

# Rain Command Manual

**Version A03**

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The RAIN COMMAND is a product of MICROFAN North America.  
MICROFAN North America is a joint venture between the DRAMM  
Corporation and VAN ISSUM Techniek BV.

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

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**Dear Customer,**

This manual designed to help you get up and running quickly on you Rain Command. It describes all you need to know about how to use your Rain Command. After you become familiar with the basic functionality of your Rain Command, you can use this manual as a reference for less common tasks, for maintaining your Rain Command, and also as a source of information if you have problems operating it. So carefully read this manual before you start working with the Rain Command.

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

**Limited Warranty**

Van Issum Techniek B.V. warrants this unit, the Rain Command, subject to the following terms and conditions. This warranty is valid only to the original purchaser for a period of 1 (one) year from the date of manufacturing. Manufacturing date is stated in the four digits of the serial number. Van Issum Techniek B.V. hereby warrants that should this unit prove defective by reason of improper workmanship, Van Issum Techniek B.V. will repair the unit, making all necessary parts replacements, without charge for either parts or labor.

This warranty will apply only under the following conditions:

1. The installation must be made in accordance with our enclosed installation instructions.
2. The unit must not have been previously altered, modified or repaired by anyone other than Van Issum Techniek B.V.
3. The unit must not have been subject to accident, misuse, or abuse, or operated or installed contrary to the instructions contained in this Guide. The opinion of Van Issum Techniek B.V. with respect to these matters shall be final.
4. The person requesting the services provided hereunder must be the original purchaser of the unit, and must furnish proof of purchase upon request.
5. This warranty is applicable only to the Rain Command.
6. All transportation charges on units submitted for warranty repair must be paid by the purchaser.
7. For warranty services, return the unit, together with the original proof of purchase, to you dealer.

Except to the extent prohibited by applicable law, no other warranties whether expressed or implied, including warranties of merchantability and fitness for a particular purpose, shall apply to this unit. Any and all implied warranties are excluded. Van Issum Techniek B.V. shall not be liable for consequential damages sustained in connection with the said unit. Van Issum Techniek B.V. neither assumes, nor authorizes any representatives or other persons to assume for it, any obligation or liability other than such as is expressly set forth herein.

**Recommendation:**

Since it is not possible to internally protect this product completely from effects of power surges and other transients, we highly recommend that external surge suppression devices be installed. Power surges may be the result of external influences (such as lightning or utility distribution problems) or they may be generated internally (such as by starting and stopping inductive loads such as heavy pumps, motors, lights etc.

If you do not take such precautions, you acknowledge your willingness to accept the risk of such loss or injury.

**IMPORTANT**

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

**Always use shielded cable a minimum diameter of 0,8mm\_ for the weak current connections and mount the shielding in accordance with the wiring diagram.**

**Connecting inductive loads like magnetic switches and like, Van Issum Techniek B.V. recommends to mount an interference RC-filter (100 ohm + 100 nF) parallel on these loads.**

**It is of paramount importance to provide the equipment with a sound alarm device. Van Issum Techniek BV recommends checking its proper functioning regularly (at least once a day).**

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## Possibilities of the Rain Command.

The Rain Command is specially developed for controlling of a misting and/or an irrigation system from maximum 40 valves or zones. The Rain Command has the following possibilities:

- Modular system.
- 8 Valves per valve output board or module.
- Maximum 5 modules (= 40 Valves or zones).
- Output for valves max. 24Vac 0,5Amp per valve.
- 2 Outputs to control a main valve or pump.
- 1 Alarm output.
- 1 Temperature input.
- 1 0-10V Input for a light intensity sensor.
- 1 Liter counter input (1 pulse/liter or 10 pulses/liter)
- 1 Input for external start signal irrigation from a greenhouse computer or other source.
- Misting based on on/off time.
- Irrigation based on liters or time.

The Rain Command can be used for misting, irrigation or in combination of both. In the installers program can be set how many valves will be used for misting. The remaining valve will then be used for irrigation.

## The misting program.

The misting can start based on time if the light intensity reaches a certain level, or if the temperature rises above a set value. If the Rain Command starts on time, the misting is only active between the start- and the stop time. If the Rain Command start based on light or temperature, the misting will start with pulses if the light intensity or the temperature rises above a set value. It is also possible to increase the on time or decrease the off time by light intensity or temperature. (both result in an increase in misting time).

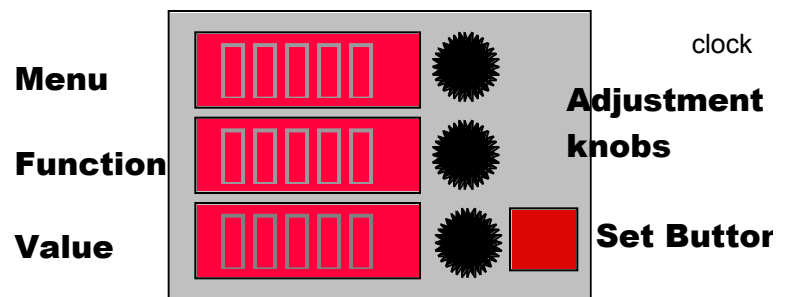
## The irrigation program.

The irrigation program consists out of 3 independent programs. Each program has 6 start times per day (7 days per week). You must choose which program each valve is assigned to. An irrigation cycle can be started manually, based on a start time, if the temperature goes above or below a set point, if the light intensity reaches a designated level or through a combination of those possibilities. There can be more then one irrigation valve simultaneously active, depending on an installers-setting. If there should be more valve active than allowed, the last valves will wait until there are free valves.

## Operation of the Rain Command.

On the front of the Rain Command you will find 3 displays, 3 turning knobs and 1 push button. The 'Valve/Zone' display shows the selected menu. By turning knob beside the display you can choose another menu. The following menus are possible:

- 00 = General measurements and settings like and temperature.
- S 00 = General settings misting program.
- r1.00 = General settings irrigation program 1.
- r2.00 = General settings irrigation program 2.
- r3.00 = General settings irrigation program 3.
- S 01-S 40 = Settings misting valve 1 - 40.
- r 01 - r 40 = Settings irrigation valve 1 - 40.



The 'Function'-display shows always the number from the selected function in the concerning menu. With the belonging turning knob you can select other functions. The 'Value'-display will show the value of a setting or measurement. If this is a function that can be set, you can change this value with the belonging turning knob. After the setting has reached the desired value, press the **SET-key**. By doing this, the new setting is "programmed" in to the memory. The Rain Command then continues controlling on this new setting.

When the Rain Command establishes an alarm, the 'Valve/Zone'-display will showed the letters **-AL-**. The 'Value'-display will give by a code de cause from the alarm. The alarm relay will be released, activating an external alarm device. Pressing the **RESET-key** the alarm will quit. The Rain Command does not monitor the same alarm anymore until the cause of this alarm is fixed.

## General settings and measurements (menu 00).

00  
01  
10.45

**Function 01 Actual time** Range: 00:00 - 23:59 hour. Here the Rain Command shows the actual time. You may adjust this setting to reflect the current time.

00  
02  
5

**Function 02 Day of the week** Range: 1 - 7. This is the actual day of the week. 1= Monday, 2 = Tuesday etc. This setting will be used when you use the day of the week program in the irrigation valves.

00  
03  
10.7

**Function 03 Actual temperature** Range: -20,0 - 50,0C. With help of the installers program you can determine if the actual temperature is displayed in degrees Celsius or degrees Fahrenheit.

00  
04  
000

**Function 04 Light intensity** Range: 0 tot 100%. Here is shown the 0-10V input as 0-100%. This input is used for a light intensity sensor.

00  
05  
000

**Function 05 Minimum liter/minute** Range: 0 - 999 liter/minute. If an irrigation program starts, this number of liters per minute must reach this value. If this limit is not reached, the alarm will be activated. The running program will be stopped. When the irrigation works based on time, then this function is not used.

00  
06  
999

**Function 06 Maximum liter/minute** Range: 0 - 999 liter/minute. If the Rain Command counts more then this numbers of liters per minute, the alarm will be switched on. If the alarm occurs while the irrigation program is active, then this program will be stopped immediately. When the irrigation works based on time, then this function is not used

## General settings misting program. (Menu S 00)

All the general settings related to the misting program are combined in the menu 'S 00'.

S 00  
01  
09.00

**Function 01 Start time misting.** Range: 00:00 - 23:59 hour. If the misting works on time, then a misting cycle will start at the moment that the actual time meets the set start time from this cycle.

S 00  
02  
18.00

**Function 02 Stop time misting.** Range: 00:00 - 23:59 hour. If the misting works on time, then the misting cycle will stop at the moment that the actual time meets the set stop time.

S 00  
03  
100

**Function 03 Start misting by light intensity.** Range: (0 - 100%) If the misting works on light intensity, then the misting will start the moment that the measured light intensity rises above this setting.

S 00  
04  
020.0

**Function 04 Start misting by temperature.** Range: 0,0 - 100,0C. If the misting works on temperature, then the misting will start the moment that the measured temperature rises above this setting.

S 00  
05  
100

**Function 05 Start correction misting by light.** Range: 0 - 100%. The on and off time of the misting can be corrected, if the light intensity rises above this set value. The amount of correction can be set separatly per misting valve.

S 00  
06  
050

**Function 06 P-band correction misting by light.** Range: 10 - 50%. This is the percentage that the light intensity has to rise above the start correction to achieve the maximum correction.

S 00  
07  
020.0

**Function 07 Start correction misting by temperature.** Range: 0,0 - 100,0C. The on and off time of the misting can be corrected when the actual temperature rises above this setting. The amount of correction can be set separately per misting valve.

S 00  
08  
05.0

**Function 08 P-band correction misting by temperature.** Range: 1,0 - 18,0C. This is the number of degrees that the temperature has to rise above the start value to achieve the maximum correction.

S 00  
09  
03

**Function 09 Maximum number of misting valves active simultaneously. Range: 1 - 40.** This is the maximum number of misting valves which can be activated at the same time. If there are more valves programmed, the last valves will wait until there are free valves again. *Remark: even if you can set a maximum of 40 valves, there never will be more valves activated at the same time as the setting of maximum valves in the installers program*

### General settings irrigation program. (Menu r1.00, r2.00 and r3.00)

There are 3 irrigation programs available. Those 3 programs work independently of each other. Each irrigation valve can be assigned to one of those programs. Per valve are also possibilities to make specific settings like water volume etc. When a cycle has started, all the valves belonging to this program will be processed.

Because the three irrigation programs are identical, we will only describe one program.

r1 00  
01  
0

**Function 01 Mode irrigation program.** Range: 0 - 7. Here you can select how the irrigation program has to start.  
**0** = program switched off.  
**1** = program manual start. After an irrigation cycle is finished, the mode will be set back automatically to 0.  
**2** = program starts based on time. If a start time comes up, an irrigation cycle will occur.  
**3** = program starts based on light. When the light intensity rises above the set value, an irrigation cycle will start.  
**4** = program starts based on temperature. When the temperature rises above a maximum or drops below a minimum set value, an irrigation cycle will start.  
**5** = program starts based on time and light. This is a combination between the modes 2 and 3.  
**6** = program starts based on time and temperature. This is a combination between the modes 2 and 4.  
**7** = program starts based on time, light and temperature. This is a combination between the modes 2, 3 and 4.  
**8** = The Rain Command starts by an external start command from another system by use of the external input.

r1 00  
02  
00

**Function 02 Status irrigation cycles.** Range: ON or OFF. Here the Rain-Command shows if an irrigation program is active.

r1 00  
03  
100

**Function 03 Start value light intensity.** Range: 0 - 100%. If you want to start an irrigation cycle based on light intensity, then the measured light intensity has to rise above this set value before the irrigation cycle will start.

r1 00  
04  
00.00

**Function 04 Pause after start by light.** Range: 00:00 - 12:00 hour. This is the minimum pause time between 2 irrigation cycles started by the light intensity. The moment a cycle starts by light intensity, this pause time will start also. Only after ending the pause time a new potential cycle can start by light intensity. If the duration of a cycle is longer then the set pause time, then a new cycle will start at the same time as that the previous cycle stops. (Of course this is only possible if the light intensity is high enough.)

r1 00  
05  
020.0

**Function 05 Start value maximum temperature.** Range: 0,0 - 100,0C. When the irrigation has to start based on temperature, the measured temperature has to rise **above** this set value. When you don't like to use this way of starting, then program this value at 100,0C .

r1 00  
06  
00.00

**Function 06 Pause after start by maximum temperature.** Range: 00:00 - 12:00 hour. This is the minimum time between 2 irrigation cycle how get started by the maximum temperature. See for further description function 04.

r1 00  
07  
-10.0

**Function 07 Start value minimum temperature.** Range: -10,0 tot 100,0C. If an irrigation cycle has to start based on minimum temperature, the measured temperature has to drop **below** this minimum set value. This way of starting can be used as frost protection of crops in or outside. When you don't like to use this way of starting, then program this value at -10,0C.

r1 00  
08  
00.00

**Function 08 Pause after start by minimum temperature.** Range: 00:00 - 12:00 hour. This is the minimum time between 2 irrigation cycles which will be started by the minimum temperature. See for further description function 04.

r1 00  
1.09  
00.00

**Function 1.09 Start time 1 on day 1.** Range: 00:00 - 23:59 hour. In the irrigation program are 6 start times available and 7 days a week. If the cycle starts on time, and the actual time and day meet each other with this start time, an irrigation cycle will start. When you don't use this way of starting, then program this time at 00:00 hour. **Remark:** *If you don't use the week program, then there will be no comparison take place from starting times corresponding with the day of the week. Then you have the availability over  $7 \times 6 = 42$  start times per day.*

r1 00  
2.09  
00.00

**Function 2.09 Start time 2 on day 1.** Range: 00:00 - 23:59 hour. Same as previous function but now for start time 2. (for other start functions see below)

**Other start functions:**

The functions 3.09 - 6.09 are the other start times for day 1.

The functions 1.10 t/m 6.10 are the start times for day 2.

The functions 1.11 t/m 6.11 are the start times for day 3.

The functions 1.12 t/m 6.12 are the start times for day 4.

The functions 1.13 t/m 6.13 are the start times for day 5.

The functions 1.14 t/m 6.14 are the start times for day 6.

The functions 1.15 t/m 6.15 are the start times for day 7.

r1 00  
16  
Off

**Function 16 Mode week program.** On or off. With use of this function, you specify whether you use the week program yes or no.  
Off = No week program, so all the start times are available at any day.  
On = week program switched on. The start times are only valid if the day matches with the day of the week.

r1 00  
17  
02

**Function 17 Maximum number of valves activated simultaneously.** Range: 01 - 40. This is the maximum number of valves that will be switched on by program 1. If there are more valves programmed, the remaining valves will wait until there are free valves again. Remark: In the installersprogram there is a setting wich gives the total maximum number of valves switched on at the same time for the whole Rain Command. If there are more valves to switche on bij all the programs then is allowed, some valves have to wait also.

r1 00  
18  
00.00

**Function 18 Stop time irrigation program.** Range 00:00 - 23:59 hour. When the irrigation program is active after this stoptime, an alarm will be released and the running program will be stopped. The user has to check the settings to prevent the irrigation program to function after the stoptime. You can use this setting to prevent watering the plants after sunset. Remark: if you do not want to use this stoptime, you only have to program this setting to 00:00 hour.

### Settings per misting valve. (Menu S01 t/m S40)

The menu's S01 - S40 show several setting possibilities per misting valve. Only from the valves, which are programmed in the installers program as misting valve, are visible in the menus. Since those menus are all identical regarding function layout, we will explain only one menu. The way of working from a misting valve is as follows: an active misting valve will be switched on during an adjustable time. Here after there will be follow an adjustable pause time. Then the valve will be switched on again etc. Thus more valves can be active at the same time.

S 01  
01  
0

**Function 01 Mode misting valve.** (Range: 0 - 4). With this function you specify the way of working from the misting valve. The following choices are possible:  
**0** = the misting valve is always switched off.  
**1** = the misting valve is continually switched on. This means that the valve always by turns will be switched on- and off compare to the settings from the on and off times.  
**2** = the misting valve is only active in between the set start- and stop time. See for further explanation menu S00 function 01 en 02.  
**3** = the misting valve is only active when the measured light intensity rises above the set value. See menu S00 function 03.  
**4** = the misting valve is only active when measured temperature rises above the set value. See menu S00 function 04

S 01  
02  
Off

**Function 02 Position misting valve.** Range: Off or on. Here the Rain Command shows if the concerning misting valve is on- or off. **Watch!** If the computer shows that the valve is ON, this means the misting cycle is active. You cannot see whether the on time or off time is active.

S 01  
03  
00.10

**Function 03 On time.** Range: 00:01 - 99:00 minutes seconds. When the misting cycle for this valve is active, then this valve will be switched on during this time where after an adjustable pause time follows. See next function.

S 01  
04  
03.00

**Function 04 Off Time.** Range: 00:05 - 99:00 minutes seconds. When the misting cycle is active, the misting valve will be switched off after the on time during this time. See previous function.

S 01  
05  
00.00

**Function 05 Maximum increase of the on time by light.** Range: 00:00 - 99:00 minutes seconds. By influence of light the on time can be proportional increased. If the light intensity rises above the set start value, the on time of the misting can be proportional increased. See also menu S00 function 05 and 06. The on time can be maximum increased by this set number of minutes . If you don't want to increase the on time, then set this value at 00:00.

S 01  
06  
00.00

**Function 06 Maximum decrease of the off time by light.** Range: 00:00 - 99:00 minutes seconds. By influence from light, the off time can be eventually being decreased. This will result in the fact that more water will be misted. With this function you can set how many minutes the off time maximum can be decreased. **Remark:** The off



time can never get lower then 00:05 (= 5 seconds).

S 01  
06  
00.00

**Function 07** **Maximum increase of the on time by temperature.** Range: 00:00 - 99:00 minutes seconds. By the influence of temperature, the on time can be increased proportional. When the temperature rises above the set value, the on time of the misting valve can be proportional increased with the maximum that is set with this function. See also menu S00, function 07 en 08. If you do not want to increase the on time, program this function at 00:00.

S 01  
08  
00.00

**Function 08** **Maximum decrease of off time by temperature.** Range: 00:00 - 99:00 minutes seconds. By the influence of temperature it is also possible to lower the off time proportional. By doing this the quantity misted water will increase. With this function you can set how many minutes and seconds the off time can be maximum decreased. **Remark:** The off time can never be set lower then 00:05 minutes (= 5 seconds).

S 01  
09  
00.00

**Function 09** **Total counted on time.** Range: 00:00 - 99:00 hour. This shows how much time the misting valve was really active in hours and minutes. By pressing the SET-button, this measurement will be set back to 0 again.

## Settings per irrigation valve (Menu r01 - r40)

The menu's r01 - r40 show several setting possibilities per irrigation valve. Only the valves, which are set in the installers program as an irrigation valve, will appear in the menus. Because the functions in all those menus are identical, only one menu r01 will be described. The Rain Command has 3 independent irrigation programs, which can be started independently from each other. See also menu r1.00, r2.00 and r3.00. Every irrigation valve can be programmed to one of the 3 programs. If an irrigation cycle start by one of the programs, then the belonging irrigation valves will be sequential handled by the program. **Remark:** *more then one valve can be switched on simultaneously.*

### Copy function: You can copy the settings for one valve to other valves:

- Set the values of the first valve as desired.
- Press the SET-button and keep it pressed.
- Select now with help of the 'Valve/Zone'-knob the next valve.
- Now the settings of the first valve are copied to this valve.
- If you wish, you can repeat this for every next valve.

r 01  
01  
0

**Function 01** **Irrigation valve mode.** Range: 0 - 4. This function determines which program the valve will be assigned to.  
0 = means this irrigation valve is switched off.  
1 = means this valve belongs to irrigation program 1.  
2 = means this valve belongs to irrigation program 2.  
3 = means this valve belongs to irrigation program 3.  
4 = valve switched on manual. This valve will be switched on for the number of liters or minutes as set in the next function. **Remark:** *if you select this manual start only one valve can be switched on at the same time. All the other modes can switch on more than one valve at the same time. Note: once a valve has been manually activated it will return to its previous assignment.*

r 01  
02  
000

**Function 02** **On time or liters required.** Range: 0 - 999 liters or minutes. Here you set the number of liters that this valve has to dose when an irrigation cycle starts. In the installers program you can choose if the irrigation has to work based on volume in liters or based on time. In case of liters, you have to install also a watermeter with counter output, and connect this output to the Rain Command. When you just run your irrigation based on time, then of course a watermeter is not necessary. Then the irrigation valve will be switched on during the time, which is set for this valve.

r 01  
03  
0000

**Function 03 Total counted minutes or liters.** Range: 0 - 9999 liters or minutes. This function counts the total number of liters, which this valve has dosed. If you have programmed in the installers program for irrigation based on time, then this function will show the total number of minutes that this valve was active. By pressing the SET-button this counter will be set back to 0 again.

## Alarms.

**IMPORTANT! It is of paramount importance to provide the equipment and the total installation with at least a reliable sound alarm device. Van Issum Techniek B.V. recommends to check its proper functioning regularly (at least 1 times a day).**

The Rain Command is provided with an alarm contact. The alarm contact can be connected to any alarm circuit. The alarm relay is de-energized (falls out) when an alarm occurs. Several alarm situations will be immediately signaled externally by the computer.

The moment an alarm occurs this will be displayed in the 'Valve/Zone'-display with the letters '-AL-'. The 'Function'-display will show the alarm code, which belongs to this alarm. After a short delay the alarm relay falls off activating an external alarm device. By pressing the SET-button, the alarm signal will quit and will not anymore appear - the cause of the alarm situation is fixed. (E.g.: In case of a faulty temperature sensor alarm, the alarm will be active again when after a new sensor is installed).

The 'Function'-display can show the following codes:

- 00.01** Temperature sensor faulty.
- 00.02** Temperature calibration incorrect. (Recalibrate the temperature).
- 01.03 - 03.03** Minimum water alarm. If during the irrigation process less water is counted per minute then is set in the function minimum wateralarm (See menu 00 function 05), then this will result in an alarm. The number in front of the decimal point shows the program number that has registered the minimum alarm. This program will now switch off.
- 00.04** Maximum water alarm. The Rain Command will check also if there are more liters per minute counted then are set by the maximum water alarm. (See menu 00, function 06). The moment this occurs, an active irrigation program will stop immediately. There will be a continuously check on this alarm, thus also if there is no irrigation program active. (Reason: fully test on water supply leakage).
- 01.05 - 03.05** Irrigation program active after the stoptime. If an irrigation program is active after the stoptime (see function r.01/18, r02/18 and r.03/18) this alarm will be released and the irrigation program is cancelled. The user needs to readjust his programming in such a way that this alarm will not occur anymore.

## Installers program.

The Rain Command has at one's disposal an extensive installer's program, which makes it possible to adjust the controller to the user's wishes. Starting up the installers program goes as follows:

- Disconnect the controller from the main power supply. (Preferable is to install a switch between the power supply and the controller).
- Press the SET-button and hold it pressed.
- Connect the controller to the main power again.
- As soon the display lights on, the SET-key can be let loose. The installers program has now be started. As sign it has started, the 'Valve/Zone'-display will show the letters 'Adj'.

Now you can select with use of the Function-knob the following functions:

Adj  
01  
000.0

**Function 01 Temperature calibration 0 C.** With help of this function you can calibrate the temperature sensor input. To do this, connect in stead of a temperature sensor a temperature simulator, and set this at 0,0C (= 821 ohm). Then set the display at 000.0 and press the SET-key. By doing this 0C-calibration is done.

Adj  
02  
025.0

**Function 02 Temperature calibration 25C.** With help of this function you can calibrate the temperature sensor input. To do this, connect in stead of a temperature sensor a temperature simulator, and set this at 25,0C (= 1000 ohm). Then set the display at 025.0 and press the SET-key again. By doing this the 25C calibration is done. The total temperature calibration is now finished.

Adj  
03  
OFF

**Function 03 Setting the Temperature Units.** The Rain Command can display its temperature in either Fahrenheit or Celsius. OFF = Temperature in degrees Celsius, ON = Temperature in degrees Fahrenheit. **Remark:** *The calibration of the temperature always has to be done in degrees Celsius.*

Adj  
04  
08

**Function 04 Number of misting valves.** Here you can set how many valves you use as misting valve. With the Rain Command you can control maximum 40 valves. The misting valves start always with number 1. Example: There are total 40 valves available. There are set for misting 16 valves. So: valve 1 - 16 = misting and 17 - 40 = irrigation. This means that for the misting menu's only the menu's S01 t/m S16 are visible and for the irrigation menu's only r17 - r40. Therefore the misting valves are starting always with valve 1 and the rest will be used as irrigation.

Adj  
05  
40

**Function 05 Actual number of valves.** This function has to be set on the total number of valves that are connected to the Rain Command. This is the total number of misting valves and irrigation valves. See previous function.

Adj  
06  
2

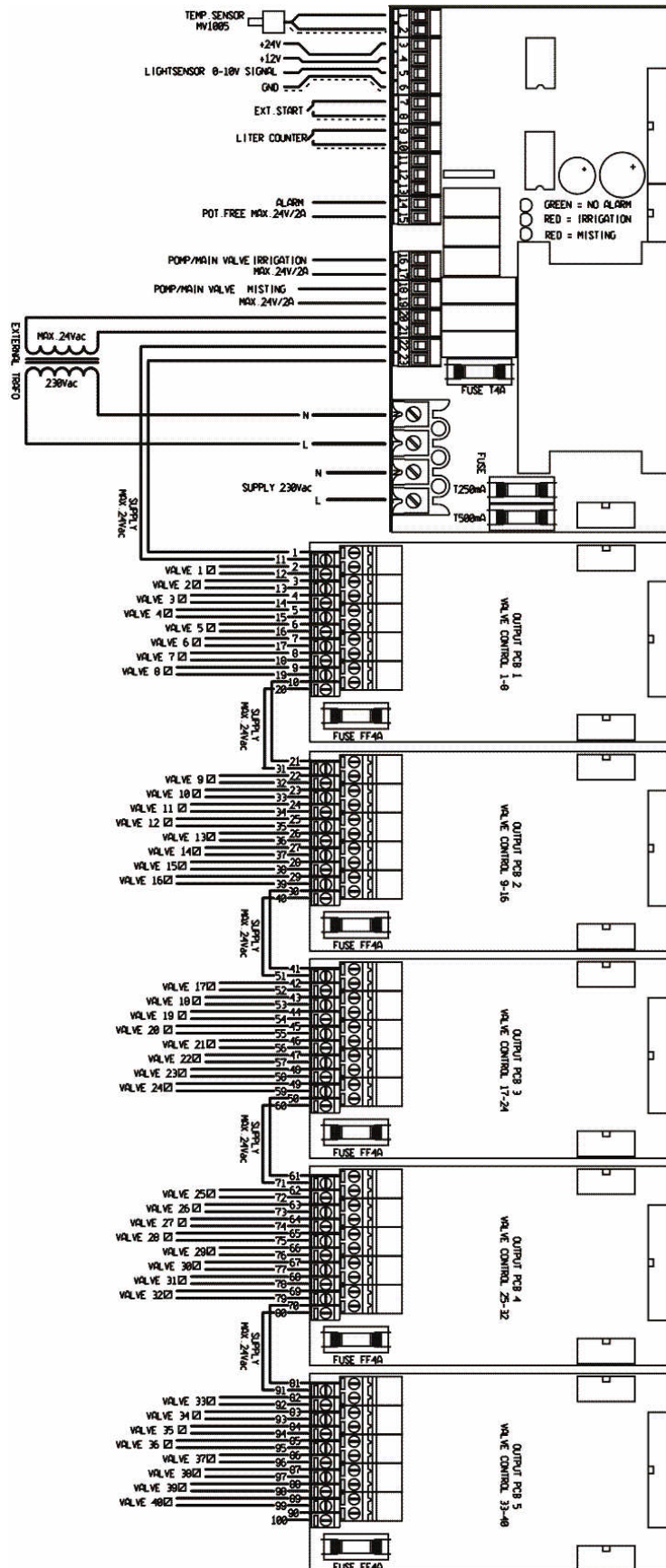
**Function 06 Mode registration for irrigation.** Here you can set in which way the registration for the irrigation has to happen.  
0 = The liter counter input will be used for counting the set number of liters. Each counted pulse is equal to 1 liter.  
1 = Same as mode 0, but now 10 pulses are equal to 1 liter. **Watch it:** *The settings per valve are always done in liters.*  
2 = The liter counter input is not used. The irrigation valves are now controlled based on time. The settings per valve are now done in minutes.

Adj  
07  
OFF

**Function 07 Hard reset.** With help of this function you can set all the settings of the Rain Command back to standard values. Set this function to 'ON'. Now the Rain Command will replace all the settings and change this function back to 'OFF'. Remark: This happens in a fraction of a second, therefore it looks like the function jumps right back to the 'OFF' position. This is normal.

Adj  
08  
10

**Function 08 Maximum number of valves open simultaneously.** Range: 1 - 40. With help of this function you can determine the number of valves switched on at the same time. Watch it! This means all the valves together, so all the misting valves + all the irrigation valves of the programs 1, 2 and 3. Remark: this function has the highest priority. So if the maximum number of valves in program 1 is set to e.g. 10, and the total number of valves at the same time is set to 6, there will be always a maximum of 6 valves switched on simultaneously.



Connecting data.

## Connecting data main board.

- 1 + 2 = Temperature sensor. MV1005  
**Remark:** Always use shielded cable, and connect the shielding to terminal 2.
- 3 + 4 + 5 + 6 = Lightsensor. 0-10V.  
 3 = +24V supply for the sensor (max. 50mA)  
 4 = +12V supply for the sensor (max. 50mA)  
 5 = 0-10V signal from the lightsensor.  
 6 = GND  
**Remark:** Always use shielded cable, and connect the shielding to terminal 6.
- 7 + 8 = Input external start signal. With use of a dry contact, (e.g. of a climate computer) you can start the irrigation programs.  
**Remark:** Always use shielded cable, and connect the shielding to terminal 8.
- 9 + 10 = Input liter counter. If you make use of irrigation based on liters, here you have to connect the liter counter. There can be used liter counters with 1 or 10 pulses per liter. In the installers program you have to set the type of liter counter.  
**Remark:** Always use shielded cable, and connect the shielding to terminal 10.
- 14 + 15 = Alarm output. (Dry contact max. 24V/2Amp)
- 16 + 17 = Output for pump or main valve for irrigation. (Max. 24V/2Amp). This output can be used to control a main valve, or a pump by use of a power relay. **Remark:** The output voltage is depending on the voltage of the used external transformer and shall be maximum 24V.
- 18 + 19 = Output for pump or main valve misting. (Max. 24V/2Amp). This output can be used to control a main valve, or a pump by use of a power relay. **Remark:** The output voltage is depending on the voltage of the used external transformer and shall be maximum 24V.
- 20 + 21 = secondary transformer voltage. (Max. 24V) Here you connect the secondary voltage of the external transformer. This voltage is used to control the varied valves, pumps and main valves.
- 22 + 23 = Supply for valves on output board 1. This connection has to be linked to the terminals 1 and 11 on output board 1.
- N + L (ext. trafo) = 230Vac (or 115Vac depending on the version) supply for an external transformer. The maximum number of valves that can be switched on simultaneously will determine the capacity of the external transformer.
- N + L (Power supply) = 230Vac (or 115Vac depending on the version) power supply for the Rain Command.  
 N = Neutral.  
 L = Phase.

**Fuse 1** = T4A for control of pumps and main valves.

**Fuse 2** = T250mA for transformer on main board.

**Fuse 3** = T500mA for external transformer. **Remark:** It can be necessary to increase the value of this fuse depended on the external transformer.

**Note: No power to the valves is supplied by the RainCommand. An additional transformer is needed to power the valves.**

Because of a concern for flexibility, the RainCommand does not include a transformer in the base model. A transformer must be purchased to power the valves. The Damm Corporation offers various sized transformers and solenoid valves that can be added to the RainCommand.

## Connecting data output board 1.

Depending on the type, the Rain Command is equipped with 1 up to 5 output boards for controlling the valves. Per output board 8 valves can be controlled.

- 1 + 11 = 24Vac (max) power coming from the main board. This power is used for controlling of the valves connected on output board 1.
- 2 + 12 = Valve 1.
- 3 + 13 = Valve 2.
- 4 + 14 = Valve 3.

- 5 + 15 = Valve 4.
- 6 + 16 = Valve 5.
- 7 + 17 = Valve 6.
- 8 + 18 = Valve 7.
- 9 + 19 = Valve 8.
- 10 + 20 = Output power 24Vac for linking to the next output board.  
Connection 10 to 21, and connection 20 to 31.

Fuse 4 = F4A for controlling from the valves. The fuse is placed in the common connection 12 - 19.

**Remark:** The terminals 12 - 19 are bridged on the circuit board. Therefore it is also possible to use 1 common wire for the connection from the valves 1 - 8. **Do not use a common wire of an other output board for the connections of valve 1 - 8!**

**Remark:** The load of the outputs can be maximum 24Vac/0,5Amp.

### Connecting data output board 2.

- 21 + 31 = 24Vac power coming from the main board. This power is used to control the valves connected to output board 2.
- 22 + 32 = Valve 9.
- 23 + 33 = Valve 10.
- 24 + 34 = Valve 11.
- 25 + 35 = Valve 12.
- 26 + 36 = Valve 13.
- 27 + 37 = Valve 14.
- 28 + 38 = Valve 15.
- 29 + 39 = Valve 16.
- 30 + 40 = Output power 24Vac for linking to the next output board.  
Connection 30 to 41, connection 40 to 51.

Fuse 4 = F4A for fusing the valves. The fuse is placed in the common from the terminals 32 - 39.

**Remark:** The terminals 32 - 39 are bridged on the circuit board. Therefore you can use also a common wire to connect the valves 9 - 16. **Do not use a common wire of a other output board to connect the valves 9 - 16!**

**Remark:** The load of the outputs can be maximum 24Vac/0,5Amp.

### Connecting data output board 3.

- 41 + 51 = 24Vac power supply coming from the main board. This power supply is used to control the valves from output board 3.
- 42 + 52 = Valve 17.
- 43 + 53 = Valve 18.
- 44 + 54 = Valve 19.
- 45 + 55 = Valve 20.
- 46 + 56 = Valve 21.
- 47 + 57 = Valve 22.
- 48 + 58 = Valve 23.
- 49 + 59 = Valve 24.
- 50 + 60 = Output 24Vac supply to link to the next output board.  
Connection 50 to 61, and 60 to 71.

Fuse 4 = F4A for fusing the output to the valves. The fuse is placed is in the common connection 52 - 59.

**Remark:** The terminals 52 - 59 are bridged on the circuit board. Therefore you can use also a common wire to connect the valves 17 - 24. **Do not use a common wire of an other output board to connect the valves 17 - 24!**

**Remark:** The load of the outputs can be maximum 24Vac/0,5Amp.

### Connecting data output board 4.

- 61 + 71 = 24Vac power supply coming from the main board. This power supply is used to control the valves from output board 4.
- 62 + 72 = Valve 25.

63 + 73	=	Valve 26.
64 + 74	=	Valve 27.
65 + 75	=	Valve 28.
66 + 76	=	Valve 29.
67 + 77	=	Valve 30.
68 + 78	=	Valve 31.
69 + 79	=	Valve 32.
70 + 80	=	Output 24Vac power supply to link to the next output board. Connection 70 to 81, and 80 to 91.

Fuse 4 = F4A is for fusing the valves. The fuse is placed in the common connection 72 - 79.

**Remark:** The terminals 72 - 79 are bridged. Therefore you can use also a common wire to connect the valve 25 - 32.  
**Do not use a common wire of an other output board for the connections of 25 - 32!**

**Remark:** The load of the outputs can be maximum 24Vac/0,5Amp.

### Connecting data output board 5.

81 + 91	=	24Vac power supply coming from the main board. This power supply is used to control the valves on output board 5.
82 + 92	=	Valve 33.
83 + 93	=	Valve 34.
84 + 94	=	Valve 35.
85 + 95	=	Valve 36.
86 + 96	=	Valve 37.
87 + 97	=	Valve 38.
88 + 98	=	Valve 39.
89 + 99	=	Valve 40.
90 + 100	=	Not used.

Fuse 4 = F4A is for fusing the valves. The fuse is placed in the common connections from 92 - 99.

**Remark:** The terminals 92 - 99 are bridged. Therefore it is possible to use 1 common wire to connect the valves 33 - 40.  
**Do not use a common connection of an other output board to connect the valves 33 - 40!**

**Remark:** The load from the outputs is maximum 24Vac/0,5Amp.

### Technical specifications.

Power supply.....	: 230Vac (or 115V depending on the version)
Power supply fluctuation.....	: +10% - -10%
Frequency.....	: 50-60Hz.
Voltage external transformer.....	: See power supply voltage
Secondary voltage external transformer.....	: max. 24Vac
Capacity external transformer.....	: Depending on max. Number of valves
Temperature sensor.....	: MV1005
Measuring range temperature.....	: -20C - 50C.
Precision temperature sensor.....	: +/- 1C
Power supply light sensor.....	: 12Vdc or 24Vdc max. 50mA
Signal from the light sensor.....	: 0-10V = 0-100%
Alarm relay.....	: Dry contact max.24V/2Amp.
Relay pump or main valve irrigation.....	: 24Vac max. 2Amp
Relay pump or main valve misting.....	: 24Vac max. 2Amp.
Valves.....	: 24Vac max.0,5 Amp
Maximum number of valves.....	: 40
Enclosure.....	: Plastic IP 54

Modifications reserved without notice.

For questions please contact Damm Corporation.