

# LI-7810 CH<sub>4</sub>/CO<sub>2</sub>/H<sub>2</sub>O Trace Gas Analyzer Specifications

The LI-7810 CH<sub>4</sub>/CO<sub>2</sub>/H<sub>2</sub>O Trace Gas Analyzer is a laser-based instrument that uses OF-CEAS in combination with numerous patented technologies to measure CH<sub>4</sub> in air with high precision and stability. This document describes the performance specifications of the LI-7810.

## General

**Measurement Technique:** OF-CEAS (Optical Feedback – Cavity Enhanced Absorption Spectroscopy)

**Measurement Rate:** 1 sample per second (1 Hz)

**Optical Cavity Volume:** 6.41 cm<sup>3</sup>

**Flow Rate:** 250 sccm nominally; 70 sccm with reduced flow rate kit

**Total Weight:** 10.5 kg (including batteries)

**Case Dimensions:** 51 cm × 33 cm × 18 cm (L × W × H)

**Operating Temperature Range:** -25 °C to 45 °C (without solar load, under normal operating conditions)

**Operating Humidity Range:** 0 to 85% RH (non-condensing, without solar load, under normal operating conditions)

**Sample Line Humidity:** 0 to 99.9% non-condensing

**Operating Pressure Range:** 70 to 110 kPa

**Connectivity:** Ethernet and Wi-Fi (not available in some countries)

**Wi-Fi Compatibility:** 2.4 GHz, 802.11 a/b/g/n/ac

**Power Consumption:**

**Steady State Operation:** 22 Watts at 25 °C without batteries charging

**Warmup:** Up to 65 W without batteries charging; up to 100 W with batteries charging

**Off:** Up to 2.3 W when powered from pins 3 and 4 without batteries charging; up to 0.2 W when powered from pins 1 and 5 without batteries charging

**Power Supply Requirements:**

**Pins 1 and 5 (24 VDC Input):** Minimum 6 A at 24 V

**Pins 3 and 4 (10.5 to 33 VDC Input):** Minimum 14 A at 10.5 VDC; 6 A at 24 VDC

**Power Supply:** Universal Power Adapter (Input: 100 to 240 VAC, 50-60 Hz; Output: 24 VDC)

**Battery Life:** 8 hours typical with 2 batteries

**Pollution Degree:** 2

**Over-voltage Category:** II

**Class 1 Laser Product**

## CH<sub>4</sub> Measurements

**Response Time (T<sub>10</sub> - T<sub>90</sub>):** ≤ 2 seconds from 0 to 2 ppm

**Range:** 0 to 100 ppm

**Precision (1σ):**  
0.60 ppb at 2 ppm with 1 second averaging  
0.25 ppb at 2 ppm with 5 second averaging

**Maximum Drift:** < 1 ppb per 24-hour period

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

**Range:** 0 to 10,000 ppm

**Precision (1σ):**  
3.5 ppm at 400 ppm with 1 second averaging  
1.5 ppm at 400 ppm with 5 second averaging

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

**Range:** 0 to 60,000 ppm

**Precision (1σ):**  
45 ppm at 10,000 ppm with 1 second averaging  
20 ppm at 10,000 ppm with 5 second averaging



### **LI-COR Biosciences**

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

**LI-COR Distributor Network:**  
[www.licor.com/env/distributors](http://www.licor.com/env/distributors)

### **Regional Offices**

**LI-COR Biosciences GmbH**  
Siemensstraße 25A  
61352 Bad Homburg  
Germany  
Phone: +49 (0) 6172 17 17 771  
envsales-gmbh@licor.com

### **LI-COR Biosciences UK Ltd.**

St. John's Innovation Centre  
Cowley Road  
Cambridge  
CB4 0WS  
United Kingdom  
Phone: +44 (0) 1223 422102  
envsales-UK@licor.com

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