BioSpherix

part of the Breeze Group

OxyCycler A44C

Dynamic Multi-Chamber CO_2 Controller

Applications:

- Hypercapnia
- Hypoxia
- Chronic Intermittent Hypoxia (CIH)
- Obstructive Sleep Apnea (OSA)
- Disease modeling
- Gene expression
- **Many more!**

Scan to read how the OxyCycler A44C is used in research

Precision Gas Control

The OxyCycler A44C is a four-chamber gas controller for in vivo research that requires precise CO_2 (0.1-20.0%) regulation.

Flexible Functionality

In conjunction with the OxyCycler A84XOV and the A-Chamber, the OxyCycler A44C controls up to four chambers at once. Each chamber can be controlled independently.

Efficient Operation

The OxyCycler A44C remotely senses gas levels inside the A-Chamber. It precisely infuses CO_2 to increase concentration, or nitrogen to displace and reduce levels as needed. Efficient, closed-loop control ensures accuracy without waste, so gas is used only when necessary.

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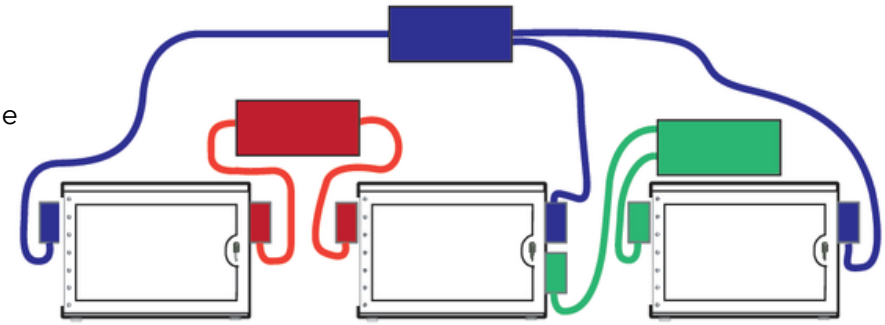
OxyCycler A44C

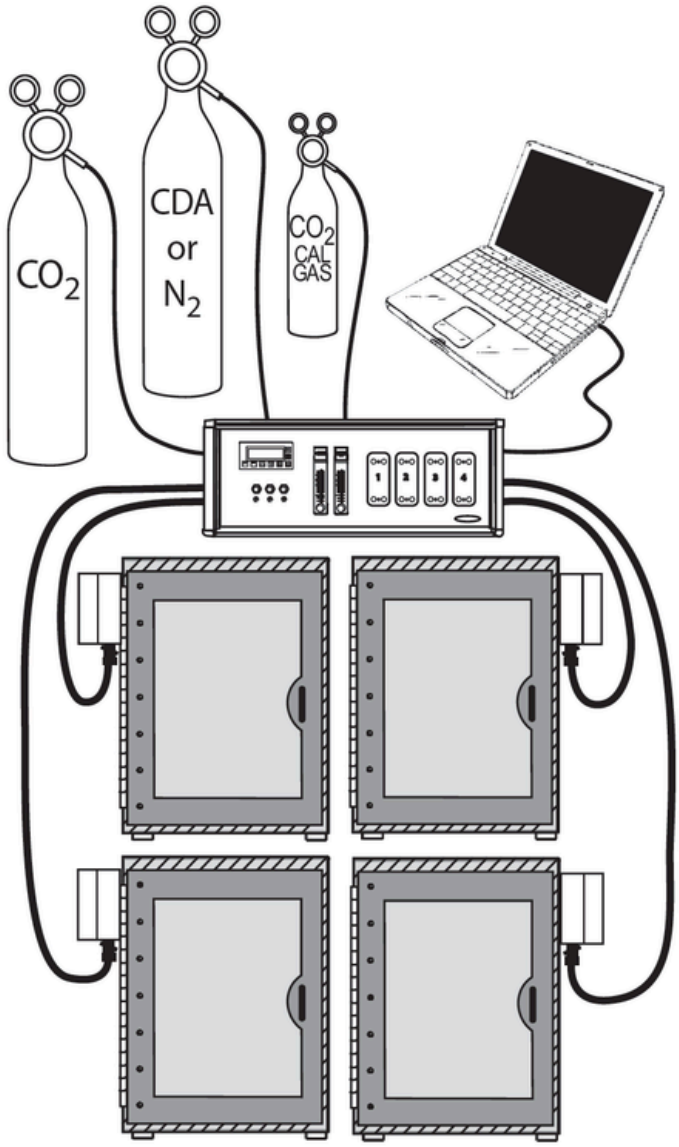
The A44C can control up to four chambers simultaneously for maximum experimental efficiency. Create fully customized carbon dioxide profiles to match physiological or experimental profiles:

- Staggered or simultaneous run times
- Independent or duplicate programs
- 1-20 programmable setpoints per profile
- 0-999 minutes between setpoints
- 1-99 cycles or continuous looping



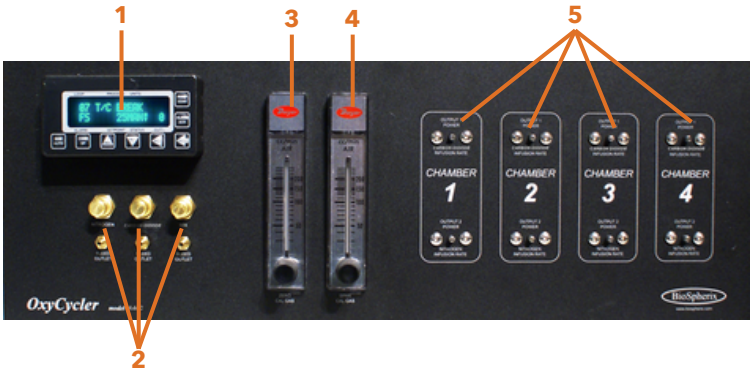
Installation

1. Set the A44C on or near A-Chamber and plug it in to standard outlet.
2. Mount each actuator pod to its respective A-Chamber via precut holes and mounting hardware (below).
3. Connect gas supply. Compressed gas is recommended for low consumption applications, and liquid for medium to high consumption.
4. Use computer software to monitor and control gas levels.



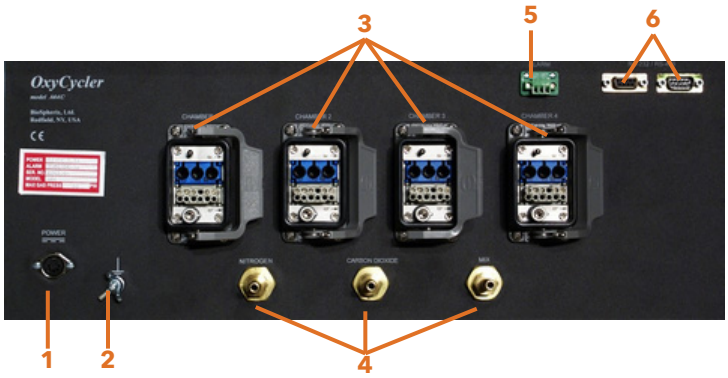
OxyCycler A42OC

Front Panel



1. Digital Display: Continuously displays current gas level, control status, and alarm status in all chambers. Displays menu items and settings during programming
2. Bleed Valves: Bleeds gases out of gas supply lines
3. ZERO Cal Gas Flowmeter: Used for calibration
4. SPAN Cal Gas Flowmeter: Used for calibration
5. Needle Valves: Sets infusion rate of control gases in each chamber to accommodate different dynamics. Can manually override controller to shut off gas

Back Panel

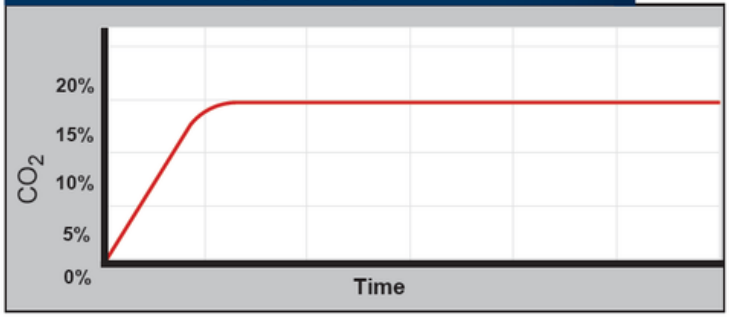


1. Power Connection (12VDC)
2. Ground Stud: Protects the controller from electrical damage
3. Actuator Pod Connectors: Flexible tubing connects remote actuator pods to back panel
4. Supply Gas Hose Inputs: 1/4" ID hose from gas sources pressure rated up to 40 PSIG
5. Alarm Receptacle
6. RS-485 Connections: Cable attachments to computer and additional controller unit

OxyCycler A44C

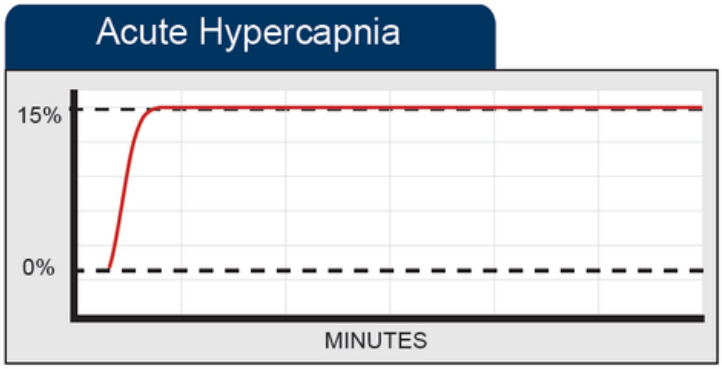
Carbon Dioxide Control Scenarios

Hypercapnia



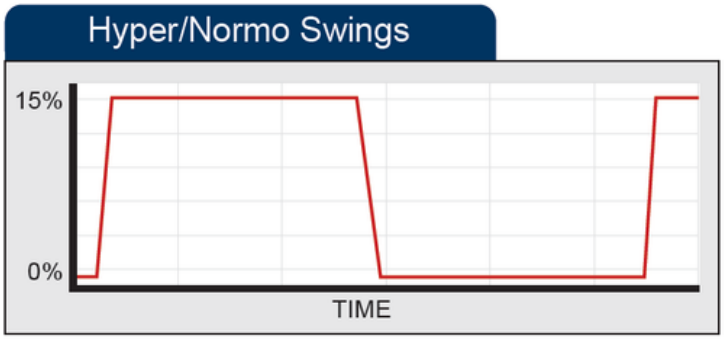
Hypercapnia can be simulated by infusing CO_2 to the desired setpoint.

Acute Hypercapnia



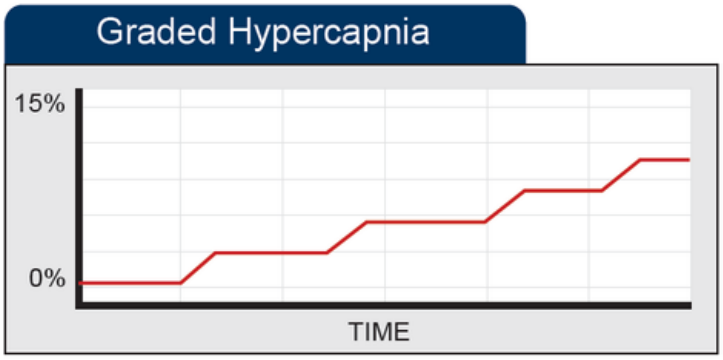
Sharp increases in CO_2 levels are frequently used in psychological or neural models.

Hyper/Normo Swings



A variety of oscillating CO_2 levels can be achieved, each with variable duration and repetitions.

Graded Hypercapnia



Gradually raise or lower CO_2 levels over time for a graded hypercapnia scenario.

OxyCycler A44C

Electrical Requirements

Electrical Power: 12 VDC, 6.6AMP

Physical Specifications

Weight: 31 lbs

Controller Dimensions: 9"H x 22.2"W x 18.5"D

Actuator Pod Dimensions: 7"H x 4.4"W x 4.5"D

Gas Control Performance

Control Range: 0.1-20.0% CO_2

Accuracy: ±1%

Resolution: 0.1%

Alarms & Safety

Alarm Output: visible, PC adds auditory and other visible indicators

Alarm Modes: 1) process high 2) process low 3) deviation high 4) deviation low 5) deviation band

Visit our YouTube channel for calibration and installation how-to's

Gas Delivery Performance

Gas Infusion Rate: 1-150 SCFH per valve

Gas Consumption: depends on 1) size and leakiness of host chamber 2) frequency and duration of chamber door openings 3) controller setpoint

Gas Supply & Compatibility

Gas Source: compressed gas tanks, liquid dewar

Gas Supply: pressurized CO_2, N_2, CO_2N_2 calibration mix

Gas Supply Line: 1/4" ID hose pressure rated at 40 PSIG

Gas Supply Line Pressure: 0-40 PSIG

Gas Supply Hose Fitting: 1/4" ID hose barb

Umbilical Specifications

Umbilical Length: 12' (custom lengths available)

Operation Parameters

Host Chamber Temperature: 0-40°C

Host Sensor Humidity: 1-95%, non-condensing

Host Chamber CO_2: 0.1-20%