



BOREAL

GasFinder3- DC (DUAL CHANNEL)

- Industrial laser based gas detection
- Low installation and maintenance costs
- Multiple measurement heads available

SET

FORGET

DETECT

boreal-laser.com

REMOTE PRECISION. SURE DECISION.

BOREAL

GasFinder3-DC (DUAL CHANNEL)

OPX Head:
Open-Path Measurement Head

RPX Probe:
Remote Point Measurement Probe

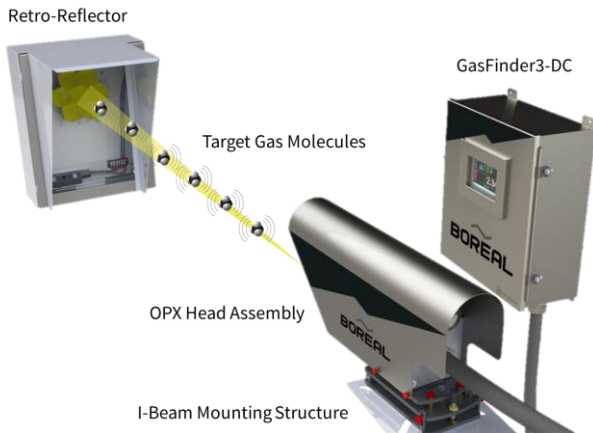
GasFinder3-DC:
GasFinder3-DC (OP-TDL Analyzer)



WHAT IT DOES

- The GasFinder3-DC and associated Measurement Heads make 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

HOW IT WORKS



- Boreal's GasFinder3-DC via a Measurement Head (e.g. OPX Head) **counts every target gas molecule** in the measurement path to give a path integrated **ppm-m** concentration or path average **ppm** concentration
- This analyzer utilizes a **mono-static configuration** with the OPX Head being a **transceiver** and having a passive **retro-reflector** to return the laser light
- This system has the ability **to monitor one (1) or two (2) measurement heads** with one (1) GasFinder3-DC analyzer.
- Measurement Head Options: **OPX Head** (Open-Path Head), **RPX Probe** (Remote Point Probe), **SDX Probe** (Stack/Duct Probe), **EMX Cell** (Extractive Measurement Cell), **ILX Probe** (In-Line Probe), and **IPX Probe** (Insertible Probe)
- 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
- 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

GASFINDER3 TECHNOLOGY

- All new **digital electronics** based platform
- Analyzer can easily be **updated through USB port**
- Practically no temperature related reading drift** over an ambient range of -40C to +50C
- Significantly **increased dynamic light level range**
- Significantly increase **data logging capabilities** (~20 years)
- Reliable and stable operation in **light levels down to 5% of ideal conditions**
- Available real-time **Pressure and Temperature compensation**
- User friendly **touchscreen interface with graphic displays**

OP-TDL BENEFITS

- 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**
- Sophisticated **self-diagnostics and data validation**
- Can provide **an independent sample or reading every second**

DETECTABLE GASES

- The GasFinder3-DC 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**)

Note: The exact gas specifications are to be confirmed at the time of an **application engineering review**. Some gases have multiple absorption lines from which to choose in order to optimize analysis for a specific application.

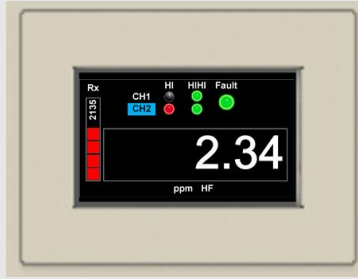
EASE OF INSTALLATION

- The **rugged industrial enclosure** of the GasFinder3-DC can be mounted on a fixed pedestal or wall
- The Measurement Head can be **mounted up to 100m** from the GasFinder3-DC via Fibre Optic and CAT6 cable run
- Only power and communication** cables required

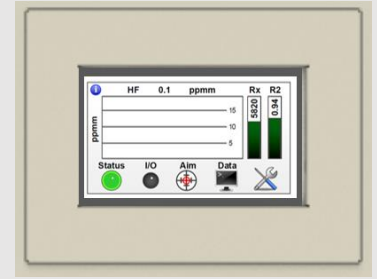
Note: For additional details see **General Arrangement Drawings**

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UNIQUE FEATURES



Numerical Display

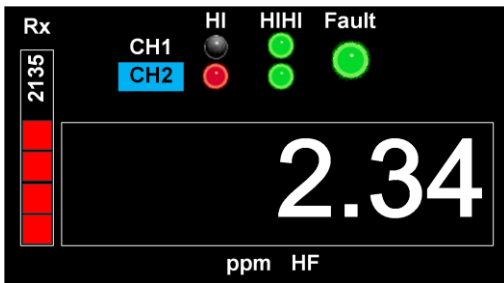


Graphical Display

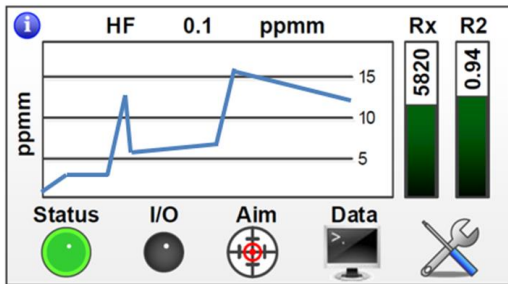
HMI DISPLAY

- The HMI Touchscreen provides operators and technicians with valuable information at a quick glance such as:
 - Concentration Measurement**
 - Key diagnostic information such as **Light Level (Rx)** and **Confidence Factor (R2)**
 - Status/Fault Indication**

Numerical Display:



Graphical Display:



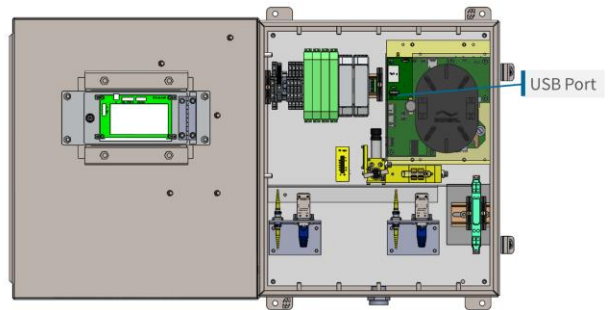
ACTIVE STATUS

- Technicians can easily have the specific status indicated to determine the **current state** of the analyzer



USER ACCESSIBLE LOGFILES

- All data generated by the GasFinder3-DC is stored internally and is **user accessible via the internal USB port**



Note: There is also a USB Port inside the Termination Junction Box (optional accessory).

ALARM PARAMETERS

- Via the HMI Touchscreen, the end-user can program/define:
 - Analog ranges** and specific **Hi & Hi-Hi Alarm Thresholds**
 - Specific **time delay** for Alarm Threshold Parameters on the **I/O Modules**:
 - Analog: **Low Light Alarm** (2.7mA)
 - Discrete: **Hi Alarm & Hi-Hi Alarm**

Note: System faults (3.6mA) will override the channel specific time delays on Low Light Alarm and Hi (-Hi) Alarm thresholds

P+T COMPENSATION

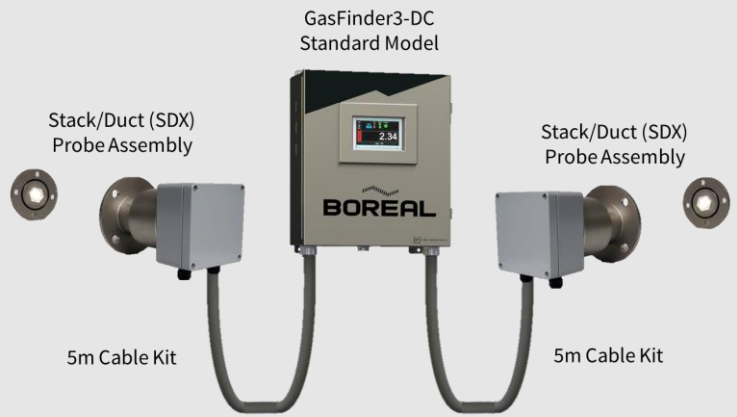
- Static:** Manually input a static pressure and temperature
 - User can post process the P+T Data
- Internal:** P+T Module makes measurements within the enclosure
 - Good for diurnal or seasonal relative rates of change
- External:** P+T Input can take external analog inputs
 - Able to make compensations for changes in Active Measurement Paths

Note: The External P+T Inputs are only available on the Enhanced GasFinder3-DC Model

Note: Internal P+T measurements come from a module that is surface mounted on the PCB. Pressure sensor is Piezo Resistive and Temperature sensor is MEM

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GasFinder3-DC (DUAL CHANNEL)



SELF TEST / VALIDATION

- 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 Self Test and On-Board Diagnostics will:
 - Determine if it gets a **proper response from a real sample** via 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.
 - All of the generated data, including the self test results, are automatically stored and recorded

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.

LONG LIFESPAN

- In Boreal Laser's GasFinder3-DC OP-TDL, there **are no moving parts.**
- Since laser light is used as the measurement sensor there are **no consumables.**
- Boreal Laser uses high grade **tele-communication lasers** and they're guaranteed to **operate for at least 15 years**
- To give an idea of the longevity of the instruments, the original systems **sold to customers back in the 90's are still in operation today.**
- Long life span combined with no periodic 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**

INTERFACE (HMI) DISPLAYS

- For enhanced **security and anti-tampering purposes**, the HMI Touchscreen is covered by glass on the GasFinder3-DC
- By opening the GasFinder3-DC's enclosure the HMI Touchscreen is accessible for **modifying user configurable settings**

QUANTITATIVE ADVANTAGE

- Boreal Laser analyzers actively compensate for both the **Universal Gas Law (Physical)** and **Absorption Line Strength Changes (Spectroscopic)**
- The greatly improved internal laser temperature stability (controlled to $\pm 0.0001^{\circ}\text{C}$) means that there is **practically no temperature related drift over an ambient temperature range from -40 to 50°C**
- This means that the GasFinder3-DC provides the **most accurate and representative Raw Uncorrected Results in the industry**
- External Pressure + Temperature (P+T) Inputs can be used to **read real-time pressure and temperature values from the active measurement path for dynamic P+T compensation**

DESIGNED TO BE MODULAR

- Boreal Laser has designed the GasFinder3-DC to be modular, which means that end-users can **easily design, install, commission, and support** the equipment.
- The GasFinder3-DC has been designed so that at any time **customers may expand or upgrade the capabilities** of the analyzer by moving-up to the next model, adding an additional measurement head, and increasing the measurable path length
- Certain implementations of firmware, software, analysis algorithm **upgrades are possible through a USB stick**

SPECIFICATIONS

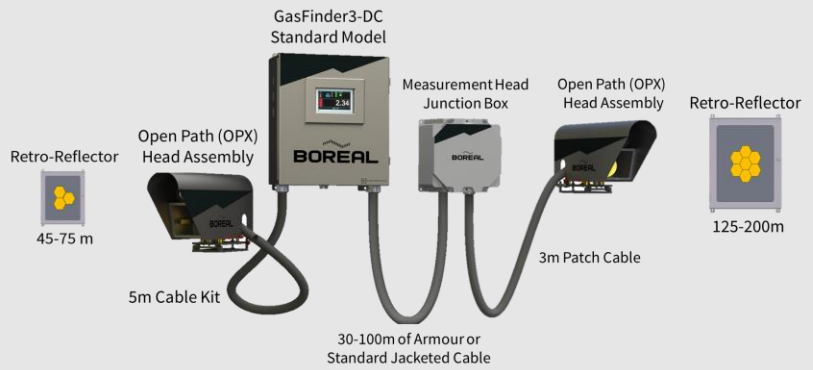
- **Technology Name:** OP-TDL or "Laser"
- **Detection Principle:** TDLAS with WMS
- **Response Time:** 1 second per path
- **Accuracy:** $\pm 2\%$ of reading
- **Data Output Options:** up to 3x 4-20mA & Dry Contact Relays per channel with Enhanced Model
- **User Interface Mediums:** HMI Touchscreen or GasView Software
- **Interface Protocols:** Serial (RS-232 & Micro-USB), Ethernet (TCP/IP: FTP or Telnet) and MODBUS (RS-485)
- **GF3-DC Weight:** 14.6 kg (32.2 lbs)
- **GF3-DC Dimensions:** 495x368x160mm (19.5x14.5x6.25in)
- **Power Requirement:** 24 VDC @ 20 Watts (120-220 VAC Optional)
- **Ambient GF3-DC Temperature:** -40°C to $+50^{\circ}\text{C}$ (-40°F to 122°F)
- **Ingress Protection:** IP 66 & NEMA 4x
- **Light Source:** Semiconductor Diode Laser w/ $\sim 10\text{mW}$ output
- **Eye Safety:** Class I AEL under IEC 60825-1
- **Area Classification (GF3-DC):** NA Class 1, Zone 2, IIC, T4
- **Area Classification (Head):** NA Class 1, Zone 1, ib, IIC, T4 Gb
- **Safety Integrity Level:** SIL2 Suitable

Note: For additional details see **Instrument Data Sheets**

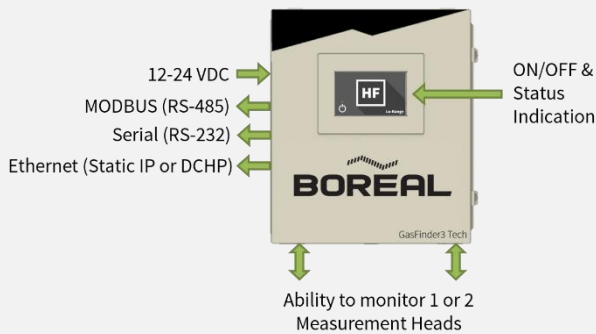
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GasFinder3-DC

MODEL OPTIONS



BASIC MODEL (GOOD)

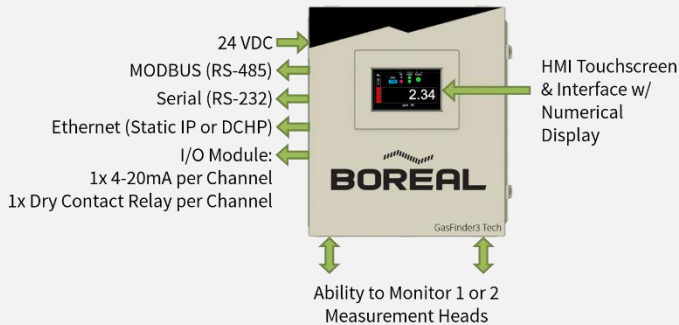


The GasFinder3-DC-B model is a **no-frills configuration** and only performs the function it needs to - quickly and reliably detect the presence of gas.

The Basic GasFinder3-DC Model has the ability to display **the Local Status Indication (ON/OFF and Fault) with a LED indicator**. The customer can interface with the analyzer by using the included GasView Software. The GasFinder3-DC has internal data logging capabilities to collect and store all the GasFinder generated data for around 20 years.

The Basic GasFinder3-DC model has three output options: **MODBUS (RS-485), Ethernet (TCP/IP: FTP or Telnet) and Serial (RS-232)**.

STANDARD MODEL (BETTER)

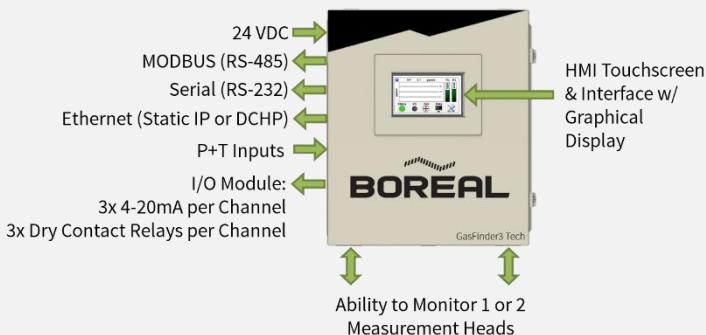


No other open path vendor has a **local touchscreen display** that enables field personnel to see **ppm(-m) concentrations, light level, and active status** in real-time.

This model can be **interfaced locally by the user with the GasView Software or via the HMI Touchscreen**. The added functionality of the HMI Touchscreen allows the user to set configurable alarm levels for the outputs, to view real-time GasFinder3-DC serial string data and view de-bug statements.

This model has one (1) I/O Module that enables **one (1) 4-20mA Loop and Dry Contact Relay per Channel** along with one additional Analog and Discrete Loop.

ENHANCED MODEL (BEST)



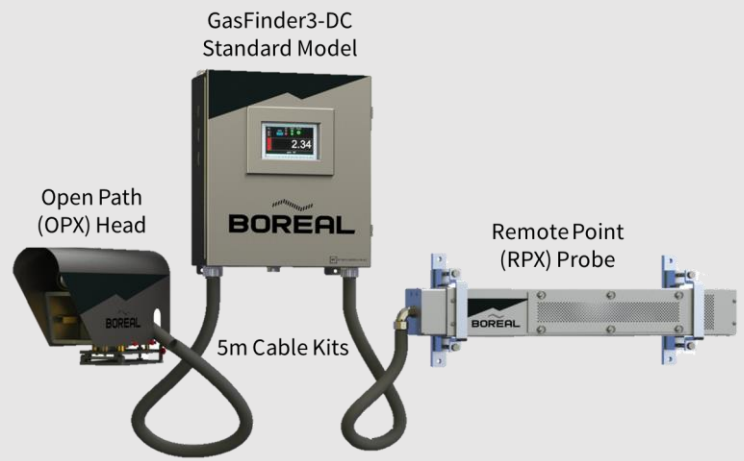
The GasFinder3-DC-E is the **top-of-the-line analyzer model** which enables the end-user to have **three (3) analog loops and three (3) dry contact relays per channel** with the use of two (2) I/O Modules. The user configurable outputs allow for easily customizable functionality to suit the exact needs of the application.

The Enhanced model accepts external **Pressure + Temperature (P+T) Inputs** from the active measurement path to enable dynamic P+T compensation.

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GasFinder3-DC

MODEL OPTIONS



AREA CLASSIFICATION



Zener Barrier

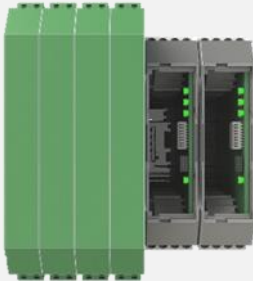
GasFinder3-DC (Analyzer):

- Area Classification – Class 1 Zone 2, IIC (Groups A,B,C,D), T4
- Method of Protection – Non-Arcing/Non-Incendive
 - As per: UL 121201, CSA C22.2 No. 213

OPX Head or RPX Probe (Measurement Head):

- Area Classification – Class 1 Zone 1, IIC (Groups A,B,C,D), T4
- Method of Protection – Intrinsic Safety “ib” & “Gb”
 - As per: IEC 60079-11

ANALOG LOOP OPTIONS



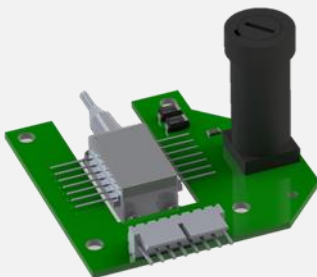
Isolators I/O Modules

The I/O Modules analog loops are **Non-Isolated** and **Active** (loop is powered by the GasFinder3-DC).

One (1) to six (6) Analog Loop Isolators are used to eliminate grounds loops, reduce noise, block transient signals, and enable passive loops (loop is field powered).

Note: The isolator can be wired in the field to be either active or passive.

TARGET GAS (LASER) SELECTION



Tunable Diode Laser

While the lasers are “tunable”, they’re tunable over a very narrow wavelength range. Typically, **a laser is only suitable for one target gas and one measurement range** making it specific for certain applications.

When a target gas and range is determined, a specific **laser**, **reference cell**, **photodiodes**, and **laser handling** components (e.g. fibre or splitter/switch) are selected.

Which gases do you need your Open Path Gas Detection solution to quickly and reliably detect?



INCIPIENT LEAK DETECTION

If a leak is to occur, then concentrations in the 10's to 1,000's of ppm are expected to be present and detected.



Hydrogen Sulphide

Lo-Range: 0-100,000 ppm-m



Carbon Dioxide

Hi-Range: 0-80,000 ppm-m



Hydrogen Fluoride

Lo-Range: 0-250 ppm-m

Hi-Range: 0-1,000 ppm



Hydrogen Cyanide

Range: 0-5,000 ppm-m



Ammonia

Lo-Range: 0-5,000 ppm-m

Hi-Range: 0-15,000 ppm-m



Hydrogen Chloride

Range: 0-2,500 ppm-m



Methane

Lo-Range: 0-2,500 ppm-m



Acetylene

Range: 0-2,000 ppm-m



Carbon Monoxide

Lo-Range: 0-8,500 ppm-m



Ethylene

Range: 0-5,000 ppm-m

DISCRETE LEAK DETECTION

If a leak is to occur, then percent (%) level concentrations are expected to be present and detected.



Hydrogen Sulphide

Hi-Range: 0-500,000 ppm-m



Carbon Dioxide

Hi-Range: 0-500,000 ppm-m



Methane

Hi-Range: 0-500,000 ppm-m



Oxygen

Hi-Range: 0-350,000 ppm-m

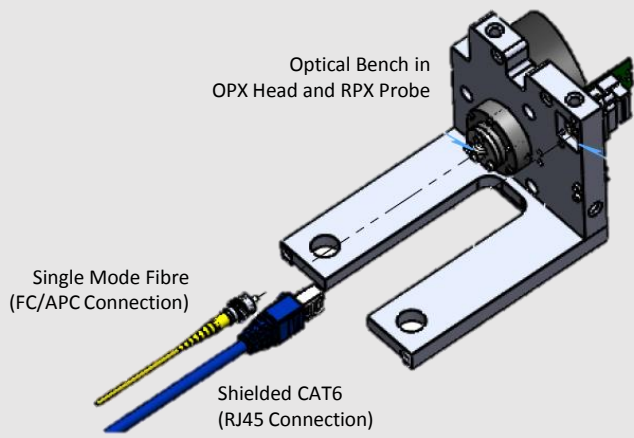


Carbon Monoxide

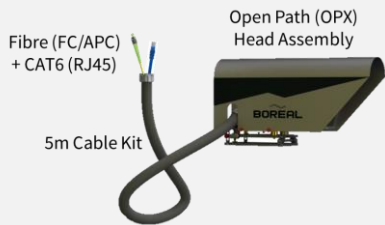
Hi-Range: 0-500,000 ppm-m

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CONNECTING THE MEASUREMENT HEAD TO THE GASFINDER3-DC

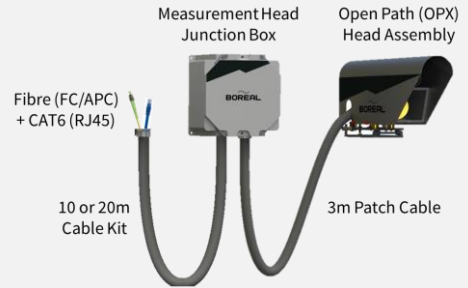


5m CABLE KIT



Kit includes: Includes 5m of Single Stand Fibre Optic and CAT6 Cabling ran in Liquid Tight Flex to connect the Measurement Head(s) to the GasFinder3-DC.

10 or 20m CABLE KIT



Kit includes: Two (2) Measurement Head Junction Boxes, one (1) 3m Patch Cable (Single Strand Fibre Optic and CAT6 Cabling ran in Liquid Tight Flex), and 10 or 20m of Patch Cable (Single Strand Fibre Optic and CAT6 Cabling ran in Liquid Tight Flex).

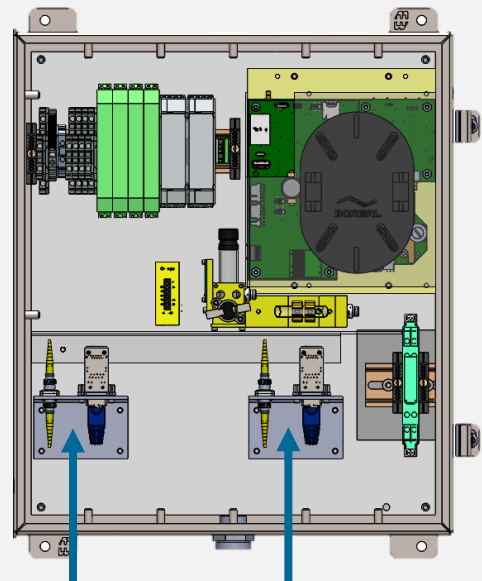
30-100m CABLE LENGTHS



Standard Jacketing: Two (2) Measurement Head Junction Boxes, two (2) 3m Patch Cables (Single Strand Fibre Optic and CAT6 Cabling ran in Liquid Tight Flex), and 30-100m of Standard Jacketed Multi-Strand Fibre Optic and CAT6 cables to be ran in end-user supplied conduit or other mechanical protection.

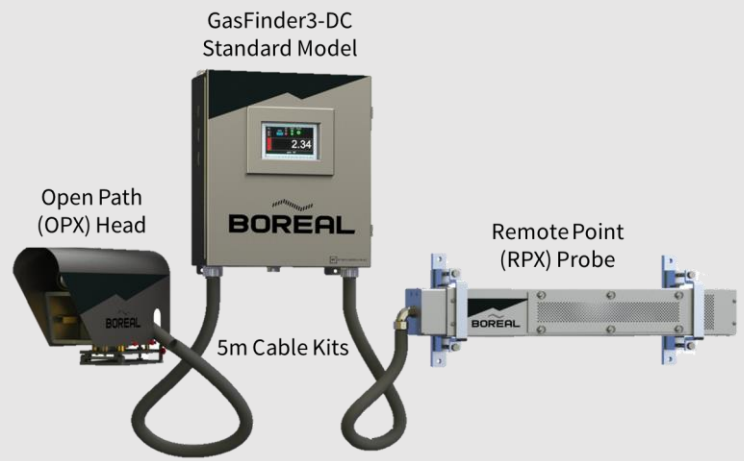
Armour Jacketing: Two (2) Measurement Head Junction Boxes, two (2) 3m Patch Cables (Single Strand Fibre Optic and CAT6 Cabling ran in Liquid Tight Flex), and 30m of Armour Jacketed Multi-Strand Fibre Optic and CAT6 cables.

TERMINATIONS IN ANALYZER

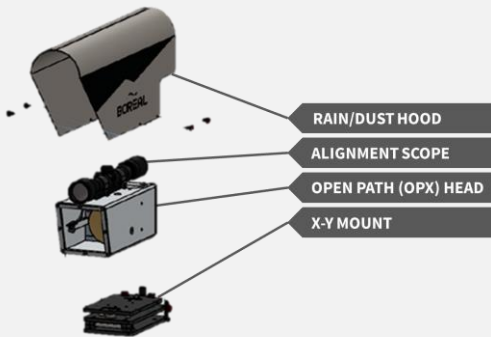


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MEASUREMENT HEAD OPTIONS



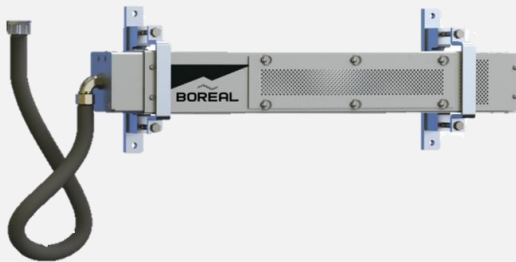
OPEN PATH (OPX) HEAD



What it does: The Open Path (OPX) Head is a transceiver assembly for GasFinder3-DC analyzers that provides a path integrated (or path average) gas concentration in the active measurement path through the ambient atmosphere. This measurement head is suitable for use in Hazardous Areas: Class 1, Zone 1, IIC (Groups A,B,C,D).

How it works: The GasFinder3-DC analyzer can be mounted locally or remotely. Fibre optic cable carries the laser light from the analyzer to the remotely mounted OPX Head (Transceiver). The maximum cable distance between the GasFinder3-DC and the OPX Head is 100m. The active measurement path is formed by the laser passing through the ambient atmosphere and being returned by the retroreflector. The returning laser light is then collected on a photodiode and the signal is carried back to the analyzer via CAT6 cable.

REMOTE POINT (RPX) PROBE



What it does: The RPX Probe is a measurement head for GasFinder3-DC analyzers that provides a path average concentration in the 0.5 m active measurement path (ambient atmosphere). The RPX Probe can be used with the GasFinder3-DC in Hazardous Areas: Class 1, Zone 1, IIC (Groups A,B,C,D).

How it works: The analyzer can be mounted locally or remotely up to a maximum of 100m cable length. Fibre optic cable carries the laser light from the analyzer to the remotely mounted RPX Probe's Transceiver. The active measurement path is formed by the laser passing through the ambient atmosphere and being returned by the heated retroreflector. The returning laser light is then collected on a photodiode and the signal is carried back to the analyzer via CAT6 cable.

STACK/DUCT (SDX) PROBE

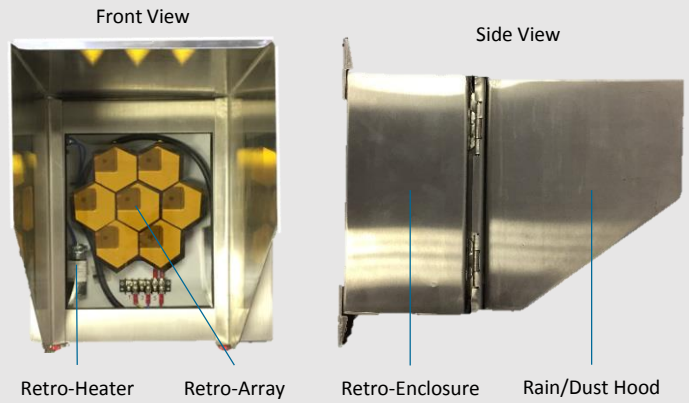


What it does: The Stack/Duct (SDX) Probe enables GasFinder3-DC analyzers to monitor the path average concentration inside a stack or duct with typical path lengths of 0.5 to 20m.

How it works: The analyzer can be mounted locally or remotely up to a maximum of 100m cable length. Fibre optic cable carries the laser light from the GasFinder3-DC to the remotely mounted stack/duct probe (Transceiver). The active measurement path is formed by the laser light passing through the stack/duct and being returned by a retroreflector mounted on the opposite side of the duct. The laser light is then collected on a photodiode and the signal is carried back to the analyzer via CAT6 cable.

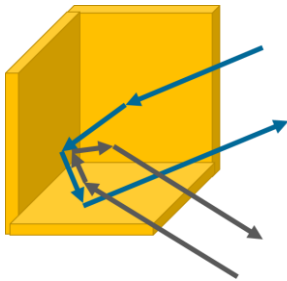
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RETRO-REFLECTORS



HOW IT WORKS

- Boreal Laser uses a **Mono-Static (Transceiver/Retro-Reflector) configuration** with the OPX Head being a **transceiver** and a passive **retro-reflector** returning the laser light to the OPX Head
- A retro is like a section through a cube and has **three faces that form the inside corner of a cube**
- Regardless of the angle of incidence of the incoming beam, the laser light is **always reflected at 180 degrees back to the OPX head**.



WHY USE A RETRO?

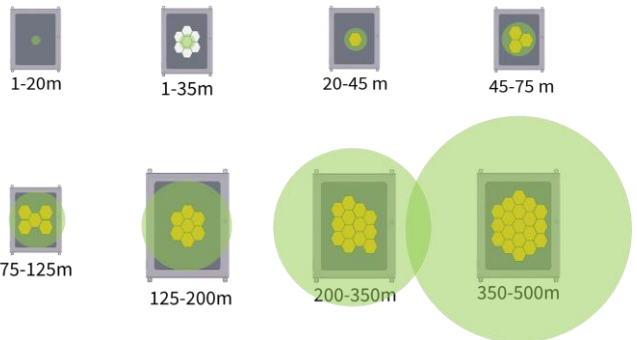
- Mono-Static (Transceiver/Retro-Reflectors)** provides the following benefits over Bi-Static (Transmitter/Receiver):
 - Provides larger target**
 - Only the Transceiver** needs to be precisely aligned
 - Easier to **obtain and maintain** optical alignment
 - Enable Longer Path Lengths**
 - Allow for **lower detectable limits**
- The Retro-Reflector configuration **handles vibration better** than the Transmit/Receive configuration
- The distance between the transceiver (OPX Head) and the Retro-Reflector forms the **physical path length** and **active measurement path**

SPECIFICATIONS

| | | |
|-----------------|-------------------------------------|--|
| Retro-Reflector | 19 Retro Enclosure Material | 304 Stainless Steel or FRP Fiberglass |
| | 20 Retro Enclosure Window Material | Lexan or Mylar (Gas/Application Dependent) |
| | 21 Retro Enclosure Heater | 24 VDC @ 20W (110-240 VAC Available) |
| | 22 Retro Enclosure Cable Entry | None |
| | 23 Retro Enclosure Cable Glands | Supplied by others (as per local electrical standards) |
| | 24 Retro Heater Termination | Mounted with flying leads (to be installed as per local electrical standards) |
| | 25 Retro Array | 2.5" Cornercube at 30 arc-seconds |
| | 26 Path Length Ranges (Retro-Array) | 1-45m (1), 45-75m (3), 75-125m (5), 125-200m (7), 200-350m (12), 350-500m (19) |
| | 27 Rain/Rust Hood | Included |

RETRO-ARRAY

- The table below provides the **recommended minimum array size** for approximate path length ranges that aim to return optimal/enough laser light:



Note: The “typical” laser dot size (shown in green in the above chart) shows how the class 1 (eye-safe conforming to IEC-60825-1) laser beam diverges with distance. The beam diameter can be calculated as follows: path length (m) x 3.5mrad = beam diameter in mm

Important: If the stability of the OPX mounting structure is in doubt with the recommended arrays, then the Retro-Reflector Arrays can easily be oversized to ensure sufficient alignment stability

KEEPING THE WINDOW CLEAR

- Rain/Dust Hoods** come standard on all Retro-Enclosures to keep debris from building up on the Retro Window. The design of the Rain/Dust Hood minimizes the requirement for routine window cleaning which can scratch the window material
- Retro-Heaters** prevent water vapour from condensing on the Retro-Window. Retro-Heaters are recommended if the mounting location of the Retro-Enclosure is outside in either hot (humid) or cold weather (ice, sleet, or snow) climates



BOREAL

BUILD YOUR OWN ANALYZER ASSEMBLY

Model Selection

The GasFinder3-DC is available in **three (3) different model configurations** to best suit the feature and budgetary needs of the application.

- [Basic Model \(GF3-DC-B\)](#)
- [Standard Model \(GF3-DC-S\)](#)
- [Enhanced Model \(GF3-DC-E\)](#)



Analog Isolation

The GasFinder3-DC comes **standard with an Active 4-20mA Non-Isolated Loop**.

- [Non-Isolated Active Loops \(NI\)](#)
- [One \(1\) Isolated Active/Passive Loop \(I1\)](#)
- [Two \(2\) Isolated Active/Passive Loops \(I2\)](#)
- [Three \(3\) Isolated Active/Passive Loops \(I3\)](#)
- [Four \(4\) Isolated Active/Passive Loops \(I4\)](#)
- [Five \(5\) Isolated Active/Passive Loops \(I5\)](#)
- [Six \(6\) Isolated Active/Passive Loops \(I6\)](#)



Area Classification

The GasFinder3-DC can be configured for use in **General Purpose or Hazardous Area** applications.

- [General Purpose Use \(GP\)](#)
- [Class 1 Zone 2 Groups A,B,C,D \(IIC\), T4 \(NA\)](#)



Target Gas

Select **one (1) target gas** per GasFinder3-DC unit.

“Lo-Range” Options:

- [Hydrogen Sulphide \(H2SL\)](#)
- [Hydrogen Fluoride \(HFL\)](#)
- [Ammonia \(NH3L\)](#)
- [Methane \(CH4L\)](#)
- [Carbon Monoxide \(COL\)](#)
- [Carbon Dioxide \(CO2L\)](#)

“Hi-Range” Options:

- [Hydrogen Sulphide \(H2SH\)](#)
- [Hydrogen Fluoride \(HFH\)](#)
- [Ammonia \(NH3H\)](#)
- [Methane \(CH4H\)](#)
- [Carbon Monoxide \(COH\)](#)
- [Carbon Dioxide \(CO2H\)](#)

Single Range Options:

- [Hydrogen Cyanide \(HCN\)](#)
- [Oxygen \(O2\)](#)
- [Ethylene \(C2H4\)](#)
- [Hydrogen Chloride \(HCl\)](#)
- [Acetylene \(C2H2\)](#)



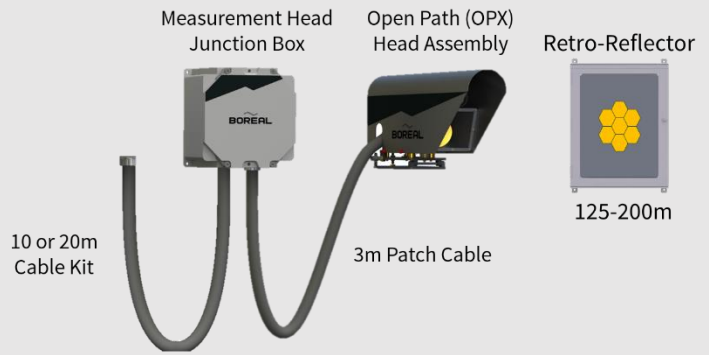
**Tell us
what you
need**

BL-GF3-DC-

Model
Area Classification
Analog Isolation
Target Gas



BUILD YOUR OWN MEASUREMENT HEAD ASSEMBLY



Cable Connection

The Measurement Head Assembly is connected to the GasFinder3-DC via **Single Mode Fibre Optic Cable and Shielded CAT6 cabling**.



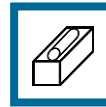
- [5m Cable Kit \(CK\)](#)
- [10 or 20m Cable Kits \(L1 or L2\)](#)
- [30-100m of Standard Jacketed Cabling \(S3-S10\)](#)
- [30-100m of Armour Jacketed Cabling \(A3-A10\)](#)

Retro Array (OPX Head)

A recommended retro array configuration is based on the **required path length of the active measurement path**.



- [1-20m Path Length – Grey Tape Array \(G\)](#)
- [1-35m Path Length – 7 IMOS Array \(M\)](#)
- [20-45m Path Length – One Cornercube Array \(1\)](#)
- [45-75m Path Length – 3 Cornercube Array \(3\)](#)
- [75-125m Path Length – 5 Cornercube Array \(5\)](#)
- [125-200m Path Length – 7 Cornercube Array \(7\)](#)
- [200-350m Path Length – 12 Cornercube Array \(12\)](#)
- [350-500m Path Length – 19 Cornercube Array \(19\)](#)



Measurement Head Assembly

There are a number of measurement heads available for use with the GasFinder3-DC, **select which measurement heads** work best for your application.

- [Open Path Head \(OPX\)](#)
- [Remote Point Probe \(RPX\)](#)
- [Stack/Duct Probe \(SDX\)](#)
- [Extractive Measurement Cell \(EMX\)](#)
- [In-Line Probe \(ILX\)](#)
- [Insertible Probe \(IPX\)](#)



Retro Enclosure (OPX Head)

You have the chose as to **what material the retro enclosure will be made of**. Each enclosure comes standard with a Retro Heater and Rain/Dust Hood.

- [Heated Stainless Steel: 12 VDC \(S12\)](#)
- [Heated Stainless Steel: 24VDC \(S24\)](#)
- [Heated Stainless Steel: 120-220 VAC \(SAC\)](#)
- [Non-Heated Stainless Steel \(SN\)](#)

- [Heated Fibreglass: 12 VDC \(F12\)](#)
- [Heated Fibreglass: 24 VDC \(F24\)](#)
- [Heated Fibreglass: 120-220 VAC \(FAC\)](#)
- [Non-Heated Fibreglass \(FN\)](#)

Tell us what you need



BOREAL

HIGHLIGHTED ACCESSORIES



Alignment Kit

ALIGNMENT KIT



The Alignment Kit is used for the **installation, commissioning, and alignment** of primarily the **OPX and SDX Measurement Heads**. The components within the alignment kit include: Laser Power meter/Visible laser module, Remote Light Meter, variable fibre attenuator, IR Card, fibre cleaning tape.

Note: The Alignment Kit is a useful accessory for OPX and SDX heads but it is **highly encouraged for OPX Head applications path lengths beyond 50m**. For more information please see the Alignment Kit Brochure.

I-BEAM MOUNT FOR OPX HEAD



The **OPX Mounting Structure** is available for mounting one (1) **OPX Head Assembly**. The X-Y Mount can directly mount onto the I-Beam Mounting Structure with the included hardware.

Note: The maximum path length that can be accommodated by the mounting structure depends on the stability of the primary structure on which the GF3-DC is mounted. See **Technical Note 02-3 – Stability of Support Structures** for more information.

RESPONSE CELL



This is typically used in leak detection installations where the target gas is not normally present in the ambient atmosphere. Response cells are used for quality assurance purposes to **validate that the GasFinder instrument is responding appropriately to a nominal concentration of the target gas**. **HF Response Cells are not currently available** in this configuration. For more information please see the Response Cell Brochure.

Note: The validation using a response cell is NOT a field calibration.

IN-LINE RESPONSE CELL



Is typically used in leak detection installations where the Measurement Head might be difficult to access. Response cells are used for quality assurance purposes to **validate that the GasFinder instrument is responding appropriately to a nominal concentration of the target gas**. For more information, please see the “In-Line Response Cell Brochure”.

Note: The validation using a response cell is NOT a field calibration.

BOREAL

HIGHLIGHTED ACCESSORIES

Retro-Reflector



GasFinder3-DC



OPX Head Assembly

I-Beam Mounting Structure

RAIN/DUST ENCLOSURE



For scenarios where **extreme deluge or dust** are expected to be present, the Rain/Dust Enclosure is a recommended accessory to **keep the OPX window clean**. The Rain/Dust Enclosure greatly reduces the build up of dust, condensation and frost on the OPX window.

Note: Includes base plate, pan-tilt mount, and hardware kit for X-Y Mount so **the OPX Assembly can be mounted inside the OPX enclosure**.

TILT-PAN SCANNER



There are two main uses for the Tilt-Pan Scanner with the OPX Head. The first is to enable a **single OPX Head to measure multiple (up to 8) paths** by successively targeting different retro-reflectors. The second is to **maintain optimal alignment by using the Auto Light Optimization algorithm**.

Note: When quoting a Tilt-Pan Scanner either **the Power + Control Centre OR the Remote Monitoring + Control Centre must be selected**.

TERMINATION JUNCTION BOX



While this accessory is optional, it is **strongly encouraged that the Termination Junction Box be included** along with the GasFinder3-DC. The Termination Junction Box includes the din rail and termination terminals required for the power, interface protocols, inputs, and outputs.

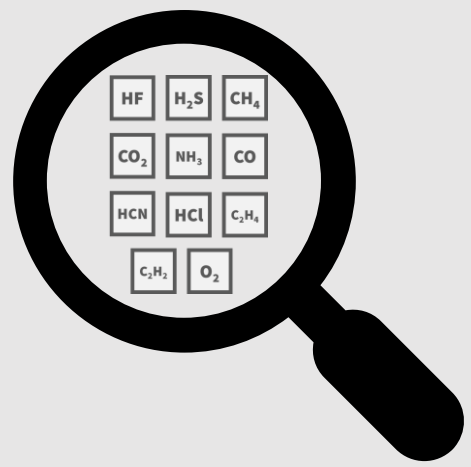
Note: In the scenario that the end-user requires a **120 -220 VAC power supply within Hazardous Area locations**, the AC power supply will be **mounted inside the Termination Junction Box** and not within the GasFinder3-DC.

SUNSHADE



The Sunshade for the GasFinder3-DC is used in applications where **high ambient temperatures** are expected and the GasFinder3-DC will have **direct exposure to sunlight**.

Note: The Sunshade has mounting holes in the same location as on the GasFinder3-DC's enclosure so same mounting hardware can be used (hardware not included).



Gas Specifications

- **Which Target Gas** do you want to detect or monitor?
- **What type of measurement** are you looking to make?
 - e.g. Line-of-Sight/Open-Path, In-Situ, Extractive?
- Besides atmospheric gases, are there **any other gases** likely to be present? If so, **which gases** and in **what concentrations**?
- What is your **desired path length**?
- Do you know the **min./avg./max. concentrations** of the target gas?
- What are your **expected detection or alarm limits**?
- Is there an **estimated plume size**?
- **What is driving the need** for obtaining gas detection or monitoring equipment?

Temperature + Pressure

- **Temperature @ (Min./Avg./Max.):**
 - GasFinder3-DC:
 - Measurement Head:
 - Active Measurement Path:
- **Pressure @ (Min./Avg./Max.):**
 - GasFinder3-DC:
 - Measurement Head:
 - Active Measurement Path:

Static: Manually input a static pressure and temperature

- User can post process the P+T Data

Internal: P+T Module makes measurements within GF3-DC

- Good for diurnal or seasonal relative rates of change

External: P+T Input can take external analog inputs

- Dynamic compensation from Active Measurement Path(s)

Environmental Conditions

- During normal operating conditions, will you be able to **visually see the Retro-Reflector from the Measurement Head**?
- Will there be conditions (e.g. particulates, rain, snow, fog, steam, etc.) that **can completely block the visual line-of-sight** between the Retro-Reflector?
- What is the **relative humidity (min./avg./max.)** in the proposed measurement path location?
- Do you anticipate **installing the GasFinder3-DC within the same environment as the Measurement Head**? If not, what will be the distance between the two?
- Will either the GasFinder3-DC or any of the Measurement Heads be installed in a **Hazardous Environment**? If so, what is the certification requirement?

Additional Services

Below are **additional services that either Boreal Laser or our network of Authorized Local Business Partners** can perform:

- Education Session/ Application Engineering Review
- Site Visit/Assessment
- Equipment Rental
- Equipment Leasing
- Extended Warranty
- Design and Integration Support
- Acceptance Tests
- Commissioning
- Factory Training
- On-Site Training
- Quarterly Data Review Package
- Preventative Maintenance Contracts
- Remote Service Contacts
- On-Site and Factory Technical Services
- Factory Upgrades and Calibrations

For more information, please ask for the “**BLI Additional Services.pdf**” document.

CONTACT US

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

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Request Quote: sales@boreal-laser.com

LOCAL DISTRIBUTION:



THE NEXT STEP:

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

- Select which configurations of **Analyzers, Measurement Heads, and Accessories** are most suitable for your application.
- Answer the Applications Engineering Review questions
- By providing us with the desired configurations and application information, Boreal Laser or our local distributors can **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

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