

HD40 Green-house controller



Complete management of temperature control and of luminosity for greenhouse with action of the ridge windows, of the lateral windows, of the shading system, of the environment and soil heating system, of the dehumidification, of the minimum and maximum temperature alarm and of the management of the pluviometer and anemometer signal. Possibility to reduce the heating during the night phase, recording of historical data of working (recording of minimum and maximum temperatures). Complete programme of windows opening and closing percentages and of shading of different conditions of dehumidification intervention, of rain block, left and right wind, night condition, morning opening, etc. Waterproof keyboard with dedicated consumer keys, specific working lamps, protected programme of settings that permit a complete flexibility of working and personal belonging with the system to control. It comes equipped with 3 temperature probes (environment, soil, limit and of a luminosity probe, that can be connected at distance (1.000 metres) with a standard two-poles wire, power supply at 230V and output contacts max 4AMP.

Like all equipment, HD40 can be connected in a network for integrated system management

INPUT SIGNALS	OUTPUT CONTROLS
Greenhouse temperature	Ridge windows
Soil temperature	Lateral windows
Heating limit temperature	Shading
Luminosity	Base heating
Humidity	Help heating
Pluviometer signal	Dehumidification
Left anemometer signal	Temperature alarm
Right anemometer signal	

HD40 comes equipped with 3 **SX1** temperature probe, with 1 **LX** luminosity probe, and with **HDY6** and **HPAL** extension modules.

The eventual anemometer is not included with the supply (we suggest our **HP33** model), the pluviometer (that we don't produce), and the humidity probe 4-20mA.

KEYS AND LAMPS DESCRIPTION

WORKING LAMPS:

"BLOCK" LAMPS: state of working blocks

These lamps show the action state of ridge window relays, of lateral window, of the shading and of heating.				NIGHT = inserted night condition. DEHUM = dehumidification cycle intervent. ALARM = temperature alarm intervent. RAIN = inserted rain condition. WIND L = inserted left wind condition. WIND R = inserted right wind condition.		
AMBIENT KEY: TEMPERATURE SETTING Push this key to programme the desired temperature in the greenhouse: according to this setting the working (independent) of the ridge and the lateral windows can be established.	LUX KEY: LUMINOSITY SETTING Push this key to programme the desired luminosity in the greenhouse: according to this setting the working of shading can be established.	HEAT KEY: HEATING SETTING Push this key to programme the heating temperature in the greenhouse: according to this setting the working of base and help heating can be established.	NIGHT KEY: NIGHT REDUCTION SETTING Push this key to programme the luminosity set that establish the condition of night and day work shading and of heating.	DEHUM KEY: DEHUM. SETTING Push this key to programme the heating and opening ridge window cycle for the dehumidification.	ALARM KEY: ALARM SETTING Push this key to programme the minimum and maximum alarm temperature of the greenhouse.	+ & - KEY: RECORDING MINIMUM AND MAXIMUM HISTORICAL Select with a appropriate key the recorded temperature to see on display, and then push the + key to view the maximum recorded temperature, push the - key to view the minimum recorded temperature.

PARICULAR CONDITIONS OF WORKING

With conditions of normal working the window of ridge and lateral, the base heating and of help are actioned in floating - proportional way according to the temperature obtained from its temperature probe, the shading can be regulated according to the survey of the luminosity probe; with the conditions under explained the normal working is left.

A) When the pluviometer intervenes (inserted **RAIN** condition) this type of working operates: - The ridge window (**RIDGE**) close completely to open then of a percentage that can be programmed and can stay in this position till the pluviometer intervention remains. - The lateral window (**LATER**) close completely to open then of a percentage that can be programmed and can stay in this position till the pluviometer intervention remains. The working of lateral window can be programmed in a way that cannot undergo any changes when the pluviometer intervenes, but they can still go on working according to the servey of the environment temperature.

B) When the anemometer intervenes (**WIND L or WIND R**) this type of working operates: - The ridge left windows (**RIDGE 1**) close completely till the wind left signal remains. - The ridge right windows (**RIDGE 2**) close completely till the wind right signal remains. - The lateral window (**LATER**) close completely to open then of a percentage that can be programmed and can stay in this position till the anemometer intervention remains. The working of lateral window can be programmed in a way that cannot undergo any changes when the anemometer intervenes, but they can still go on working according to the servey of the environment temperature.

C) During the night phase (inserted **NIGHT** condition) this type of working operates: - The heating night reduction is connected. - The shading (**SHADE**) closes completely (night thermal shade). - When the night condition ends (day condition) the heating night reduction is not connected, while the shading **SHADE** waits for a time that can be programmed to open then at impulses. During the day the closing can work without impulses and can have a limit in percentage if it is required by the luminosity probe. The opening and closing working according to the daily luminosity change has a delay of a certain time that can be programmed.

D) During the dehumidification phase (inserted **DEHUM** condition) this type of working operates: - By day: ridge and lateral windows close completely to open then the ridges of a percentage for a time period after that they open the ridges and after a time period they switch on the heating of help for a certain time, after that they switch off it and wait for a certain time. - By night: ridge and lateral windows close completely, the shading opens of a percentage for a time period after that the shading closes and repeats the preceding opening cycle, after that the same dehumidification cycle is included as explained by day condition. - The

dehumidification cycle remains till when the dehumidification condition **DEHUM** is inserted. If one of ridge or lateral windows is going to open, the dehumidification condition is not inserted.

E) The base heating working (**BASE**) can be done with three different ways (anyway it works in a proportional way till when the limit probe operates):

- 1: the base heating works with the soil probe and the limit probe is present. The limit function operates in a proportional way on the cold of the base heating.
- 2: the base heating works with the environmental probe and the limit probe is not present.
- 3: the base heating works with the environmental probe and the limit probe is present. The limit function operates in this way: when the limit temperature is exceed the programmed set on the base heating diminishes. The heating is reduced during the night phase (**NIGHT**).