







## Overview

The AP200 is a complete, integrated  $CO_2$  and  $H_2O$  atmospheric profile system. It measures carbon dioxide ( $CO_2$ ) and water vapour ( $H_2O$ ) 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 CO<sub>2</sub> 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
- NL116 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

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





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# 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/NL116: 0.2 kg (0.4 lb)

#### Power Requirements

- Voltage: 10 to 16 Vdc
- Average Power (at 25°C)<sup>1</sup>: 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)

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

### Valve Manifold

- Mounting: Mounted inside system enclosure
- Inlets: Eight air sample inlets plus one inlet for zero, one inlet for CO<sub>2</sub> span, and one inlet for H<sub>2</sub>O 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

