



## Features:

- 0.6m<sup>2</sup> (6ft<sup>2</sup>) of plant growth area per tier
- 240mm to 1195mm (9½" to 47") of growth height from 4 tier to 1 tier options
- 500μmol m<sup>-2</sup> s<sup>-1</sup> to 2000μmol m<sup>-2</sup> s<sup>-1</sup> PPFD of dimmable LED lighting from 4 tier to 1 tier options
- 4°C to 45°C all lights off, 7°C to 45°C all lights on (5.5°C at 50% lights on)
- Ideal for flexible research requirements - short plant to tall plant conversion options available
- Multi-tier shelving options maximizes growth area
- Ideal for labs and smaller spaces
- Entirely front serviced - can be placed back-to-back and side to side



BioChambers FLEX™  
FXC-6 chambers are  
available with a variety  
of configuration options  
to suit your research  
needs



FXC-6 shown as Tall Plant (Single Tier) Option



FXC-6 shown as Two Tier Option



FXC-6 shown as Three Tier Option



FXC-6 shown as Four Tier Option

FLEX™ SERIES

# FXC-6

## INTRODUCTION

BioChambers' FXC-6 is a plug and play growth chamber you can put just about anywhere. The FXC-6 can have one to four tiers of shelving for tissue culture, Arabidopsis, crop plants, small trees, and everything in between.

Two independently controlled light environments facilitate research and other tailored goals, each with independent PPF (PAR) and far-red PFD control. Easily set PAR and far-red for a broad and balanced spectrum that's been consistent across our equipment for almost a decade. Intuitive, practically limitless scheduling allows you to grow exactly how you need.

Tired of monitoring water in trays? Each tier fully drains after watering plants, so you don't have to worry about standing water in trays. Worried about an optimal layout or losing lab space? FXC-6 chambers can be placed side by side and back to back to make best use of your installation space. Built to last; we use the same quality components as our bigger chambers.

## 1.0 CONTROLLER

- 1.1 **Controller Version:** BioChambers NEXUS.
- 1.2 **Interface:** Fanless panel PC with a 305mm (12") color touch screen.
- 1.3 **Ethernet Connection:** Secure remote access using a unique site specific webkey allowing the chambers/rooms to be connected to a facility supplied local area network (LAN)/internet.
- 1.4 **Security:** Multiple levels of password security for researchers, administrators, service technicians, and BioChambers' factory technicians.
- 1.5 **NEXUS Viewer:** Instantly view the status of all your experiments. Single or multiple chambers/rooms can be remotely monitored and operated from a central location via the LAN/internet. NEXUS Viewer can be installed on up to three existing computer stations.
- 1.6 **Schedule:** Multi-line schedule can be created for temperature, lighting (day length), light intensity, and fan speed using the touch screen interface or remotely using the facility provided LAN/internet. Available options: humidity, carbon dioxide, auxiliary circuits primarily for automatic watering, etc... can also be scheduled.
- 1.7 **Multi-Day:** Multi-day changing environmental conditions can be scheduled.
- 1.8 **Ramping:** Temperature and light intensity changes gradually (ramping) from setpoint to setpoint. Available options: humidity and carbon dioxide can also be ramped.
- 1.9 **Astronomical Clock:** Researchers can produce photoperiod schedules for locations worldwide by simply entering the latitude and longitude.
- 1.10 **Graphing:** Controlled parameters such as temperature, light intensity, and the following available options: humidity and carbon dioxide can be graphed to show setpoint versus actual conditions.
- 1.11 **Research Data:** Controller equipped with a memory card to store multiple schedules and logged data such as temperature, alarms, etc... Log rate and duration can be set by the user.
- 1.12 **Data Export:** Data can be exported to the researcher's/administrator's computer for further analysis.
- 1.13 **Start-up:** Provisions for chamber/room start-up delay in facilities with multiple chambers/rooms helping to reduce the initial inrush current after a power outage.
- 1.14 **Alarms:** Notification via e-mails, building alarm contacts connected to a facility supplied building security system, and on chamber/room audible alarm with red indicator light.
- 1.15 **Service Data:** Refrigeration system pressures and temperatures along with other service parameters are logged. Log rate and duration can be set independently of the research log.
- 1.16 **Service Screen:** Displays compressor discharge and suction pressures and temperatures, facility water supply and return temperatures, automatic temperature setting safety limits status, lamp hours, sensor calibration hours, temperature control valve position, and more.
- 1.17 **Service:** On-screen override switches with a 10 minute schedule bypass are provided for the service technician to place the chamber/room into full cooling or heating and all lights on or off. This enables faster and easier service work as the technician does not need to learn how to program a schedule.



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## 2.0 CONSTRUCTION (FXC-6-SP2 specification, for other models see tables 1 and 2)

- 2.1 **Exterior Dimensions:** 1040mmW x 815mmD x 2005mmH (41"W x 32"D x 79"H) assembled.
- 2.2 **Assembly:** Chamber shipped assembled as one unit for easy installation in the facility. Chamber equipped with caster wheels for ease of movement.
- 2.3 **Interior Dimensions:** 925mmW x 635mmD x 1255mmH (36½"W x 25"D x 49½"H).
- 2.4 **Growth Area:** 1.14m<sup>2</sup> (12.3ft<sup>2</sup>) total on two tiers.
- 2.5 **Growth Height:** 560mm (22") each of the two tiers.
- 2.6 **Growth Capacity:** 0.6m<sup>3</sup> (23ft<sup>3</sup>) total on two tiers.
- 2.7 **Interior:** Pre-painted white smooth aluminum.
- 2.8 **Exterior:** 22ga. stainless steel type 304 #4 brushed.
- 2.9 **Lamp Canopies:** Two adjustable height in 13mm (½") increments, removable, non-barriered canopies measuring 605mmD x 915mmW (23¾"D x 36"W). Maximum weight carrying capacity of 23Kg (50lb) per shelf.
- 2.10 **Drain Pan/Floor:** Constructed of stainless steel for superior corrosion resistance.
- 2.11 **Insulation:** 38mm (1½") CFC free, high-density expanded polystyrene.
- 2.12 **Electronics:** Filtered air blown into the control panel, providing cooling to the electronics and positive pressure in the control panel keeping dust out, extending the life of the electronics.
- 2.13 **Service:** Easy access from the front to electronics and mechanical components located on the roof of the chamber.
- 2.14 **Instrument Ports:** One 50mm (2") with light tight cover.
- 2.15 **Reach-In Door:** Two 465mmW x 1255mmH (18¼"W x 49½"H) with light tight magnetic gasket and self closing cam-lift hinges.
- 2.16 **Observation Window:** Available as an option.
- 2.17 **Control Panel:** Display mounted on the center of the chamber when facing the door.
- 2.18 **Aisle/Vestibule:** Not applicable.

## 3.0 AIR TEMPERATURE

- 3.1 **Ambient:** Designed for a maximum ambient of 35°C outside the chamber.
- 3.2 **Range:** 4°C to 45°C all lights off, 7°C to 45°C all lights on with proportional ramping (e.g. 5.5°C at 50% lights on) (extended temperature options are available).
- 3.3 **Control:** PID control, ±0.5°C at the aspirated sensor.
- 3.4 **Temperature Limits:** Automatically set when the user selects a schedule. One high/low and one lamp safety temperature limit sensor independent of the main temperature sensor.
- 3.5 **Sensor Box:** Moveable, aspirated, and sensors are shielded from the radiative heat produced by the lights.
- 3.6 **Temperature Sensor:** High precision fast responding thermistor sensor.

## 4.0 LIGHTING (FXC-6-SP2 specification, for other models see tables 1 and 2)

- 4.1 **Type:** PhytoFlux LED modules with two dimmable channels (other lighting options are available).
- 4.2 **Intensity:** 1000µmol m<sup>-2</sup> s<sup>-1</sup> PPFD (Photosynthetic Photon Flux Density measured in the PAR (Photosynthetically Active Radiation) range of 400-700nm) on each tier of shelving. Light intensity is measured at 150mm (6") from the lamp canopy at 25°C and averaged on a 150mm (6") grid.
- 4.3 **Light Source:** PhytoFlux LED modules provide a broad White/Red and Far-Red spectrum for balanced plant growth.
- 4.4 **Programming:** Via NEXUS controller.
- 4.5 **Light Intensity Control:** Two channel dimmable system per tier, total of 4 dimmable channels. PhytoFlux broad White/Red spectrum LEDs are on one dimming channel and Far-Red spectrum LEDs are on the second dimming channel. For each channel, users program a percentage setpoint within the dimmable range from 10% to 100% via the controller (closed loop dimming option available).
- 4.6 **Lamp Heat:** Cooling system sized to remove all heat generated by the lights.
- 4.7 **Light Sensor:** Available as an option.

## 5.0 COOLING SYSTEM

- 5.1 **Type:** Direct expansion cooling system equipped with a self-contained air-cooled condenser with an energy efficient electronically commutated (EC) motor with built-in fan speed control which reduces the fan speed in cooler ambient conditions or reduced heat load conditions (e.g. chamber/room lights off vs. on) providing energy savings. Condenser capacity designed for indoor ambient temperatures up to 35°C. (other options are available).
- 5.2 **Temperature Valve:** No maintenance electronic proportional hot gas bypass system for close temperature control and continuous compressor operation.
- 5.3 **Compressor:** Scroll compressor.
- 5.4 **Coolant:** HFO based refrigerant.
- 5.5 **Cooling Coil:** Copper tube and aluminum fin construction.
- 5.6 **Analysis:** Compressor discharge pressure, suction pressure, and temperatures are logged for ease of service.
- 5.7 **Safety:** One suction pressure switch and one discharge pressure switch is provided for the refrigeration system to prevent short cycling and compressor burn out.

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**5.8 Barriercd Lamploft:** Not applicable.

**5.9 Defrost Cycle:** Not applicable.

## **6.0 AIR DISTRIBUTION** (FXC-6-SP2 specification, for other models see tables 1 and 2)

**6.1 Air Flow:** Horizontal back wall airflow through shaped plenums and perforated walls to provide uniform conditions on each tier of shelving.

**6.2 Fan Type:** Energy efficient electronically commutated (EC) motor with built in fan speed control and tach output.

**6.3 Fan Speed:** Can be programmed from 50% to 100% in the controller, enabling researchers to vary the airflow through the plants (85% or higher recommended, temperature gradients increase at lower fan speeds).

**6.4 Fresh Air:** Filtered fresh air with a manually adjustable vent: 0.6m<sup>3</sup>/min (20ft<sup>3</sup>/min).

## **7.0 RESEARCH SAVER**

**7.1 Surge Protector:** Over voltage protection of the controller and control circuit from electrical surges.

**7.2 Capacitor Back-up:** Provides time for soft shutdown of the controller.

**7.3 Power Phase Detector:** Loss of power phase alarm protects the compressor and other components.

**7.4 Air Flow:** Tach output of each fan displayed in the controller with automatic low rpm alarm to detect fan failure.

**7.5 Factory Diagnostics:** Through a facility supplied LAN/internet connection a BioChambers' factory technician can remotely access the chamber/room to analyze the mechanical, electrical, and control systems.

**7.6 Testing:** 100% assembled, tested, and run-in at the factory before being disassembled for shipment to the site reducing on-site assembly time and disruptions.

**7.7 Quality Standard:** ISO 9001:2015 certified company.

## **8.0 WARRANTY**

**8.1 Duration:** Two years parts and labor from date of installation or 28 months from date of shipment, whichever comes first.

**8.2 Diagnostics:** Remote diagnostics for five years from the date of installation.

## **9.0 ELECTRICAL**

**9.1 Service:** 120/208-240V/1-phase/60Hz, 3-wire + ground (NEMA L14-20R) (50Hz option: 240V/1-phase/50Hz/2-wire + ground). Electrical service to be provided by others (contact BioChambers for utility requirements).

**9.2 Electrical Safety:** Chamber/Room is CSA inspected (CE where applicable).

## **10.0 INSTALLATION & CUSTOMER TRAINING**

**10.1 Manuals:** Controller manual, operation & maintenance manual, and electrical schematics provided.

**10.2 Training:** Please consult with BioChambers for training options.

**10.3 Installation:** Please consult with BioChambers for installation options.

## **11.0 OTHER**

### **11.1.a ADDITIVE HUMIDITY**

**11.1.1 Type:** Stainless steel spray nozzle humidification.

**11.1.2 Ambient:** Designed for an ambient condition of 21°C and 50% RH.

**11.1.3 Range:** Up to 75% RH with all lights on, up to 90% RH with all lights off, and limited by a 25°C dewpoint temperature (e.g. 56.3% RH at 35°C, 74.6% RH at 30°C, 75% RH at 20°C lights on, 90% RH at 20°C lights off).

**11.1.4 Control:** PID control, ±3% RH at the aspirated sensor.

**11.1.5 Components:** Humidity sensor, stainless steel spray nozzles, stainless steel tubing, stainless steel on/off solenoid, solid state relay, inline water filter, controls, and data logging by the controller.

**11.1.6 Operation:** The user programs the desired relative humidity (% RH) setpoint on one or multiple schedule lines and using the humidity sensor as a closed loop feedback, the controller sends an on or off signal to the solenoid which controls the flow of water to the spray nozzles which adds moisture to the circulating air stream inside the chamber/room to achieve above ambient humidity levels (see dehumidification option to achieve below ambient levels).

**11.1.7 Sensor Specifications:** Vaisala humidity sensor, range 0 to 100% RH, accuracy from 0 to 40°C: ±3% (0 to 90% RH).

### **11.13.b BENCHING & SHELVING** (FXC-6-SP2 specification, for other models see tables 1 and 2)

**11.13.1 Type:** Wire shelves.

**11.13.2 Components:** Two adjustable height stainless steel wire shelves.

**11.13.3 Dimensions:** Two wire shelves each 920mmW x 605mmD (36¼"W x 23¾"D).

**11.13.4 Capacity:** Maximum weight carrying capacity of 23kg (50lbs) per shelf.

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**Table 1: Specifications for items 2.4, 2.5, 2.6, 2.9, and 4.2**

Model #	Specification 2.4	Specification 2.5	Specification 2.6	Specification 2.9	Specification 4.2
	Growth Area	Growth Height	Growth Capacity	Lamp Canopies	Intensity
<b>FXC-6 Short Plant Options</b>					
<b>FXC-6-SP2</b>	1.14m <sup>2</sup> (12.3ft <sup>2</sup> ) total on two tiers.	560mm (22") each of the two tiers.	0.6m <sup>3</sup> (23ft <sup>3</sup> ) total on two tiers.	Two adjustable height ...	1000µmol m <sup>-2</sup> s <sup>-1</sup> PPFD
<b>FXC-6-SP3</b>	1.69m <sup>2</sup> (18.2ft <sup>2</sup> ) total on three tiers.	340mm (13½") each of the three tiers.	0.6m <sup>3</sup> (20ft <sup>3</sup> ) total on three tiers.	Three adjustable height ...	500µmol m <sup>-2</sup> s <sup>-1</sup> PPFD
<b>FXC-6-SP4</b>	2.24m <sup>2</sup> (24.1ft <sup>2</sup> ) total on four tiers.	240mm (9½") each of the four tiers.	0.5m <sup>3</sup> (19ft <sup>3</sup> ) total on four tiers.	Four adjustable height ...	500µmol m <sup>-2</sup> s <sup>-1</sup> PPFD
<b>FXC-6 Tall Plant Options</b>					
<b>FXC-6-TP1H*</b>	0.59m <sup>2</sup> (6.3ft <sup>2</sup> ) total on one tier.	1195mm (47") on one tier.	0.7m <sup>3</sup> (25ft <sup>3</sup> ) total on one tier.	One adjustable height ...	2000µmol m <sup>-2</sup> s <sup>-1</sup> PPFD
<b>FXC-6-TP1U*</b>	0.59m <sup>2</sup> (6.3ft <sup>2</sup> ) total on one tier.	1145mm (45") on one tier.	0.7m <sup>3</sup> (24ft <sup>3</sup> ) total on one tier.	One adjustable height ...	2000µmol m <sup>-2</sup> s <sup>-1</sup> PPFD
<b>FXC-6 Tissue Culture Options</b>					
<b>FXC-6-TC4</b>	2.24m <sup>2</sup> (24.1ft <sup>2</sup> ) total on four tiers.	215mm (8½") each of the four tiers	0.5m <sup>3</sup> (17ft <sup>3</sup> ) total on four tiers.	Four fixed height ...	500µmol m <sup>-2</sup> s <sup>-1</sup> PPFD

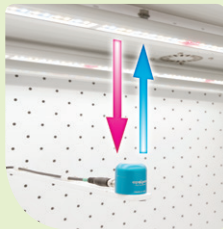
**Table 2: Specifications for items 4.5, 6.1, and 11.13.2/3**

Model #	Specification 4.5	Specification 6.1	Specification 11.13.2/3
	Light Intensity Control	Air Flow	Benching & Shelving
<b>FXC-6 Short Plant Options</b>			
<b>FXC-6-SP2</b>	Two channel dimmable system per tier, total of 4 dimmable channels ...	Horizontal back wall airflow through shaped plenums and perforated walls to provide uniform conditions on each tier of shelving ...	Two .../Two ...
<b>FXC-6-SP3</b>	Two channel dimmable system per two tiers, total of 4 dimmable channels ...	Horizontal back wall airflow through shaped plenums and perforated walls to provide uniform conditions on each tier of shelving ...	Three .../Three ...
<b>FXC-6-SP4</b>	Two channel dimmable system per two tiers, total of 4 dimmable channels ...	Horizontal back wall airflow through shaped plenums and perforated walls to provide uniform conditions on each tier of shelving ...	Four .../Four ...
<b>FXC-6 Tall Plant Options</b>			
<b>FXC-6-TP1H*</b>	Two channel dimmable system per tier, total of 2 dimmable channels ...	Horizontal back wall airflow through shaped plenums and perforated walls to provide uniform conditions on each tier of shelving ...	One .../One ...
<b>FXC-6-TP1U*</b>	Two channel dimmable system per tier, total of 2 dimmable channels ...	Vertical uniformly upward through an anodized aluminum open channel floor providing uniform conditions on a horizontal plane.	N/A .../N/A ...
<b>FXC-6 Tissue Culture Options</b>			
<b>FXC-6-TC4</b>	Two channel dimmable system per two tiers, total of 4 dimmable channels ...	Vertical uniformly upward through an anodized aluminum open channel floor to minimize or eliminate condensation in the tissue culture dishes ...	N/A .../N/A ...

\* H = horizontal airflow, U = upward airflow. Reduced growth height from floor plenum providing upward airflow.

**Available Options**

BioChambers Rooms and Chambers are available with a variety of options. If your research has specific requirements, BioChambers can outfit your equipment to meet your needs. These are just a few of the available options. Ask for more information.



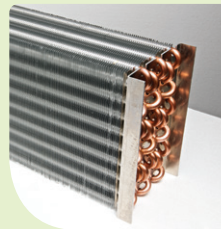
CLOSED LOOP DIMMING



PPFD/FAR-RED PFD DATA LOGGING



ULTRASONIC HUMIDIFIER



DEHUMIDIFICATION BY REFRIGERATION



ADDITIVE CO<sub>2</sub>



LOW CO<sub>2</sub> (SCRUBBER)



55°C HEAT CLEAN CYCLE



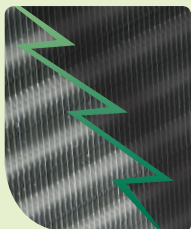
LOW TEMPERATURE DEFROST



VIEWING WINDOW



WATER COOLED CONDENSER



EVAPORATOR COATING

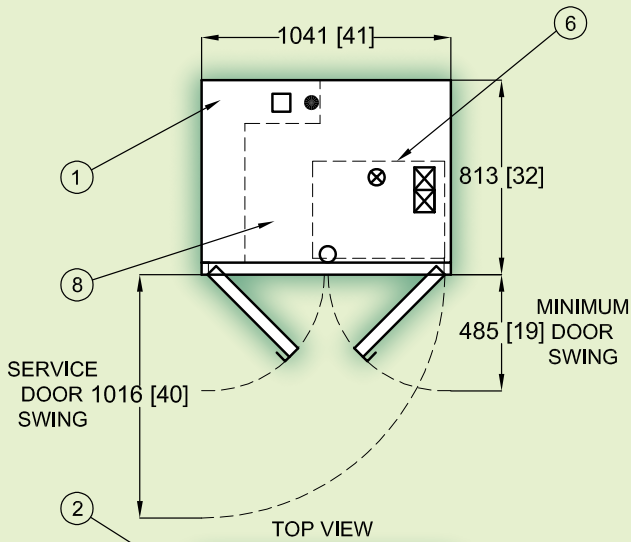


EXTENDED TEMPERATURE RANGE



EXTENDED WARRANTY

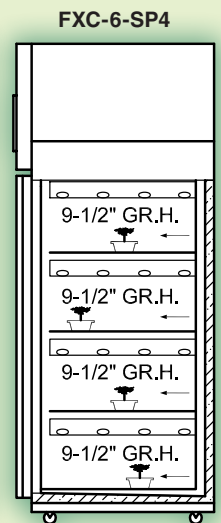
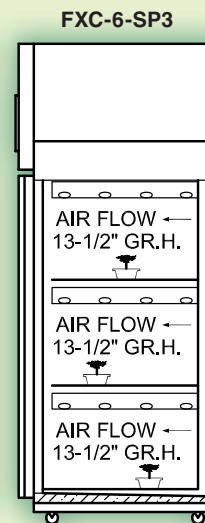
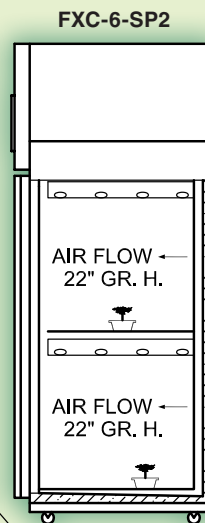
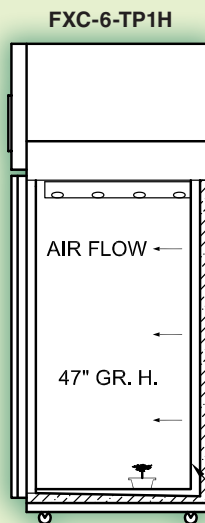
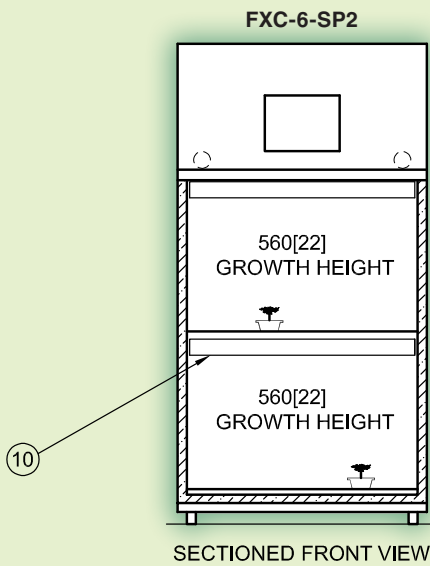
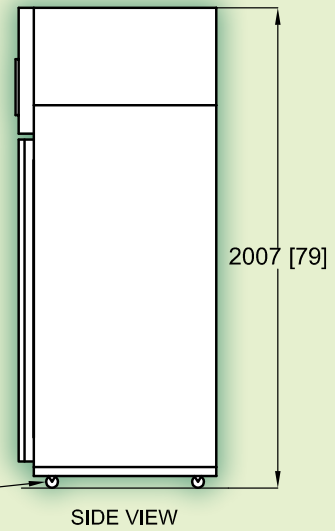
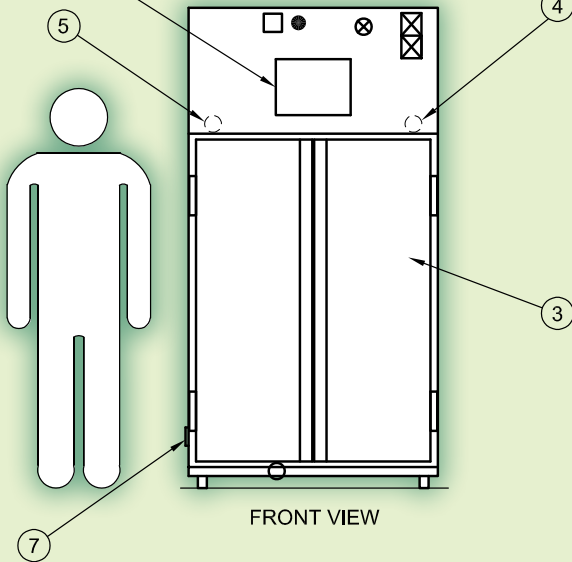
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**FXC-6**



Metric (mm) [Imperial (")]

- - Ethernet connection
- ⊗ - Purified water connection for humidity system
- - Electrical connection
- - Ø1-1/8" Drain Location
- ⊠ - Cooling water connections (if option selected)

1. Control Panel
2. Touch Screen Interface
3. Door Opening 933 [36-3/4] x 1257 [49-1/2]
4. Fresh Air
5. Exhaust Air
6. Cooling System
7. Instrument Port
8. Lighting Drivers
9. Optional Viewing Window
10. Adjustable Height Lamp Canopy
11. N/A
12. Air Plenum
13. Castors



SECTIONED SIDE VIEWS

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Biochambers FXC-6 Specifications version 2026-06A.  
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