

# LI-7500DS Open Path CO<sub>2</sub>/H<sub>2</sub>O Analyzer Specifications

The LI-7500DS provides high speed, high precision measurements of CO<sub>2</sub> and H<sub>2</sub>O in ambient air. It is designed for use in eddy covariance systems to measure gas exchange over the terrestrial landscape. This document describes the performance characteristics of a typical LI-7500DS.

## CO<sub>2</sub> Measurements

**Calibration Range:** 0 to 3000  $\mu\text{mol mol}^{-1}$

**Accuracy:** Within 1% of reading

**Zero Drift (per °C):**

±0.1 ppm typical

±0.3 ppm maximum

**RMS Noise (typical @ 370 ppm CO<sub>2</sub>):**

@5 Hz: 0.08 ppm

@10 Hz: 0.11 ppm

@20 Hz: 0.16 ppm

**Gain Drift (% of reading per °C @ 370 ppm):**

±0.02% typical

±0.1% maximum

**Direct Sensitivity to H<sub>2</sub>O (mol CO<sub>2</sub> mol<sup>-1</sup> H<sub>2</sub>O):**

±2.00E-05 typical

±4.00E-05 maximum

## H<sub>2</sub>O Measurements

**Calibration Range:** 0 to 60 mmol mol<sup>-1</sup>

**Accuracy:** Within 1% of reading

**Zero Drift (per °C):**

±0.03 mmol mol<sup>-1</sup> typical

±0.05 mmol mol<sup>-1</sup> maximum

**RMS Noise (typical @ 10 mmol mol<sup>-1</sup> H<sub>2</sub>O):**

@5 Hz: 0.0034 mmol mol<sup>-1</sup>

@10 Hz: 0.0047 mmol mol<sup>-1</sup>

@20 Hz: 0.0067 mmol mol<sup>-1</sup>

**Gain Drift (% of reading per °C @ 20 mmol mol<sup>-1</sup>):**

±0.15% typical

±0.30% maximum

**Direct Sensitivity to CO<sub>2</sub> (mol H<sub>2</sub>O mol<sup>-1</sup> CO<sub>2</sub>):**

±0.02 typical

±0.05 maximum

## General

**Fundamental Gas Sampling Rate:** 150 Hz

**Bandwidth:** 5, 10, or 20 Hz; software selectable

**Type:** Absolute, open-path, non-dispersive spectroscopy

**Detector:** Thermoelectrically cooled lead selenide

**Path Length:** 12.5 cm (4.92")

**Air Temperature Thermistor**

**Accuracy:** ±0.3 °C

**Range:** -20 to 70 °C

**Resolution:** 0.003 °C @ 25 °C

**Signal Noise:** 0.002 °C RMS at 25 °C and 20 Hz

**Pressure Sensor**

**Accuracy:** 0.4 kPa

**Range:** 50 to 110 kPa

**Resolution:** 0.006 kPa

**Outputs:** Ethernet

**Operating Temperature Range:** -25 to 50 °C (-40 to 50 °C verification on request)

**Relative Humidity Range:** 0-95% (non-condensing)

**Weatherproof Rating:** Tested to IEC IP65 standard

**Power Consumption:**

4 W steady state @ 25 °C

8 W maximum over operating temperature range

15 W maximum during warm-up (up to 4 minutes)

**Input Voltage:** 8 to 34 VDC

**Head:**

**Size:** Diameter 6.5 cm, Length 30 cm.

**Weight:** 0.67 kg; 1.3 kg with mounting post.

**Head Cable Length:** 200 cm

**DSI Box:**

**Size:** 13.24 × 14.64 × 6.24 cm (H × W × D)

**Weight:** 0.93 kg

## SmartFlux System

**Data Inputs:** Three RS-232/422/485 serial ports

**Network Communication:** Ethernet (TCP/IP)

**Data Storage:** USB port for 16 GB industrial grade flash drive

**Operating Temperature Range:** -25 to 50 °C (-40 to 50 °C verification on request)

**GPS Antenna Operating Temperature Range:** -30 °C to 80 °C

**Relative Humidity Range:** 0 to 95% (non-condensing)

**Input Voltage:** 10 to 30 VDC

**Power Consumption:** 1.5 W typical (3.5 W max; excluding pass-through power)

**Max Current Passed Through to the Anemometer:** 2 A

**Dimensions with DIN Clip:** 149 x 100 x 37 mm (LxWxH)

**Weight with GPS:** 1.32 lb. (0.59 kg)

**GPS Antenna Diameter:** 61 mm (2.4 in.)

**GPS Cable Length:** 5 m

**GPS Accuracy:**

**GPS Standard Positioning Service:** <15 m; 95% typical

**WAAS:** <3 m; 95% typical

## LI-COR Biosciences

### Global Headquarters

LI-COR, Inc.

4647 Superior Street  
Lincoln, Nebraska 68504  
Phone: +1-402-467-3576  
Toll free: 800-447-3576  
(U.S. and Canada)  
Fax: +1-402-467-2819  
envsales@licor.com  
envsupport@licor.com  
www.licor.com/env

**LI-COR Distributor Network:**

www.licor.com/env/distributors

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979-16817984-16925

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LI-COR GmbH, Germany

*Serving Andorra, Albania, Cyprus, Estonia, France, 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