

## RH-CUBE 18HHG GREENHOUSE DEHUMIDIFIER



The RH-Cube 18HHG greenhouse dehumidifier:

- 1.86 kW
- removes 219 litres of water per day
- provides 51,870 BTUs/hr of heat savings.
- More economic than propane, natural gas, or fuel oil.

Benefits to dehumidification:

- improved crop yield
- CO<sub>2</sub> retention
- extended growing season
- water recovery

RH-Cube 18 HHG completely out-classes the competition on price and performance.



### TRADITIONAL HUMIDITY CONTROL

The traditional method to control a greenhouse's humidity is with ventilating and heating; however, this method has several limitations: It can be ineffective in controlling humidity on days when conditions are cloudy and rainy. It creates constant fluctuations in the indoor climate which lead to reduced crop yield and susceptibility to disease. In the evening as temperatures drop and humidity rises, venting often has to be supplemented with heating, which can be expensive.

### RH-CUBE 18HHG BENEFITS

The alternative is to control humidity with the right-sized dehumidifier. The benefits of this method are:

- improved crop yield through more uniform climate control,
- extended growing season,
- CO<sub>2</sub> retention
- water recovery,
- retain more of the day's heat for use at night.

Why choose the RH-Cube 18HHG dehumidifier to provide humidity control? Simply, because it is the most cost-effective dehumidifier on the market today. It is the most efficient and the highest capacity per dollar dehumidifier available anywhere. It outperforms the competition both in capacity and efficiency by 30% to 40%.

It can be used "stand alone", or be connected to the climate control system. It is simple to install, needing only a 208-230 VAC and a drain.

## RIGHT-SIZING

When not ventilating, then even a small amount of dehumidification improves crop yield; however, the optimum amount of dehumidification that is required is determined by the amount of moisture that builds up as a result of plant transpiration, and by the desired humidity level for optimum yield. For instance, if a given plant transpires one litre per day, then a single RH-Cube 18HHG could optimally support between 162 and 219 plants, depending on the desired conditions.

As a rough rule of thumb, a single RH-Cube is sufficient for 300-500 m<sup>2</sup> (3000-5000 ft<sup>2</sup>) of growing area, depending on the type of the crop.

	80°F 60% RH	70°F 80% RH
Capacity (US gal/day)	42.8	58
Efficiency (US gal/kW-hr)	0.96	1.3
Capacity (litres / day)	162	219
Efficiency (litres/kW-hr)	3.62	4.91

### RH-CUBE 18 HHG DEHUMIDIFICATION PERFORMANCE

## HEATING BENEFITS

As the RH-Cube 18HHG dehumidifies, the latent heat it extracts from the humidity in the air is released back into the greenhouse, heat that would otherwise be lost. The amount of latent heat extracted in this manner is quite significant and is far less expensive to generate than by any other source.

Computed below is the total heat generated by the RH-Cube 18HHG. Its cost of generation is then compared to alternative heating sources such as propane, natural gas, fuel oil and electrical heat. If you are only interested in the results, you can skip to the section on "RH-CUBE 18HHG HEAT EQUIVALENCY" on the next page.

### CALCULATION OF DIRECT HEAT GENERATION

The RH-Cube 18HHG consumes 1.86 kW of power and removes 23.4 lb of water per hour. Since water contains 970 BTU of latent heat per pound, the

condensing 23.4 lb of water releases 22,762 BTUs/hr of heat. Since 1 kilowatt is equal to 3412 BTUs, the 1.86 kW generated by the condenser and fan create another 6436 BTUs of heat. Therefore the total heat released by the RH-Cube 18HHG is 29,108 BTUs/hr.

### CALCULATION OF PREVENTED HEAT LOSS

Bearing in mind that any humidity that the RH-Cube 18HHG removes from the air is humidity that might otherwise condense out on greenhouse windows or walls and whose latent heat content could be then lost by conduction through those exterior surfaces, then the dehumidifying effect of the RH-Cube 18HHG prevents a further 22,762 BTUs of heat loss per hour. This effectively adds an additional 29,108 BTUs of heating benefits for a total of 51,870 BTUs/hr of heat savings.

## RH-CUBE 18HHG HEAT EQUIVALENCY

The tables below show the heating capability of the RH-Cube 18HHG and lists the hourly equivalent amount of fuel that it would save. For instance, the table shows that for every kilowatt of power consumed by the RH-Cube 18 HHG (roughly 10 cents worth) you could save up to one litre of fuel oil (roughly 1 dollar)

	80°F 60% RH	70°F 80% RH
BTUs per hour	51,877	68,259
kJ per hour	54,733	72,017
BTUs per kilowatt	21,454	27,861
kJ per kilowatt	8.17	10.74

### RH-CUBE 18HHG HEATING CAPABILITY

HEAT SOURCE	80°F 60% RH	70°F 80% RH
Heating oil (litres)	1.43	1.88
Propane (litres)	2.14	2.82
Natural gas (m <sup>3</sup> )	1.47	1.93

### HOURLY FUEL CONSUMPTION SAVINGS

# RH-CUBE 18HHG TECHNICAL DATA

## CONDENSER

Power Consumption	1526W (2.0 HP) @ 80°F and 60% RH
Supply Voltage	208/230 V - 1 phase, 60 Hz
(Max/Min V)	(193V - 255V)
Power Circuit	15 A breaker (Max draw 9.1A)

## BLOWER

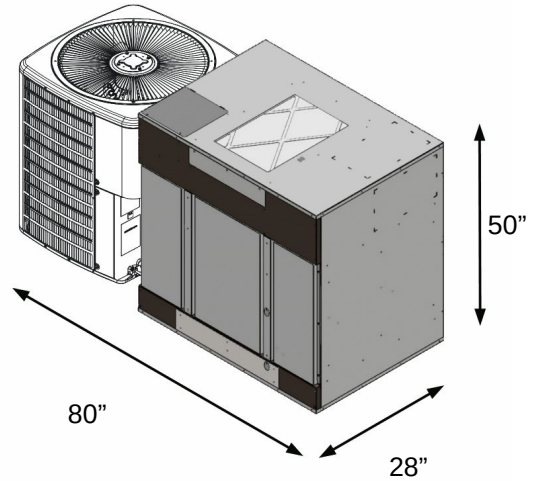
Power, Consumption	336W (0.44 HP), 610 CFM
Supply Voltage, Cord	120 V - 1 phase, 60 Hz, 6 foot cord
Power Circuit	15 A breaker (Max draw 3.2A)

## CONTROL DEVICE Dehumidistat (not included)

Output Control Power	24 VAC up to 30 VA to power
Blower Switch	Auto or always on

## FILTER

Standard (recommended)	Camfil 24x16x2 30/30 MERV 8 Part # 049880-016
Premium	Camfil 24x16x2 30/30 Dual 9 Part # 0406331-016
Maintenance	Inspect every 1-2 months, replace every 3-4 months or as needed



Patents: CA2861757, US2016265805. Other patents pending.



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