
- Dimensions:** (LxWxH): 470x 420 x 285mm (18.5 x 16.5 x 11.25in)
- Power Requirement:** 120-240 VAC (12 VDC also available)
- Ambient Temperature:** -30°C to +50°C (-22°F to 122°F)
- Ingress Protection:** IP 65
- Hazardous Area Classification:** General Purpose

POWER SUPPLY SPECS

INPUT:

- Input Voltage:** 100 to 240 VAC
- Frequency:** 47 to 65 Hz
- Input Current:** 5 A max. (RMS) @ 115 VAC

OUTPUT:

- Total Power:** 10 to 16.5 V @ 5 A & 22.5 to 29.5 V @ 4.2 A
- Overload Protection:** Short circuit protection on all outputs
- Remote Sense:** Reverse connection protected

DATA LOGGER SPECS

- CPU:** Intel Atom D525 Processor w/ ICH8M Chipset
- System Memory:** DDR3 667/800 SODIMM Slot x 1, up to 4 GB
- OS Support:** Windows XP & 7
- I/O:**
 - RS-232/422/485 x 1
 - RS-232 x 5 (B2 / B2M) ; x 1 (A1 / A1M)
 - USB 2.0 x 6 (B2 / B2M) ; x 2 (A1 / A1M)
 - VGA x 1
 - Line-out x 1
 - DIO x 8 (DI x 4 ; DO x 4)
 - LAN x 2
 - Compact Flash slot x 2

WIRELESS MODULE SPECS

3G HSPA + MODELS

- Peak HSPA data rates
 - Download: 14.4 Mbps
 - Upload: 5.76 Mbps
- SIM Interface (2FF)

3G EV-DO MODELS

- Peak CDMA data rates
 - Download: 3.1 Mbps
 - Upload: 1.8 Mbps
- SIM Interface (2FF)

PROTOCOLS

- Network: TCP/IP, UDP/IP, DNS
- Routing: NAT, Host Port Routing, DHCP, PPPoE, VLAN, VRRP, Reliable Static Route
- Application: SMS, Telnet/SSH, Reverse Telnet, SMTP, SNMP, SNTIP
- Serial: TCP/UDP PAD Mode, Modbus (ASCII, RTU, Variable), PPP
- GPS: NMEA 0183 V3.0, TAIP, RAP

EVENTS REPORTING

- Event Types: Digital Input, GPS/AVL, Network Parameters,
- Data Usage, Timer, Power, Device Temperature
- Report Types: SMS, Email, SNMP Trap, Relay Output, GPS
- Rap Report, Events Protocol Message to Server

AVAILABLE OPTIONS



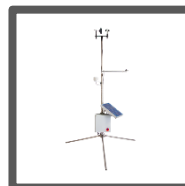
GasFinder3-OP



TILT-PAN SCANNER



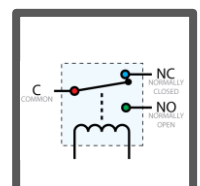
3D ANEMOMETER



MET. STATION



WEBCAM



RELAY



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CONTROL CENTRE CONFIGURATIONS



GasFinder3-OP

Tilt-Pan Scanner

Tilt-Pan Scanner Tripod

CONTROL CENTRE COMPARISON

X = Included	- = Not Available	O = Optional	Power + Control Centre	Remote Monitoring + Control Centre
			X	X
Use with one (1) Tilt-Pan Scanner/ GasFinder Unit			X	X
Use with two (2) Tilt-Pan Scanners/ GasFinder Units			-	X
120-220 VAC Power Source			X	X
12 VDC Power Source (Inverter)			O	O
GasViewMP (Windows based Software)			X	X
Internal Data Logger to run GasViewMP			-	X
Collect and Store Data from Multiple Serial Devices (1-6)			-	X
Cellular Modem for 2-Way Communication			-	X
Radio Modem for 2-Way Communication			-	X

ORDERING INFO

Below are the required items for the Tilt-Pan Scanner:

- **BL-TPS:** Tilt-Pan Scanner
- **BL-PCC:** Power + Control Centre
Or
- **BL-RMCC:** Remote Monitoring +Control Centre

Below are Optional Accessories

- **BL-TPT:** Tilt-Pan Scanner Tripod
- **BL-SRT:** Small Retro Tripod (7 Cube Arrays and Under)
- **BL-LRT:** Large Retro Tripod (12 Cube Arrays and Over)
- **BL-DC2AC:** DC to AC Power Inverter

Fibre Glass Retro Enclosures:

- **BL-HFR-3:** 3 Corner Cube Array
- **BL-HFR-7:** 7 Corner Cube Array
- **BL-HFR-12:** 12 Corner Cube Array
- **BL-HFR-19:** 19 Corner Cube Array
- **BL-HFR-27:** 27 Corner Cube Array

Stainless Steel Retro Enclosures:

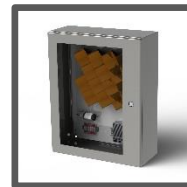
- **BL-HSR-3:** 3 Corner Cube Array
- **BL-HSR-7:** 7 Corner Cube Array
- **BL-HSR-12:** 12 Corner Cube Array
- **BL-HSR-19:** 19 Corner Cube Array
- **BL-HSR-27:** 27 Corner Cube Array

SCANNER PATH LENGTH TABLE

Path Length Range	Retro-Array
1-20 m	Grey Tape
20-45 m	3 Corner Cube Array
45-75m	7 Corner Cube Array
75-200m	12 Corner Cube Array
200-350m	19 Corner Cube Array
350-500m	27 Corner Cube Array
+500m	Not Recommended



FIBRE GLASS



STAINLESS STEEL

Note: Retro-Arrays are oversized for scanner use.

Note: All retro-reflectors come standard with heaters and rain/dust hoods.



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RESPONSE CELL



WHAT IT DOES

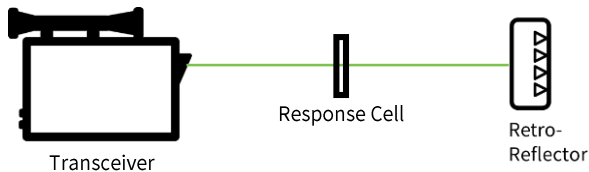
- The response cell is typically used in **leak detection** installations that are monitoring for a gas that is **not present in the ambient atmosphere**.
- Response cells are used for **quality assurance** purposes to validate that the GasFinder instruments is **responding appropriately to a nominal concentration of the target gas**
- The validation using a response cell is **NOT a field calibration**

HOW IT WORKS

- The response cell is a **completely sealed unit that contains the specific target gas** that the GasFinder Instrument has been configured to detect
- The OP-TDL GasFinder instruments are designed to **“count” the number of molecules** of the target gas in the active measurement path
- Since the response cell has a concentrated number of molecules within the cell it **can replicate or simulate a release of gas that would be similar to a loss of containment**
- The small amount of gas contained in response cell **does not present a health hazard to the user**

PROCEDURE + PLACEMENT

- To “bump” or “challenge” the system, **the response cell needs to be placed in the active measurement path**
- The active measurement path is between the **transceiver** and the **retro-reflector**



WARNING

- If the GasFinder instrument is connected to Safety Instrumented System (SIS) it is important to **follow your facilities testing/bypass procedure** so that you do not inadvertently execute an unwanted shutdown procedure

REPEATABILITY

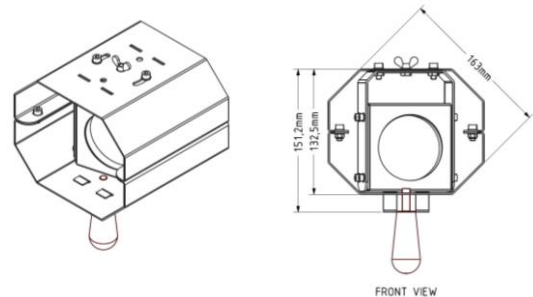
- **One cannot expect identical readings** from the response cell every time it is put into the path as it has an anticipated **repeatability around +/- 20%**
- Repeatability of the response cell is effected by two factors:
 - Depending on how the response cell is held in the active measurement path, **the path length through the response cell (and number of counted molecules) can change and therefore so will the indicated reading**
 - **Optical effects from the response cell windows**

RE-CERTIFICATION

- It is recommended that response cells be **returned to Boreal Laser for factory re-certification every two years** or within the frequency required by facility quality assurance and safety procedures.

RESPONSE CELL HOLDER

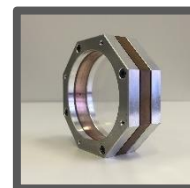
- A response cell holder is available and is shown below:



RESPONSE CELL TYPES



1" HF CELL



3" HF CELL



ALL OTHER GASES

CORE COMPONENTS



GAS CONCENTRATION MEASUREMENT



WEATHER DATA



ATMOSPHERIC DISPERSION MODEL



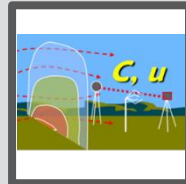
EMISSION RATE



GasFinder3-OP



3D ANEMOMETER



bLS



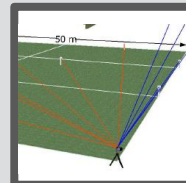
VERY ACCURATE EMISSION RATE



GasFinder3-DC



OTHER MET. DATA



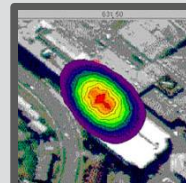
RADIAL PLUME MAPPING



MODEL: PLUME + FLUX



GasFinder2-MC



AERMOD



REAL-TIME EMISSION RATE

GENERATING AN ESTIMATED EMISSION RATE

Gas Concentration Measurement:

- Boreal Laser develops and manufactures the GasFinder analyzers.
- There are a number of analyzers and measurement heads configurations available

Weather Data:

- Boreal Laser can supply various weather data instruments
- Boreal Laser's Remote Monitoring + Control Centre can be used to collect and transmit both the gas concentration and weather data

Atmospheric Dispersion Model:

- Boreal Laser does not sell or support any of the atmospheric dispersion models
- The models listed are the most common techniques used with our equipment by our customers.

CONTACT US

CHOOSING THE BEST SOLUTION FOR YOUR APPLICATION IS CRITICAL. LET US HELP.

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Technical Product Information: info@boreal-laser.com

Request Quote: sales@boreal-laser.com

LOCAL DISTRIBUTION:



THE NEXT STEP:

Contact us for an **Application Engineering Review:**

- **Select the target gas you want to measure**
- Determine if you require **leak detection** or **ambient monitoring** analysis capabilities
- Decide which **measurement head** is best suited to your application
- Once we have identified the best technical solution from your needs, **we'll provide you with a quotation.**
- If you require **on-site/factory training, installation, and commissioning support** from Boreal Laser or a Boreal Laser Authorized Distributor this service is available at our standard charge-out rates

BOREAL