

# IR-400 Series NDIR Optical Benches



The state-of-the-art IR-400 Series NDIR Optical Benches from Infrared Industries are designed to do highly accurate gas analysis and to meet worldwide gas measurement standards. Selectivity of specific gases is obtained via an optical interference filter. Components are easy to reach and replace, which makes the unit highly serviceable.

The IR-400 series is available in five versions—IR-403, IR-406, IR-408, IR-410, and IR-412—which can fit a wide variety of enclosures. The software and communications protocol are designed to make system integration simple and fast. The command set has the flexibility to provide a variety of output configurations including pneumatic controls, printers, measurement data, and selected displays. The system monitors and corrects for critical operating parameters that affect performance and provides real-time status of the overall integrity and quality of the gas measurement.

The IR-400 Series benches all interface with analog outputs and to a PC for complete control, display, and graphing capability. Recording of the output data within the bench itself allows the measurements to be replayed and analyzed at a later time.

## Product Features/Benefits

### Measurement of Gases

Measure up to three gases simultaneously with NDIR. Two auxiliary sensor inputs are also available (electrochemical, paramagnetic, or other).

### Solid State Detector

Long life, rugged, insensitive to vibration. Low replacement cost.

### Balanced Chopper

High-speed, balanced chopper permits fast system response.

### Imaging Optics

Eliminates the need for costly and fragile gold foil linings in the sample cells, reducing maintenance cost.

### Solid State Electronics

Synchronous demodulation and automatic gain control minimize the influences of temperature and line voltage variations.

### Easy Calibration

Semi-automated, requiring no tool or adjustments to make.

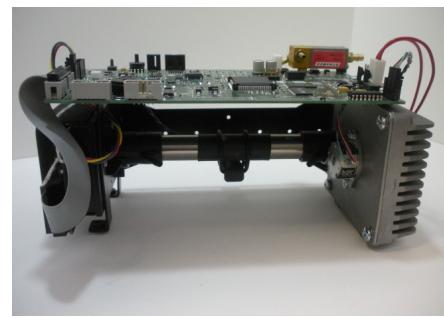
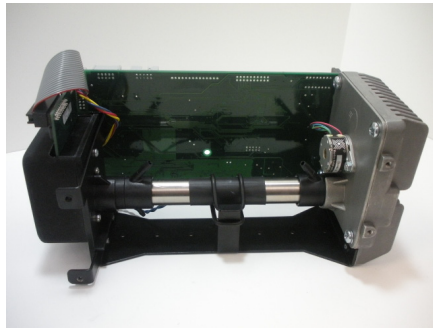
### InfraView Software

You can hook up any of the IR-400 Series benches to your PC and use InfraView Software from Infrared Industries to control, display, and graph the data from the IR-400 Series bench and up to seven additional Infrared Industries gas analyzers or benches.

## APPLICATIONS

- Combustion Analysis
- Well Logging (CH<sub>4</sub>, C<sub>2</sub>H<sub>6</sub>)
- Automotive Emissions Testing
- Motorcycle Tuning
- Stack Gas Monitoring
- Safety Monitoring
- Food Processing
- CO<sub>2</sub> Ventilation
- O<sub>2</sub> Based Ventilation
- Sterilizer (ETO/Freon)
- Respiration Studies
  - Single Breath Lung Diffusion (CO)
  - Breath by Breath (CO<sub>2</sub>)
  - Breath Alcohol (C<sub>2</sub>H<sub>6</sub>O)

# IR-400 Series NDIR OPTICAL BENCHES



## SPECIFICATIONS

### Materials

Stainless steel sample cell, sapphire windows, selected o-rings, and Teflon tubing. For corrosive sample streams, a Kynar sample cell can be provided as an option.

### Output Data Interface

Digital RS-232  
Analog (optional)  
4-20mA(optional)

### Accuracy

+/-1% of full scale

### Repeatability

+/-1% of full scale

### Zero Drift

+/-1% of full scale per 24 hours

### Span Drift

+/-1% of full scale per 24 hours

### Linearity

+/- 0.5% of full scale fitted to theoretical curve

### Noise Level

Less than 1% of full scale

### Warm-Up

Ready for use in 5 minutes; fully stabilized in 15 minutes

### Temperature Range

32 to 158 degrees F (0 - 70 degrees C)

### Ambient Humidity

Up to 95% relative humidity

### Power Requirements

12 VDC  
50 watts maximum

### Dimensions

4.6" x 4.25" and path length of 3", 6", 8", 10", or 12"

### Weight

2 pounds, 1 ounce (907.184 grams)

### Warranty

12 months standard; extended warranty available

To determine compatibility of multiple gases in one multi-gas bench, contact an Infrared Industries applications engineer.