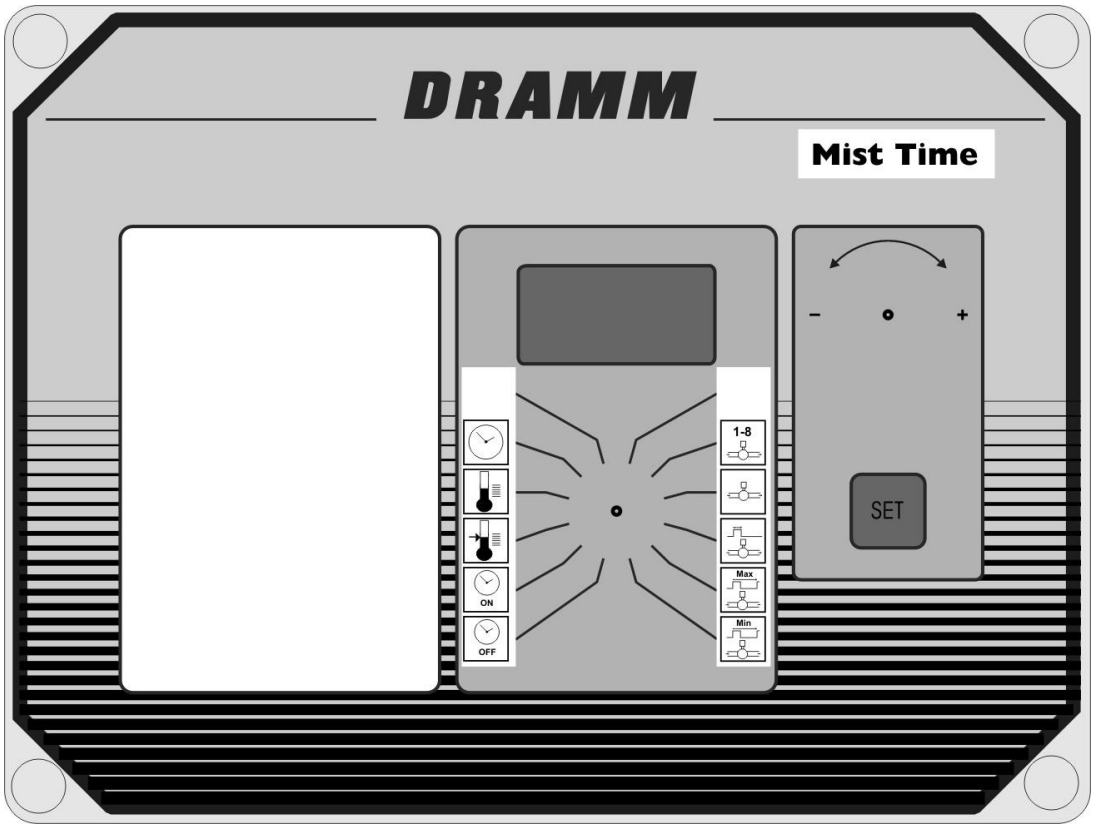
# DRAMM

**Manual**
**MIST TIME 2**
**Version MIS 1.4-2 LP**
**December 18, 2006**





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**MICROFAN** Agri-division of Van Issum Techniek BV
Developing, manufacturing and marketing of **MICROFAN** computers, measuring, control and monitoring equipment for Agricultural purposes.

Dear customer,

This manual contains all the necessary information to master the operational characteristics of the MIST TIME Read this manual carefully before you start working with the MIST TIME. It makes it a lot easier to familiarize oneself with the controller. Keep this manual at hand, so that you can use it as a reference book at all times.

As our products are subject to continuous development and updating, Van Issum Techniek BV is entitled to revise or modify its products without prior notice.

## IMPORTANT!

**Never disconnect the cabling from the various circuit boards, when the computer is plugged.**

**All weak current wiring should be shielded. Shield connected as shown in the wiring diagram.**

**It is really important to provide the installation of a reliable alarm mechanism. Microfan advises next to the application of the computer alarm signalling, a minimum/maximum thermostat that is not dependent on the computer.**

**Van Issum Techniek BV recommends checking its proper functioning regularly (at least 1x a day).**

## Table of contents

## Description MIST TIME

The MIST TIME controller is specially developed for climate conditioning in a section.

Possibilities MIST TIME:
- Controlling up to 2misting valves (24Vac 2VA per valve).
- Controlling a pump.
- Misting valves starting on time or temperature.
- Automatically adjustment of the misting cycle by the temperature.
- Alarm output for alarm when temperature sensor goes defect.
- Alarm when power goes down.
- Temperature readings selectable in Celsius or Fahrenheit.

## How to operate the MIST TIME

On the front of the MIST TIME controller you will find a display (4 digits), a function selector and a turning knob to adjust the settings and a SET key. The function selector allows a selection of 10 functions. In the 4-digit display appears the value of the selected function. Being a setting this value can be adjusted by the control knob. To the left: value setting is reduced, to the right: value setting is increased. The display will start flashing indicating that the setting is being adjusted. After the setting has reached the desired value, it can be ‘programmed' by pressing the SET key. The display stops flashing and from then onwards the controller continues controlling on the new setting.

When the controller establishes an alarm, the display will show a flashing code (e.g.: ‘-2-'). The alarm relay will be released activating an external alarm device. Pressing the SET key will cancel this alarm. If the alarm situation is still there after 1 minute, the controller will again release an alarm.

## Measurements /Setting procedure

By directing the function selector to the desired symbol, the display will produce the measured value/setting going with it. The symbols have the following meanings:


**Misting valve selection** (1 till 2)
After selecting a valve all the next valve settings are related to the selected valve.

The next functions are related to the valve you have selected by previous function. So first you select the desired misting valve (see previous function) and then you can adjust the concerning setting for that valve.

**Mode misting valve** (0 till 4)
This function lets you select the mode of the concerning misting valve. There are 5 possibilities:
0 = Valve always off.
1 = Valve manual on. Cycle time = setting maximum cycle time. Active time = setting on-time.
2 = Same as mode 1, but only active between the start and stop time.
3 = Valve on as soon as the temperature rises above the set temperature. The cycle time is calculated between the maximum cycle time and the minimum cycle time. Remark: the cycle time is never smaller then the minimum cycle time.
4 = The valve is working on temperature base but only between the start and stop time.

**On-time misting valve** (1 till 250 sec.)
This is the active-time of the misting valve every misting cycle.


**Maximum cycle time** (1 till 250 minutes)
This is the cycle time of de selected valve. When the valve is controlled manually or by time this setting is used as the cycle time. When the valve is controlled by temperature the MIST TIME will calculate the cycle time between this maximum cycle time and a adjustable minimum cycle time. See farther down.


**Minimum cycle time** (1 till 250 minutes)
This is the minimum cycle time. This minimum time is only working when the mode of the valve is on temperature base. When the temperature is equal to the set temperature plus the p-band (or higher) this minimum cycle time is used. When the temperature is between the set temperature and the set temperature plus the p-band, the controller will calculate the cycle time. (Between the maximum cycle time and the minimum cycle time).


**Stop time** (00.00 till 23.59 hour)
When the misting control is on time-base the misting is only active between the starting time and this stop time.


**Start time** (00.00 till 23.59 hour)
When the misting control is working on time-base the misting is started when this time has been reached. See also next function.

**Set temperature** (0,0°C till 50,0°C).
When the valve is working on temperature base, the misting cycle is started as soon as the temperature is rising above this set temperature. When the temperature is still rising, the cycle time will be shortened from maximum cycle time to minimum cycle time. This means the valve is switched on more often when the temperature becomes higher.

**Reading temperature** (0.0°C till 51,0°C). This is the actual temperature. If the control by temperature is selected, this temperature is used to determine wetter the misting should be switched on or off.
***Note I:*** if you have selected the Fahrenheit reading, this temperature will be shown in Fahrenheit.

**Actual time** (00.00 till 23.59 hour)
**Note I:** if the power is off the clock will stop running. All settings remain in the memory.(Backup)

## Installation instructions

The controller disposes of an installer's program that makes it possible to adjust the controller to the user's wishes. In addition, the program can be used to calibrate the controller. Starting up the installer's program goes as follows:

- Disconnect the controller from the mains power supply.
- Press the SET key and hold it pressed.
- Connect the controller to the mains power supply again.
- As soon as the display lights on, the SET key can be released.

The installer's program has now been started up, which is made visible by a flashing point behind the third digit in the display.

With the selection knob a selection can be made from the various installer's functions. The following functions will be possible:


**Calibration temperature sensor** (already done at works)
The display now produces the measured current temperature of the room sensor. By turning the +/- control knob this measured current temperature can be adjusted to one's personal wish. Adjustment of this measured value is done as follows: Select this function. Measure the temperature near the room sensor with an accurate thermometer. Turn the +/- knob, until the display indicates the same value. Next press the SET key to store the calibration into memory.

***Note:*** Carry out the calibration only when the temperature at the room sensor is 10°C /50 F or higher.

**P-band cycle time** (1,0°C till 10,0°C).
This is the number of degrees where in the cycle time will be regulated from maximum cycle time till minimum cycle time. Remark: this setting is always in Celsius, even if you have selected Fahrenheit.

***Example:***

| | |
|---|---|
| Mode valve | = 3 (on temperature base) |
| On-time valve | = 30 sec. |
| Maximum cycle time | = 10 minutes. |
| Minimum cycle time | = 2 minute. |
| Set temperature | = 20,0°C |
| P-band | = 10,0°C |

When the actual temperature is below the set-temperature (< 20°C) the valve is always switched off. As soon as the actual temperature reaches the set-temperature (= 20°C) the valve is pulsed on and off. The on-tie is 30 seconds and the total cycle time is 10 minutes. (= maximum cycle time). So the valve is switched on for 30 seconds every 10 minutes. When the temperature is rising the cycle time decreases and the valve will be switched on more often. The maximum pulse frequency will be reached as soon as the actual temperature reaches 30°C (set-temperature + P-band). The valve then is switched on for 30 seconds every 2 minutes. See table below.

| Actual temperature | On-time valve | Cycle time |
|---|---|---|
| Below 20°C | Valve off | Valve off |
| 20,0°C | 30 sec | 10 minutes |
| 22,5°C | 30 sec | 8 minutes |
| 25,0°C | 30 sec | 6 minutes |
| 27,5°C | 30 sec | 4 minutes |
| 30,0°C | 30 sec | 2 minutes |
| Higher then 30,0°C | 30 sec | 2 minutes |

*Example table*

**Selection Celsius or Fahrenheit** (0 or 1).
0 = All temperature readings are in Celsius.
1 = All temperature readings are in Fahrenheit.
***Note I:*** If you change this setting, you will have to recalibrate the temperature sensors; otherwise there will be a minor difference in the temperature readings.


**Mode water pump** (0 or 1).
The MIST TIME can control a water pump. Before a misting valve is switched on, this water pump is switched on to create water pressure. When you select the water pump control, output 8 (is used for the pump control.
0 = No water pump selected.
1 = Water pump selected.


**Pre-running time water pump** (1 till 100 sec.)
This number of seconds before a misting valve is switched on, the water pump is switched on to build up the water pressure. As soon as the valve is switched off the water pump is also switched off immediately.
***Note I:*** This function has no meaning when you don't have selected the water pump control.

The remaining functions have no meaning.

The installer's program is concluded by switching the mains off and on again. After that the user's program will be started

## Alarm signalling

When the controller establishes an alarm, its code appears in the display. At the same time an alarm relay falls off activating an external alarm device connection. After the alarm release by the controller there is a possibility to restore the alarm by pressing the SET key. When after 1 minute the alarm is still there, the controller will release the alarm a second time. The following alarm call releases can be distinguished:

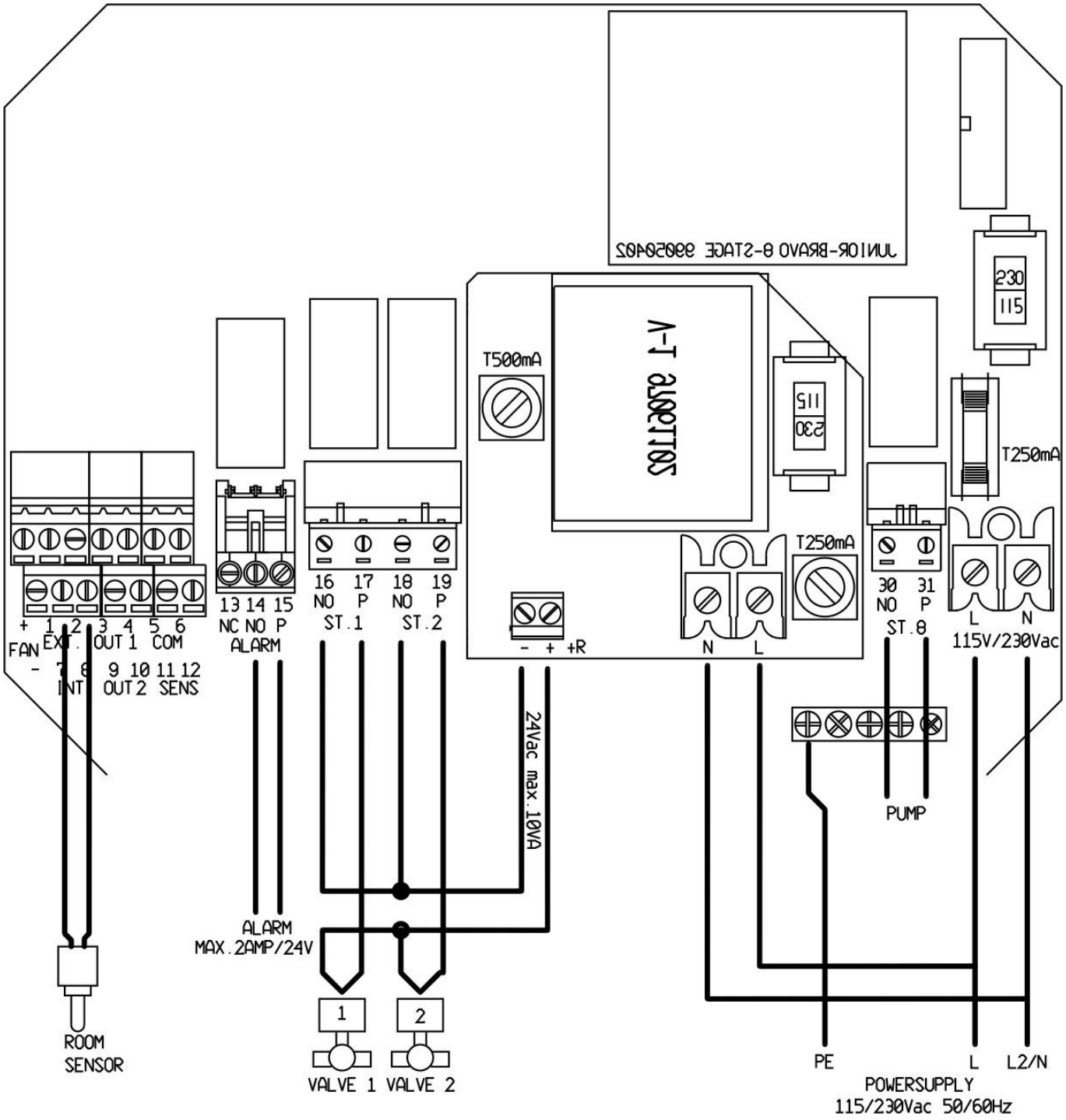
**-2- Faulty temperature sensor**
The controller establishes a short-circuited or interrupted sensor or sensor line.

## Installation rules

Installing the MIST TIME you proceed as follows:
- Mount the controller to the wall and make the connections according to the wiring diagrams as indicated on the following pages.
- Ensure that the weak current lines are placed as far as possible from the heavy current lines. Never in the same cable shaft.
- After you have checked the connections start up the installer's program by holding the SET-button while activating the power supply.
- Make the right settings in the installer's program, like:
  - Celsius or Fahrenheit.
  - Water pump control.
  - P-band temperature control.

Now the installation is complete and the power supply can be switched off and on again to terminate the installer's program and to start up the user's program.

## Wiring diagram Print



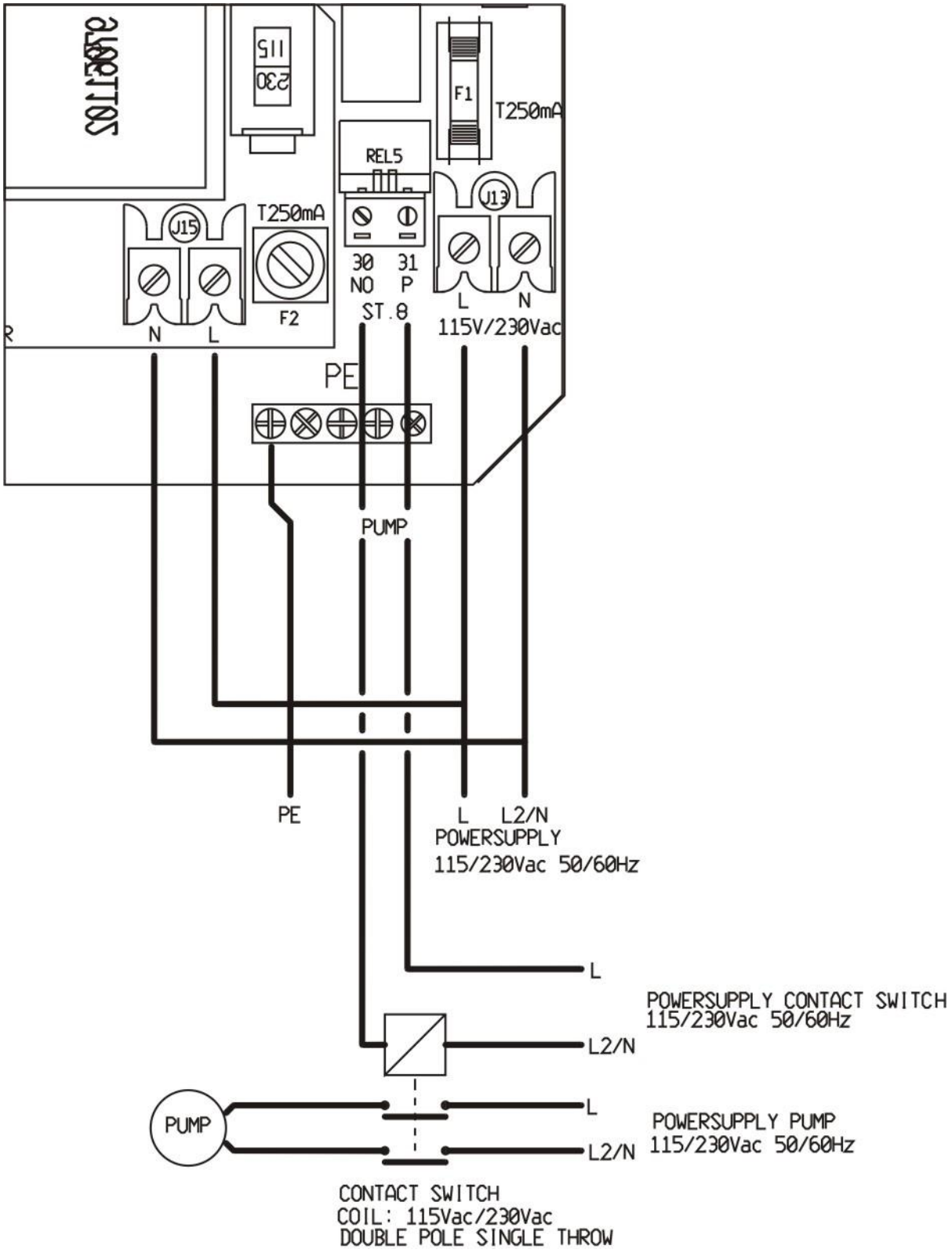
## Wiring data Print

| | |
|---|---|
| **7+8** | **Temperature sensor PT1000**<br>Always use shielded cable and connect the shielding to connector 8. |
| **13+14+15** | **Alarm relay** (potential free, max. 2Amp./24Vac/dc)<br>No alarm: 14+15 closed, alarm: 13+15 closed. |
| **16+17** | **Relay misting valve 1**<br>Potential free. |
| **18+19** | **Relay misting valve 2**<br>Potential free. |
| **30+31** | **Relay water pump**<br>Potential free. |
| **N+L** | **Power supply** 230Vac/115Vac (*) 50/60Hz.<br>L2/N = L2/Neutral<br>L = Phase |

***Fuse:*** T250mA (Main bottom board)
***Fuse:*** T250mA (Power supply)
***Fuse:*** T500mA (Power supply)

***Attention!*** Check the power supply switches on the main bottom board and the power supply board.

## Wiring diagram pump with external contact switch



## Specifications

| | |
|---|---|
| Power supply | : 115/230Vac -10% / +5% |
| Max. load misting valve/pump relays | : 6Amp. 230Vac (potential free) |
| Max. load alarm relay | : 2 Amp. 24V ac/dc (potential free) |
| Fuse main bottom board | : T250mA |
| Fuse power board | : T250mA + T500mA |
| Max.load power board | : 10VA |
| Temperature sensor | : PTC 1000 ohm |
| Accuracy sensor | : +/- 0,5°C |
| Accuracy temperature measurement | : +/- 0,5°C |
| Resolution temperature measurement | : 0,2°C |
| Resolution temperature reading | : 0,2°C |
| Temperature range temperature sensor | : 0 - 50°C |
| Encasing | : Plastic IP54 |