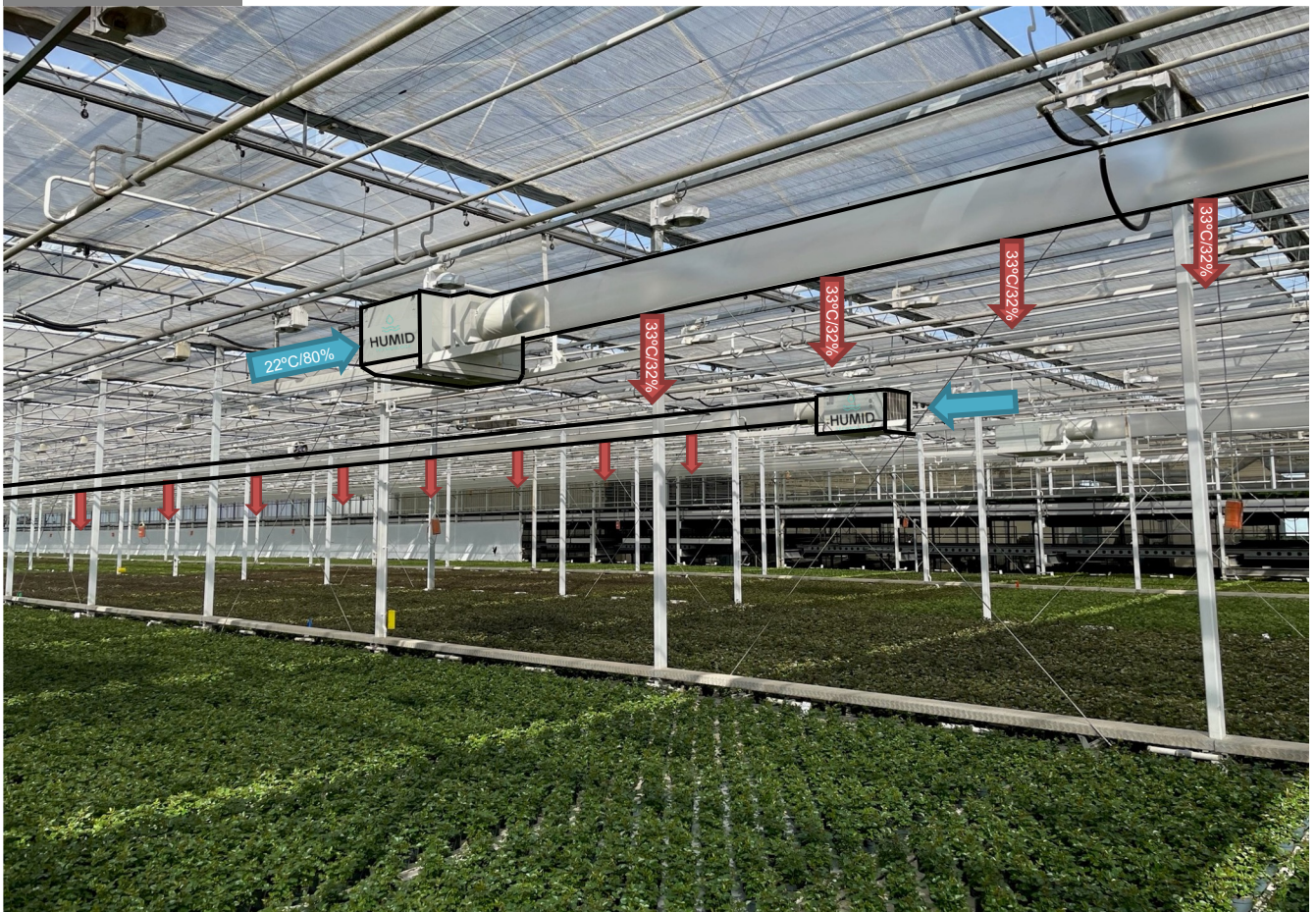


# HUMID TECHNOLOGY



## CERES 1



### General story

In a greenhouse environment the humidity level should be controlled to prevent mold forming.

Controlling the humidity level by opening the windows in the greenhouse creates a lot of heat loss and CO<sub>2</sub> loss.

To prevent loss of heat the latest solution is to use dehumidifiers for humidity control and heat generation.

Test set-ups in The Netherlands, Norway, Sweden and Mexico have proven this concept has a quick return of investment.

The Humid Ceres 1 is a top of the line dehumidifier especially designed to be used in greenhouses.

The Ceres 1 is a much more economical option for controlling the humidity level in a greenhouse environment.

Instead of losing heat the Ceres 1 produces heat while simultaneously creating the perfect climate for many different types of plants to flourish.

The Ceres 1 is developed to have a high level dehumidification and heating with a low level of power input. (DER = 2,85 at 22°C/80%RH)

### Installation

The Ceres 1 is intended to be ceiling installed in combination with air socks for discharge air distribution.

### Durability

The Ceres 1 is made to operate in aggressive environments. To accomplish this the unit is made of thick hot galvanized sheet metal. Which is powder coated with polyurethane enamel and hardened at 180°C. All units are coated in RAL. The frame is completely self-supporting with removable panels for maintenance.

### Refrigerant circuit

The refrigerant circuit is made using only parts from internationally renowned brands.

The circuit assembly and welding procedures are executed according to PED 2014/68/EU standards.

The refrigerant gas used is R410A.

Included in the refrigerant circuit are:

- Pressure safety valve
- Liquid sight glass
- Filter drier
- Thermal expansion valve with external equalizer
- Schrader valves for maintenance and control

### Compressor

The compressor used is a scroll compressor which has thermal protection built in.

The compressor is mounted on rubber vibration dampers and comes fitted with a noise insulating jacket to reduce noise emission.

### Condensor and evaporator

The condensor and evaporator are made of copper pipes and aluminium fins. The copper pipes are expanded into the aluminium fins to improve the heat exchange factor. The thickness of the aluminium fins is just 0,1mm which further improves the heat exchange factor. The evaporator is fitted with a powder coated steel drip tray and a temperature sensor used as an automatic defrost probe.

### Fan

A centrifugal type fan is used which is made of galvanized steel. The electric motors are directly connected to the fan come fitted with thermal protection and an IP54 rating. The geometry of the heat exchangers guarantees a low air side pressure drop. This makes it possible to use low rotation and low noise emission fans.

### Filter

The filter is made of a synthetic filtering medium and is removable. Filter class is ePM10 50% according to UNI EN ISO 16890:2017

### Electric switch board and microprocessor

The electric switch board is made according to electromagnetic compatibility norms CEE

2014/35 and 2014/30

The electric switch board is controlled by a microprocessor with an LCD display.

### Control and protection devices

The Ceres 1 comes fitted with the following control and protection devices:

- Antifreeze protection sensor
- Low pressure switch
- High pressure switch
- Pressure safety valve
- Compressor thermal protection
- Fan thermal protection

### Testing

The Ceres 1 is leak tested and tested in operation before shipping.

The Ceres 1 conforms to European Directives and comes marked with the CE label and a Conformity Declaration.

### Standard accessories

#### Serial interface card RS485

This interface card enables the microprocessor to communicate using the Modbus protocol

#### Low noise emission

Included are complete acoustic insulation of the unit and the compressor. The insulating medium and the compressor jacket are made of high density noise cancelling material.

### Optional accessories

#### Remote control panel

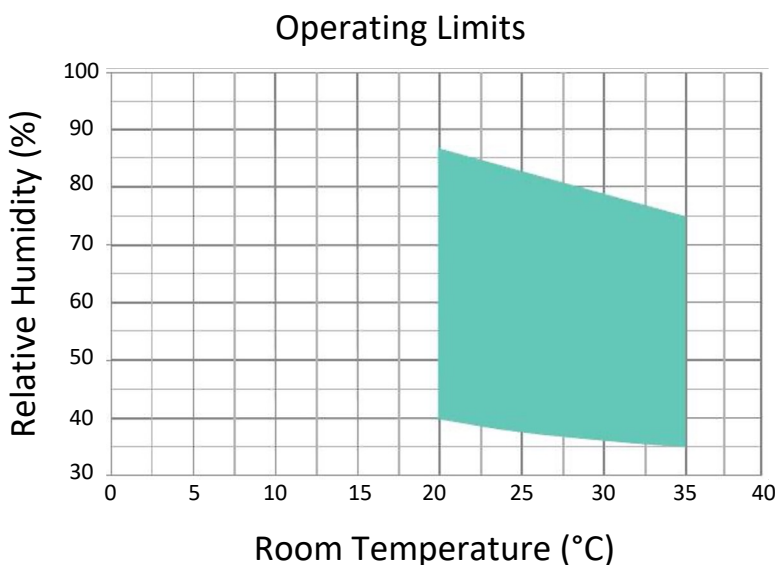
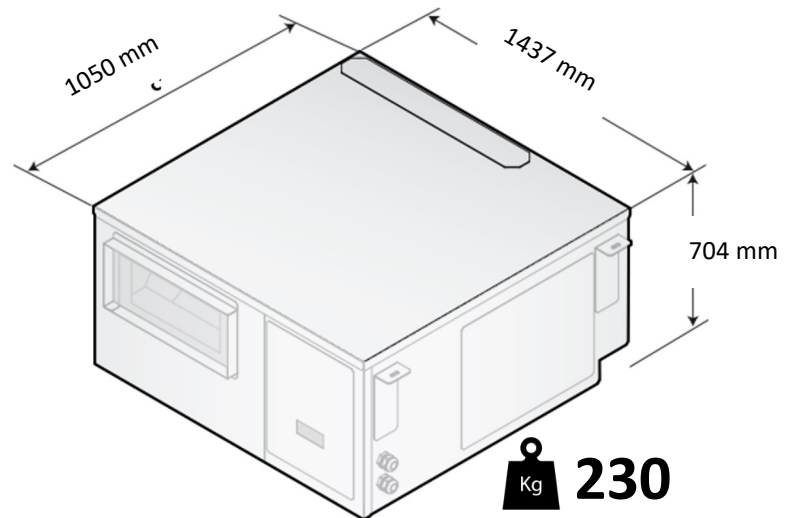
This panel can be mounted up to 50m away from the unit and replicates all of the functions of the microprocessor display.

#### Humidity and temperature probe sensor

Built-in electronic humidity and temperature probe sensor.

#### XWEB module

Remotely monitor the functioning of the unit using XWEB.



CERES 1		
Moisture removed at 22°C - 80%	l/24h	387,5
Heating capacity (sensible)	kW	14,2
DER (rendement)	Lt/kWh	2,85
Compressor input power <sup>(1)</sup>	kW	4,27
Nominal input power <sup>(1)</sup>	kW	5,67
Maximum input power	kW	11,0
Maximum input current	A	17,9
Peak current	A	76,8
Air Flow	m <sup>3</sup> /h	4300
Available static pressure	Pa	60
Refrigerant		R410A
Global warming potential (GWP)		2088
Refrigerant charge	kg	3,00
Equivalent CO2 charge	t	6,26
Sound power <sup>(2)</sup>	dB(A)	79,0
Sound pressure <sup>(3)</sup>	dB(A)	48,0
Power supply	V/Ph/Hz	400/3/50

Performances are calculated with low fan speed and are referred to the following conditions:

(1) Temperature 22°C; Humidity 80%

(2) Sound power level calculated according to ISO 9614.

(3) Sound pressure level measured at 10 mt from the unit in free field conditions according to ISO 9614.