

# LI-8150 Multiplexer

For the LI-8100A Automated Soil CO<sub>2</sub> Flux System

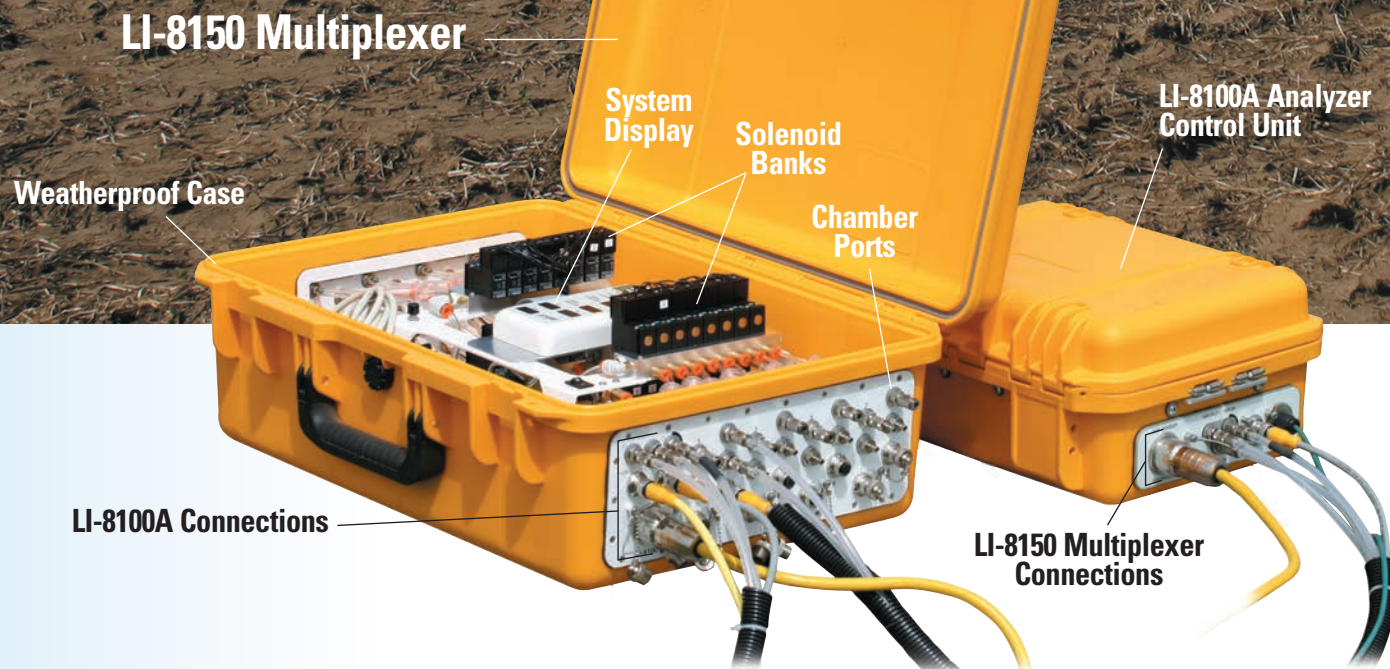
Connect Multiple Chambers for Spatial  
and Temporal Sampling



**LI-COR**<sup>®</sup>



# LI-8150 Multiplexer

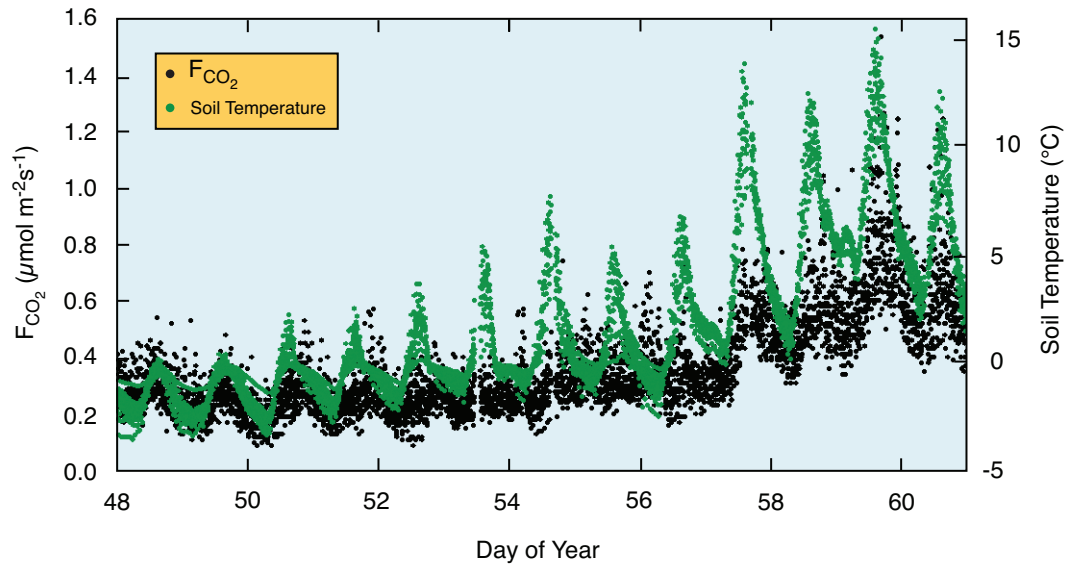


## The Multiplexed System

- Connect up to 16 chambers
- 30 m diameter coverage
- Auxiliary sensor connections
- NDIR CO<sub>2</sub>/H<sub>2</sub>O analyzer in the LI-8100A ACU
- Single gas analyzer prevents measurement bias

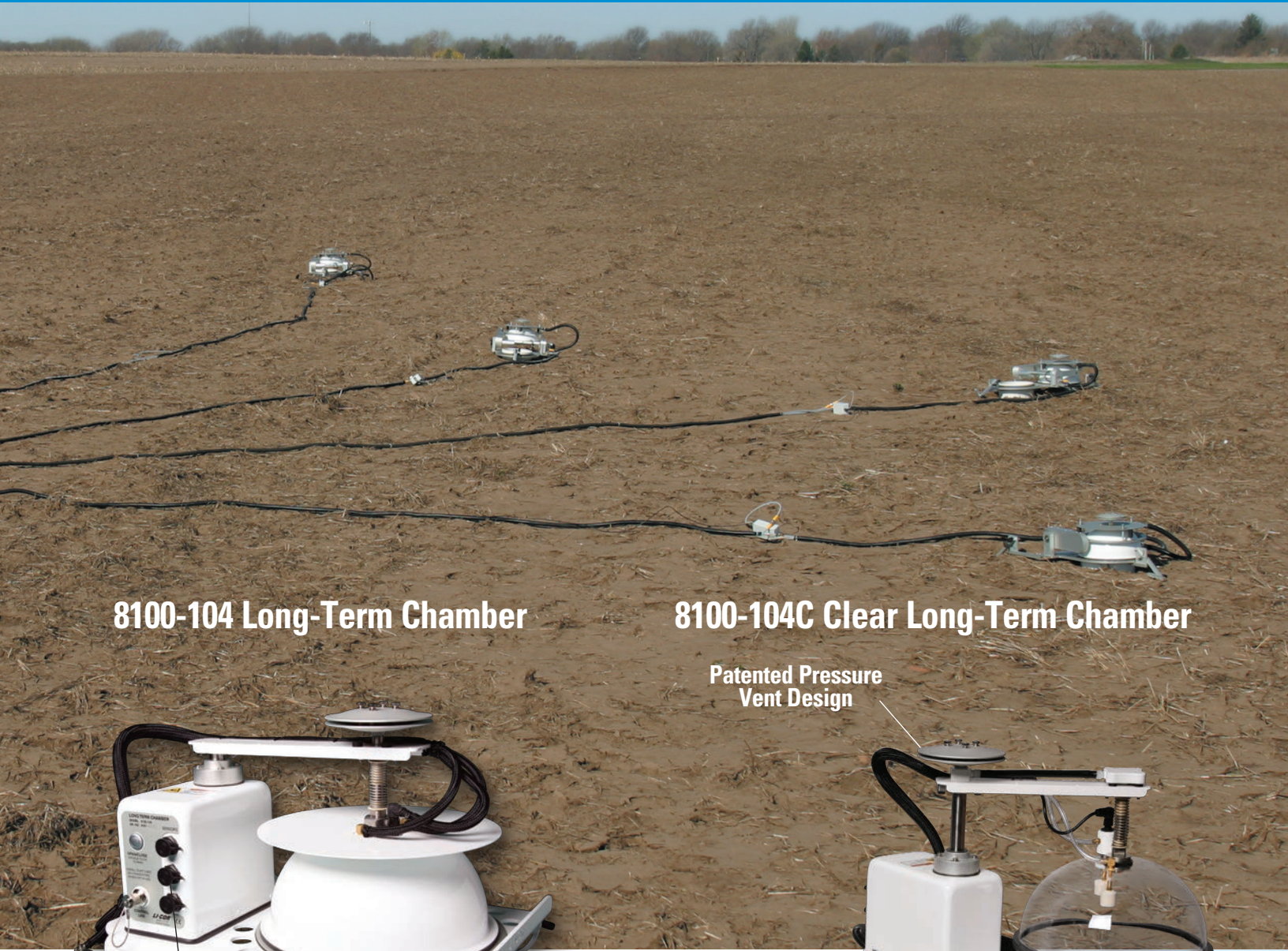


# Spatial and Temporal Measurement



An example of time series data for soil CO<sub>2</sub> flux ( $F_{\text{CO}_2}$ ) obtained with a 16-chamber system at Lincoln, Nebraska. Soil temperature data at a depth of 5 cm from each chamber are also shown. For more information on data collected from a multiplexed system, visit [www.licor.com/multiplex](http://www.licor.com/multiplex).



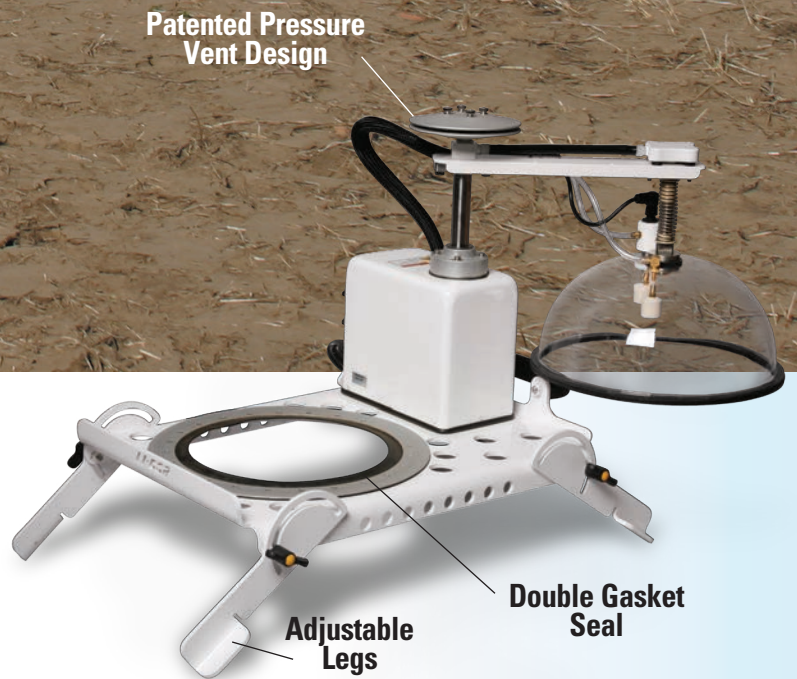


**8100-104 Long-Term Chamber**

**8100-104C Clear Long-Term Chamber**



**Weatherproof Connectors**



**Patented Pressure Vent Design**

**Adjustable Legs**

**Double Gasket Seal**

## The Long-Term Chambers

- Chamber pressure tracks ambient pressure with patented vent design
- Can be deployed on uneven surfaces and slopes
- Slow chamber movement minimizes disturbance to soil CO<sub>2</sub> concentrations
- -20 to 45°C operating temperature range
- Clear chamber for net ecosystem carbon exchange



# The Multiplexed LI-8100A System

## Advantages

Designed for use with the LI-8100A Automated Soil CO<sub>2</sub> Flux System, the LI-8150 Multiplexer allows up to 16 chambers to be connected.

- Choose from 8 or 16 port configurations
- Durable, weatherproof connectors and case
- High flow, low power, long-life solenoid valves
- Filter assemblies clean incoming air
- LED indicator panel provides diagnostic information
- System software for leak testing without the need for additional hardware

## Modular Design

As your research needs grow, so can the LI-8100A system. Its modular design allows for additional chambers to be added at any time. The pictures at right demonstrate the spatial flexibility of the system.

An 8-port LI-8150 can operate up to 8 chambers and can easily be upgraded to 16 ports for 8-16 chambers.

Regardless of the number of chambers you use, the LI-8100A Analyzer Control Unit has plenty of data storage capacity. Data can be stored on the instrument's internal flash memory or on a removable compact flash card.

Placement of chambers is flexible to within 15 meters of the LI-8150 Multiplexer.

Auxiliary sensors, such as soil temperature and moisture probes, can be connected at each chamber.



LI-8150 Multiplexer (left), four long-term chambers (background), LI-8100A Analyzer Control Unit (right), communication through wireless PDA.



Four chamber system



Eight chamber system

Additional uses for the LI-8150 Multiplexer:

- Vertical CO<sub>2</sub> Profiling Studies: [www.licor.com/profile](http://www.licor.com/profile)
- Flask Sampling: [www.licor.com/flask](http://www.licor.com/flask)

## Ordering

**LI-8150-8 Eight Port Multiplexer.** Connect up to eight Long-Term Chambers or gas sampling lines. Includes Spares Kit, DC Power Cable, and Cable/Hose Assembly for connection to LI-8100A Analyzer Control Unit. LI-8100A, Chambers, and Power Supply not included. (Note: LI-8150 powers the LI-8100A Analyzer Control Unit when connected.)

**LI-8150-16 Sixteen Port Multiplexer.** Connect up to sixteen Long-Term Chambers or gas sampling lines. Includes Spares Kit, DC Power Cable, and Cable/Hose Assembly for connection to LI-8100A Analyzer Control Unit. LI-8100A, Chambers, and Power Supply not included. (Note: LI-8150 powers the LI-8100A Analyzer Control Unit when connected.)

### System Packages

**LI-8100-M1 Four Chamber Multiplexed Package**  
Includes LI-8100A Analyzer Control Unit, LI-8150-8 Multiplexer, four 8100-104 Long-Term Chambers, and four 8150-705 Cable/Hose Assemblies. Auxiliary sensors sold separately.

**LI-8100-M2 Four Chamber Multiplexed Package**  
Includes LI-8100A Analyzer Control Unit, LI-8150-16 Multiplexer, four 8100-104 Long-Term Chambers, and four 8150-705 Cable/Hose Assemblies. Auxiliary sensors sold separately.

**LI-8150-M3 Four Chamber Multiplexed Package**  
Includes LI-8150-8 Multiplexer, four 8100-104 Long-Term Chambers, and four 8150-705 Cable/Hose Assemblies. Auxiliary sensors sold separately.

**LI-8150-M4 Four Chamber Multiplexed Package**  
Includes LI-8150-16 Multiplexer, four 8100-104 Long-Term Chambers, and four 8150-705 Cable/Hose Assemblies. Auxiliary sensors sold separately.

**LI-8100-P8 Eight Chamber Multiplexed Package**  
Includes LI-8100A Analyzer Control Unit, LI-8150-8 Multiplexer, eight 8100-104 Long-Term Chambers, eight 8150-705 Cable/Hose Assemblies, eight 8150-203 soil temperature thermistors and two year extended warranties for the LI-8100A and LI-8150-8.

**LI-8100-P16 Sixteen Chamber Multiplexed Package**  
Includes LI-8100A Analyzer Control Unit, LI-8150-16 Multiplexer, sixteen 8100-104 Long-Term Chambers, sixteen 8150-705 Cable/Hose Assemblies, sixteen 8150-203 soil temperature thermistors and two year extended warranties for the LI-8100A and LI-8150-16.

**LI-8100TR Automated Soil CO<sub>2</sub> Flux and Atmospheric Monitoring System- Teaching/Research Package**  
(Available in North America Only)  
Includes LI-8100A Analyzer Control Unit, LI-8150-8 Multiplexer, 8100-103 20 cm Survey Chamber, four 8100-104 Long-Term Chambers, 8100-704 Cable/Hose Assembly,

8150-770 AC power supply, four 8150-705 Cable/Hose Assemblies, four 8150-203 soil temperature thermistors, 8100-202 Soil Moisture Probe, 8100-201 Soil Temperature Probe, 8150-662 Profiling Kit, 8100-664 Trace Gas Sampling Kit, Five 8150-250 Bev-a-line Rolls, 8100-564 Wireless Communications Package, three 6400-03 Batteries, LI-6020 Battery Charger, three 8100-510 DVD Training Sets and two year extended warranties for the LI-8100A and LI-8150-8.

### Chambers

**8100-104 Long-Term Chamber**  
Designed for use with the LI-8150 Multiplexer. 8150-705 cable/hose assembly required for multiplexing.

**8100-104C Clear Chamber**  
Designed to quantify the net carbon exchange between the ground and atmosphere. 8150-705 cable/hose assembly required for multiplexing.

### Accessories

. 3 m cable, bare lead termination. For user-supplied DC power source.

**8150-770 AC Power Supply.** Includes connection to LI-8150.

**8150-705 Cable/Hose Extension Assembly.** 15 meters in length. Use only one extension per chamber.

**8150-202 Soil Moisture Probe.** (ECH<sub>2</sub>O) Volumetric water content, 0 to saturation.

**8150-203 Soil Temperature Thermistor.** For use with multiplexed 8100-101 Long-Term Chambers.

**8150-204 Theta Moisture Probe.** Model ML2, for use with multiplexed long-term chambers.

**8150-916 Eight to Sixteen Port Upgrade.** Upgrade an eight port Multiplexer to sixteen ports. Includes factory installation.

**8150-916-1 Eight to Sixteen Port Field Upgrade Kit.** Field installation kit includes control panel assembly, solenoid/valve bank assemblies, Multiplexer module PCA boards, filter assemblies, necessary hardware, and upgrade instruction document.

**8150-662 Atmospheric Profiling Kit.** Used for performing atmospheric profiling studies using LI-8150 Multiplexer and LI-8100A Analyzer Control Unit. Includes hardware for 4 ports (Bev-a-line tubing 8150-250 sold separately).

**8150-670-8 Flask Sampling Kit** (8 ports). Includes hardware needed to connect up to eight flasks to the LI-8150 Multiplexer.

**8150-670-16 Flask Sampling Kit** (16 ports). Includes hardware needed to connect up to sixteen flasks to the LI-8150 Multiplexer.

## LI-8150 Specifications\*

### LI-8150 Multiplexer

**Dimensions:** 40.6 cm L x 57.2 cm W x 21.1 cm H (16" x 22.5" x 8.3")

**Weatherproof Rating:** Tested to IEC IP55 standard

**Weight**  
8 port version: 9.4 kg (20.7 lb)  
16 port version: 11.2 kg (24.8 lb)

**Operating Range**  
**Temperature:** -20 to 45 °C  
**Humidity:** 0 to 95% RH, non-condensing

**Coverage Area**  
**Max radius from LI-8150 to chambers:** 15.0 m (49.2 ft)  
**Max diameter of measurement circle:** 30.0 m (98.4 ft)

**Plumbing**  
**Flow rate to/from chambers:** ~3.0 lpm  
**Flow rate between LI-8100A and LI-8150:** ~2.0 lpm  
**LI-8150 Pump Type:** Diaphragm

**Display**  
**Four LED Indicators:** Power, Check Error Log, Manual Chamber Activation Indicator, Active Chamber Error  
**Five 7-segment LED Displays:** Active Chamber, Active Valve, three voltage channel indicators

**Power Requirements:**  
10.5 – 14.5 VDC (120 VAC and 240 VAC with optional power supply)  
Power supplied through the LI-8150; LI-8150 powers the LI-8100A when connected

See example below for total system power requirements

LI-8100A + LI-8150 + n Chambers	Typical Operation		At Startup (IRGAs warming, chambers actuated)	
	Amps @ 12.5VDC	Watts	Amps @ 12.5VDC	Watts
n Chambers				
2	2.0	25	2.0	25
4	2.1	26	2.2	28
8	2.1	27	2.3	29
16	2.3	29	2.5	31

### Long-Term Chambers (8100-104/C)

**System Volume:** 4076.1 cm<sup>3</sup>  
**Soil Area Exposed:** 317.8 cm<sup>2</sup> (49.3 in.<sup>2</sup>)  
**Dimensions:** 48.3 cm L x 38.1 cm W x 33.0 cm H (19" x 15" x 13")

**Weatherproof Rating:** Tested to IEC IP55 standard

**Air temperature thermistor**

**Operating Range:** -20 to 45 °C  
**Accuracy:** ± 0.5 °C over 0 to 70 °C

**Cable length:** 15 m, purchased separately  
**Weight:** 5.9 kg (13 lb.)

\*Specifications subject to change without notice.



LI-COR Biosciences

#### Global Headquarters

4647 Superior Street  
Lincoln, Nebraska 68504

Phone: +1-402-467-3576  
Toll free: 800-447-3576  
Fax: +1-402-467-2819

envsales@licor.com  
envsupport@licor.com

www.licor.com/env

#### Regional Offices

##### LI-COR GmbH, Germany

Serving Andorra, Albania, Belarus, Cyprus, Estonia, Germany, Iceland, Latvia, Lithuania, Liechtenstein, Malta, Moldova, Monaco, San Marino, Ukraine, and Vatican City.

LI-COR Biosciences GmbH  
Siemensstraße 25A  
61352 Bad Homburg  
Germany

Phone: +49 (0) 6172 17 17 771  
Fax: +49 (0) 6172 17 17 799

envsales-gmbh@licor.com  
envsupport-gmbh@licor.com

##### LI-COR Ltd., United Kingdom

Serving Denmark, Finland, Ireland, Norway, Sweden, and UK.

LI-COR Biosciences UK Ltd.  
St. John's Innovation Centre  
Cowley Road  
Cambridge  
CB4 0WS  
United Kingdom

Phone: +44 (0) 1223 422102  
Fax: +44 (0) 1223 422105

envsales-UK@licor.com  
envsupport-UK@licor.com

The LI-COR board of directors would like to take this opportunity to return thanks to God for His merciful providence in allowing LI-COR to develop and commercialize products, through the collective effort of dedicated employees, that enable the examination of the wonders of His works.

"Trust in the LORD with all your heart and do not lean on your own understanding. In all your ways acknowledge Him, and He will make your paths straight."

—Proverbs 3:5,6

LI-COR is a registered trademark of LI-COR, Inc. All trademarks belong to their respective owners. These third parties do not endorse, are not affiliated with, and do not sponsor the LI-8150 or other LI-COR products. Copyright 2015, LI-COR, Inc. Printed in the U.S.A. The LI-8100A is covered by U.S. Patents 7,509,836; 7,568,374; 7,748,253; 7,856,899, patents pending and foreign equivalents.