

## Manual Smartbox:



## Smartbox user manual

Software version 1.8

### Preface

The Smartbox can be configured in 4 different operating modes. Each mode has its own unique functionality.

The smartbox can read out various different sensors. Analogue as well digital sensors can be monitored. Different inverters can be controlled by the Smartbox V1.0. Three mains outputs can be controlled independently by the Smartbox V1.0. The behaviour of the mains outputs depends on the chosen operating mode of the Smartbox v1.0

Mode Fanauxbox retro

Mode Humidifier  
Mode Fanpumpbox  
Mode Fanpumpbox retro

Before starting always make sure the correct operating mode is selected, confirmed and loaded.

## Setup mode

The Smartbox V1.0 can be programmed in 4 different modes. To select a mode follow the next steps

- 1 Touch the up key several times until SELECT MODE pops up on de display.



- 2 Touch the enter button to enter the menu
- 3 Select other mode by touching the up key several times until the desired mode is showing in the display.



- 4 To store the mode in the Smartbox V1.0 touch the down key.



The Fanauxbox V1.0 will now store this mode in to the memory. Dots will be showed on the display during the programming.

To use the smartbox as the previous fan-Auxbox choose the MODE FANAUXBOX RETRO.

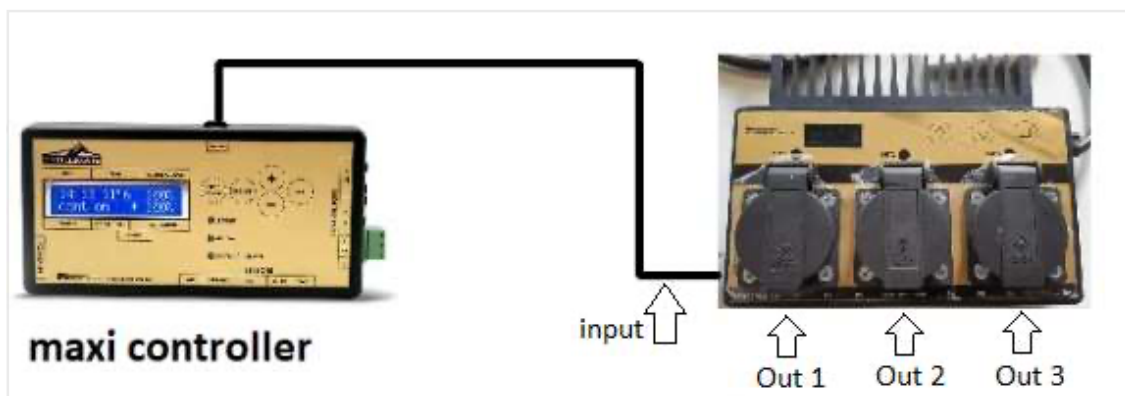
### Mode Fanauxbox retro General description

3 inputs are responsible for the status of the outputs OUT1 - OUT2 and OUT3 The inputs are on the left hand side of the Smartbox V1.0. Each output can deliver 15A. The sum of currents may not exceed 15A in total. Input RJ22 cable is connected to maxi controller

Out 1 output is connected to a fan (slow/fast)

Out 2 output is connected to a humidifier or dehumidifier (on/off)

Out 3 output is connected to a heater (on/off)



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### Mode Humidifier General description

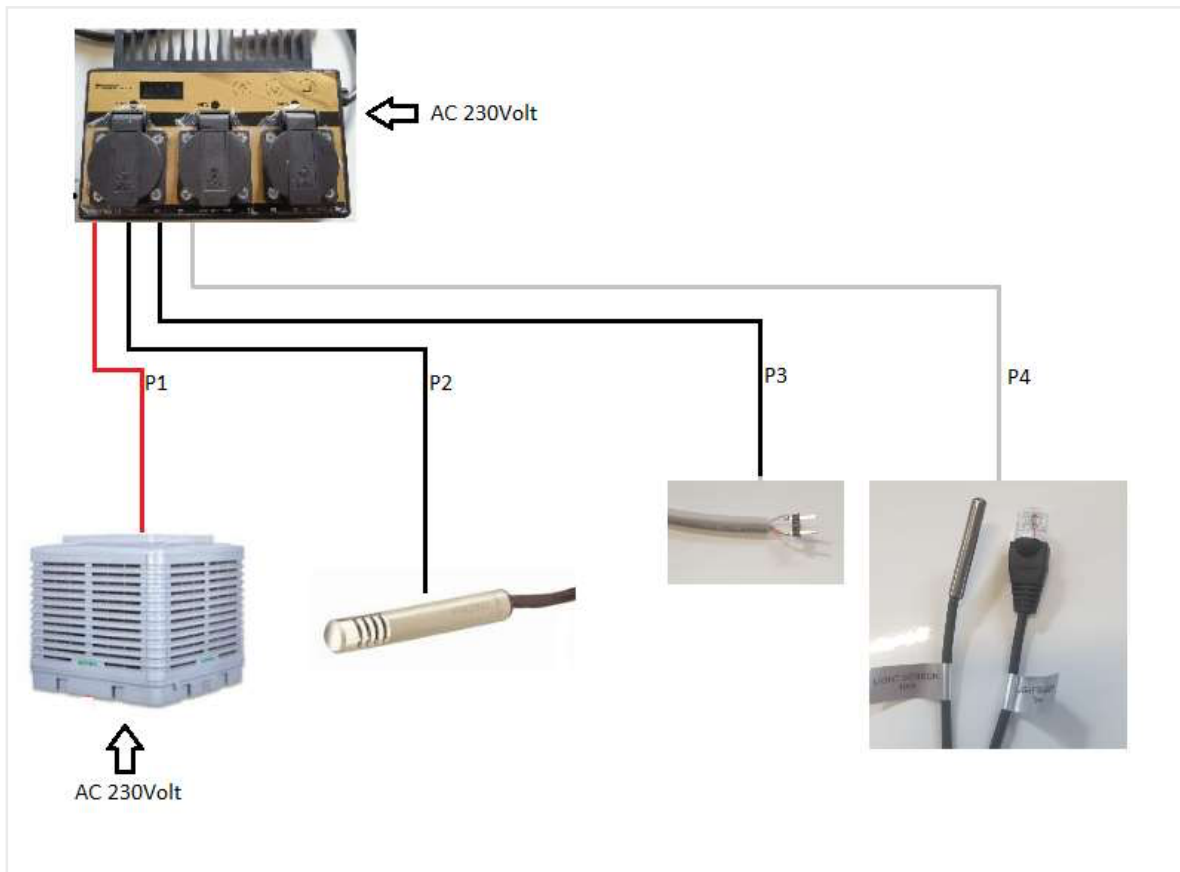
The humidifier configuration regulates the humidity by vaporising water

and distribute it in the environment direct, through ducting or an air distribution hose.

Water is being pored over anti-bacterial threaded pads, through these pads warm dry air will be introduced by a powerful fan, distributing colder moist air into the environment. (adiabatic cycle)

A number of parameters can be changed to maintain maximal performance. Also extra features have been added to make the air more homogeneous after getting the environment to the desired humidity.

- inverter fan P1.
- RH sensor P2.
- Water detector P3
- Light sensor P4



## Menu structure

### LDR setup

- LDR On Day and Night modes are selected by measuring the environment light.
- LDR Off Day mode is always selected 24/7 (always on)

### RH setup

- RH SET - Used as LDR is switch to off

- RH DAY - Used in Day mode (selected trough light detection LDR)
- RH NIGHT -Used in Night mode (selected trough light detection LDR)

### **FAN setup**

- FAN max = Max percentage fan (30%-100%)
- FAN min = Min percentage fan (0%-40%)
- FAN auto/manual - Select automatic control (PID regulated) / Manual speed
- FAN manual -Manual fan speed (0-100%)

### **Circulate setup**

- Circulate time 0 means no circulation mode 5 means 5min delay to Circulate
- Circulate speed 0-100% Fan speed in circulation mode

### **CLEAN setup**

- CLEAN auto/manual Select = Auto or manual clean (Flush water buffer)
- CLEAN Period = Time clean interval Fixed 3-6-12-24 hour Manual 1-72 hour

### **MODE setup**

- Humidifier = Smartbox V1.0 Humidifier
- Fanauxbox retro = Smartbox V1.0 Fanauxbox retro
- Fanpumpcontrol =Smartbox V1.0 Fanpumpcontrol
- Fanpumpbox retro = Smartbox V1.0 Fanpumpbox retro

### **PID setup**

- P setup - P parameter
- I setup - I parameter
- D setup - D parameter

### **Beep setup**

- Beep On/Off

### **SYS info**

- Shows version number memory model and status Temp/Hum sensor and Inverter status

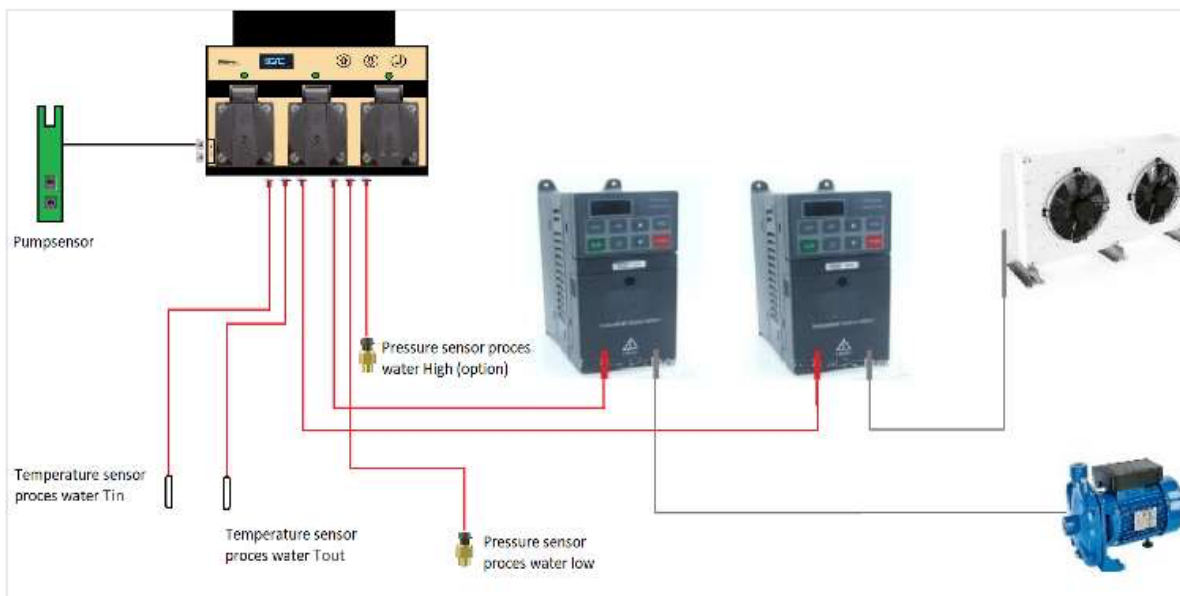
### **Exit**

- Return to main menu display
-

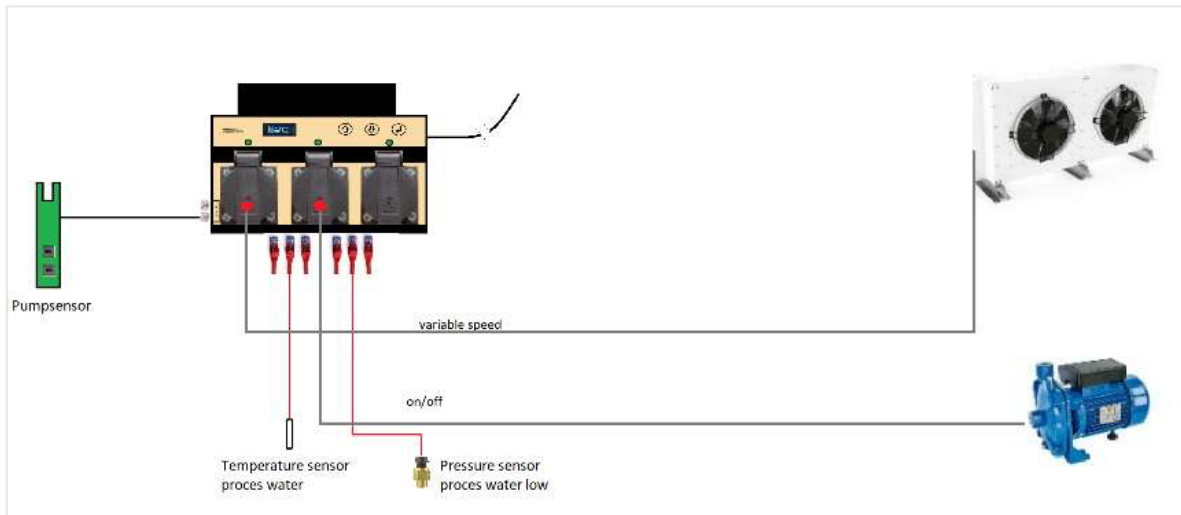
## Mode Fanpumpbox General description

- The fanpumpbox controls the liquid temperature by two complementing systems. One is the fan on the cooler and two the pump witch circulates the liquid in the system. Two NTC temperature sensors can be added to the system as well as two pressure sensors. For now only the low pressure sensor is being monitored (low pressure = pump off). The Temperature sensors are named Tin and Tout. The fan and pump can be controlled trough inverter or trough Mains output on the front. OUT1 for the fan and OUT2 for the pump.  
Note! When pump is connected to OUT 2, the pump control is on/off

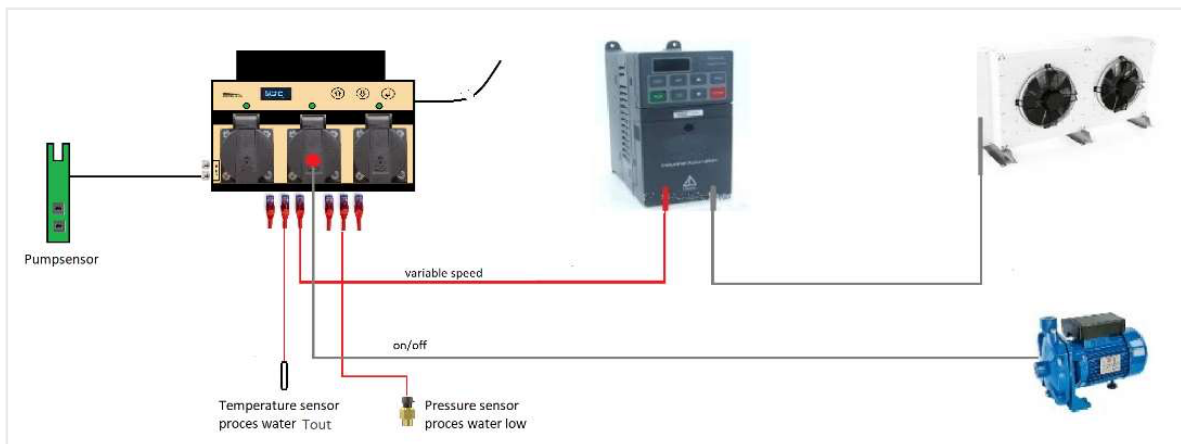
- Tin P1.
  - Tout P2.
  - Port inverter fan P3.
  - Port inverter pump P4.
  - Pressure sensor High P5. (option)
  - Pressure sensor Low P6.
  - Input RJ22 (side) to connect pump-sensor
- **Option 1: pump and fan speed controlled by inverter**



## Option 2: Pump controlled by OUT2 and fan speed by OUT1



### Option 3 : Pump controlled by OUT2 and fan speed by inverter

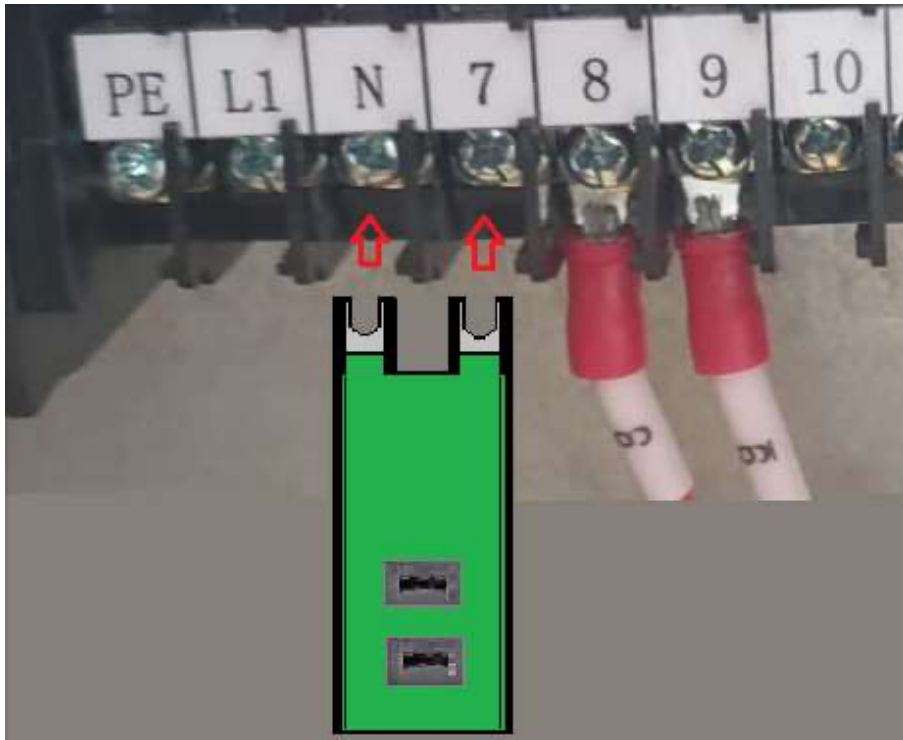


### Sensor location:

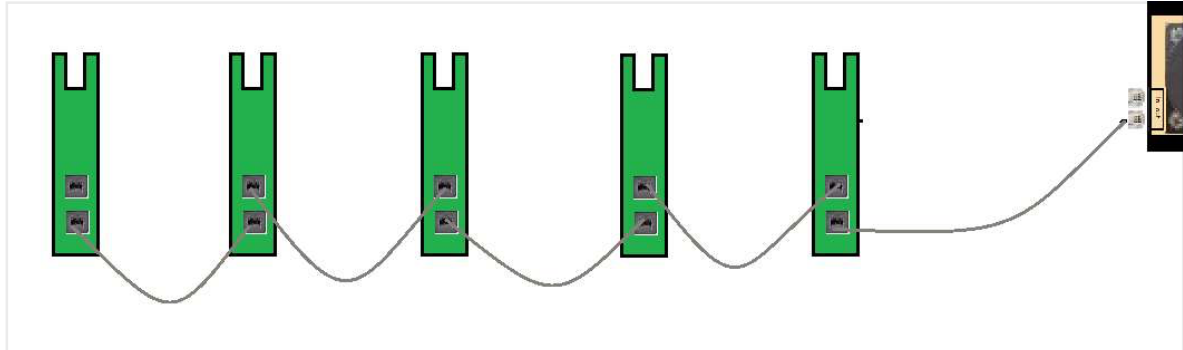
#### Pump sensor

Connect the pump sensor (compressor on signal) on the connection bar inside the electric compartment of the Opticlimat.

The sensor latches must be connected to screw terminal 7 & N. Connect the sensor with the smartbox input using the supplied communication cable (RJ22)

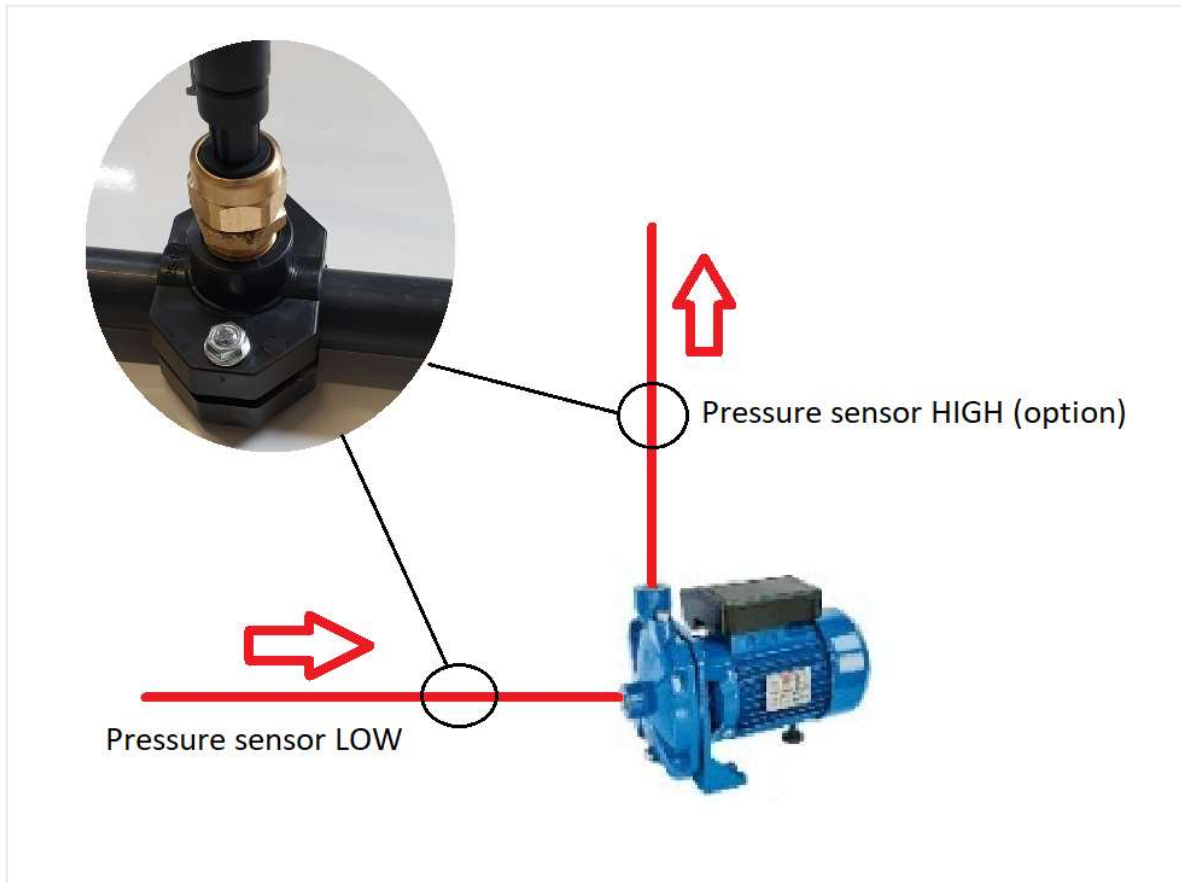


In a multiple Opticlimat setup, daisy chain each pumpsensor with the next one using a communication cable between sensors.  
 Pressure sensor



The pressure sensor LOW must be installed on the pump suction-side (before the pump) The pressure sensor HIGH must be installed on the pump pressure side (behind the pump)  
 When the pressure at the pressure LOW side is lower than 0,5Bar, the pump will stop to avoid pump damage.



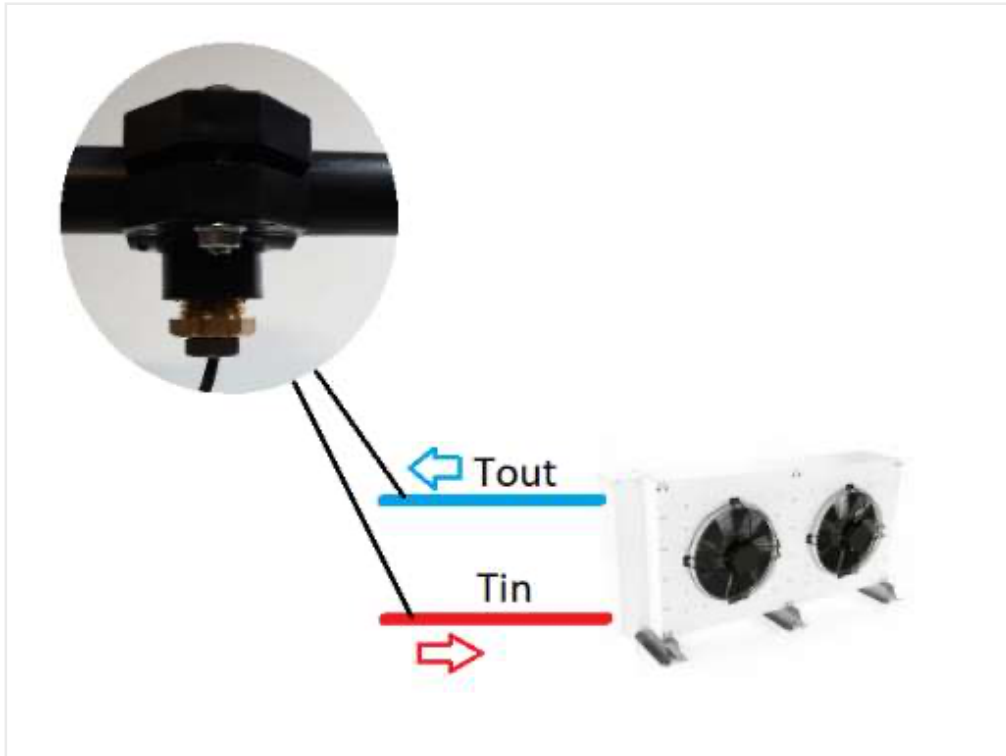


## Temperature sensors

The temperature sensor  $T_{in}$  must be installed on the pipe going into the cooler (coming from the pump) near the water cooler.

The temperature sensor  $T_{out}$  must be installed on the pipe coming out of the cooler (going to Opticlimat)

$T_{in}$  is warmer than  $T_{out}$  in an operating system. Follow the yellow arrows on the copper piping of the cooler to determine what is in and what is out. Install the sensors with the cable facing down to avoid wrong sensor reading due to air pockets trapped in the piping.



### Humidity Sensor

Install the humidity sensor near the location where humidity is critical.

- Avoid direct heat radiation from lights or sun.
- Avoid installing the sensor near humidifier air exhaust. (cycling)



### Water leak sensor

Install water sensor contact points near the floor.

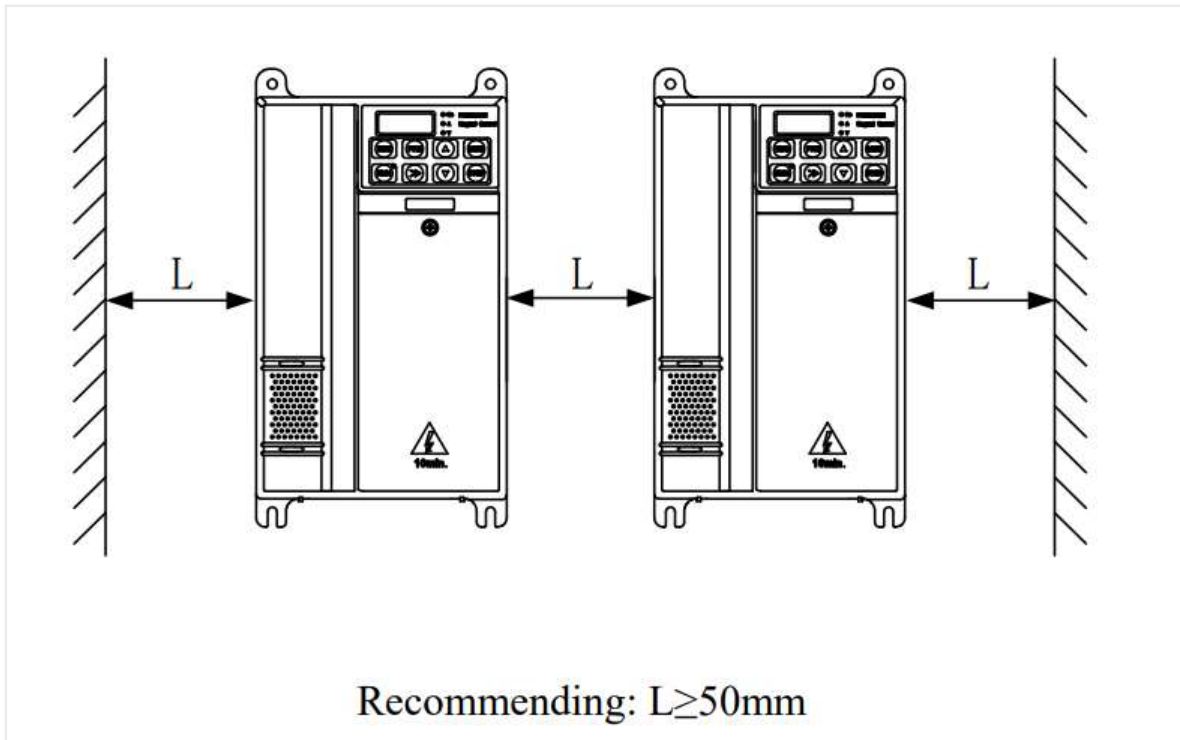
When the contacts sense water due to a water leak, the display from the smartbox flashes and water supply is shut.



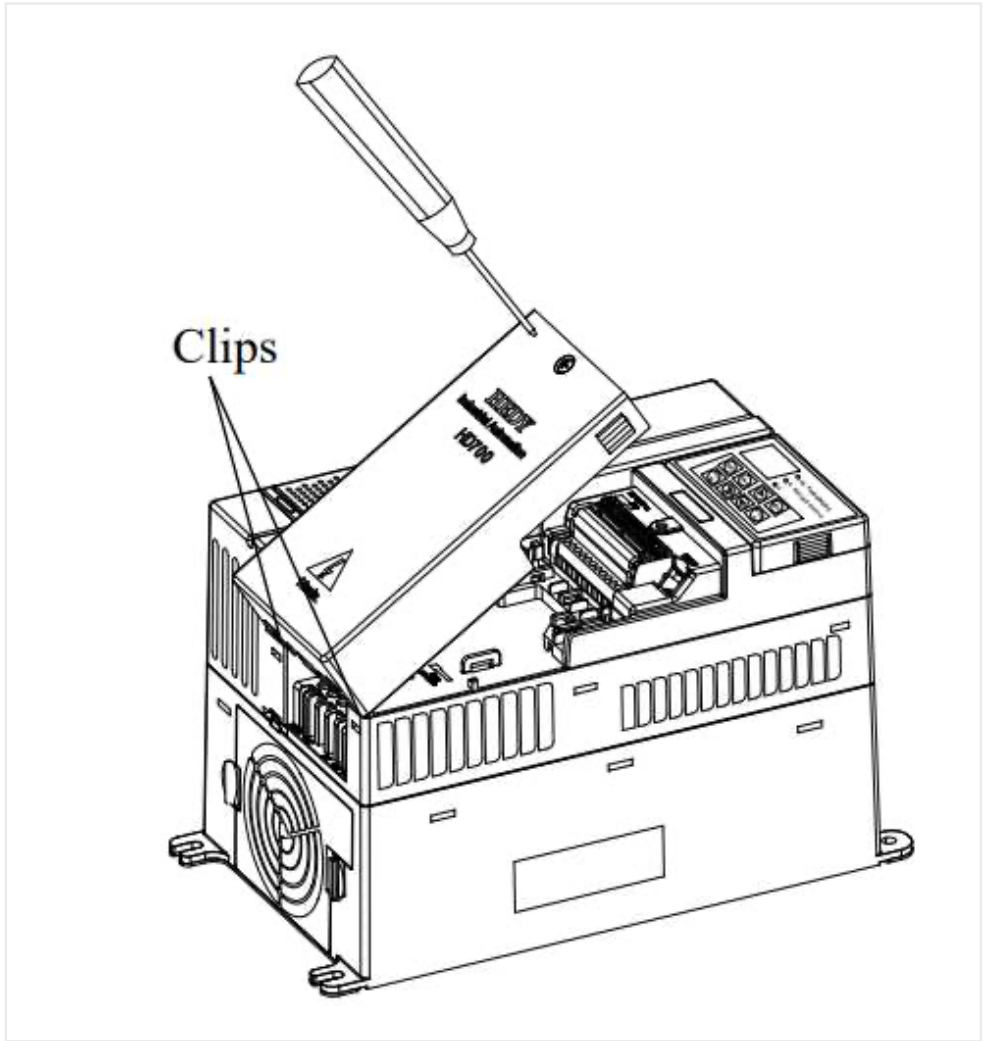
### Inverter installation

Install inverters firmly to a wall in a dry and condensation free environment. Do not use an enclosure.

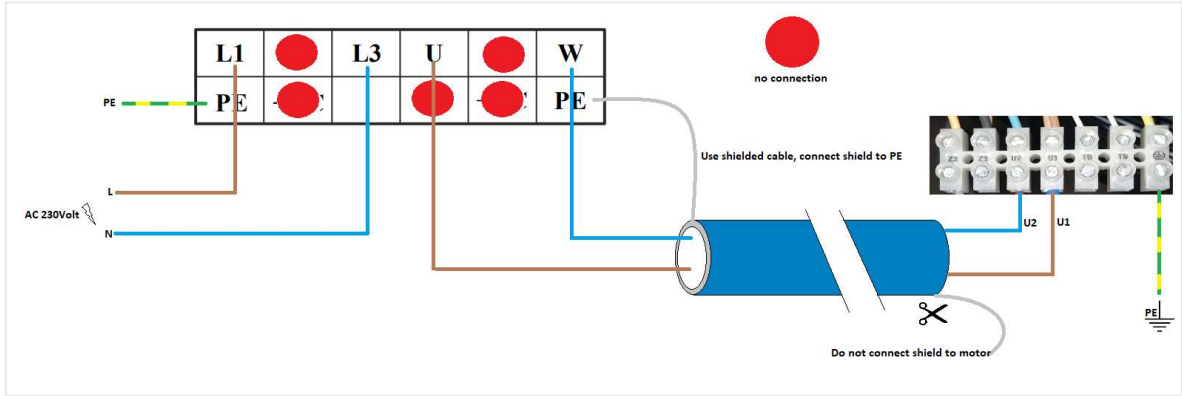
Open cover to make the connections.



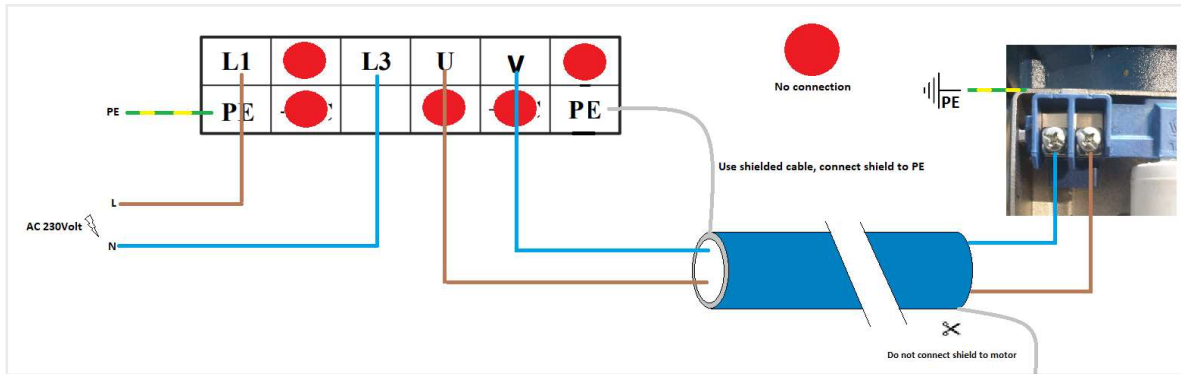
Recommending:  $L \geq 50\text{mm}$



Connecting Inverter to Fan



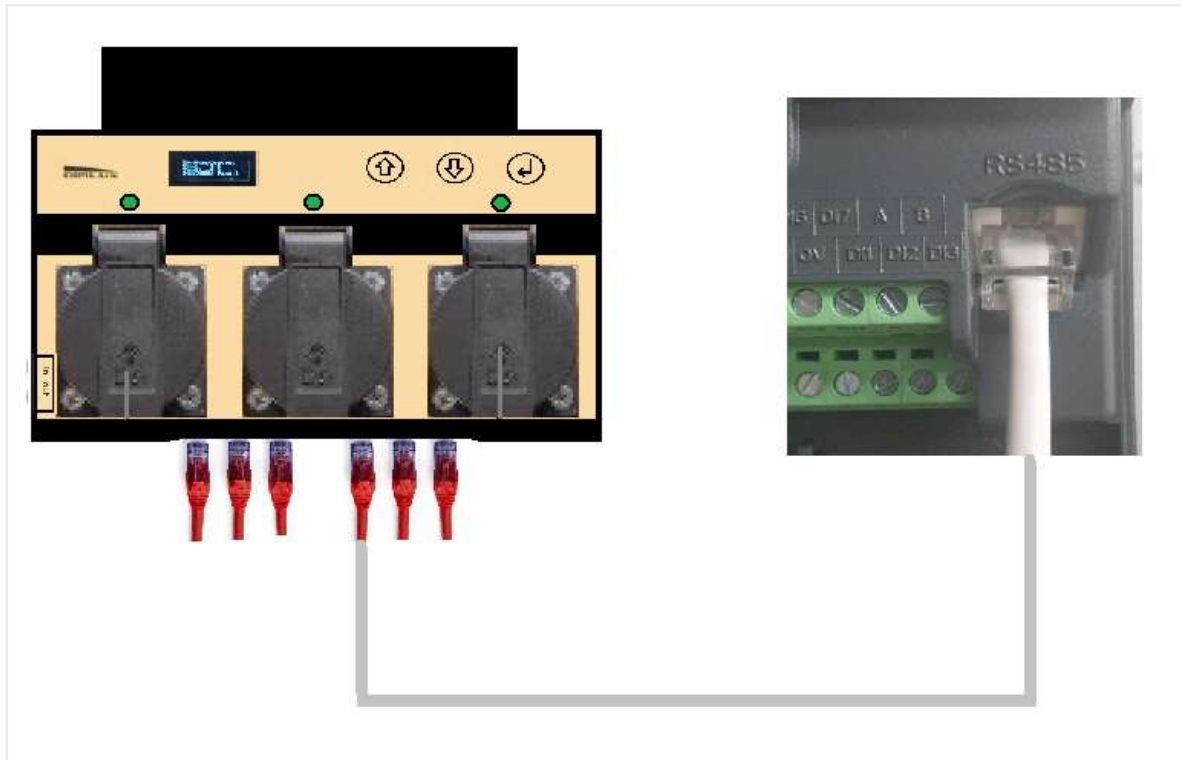
Connection of power cables Fan  
Connecting inverter to pump



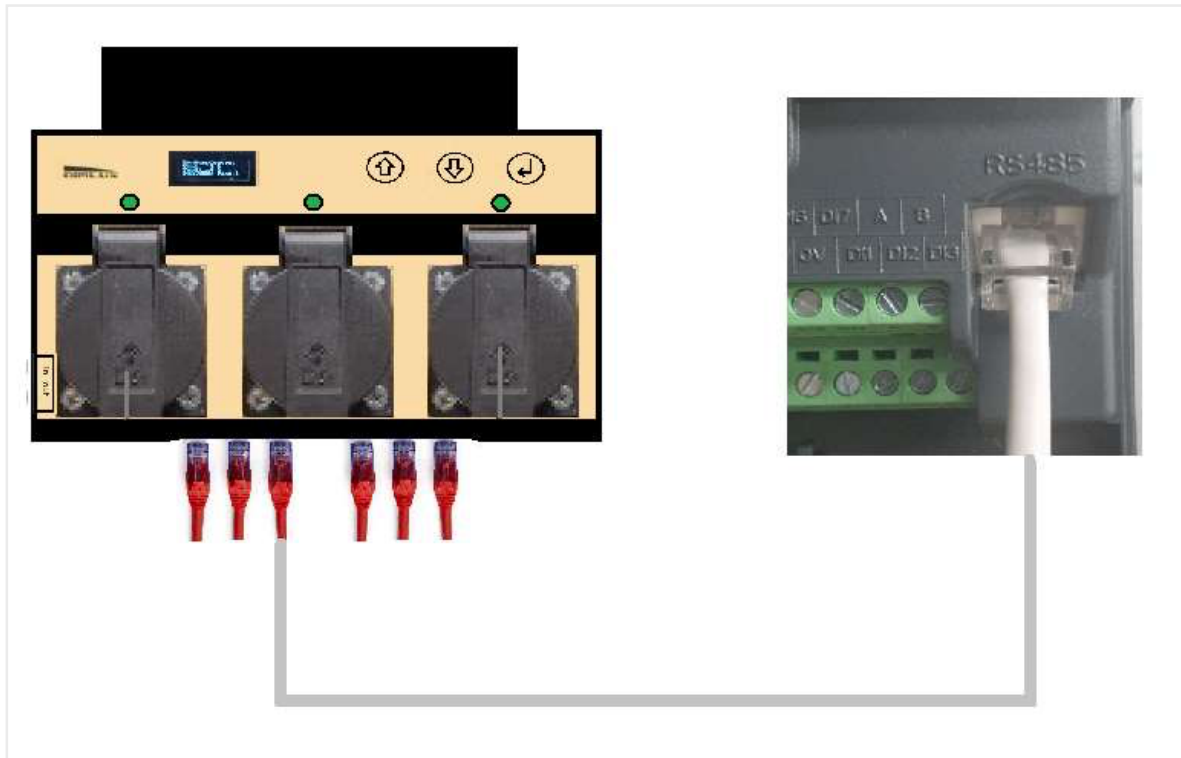
### Connecting smartbox to inverter (RS485)

Use supplied dedicated cable with labelled connections between smartbox and inverter

### Fan



### Pump



## Menu structure

### Tout SETUP

- Sets the desired process water output temperature (30°C)

### Tdelta SETUP

- Sets the max delta temperature between Tout and Tin Steps in 0,5 degrees ( $\Delta T = 5$ )

### NTC SETUP

- Calibrate NTC. Enter the result Tout(on display) - Tactual(measured).

### FAN SETUP

- FAN MAX  
Maximal speed fan (30 – 100%)
- FAN MIN  
Minimal speed fan (0 – 40%)

### PUMP SETUP P

- PUMP MAX  
Maximal speed pump (30 – 100%)
- PUMP MIN  
Minimal speed pump (0 – 30%)

### **PID setup**

- P setup - P parameter
- I setup - I parameter
- D setup - D parameter

### **MODE setup**

- Humidifier = Smartbox V1.0 Humidifier
- Fanauxbox retro = Smartbox V1.0 Fanauxbox retro
- Fanpumpcontrol = Smartbox V1.0 Fanpumpcontrol
- Fanpumpbox retro = Smartbox V1.0 Fanpumpbox retro

### **Beep setup**

- Beep On/Off

### **SYS info**

- Shows version number memory model and status Temp/Hum sensor and Inverter status

### **Exit**

- Return to main menu display

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## **Mode Fanauxbox retro**

### **General description**

3 inputs are responsible for the status of the outputs OUT1 OUT2 and OUT3

The inputs are on the left hand side of the Smartbox V1.0. Each output can deliver 15A. The sum of currents may not exceed 15A in total.

Input RJ22 cable is connected to maxi controller

Out 1 output is connected to a fan (slow/fast)

Out 2 output is connected to a humidifier or dehumidifier (on/off)

Out 3 output is connected to a heater (on/off)

All settings are controlled by Maxi controller. Use Maxi Controller manual for discription.

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## Fanpumpbox retro General description

3 inputs are responsible for the status of the outputs OUT1 OUT2 and OUT3 The inputs are on the left hand side of the Smartbox V1.0.

Each output can deliver 15A. The sum of currents may not exceed 15A in total.

The Fanpumpbox retro mode is for retrofitting older style fanpump-controllers using a FanAuxBox Input: IN/OUT

See manual fan pump box for installation advice for the fan pump box retro

