



Preprogrammed and low power Complete, Integrated System

Measurements

Primary:

- CO₂ concentration at each intake
- H₂O concentration at each intake
- System diagnostic word

Secondary:

- Sample flow rate
- Sample cell pressure
- Sample cell temperature
- Other control variables

Overview

The AP200 is a complete, integrated CO₂ and H₂O atmospheric profile system. It measures carbon dioxide (CO₂) and water vapour (H₂O) concentration from up to eight intakes, which are normally spaced along the height of a tower to give a vertical profile.

The AP200 is often used in conjunction with an eddy-covariance system to measure the storage term and give a more complete measure of the surface gas exchange.

Benefits and Features

- › Provides a fully integrated system
- › Requires only 13 W (average at 25 °C and 12 Vdc)
- › Contains a Campbell Scientific CR1000 Measurement and Control Datalogger
- › Automatically performs CO₂ span and zero
- › Automated temperature and pressure control
- › Datalogger program included



Standard Components

- › #28547 AP200 System Enclosure
- › #27693 Heated Sample Intake Assemblies (4, 6, or 8)

Optional Components

- › LI-840A Analyzer
- › NL115 Ethernet Interface and CompactFlash Module
- › CFM100 CompactFlash Module
- › CR1000KD mounted in enclosure
- › Enclosure mounts (tower, tripod, etc.)

Common Accessories

- › #15702 Tubing
- › #9922 20 AWG Power Cable
- › CFMC1G 1 GB CompactFlash card
- › 107 Temperature Probes
- › Met20 Radiation Shields

Other Accessories

We offer a variety of tower and tripod sizes. Several sensor-mounting options are available:

- › UT920, UT930—6, 10 m instrument tower for permanent installations
- › CM110, CM115, CM120—3, 4, 6 m Stainless-Steel Instrument Tripod
- › CM10—2-3 m Galvanized-Steel Instrument Tripod

Key for Typical Installation

- 1 #27693 Heated Sample Intake Assemblies (4, 6, or 8)
- 2 #9922 20 AWG Power Cable
- 3 #28547 AP200 System Enclosure
- 4 #15702 Tubing
- 5 Zero/Span Tanks and Regulators (not included)
- 6 Instrument Tower (sold separately)



Specifications

System Enclosure

- › Operating Temperature: -30° to 45 °C
- › Dimensions: 52.1 x 44.5 x 29.7 cm (20.5 x 17.5 x 11.7 in.)

Weight

- › AP200 base model: 15.9 kg (35 lb)
- › Accessories
 - LI-840A: 1 kg (2.3 lb)
 - CR1000KD: 0.3 kg (0.7 lb)
 - CFM100/NL115: 0.2 kg (0.4 lb)

Power Requirements

- › Voltage: 10 to 16 Vdc
- › Average Power (at 25°C)¹: 13 W
- › Maximum Power (cold startup): 3.75 A (45 W)

Pump

- › Pump type: Dual-head diaphragm pump with a brushless DC motor
- › Mounting: Mounted in an insulated, temperature-controlled box inside system enclosure
- › Control: Pumping speed is automatically controlled to maintain the pump inlet pressure at the set point
- › Maximum Pumping Speed: 9.0 litres per minute (LPM)
- › Pressure Sensor Range: 15 to 115 kPa
- › Heater: 8.0 W, turns on/off at 2°C
- › Warm-up time: ~50 min. from -30° to 2°C
- › Fan: 0.7 W (turns on at 50°C and off at 45°C)

Valve Manifold

- › Mounting: Mounted inside system enclosure
- › Inlets: Eight air sample inlets plus one inlet for zero, one inlet for CO₂ span, and one inlet for H₂O span
- › Connections: 0.25-in Swagelok®
- › Mass Flow Sensor: 0 to 1.0 standard litres per minute (SLPM)
- › Heater: 8.0 W, turns on/off at 5°C
- › Warm-up time: ~20 min. from -30° to 4°C
- › Fan: 0.7 W (turns on at 45°C and off at 43°C)

Intake Assembly

- › Dimensions: 31 x 12.5 x 19 cm (12 x 5 x 7.5 in)
- › Weight: 1.4 kg (3.1 lb)
- › Filter: 1.0-in diameter, sintered stainless steel disk filter, 10-micron pore size, CSI pn #27809
- › Orifice Inside Diameter: 0.178 mm (0.007 in.)
- › Orifice Heater: 2 kohms (0.07 W at 12 Vdc)
- › Mixing Volume: 750 ml
- › Sample Connection: 0.25 in. Swagelok

Heater Cable Entry Seals

- › Number of connections: 3 (1 in, up to 2 out)
- › Cable diameter: 2.8 to 6.6 mm (0.11 to 0.26 in)

Heater Cable Screw Terminals

- › Wire Diameter: 26 to 12 AWG
- › Wire Stripping Length: 5.0 mm (0.2 in)
- › Screw Tightening Torque: 0.4 N·m

¹Average power varies from 12.5 W above 35°C to 22.5 W at -30°C.