



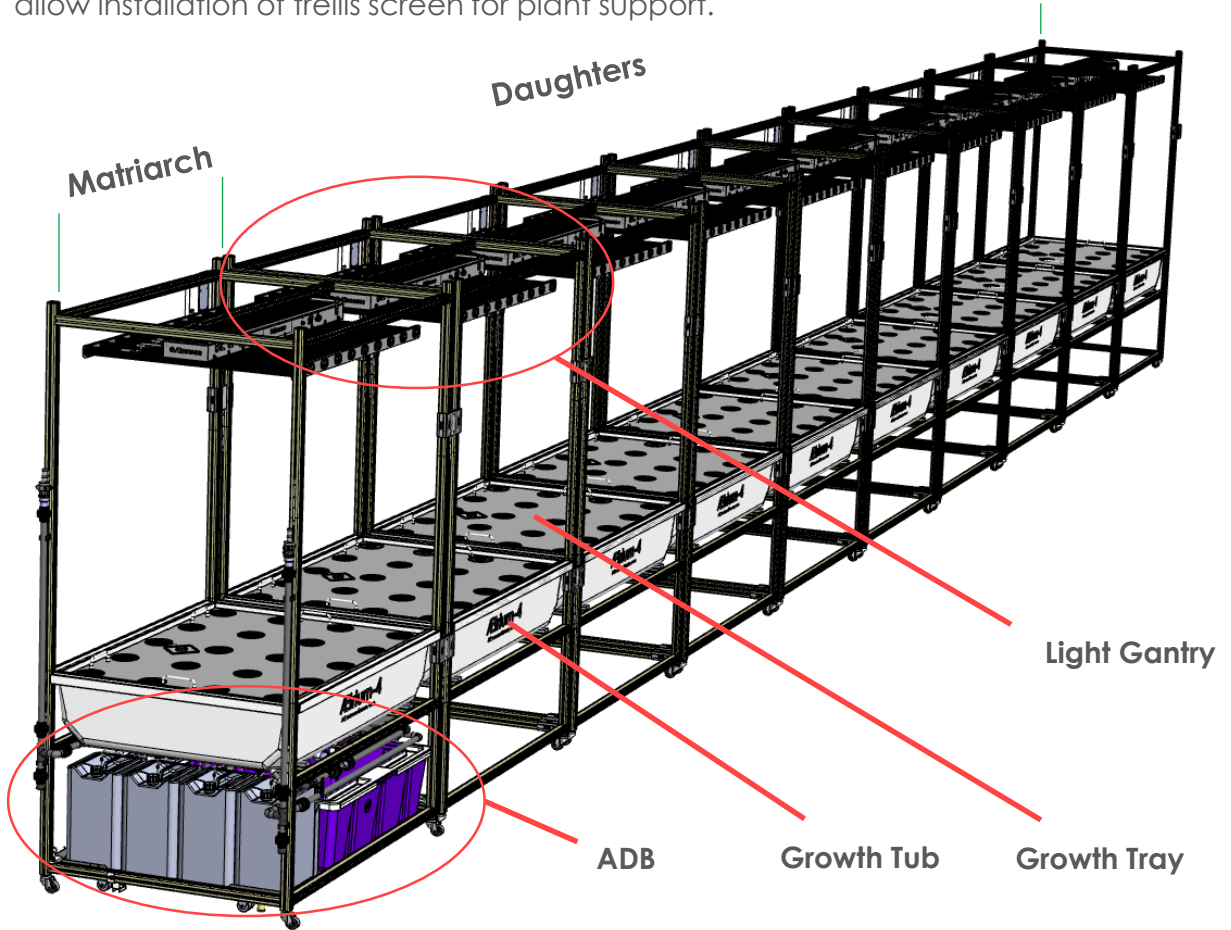
# Ætrium-4

Data Sheet 10/2019

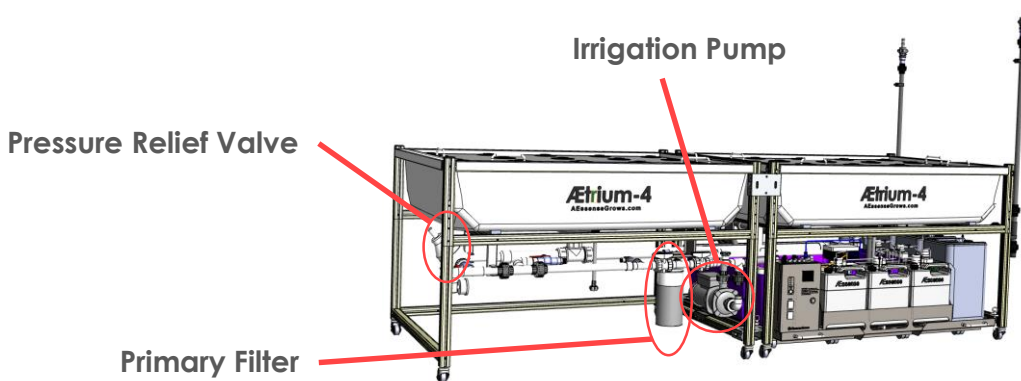
## Ætrium-4 Components

Each Ætrium-4 row contains 1 **Matriarch** and 1 to 9 **Daughters**. The Ætrium Dosing Base (**ADB**) located under the **Matriarch** is the main engine of the Ætrium-4. It controls all water, air, and electrical operations.

Plants are cultivated in the **Growth Trays** located on top of the **Growth Tubs** which include the spray manifold system. The optional **Light Gantries** provide hard points for installing grow lights. If lights are suspended from the ceiling the optional trellis supports allow installation of trellis screen for plant support.



10-tub Ætrium-4 with left-handed Matriarch and LED grow lights



2-tub Ætrium-4 with left-handed Matriarch

## AEtrium Dosing Base (ADB) Components

The **ADB** may be left handed or right handed depending on the orientation of the **Matriarch™**. It consists of the Power Distribution Unit (**PDU**), a water **Reservoir**, **Dosing Bottles**, **Peristaltic Pumps**, and the Water Sensing Electronics (**WSE**). The ADB is connected to the AEtrium System Detector (**ASD**) and the **Irrigation pump**.

### Power Distribution Unit (PDU)

The **PDU** wirelessly links the **ADB** over a Wi-Fi access point to the server that runs the Guardian™ Grow Manager. It gathers information from the **ASD** (AEtrium System Detector) and the **WSE** (Water Sensing Electronics) to directly control the **Irrigation Pump**, the mixing pump, the **Peristaltic (doser) Pumps** via the Stepper Motor (doser) Controllers (**SMC**), the grow lights, and external actuators. The **PDU** also controls the valves and the stir/drain pump which fill and drain the **Reservoir**.

### Irrigation Pump

The **Irrigation Pump** moves the nutrient solution from the **Reservoir** through the pipes to the spray manifold within the **Growth Tubs**.

### Mixer/Drain Pump

The mixer/drain pump provides for automatic draining of the reservoir or automatic mixing of the reservoir.

### Reservoir

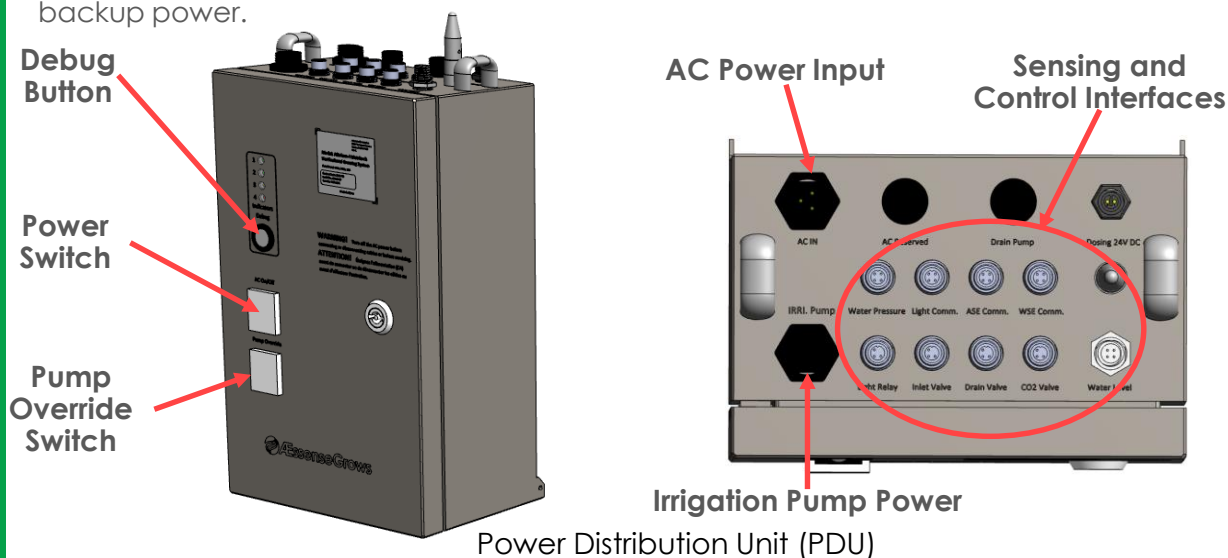
The **Reservoir** is the storage tank for the nutrient solution circulated through the **Growth Tubs**.

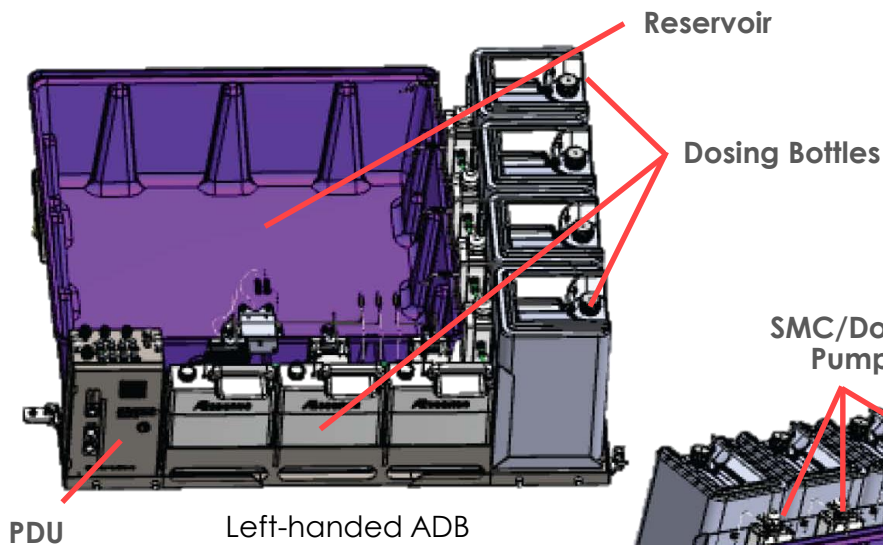
### Sensors

The Water Pressure Sensors (**WTP**), the Water Sensing Module (**WSE**), and the AEtrium System Detector (**ASD**) provide accurate feedback to the Guardian™ Grow Manager on water pressure, level, pH, water temperature, electrical conductivity, air temperature, relative humidity, CO<sub>2</sub> level, and light intensity (ON/OFF).

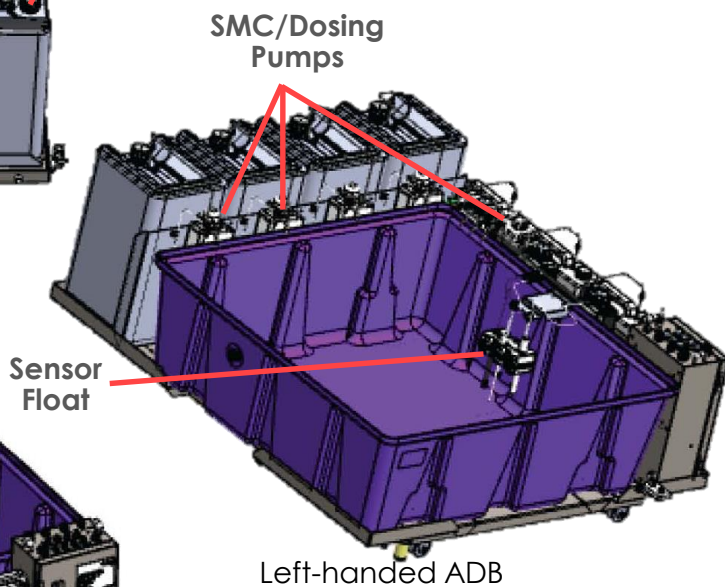
### Backup Power

In areas where one could suffer from loss of mains power it is highly recommended that the Matriarch/ADB be supplied with power from a backup source to assure that the plants continue to get fertigated. The control network, and its components, should also be on backup power.

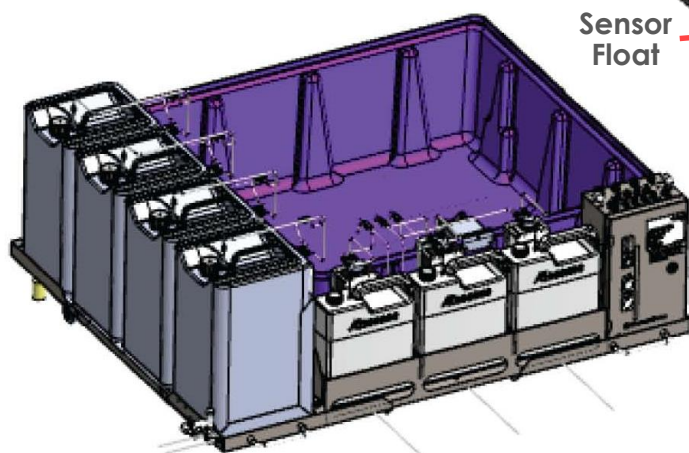




Left-handed ADB

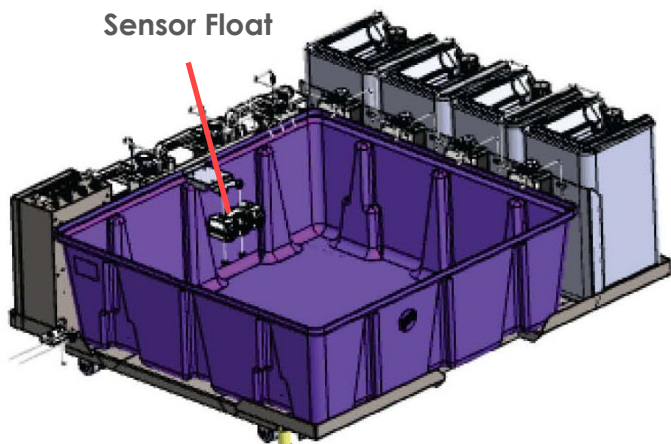


Left-handed ADB



Right-handed ADB

Sensor Float



Right-handed ADB

Ætrium-4 configuration	Length	Width	Dry weight <sup>1</sup>
2 tubs	9'6" (2896 mm)	3'7" (1090 mm)	496 lbs (225 kg)
3 tubs	14'4" (4368 mm)	3'7" (1090 mm)	622 lbs (282 kg)
4 tubs	19'2" (5824 mm)	3'7" (1090 mm)	748 lbs (339 kg)
5 tubs	24' (7315 mm)	3'7" (1090 mm)	874 lbs (396 kg)
6 tubs	28'10" (8789 mm)	3'7" (1090 mm)	1,000 lbs (453 kg)
7 tubs	33'8" (10262 mm)	3'7" (1090 mm)	1,126 lbs (510 kg)
8 tubs	38'6" (11735 mm)	3'7" (1090 mm)	1,252 lbs (567 kg)
9 tubs	43'4" (13208 mm)	3'7" (1090 mm)	1,378 lbs (624 kg)
10 tubs	48'2" (14681 mm)	3'7" (1090 mm)	1,504 lbs (681 kg)

1. Not including ASD, Light Gantries, Trellis Support, Trellis Bars, V-wheels or uni-directional wheels



## Ætrium-4 Specifications

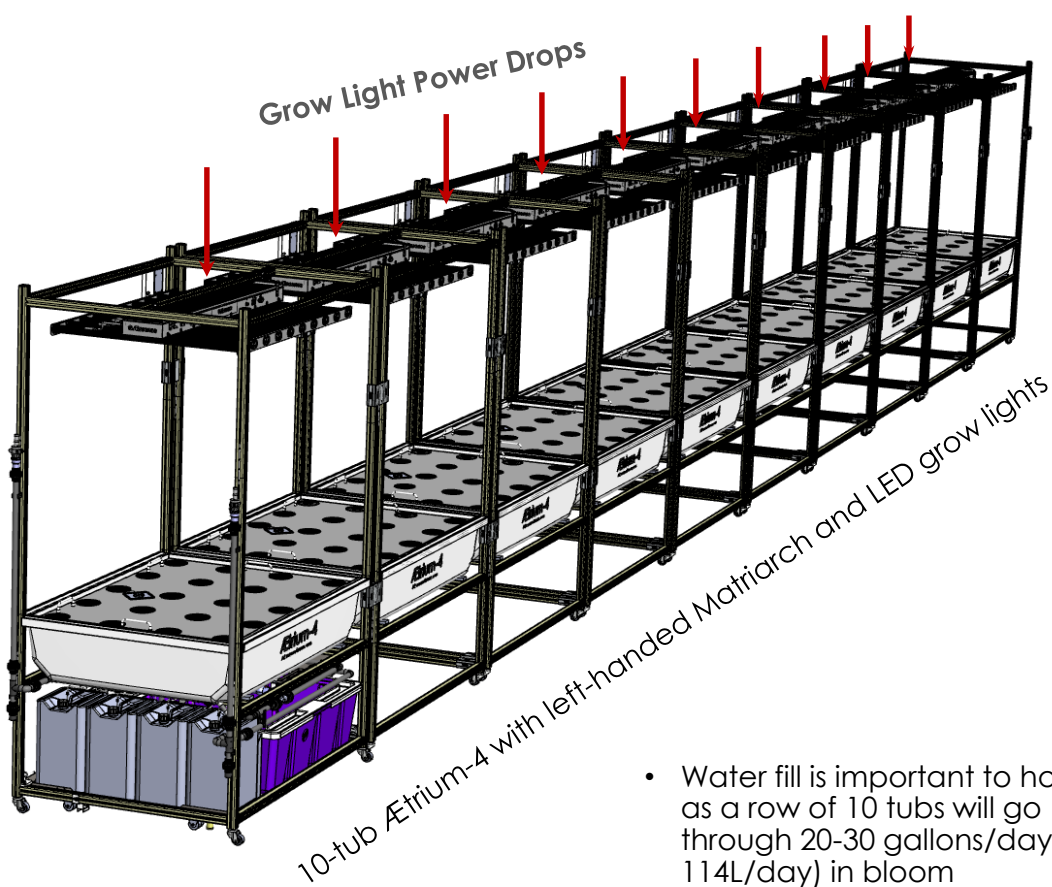
Description	Min	Typ	Max
Power Cord Length		27' (8230mm)	
Input voltage <sup>1</sup>	–	120 V <sub>AC</sub>	–
Input frequency <sup>1</sup>	–	60 Hz	–
Current draw <sup>1</sup> (120 V <sub>AC</sub> )	–	–	5-tub: 9.2 <sup>2</sup> 10-tub: 12.5 <sub>2</sub>
Wattage:			
5 tub ADB	10W	1,100W	
10 tub ADB	10W	1,600W	
Heat output	–	928 BTU/h <sub>3</sub>	–
Total daily energy consumption <sup>5</sup>	–	6.5 kWh <sup>3</sup>	–
Total daily heat generation <sup>5</sup>	–	22,200 BTU <sub>3</sub>	–
Irrigation Pump flow rate	–	–	27 gal/min (102 lpm)
Irrigation Pump duty cycle range	0%	20%	100%
Water Consumption/Loss to transpiration (per Atrium-4 tub/day)	2 (7.6L)		3 (11.4L)
Recommended Ceiling Height	8' (2438mm)	12' (3658mm)	Unlimited
Offset from walls (front back sides)	30" (762mm)	36" (914mm)	Unlimited
UL/CSA Certification <sup>7</sup>		reference E491725	

Description	Value
Water temperature	Range: 32-122°F (0-50°C) Resolution: 1°F (0.1°C)
Water pH	Range: 0-14 pH Resolution: 0.01 pH
Water Electrical Conductivity (EC)	Range: 10 µS/cm – 30 µS/cm

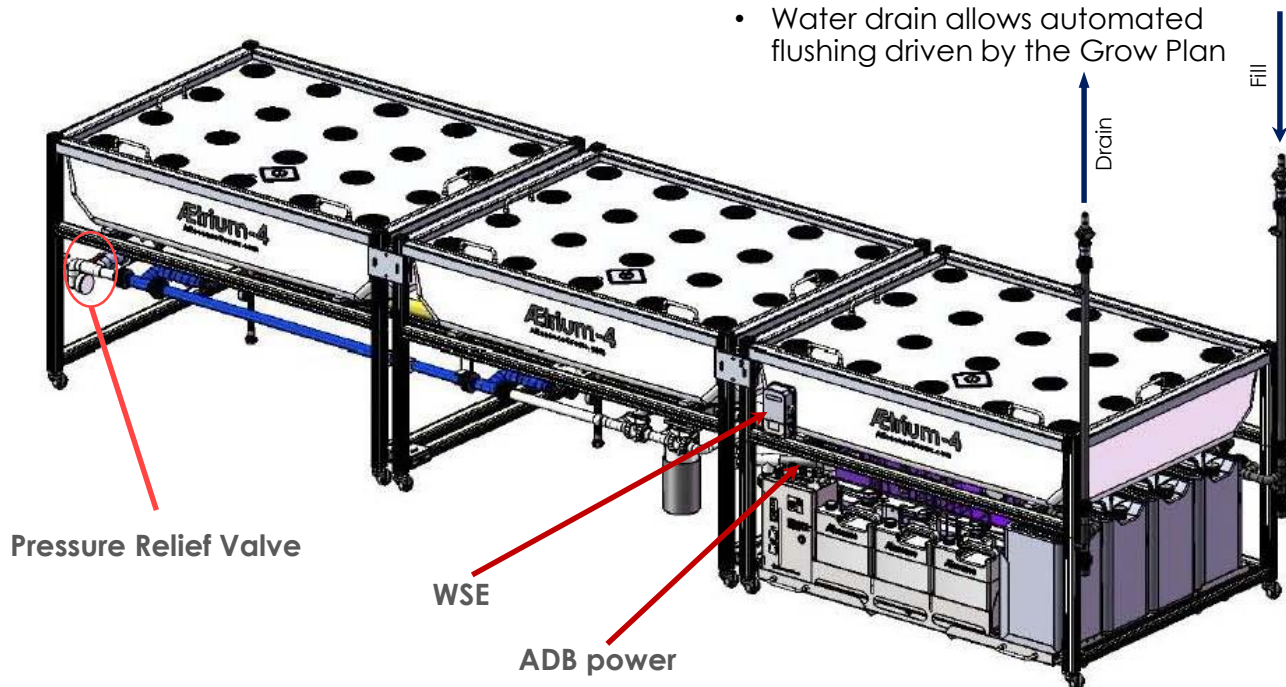
Description	Value
Tray dimensions (inner) (L x W)	51" x 38" (1300 mm x 970 mm)
Tray dimensions (outer) (L x W)	56" x 43" (1420 mm x 1090 mm)
Tray area	16.7 sqft (1.55 m <sup>2</sup> )
Max. plant count per tray	20
Reservoir capacity	50 gal (190 l)
Dosing Bottle capacity (bottles #1 - #4)	5 gal (20 l)
Dosing Bottle capacity (bottles #5 - #7)	1 gal (4 l)
# of Peristaltic Doser Pumps	7
Primary Filter material	Polypropylene frame 304 Stainless mesh
Primary Filter size	80 mesh (0.18mm)
Automatic Drain pump: the ADU can automatically complete a change out of the fertigation solution	
Max. drain pumping height	14.7' (4.5 m)
Flow rate	1.7 gal/min (6.4 lpm)
Connection Hose Barb (uses 5/8" garden hose)	5/8" OD (16mm OD)
Automatic Water Fill: the ADU automatically senses water level and will add water using a provided solenoid when water levels slip below allowable levels	
Water Fill	30-50psi @2.2gpm (2-3bar, 8.3lpm)
Flow/pressure	
Connection Hose Barb (uses 5/8" garden hose)	5/8" OD (16mm OD)
Light comm. interface	AES Link <sup>6</sup>
Relay comm. interface	24VDC
ADB dimensions (L x W x H)	51.6" x 42.5" x 19.7" (1310 mm x 1080 mm x 500 mm)
ADB dry weight	220 lbs (100 kg)
Ætrium-4 height <sup>7</sup>	35" (889 mm)
Ætrium-4 height (with trellis support)	5'10" (1760 mm)
Ætrium-4 height (with 8' light gantries)	7'9" (2355 mm)
Ætrium-4 height (with 10' light gantries)	9'9" (2972 mm)
Daughter weight <sup>7</sup>	126 lbs (57 kg)
8' Light Gantry weight	44 lbs (20 kg)
Trellis Support weight	14 lbs (6.4 kg)
Trellis Bars weight	20 lbs (9.1 kg)

1. North America only
2. In-rush current after the irrigation pump is turned on
3. 20% irrigation duty cycle (Irrigation Pump on for 1 min, off for 4 mins)
4. 100% irrigation duty cycle (Irrigation Pump always on)
5. Uninterrupted operation for 24 hours
6. Wired communication line based on RS-485
7. UL certificate number: 20180604-E491725



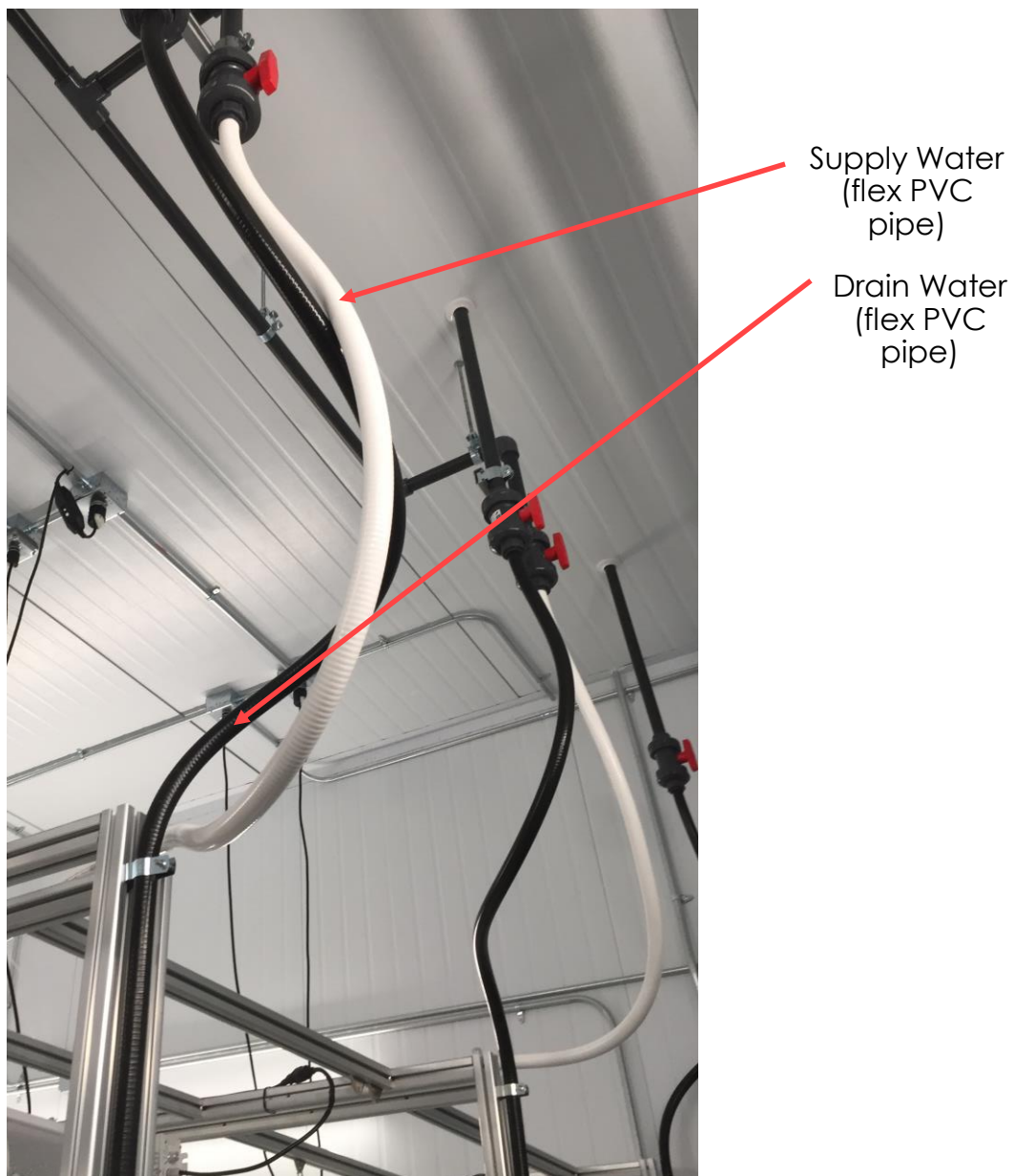


- Water fill is important to hook up as a row of 10 tubs will go through 20-30 gallons/day (76-114L/day) in bloom
- Water drain allows automated flushing driven by the Grow Plan



3-tub Ætrium-4 with left-handed Matriarch

# Atrium-4 Liquid Line Connections



- Note: now the supply and drain line both terminate at the front of the Atrium-4 Matriarch
- Flexible lines allow the Atrium-4 rows to move back and forth

# Typical AEtrium-4 Shipping Configuration

Major AEtrium-4 components	Dimensions (L x W x H)	Weight
Packaged and palletized Matriarch	57" x 45" x 37" (1450 mm x 1140 mm x 920 mm)	450 lbs (204 kg)
Packaged and palletized Daughters	57" x 45" x 48" (1450 mm x 1140 mm x 1210 mm)	480 lbs (218 kg)
Packaged Light Gantry	59" x 9.5" x 3.25" (1500 mm x 240 mm x 80 mm)	44 lbs (20 kg)
Packaged Trellis Support	34" x 3.25" x 3.25" (855 mm x 80 mm x 80 mm)	14 lbs (6.4 kg)
Packaged Trellis Bars	59" x 6" x 3.25" (1500 mm x 150 mm x 80 mm)	20 lbs (9.1 kg)

## AEtrium-4 Shipping and installation

The AEtrium-4 Matriarchs ship assembled one per pallet. The AEtrium-4 Daughters ship 3 per pallet and require about 10-15 minutes of assembly per Daughter tub.

- Door size for installation:** Grow room doors are recommended to be 48" wide to accommodate the wheeled AEtrium-4 tubs.



Packaged AEtrium-4 Matriarch



Packaged AEtrium-4 Daughters (3 sets)



Packaged Light Gantry (1 set)



Packaged Trellis Support (1 set)



Packaged Trellis Bars (1 set)



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