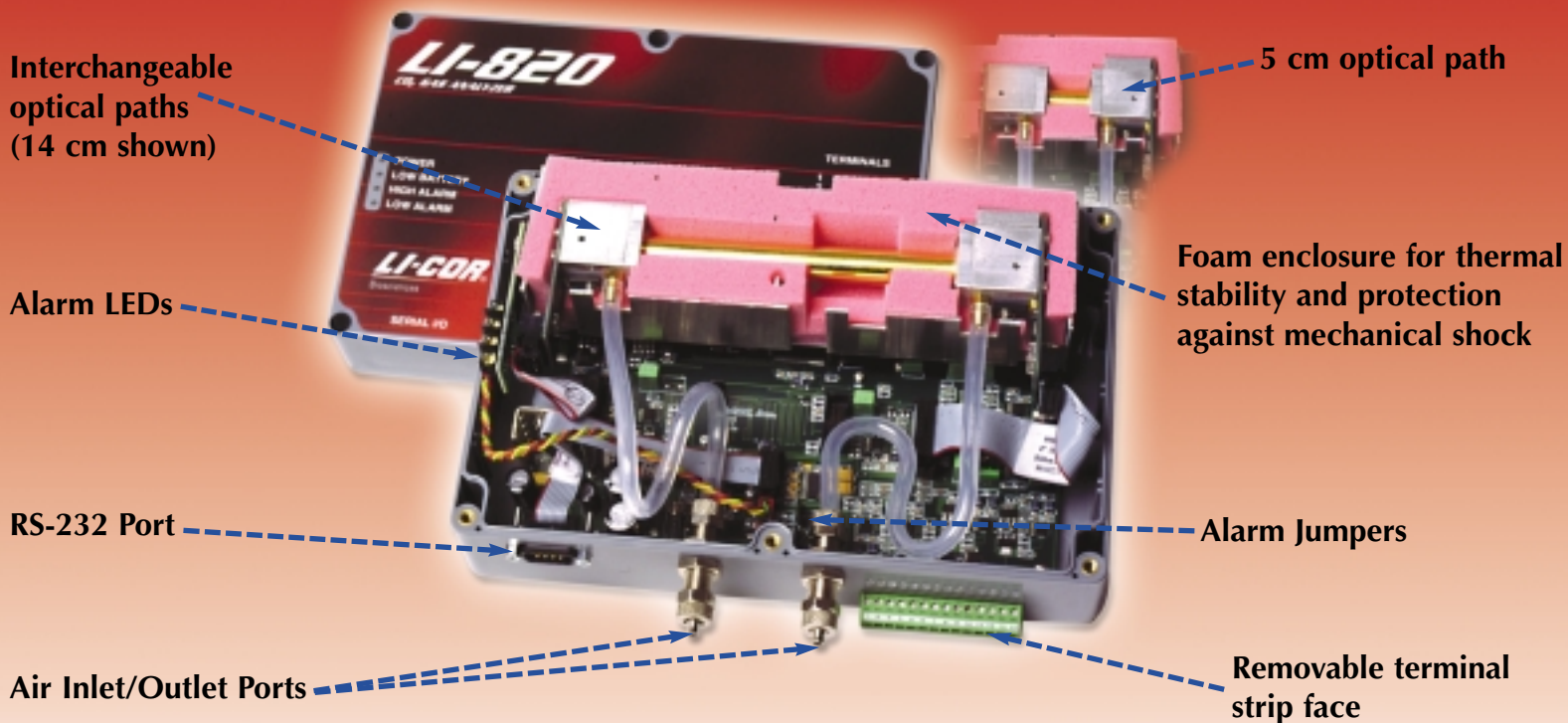


The LI-820 CO₂ Gas Analyzer



LI-COR[®]
Biosciences



For Continuous CO₂ Monitoring Applications

Long recognized as a market leader in high quality, portable infrared gas analyzers for environmental research, LI-COR now introduces the LI-820 CO₂ Gas Analyzer. The LI-820 is an absolute, non-dispersive, infrared (NDIR) gas analyzer based upon a single path, dual wavelength, infrared detection system. This low-cost, low-maintenance analyzer is designed for continuous monitoring of CO₂ over a wide range of environmental conditions.

LI-820 Features

- High accuracy over the entire measurement range due to automatic temperature and pressure compensation
- High stability with low zero and span drift
- 1 ppm signal noise at 370 ppm CO₂.
- Two interchangeable optical benches provide four CO₂ measurement ranges: 0-1,000 or 0-2,000 ppm using the standard 14 cm optical path, and 0-5,000 or 0-20,000 ppm using the optional 5 cm optical path

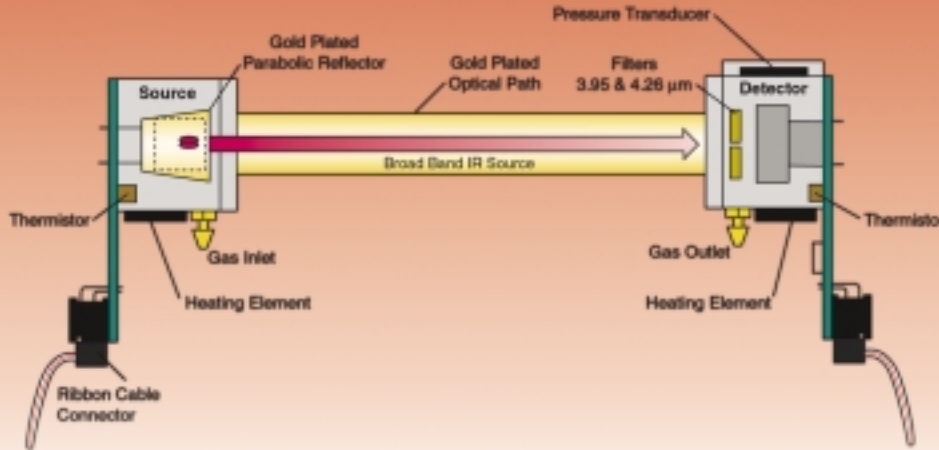
- User cleanable optical paths do not require factory recalibration
- Factory calibration made using gases traceable to WMO and EPA standards
- Operating temperature range of -25 °C to +45 °C
- Maximum flow rate of up to 1 liter/minute
- Compact, lightweight design with low power consumption

User defined high and low alarms are available as voltage outputs, allowing you to control CO₂ within a desired range. For instance, the LI-820 can trigger an exhaust fan in a greenhouse environment. Relays can trigger devices such as automatic dialers, alarms, pumps, and valves in industrial environments. Alarm values can be changed easily using the Windows®-compatible application software included with the LI-820.

Optical Paths

4 cm (standard)

5 cm (optional)



Innovative Optical Path

The optical benches can be swapped quickly and easily. The LI-820 optical path is designed to achieve accurate CO₂ concentration measurement:

- The reflector and optical path are gold plated to increase energy transmission.
- CO₂ is measured in a single path through the use of narrow band optical filters.
- The optical path is in contact with the source and detector housing, achieving thermal equilibrium.
- A pressure transducer reduces variability due to changes in barometric pressure.
- A foam enclosure surrounds the optical bench. This helps maintain a controlled thermal environment as well as protect the bench from mechanical shock and vibration.

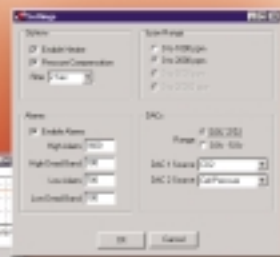
Multiple Data Outputs

The LI-820 includes easy-to-use Windows® interface software for user calibration and data collection. You can easily set operational parameters and logging options, as well as output data to a printable chart. Once parameters have been set, a main window displays CO₂ concentration and status of settings.

A choice of analog outputs (Temperature, Pressure, or CO₂) are selectable on either of the two DAC channels. Linear analog voltage (0-2.5V, 0-5V) and current loop (4-20mA) outputs are available. A removable terminal strip allows easy connection of external recording devices such as the LI-COR LI-1400 Datalogger.



The LI-820 communications software main window displays CO₂ concentration and status of settings



Operational parameters are easily changed in the settings window.

An eXtensible Markup Language (XML) communication protocol provides for complete OEM application integration. XML is a simple text-based language that allows bi-directional communication between the LI-820 and your data acquisition system. As an example, sending this command:

```
<LI820><DATA>?</DATA></LI820>
```

instructs the LI-820 to send the most recent set of data values. The XML communication protocol allows the LI-820 to be polled for data at user-defined intervals, globally reconfigured, or configured to perform automatic calibration routines.

Real-time strip charts can be printed or saved to a file.



Applications

The LI-820 can be used for continuous monitoring of carbon dioxide under a wide range of environmental conditions due to its stability, accuracy, and design. As a result, the instrument can be used for a variety of applications:

- Ocean Sciences
- Plant Sciences
- CO₂ Sequestration
- CO₂ Storage
- Soil CO₂
- Ambient Air Monitoring
- Meteorology
- Agriculture
- Horticulture
- Entomological Respiration Studies
- Volcanology
- Geological Monitoring
- Bioremediation
- TOC Analyzer System
- Particulate Analyzer System
- Greenhouse Control Systems
- Growth Chambers
- Fruit Storage
- Food and Beverage Industry
- Industrial CO₂ Monitoring
- Other Portable Instruments Requiring CO₂ Detection

Specifications*

CO₂			
Measurement Range:	0 – 1,000 ppm, 0 – 2,000 ppm 0 – 5,000 ppm, 0 – 20,000 ppm	Measurement Principle:	Non-Dispersive Infrared
Accuracy:	<2.5% of reading with 14 cm bench; 4% of reading with 5 cm bench	Traceability:	Traceable gases to WMO standards from 0 to 3,000 ppm. Traceable gases to EPA protocol gases from 3,000 to 20,000 ppm
Calibration Drift		Pressure Compensation Range:	15 kPa – 115 kPa
Zero Drift⁽¹⁾:	<0.15 ppm/°C	Maximum Gas Flow Rate:	1 liter/min
Span Drift⁽²⁾:	<0.03%/°C	Output Signals:	Two Analog Voltage (0-2.5V or 0-5V) and Two Current (4-20mA) Digital: TTL (0-5V) or Open Collector
Total Drift⁽³⁾ at 370 ppm:	<0.4 ppm/°C	DAC Resolution:	14-bits across user-specified range
RMS Noise at 370 ppm with 1 sec signal filtering:	<1 ppm	Source Life:	18,000 Hours
		Power Requirements:	Input Voltage 12-30 VDC; 1.2A @ 12V (14W) maximum during warmup with heaters on 0.3A @ 12V (3.6W) average after warmup with heaters on
		Operating Temperature Range:	-20 to 45°C
		Relative Humidity Range:	0 to 95% RH, Non-Condensing
		Dimensions:	8.75" x 6" x 3" (22.23 x 15.25 x 7.62 cm)
		Weight:	2.2 lbs. (1 kg)

(1) Zero Drift is the change with temperature at 0 concentration.

(2) Span Drift is the residual error after re-zeroing following a temperature change.

(3) Total Drift is the change with temperature without re-zeroing or re-spanning.

Ordering Information

LI-820 CO₂ Analyzer:

Includes LI-820 CO₂ Analyzer with 14 cm optical path (0-2,000 ppm), spare parts kit, 2 disposable air filters, cleaning kit, Windows® communications software, and a 9-pin RS-232 communications cable. A power source is required.



800-401 AC Power Supply (110 VAC):

18 VDC output, 800 mA, for indoor use only. An AC power supply is required if an alternate power supply is not available. See *Power Requirements* in the specifications.

800-905 Optional 5 cm Optical Path:

Everything needed to replace the standard 14 cm optical path. The 5 cm optical path provides a measurement range of 0-20,000 ppm.

* Specifications subject to change without notice.

LI-COR is an ISO 9001 registered company. © 2003 LI-COR, inc. LI-COR is a trademark of LI-COR, inc.

LI-COR®

Biosciences

4421 Superior Street • P.O. Box 4425 • Lincoln, Nebraska 68504 USA
North America: 800-447-3576 • International: 402-467-3576
FAX: 402-467-2819 • www.licor.com

Doc #980-07505
1203