RMD Manual

RMD

Users Manual

Models:
8D, 12D, 16D

RAIN MASTER

Document #500035 Rev. B March 2001

Table of Contents

Table of Figures

A Few Very Important Notes

Only Rain Master Remote Control units may be used with this controller – use of any other remote control device will void the warranty. Please read the appropriate section of this manual.

This controller comes equipped for a 9v-transistor battery (not included). If you desire a rechargeable Nicad battery that will recharge automatically after power outages ask for Rain Master battery pack BP2. It is easily installed in just a few seconds.

When programming remember 12:00 Midnight = 12:00 Noon =12:00 PM

When you bring the field wires into the controller don not allow any wires whatsoever to get up in back of the electronics panel, and, very importantly, do not leave any bare or stripped wires exposed anywhere in the unit. Please read the appropriate section of this manual.

All holes for mounting the controller to the wall or pedestal are provided. Do not drill additional holes in the case. Metal shavings will mix with the electronics and damage will result. See the appropriate section of this manual for mounting instructions.

If the clock is going to control a master valve or pump, as it is capable of doing, please read the appropriate section of this manual. Improper installation will result in damage to the controller.

Never install any backup battery (Nicad rechargeable or transistor battery) before permanent utility power (not temporary construction site or generator power) is applied to the controller. For safety reasons, our Nicad rechargeable battery (not supplied) is shipped in a unique discharged state which will prevent the controller from turning on if it is connected before utility power and lack of permanent power will not allow the battery to charge. If permanent power has not been connected, installing a transistor battery will be of little value because it will be used up rapidly.

If the clock is going to be powered by a generator, be sure the generator's power has stabilized at the correct output voltage before allowing it to be connected to the clock. Note – when generators are first started, the voltage overshoots the normal output for a period of time which may cause damage if the clock is connected during this voltage overshoot.

A Quick Reference in Spanish is included – see the Table of Content

1.0   Introduction

We would like to thank you for your expression of confidence in having selected a Rain Master Irrigation System's controller. You have chosen a product of the highest quality, which will bring you years of trouble-free service and enhance the appearance of your landscape through efficient control of water.

Your RMD Series dial controller contains many features which will simplify the control of your irrigation system as well as simplify troubleshooting of your system should a problem arise. We suggest you take a few moments to read this manual, which details all the capabilities of our unit.

2.0   RMD Series Controlling Features

1. All solid-state design with accuracy to the second. No moving parts to wear out.

2. Two dials make for simple programming.

3. Weatherproof case.

4. 9V battery (not included) keeps the program information and time and day during power failures. Rechargeable Nicad battery optional (BP2).

5. Automatic Default Program (ADP), in case of power failure and no battery, will run every station 10 mins. Per day.

6. Manual reset for circuit breaker.

7. Master Valve/Pump start circuit built in.

8. Three programs available to the user.

9. Three start times per program for a total of 9 start times.

10. The watering length for each station may be set from 1 min. to 99 mins. in 1 min. increments.

11. Manually activated syringe cycle.

12. All stations in a program water in sequence.

13. Water days for each program may be based either on a fourteen day, two week cycle or on a skip day routine allowing every 2nd, 3rd, … 14th day watering.

14. Standard voltage – 120v, 50-60 Hz. Other voltages available.

15. Pedestal available for all controllers.

16. Manually activated System Check feature will sequentially water all stations for 2 mins.

17. Manual Program will run any program.

18. Manual Station will run a selected station for a selected time.

19. Automatic Program Overlap (APOP) ensures that only one program waters at a time.

20. UL approved.

3.0   Hello Mode and Automatic Default Program

When the controller is first powered up, the display will show HELLO (unless the MODE switch is in the RAIN position in which the display will show OFF). In the HELLO Mode the Automatic Default Program (ADP) will run every station, every day for 10 mins. Should you have a power failure and not have a good battery plugged in which would keep the controller's information and time intact, the ADP program ensures that your landscape will be watered when power returns.

In the HELLO mode, the ADP will begin the first watering cycle 6 hours after power is reapplied and then continue at 24 hour intervals until the controller is reprogrammed.

Rotating the MODE switch anywhere will automatically clear the HELLO Mode and ADP.

3.1   Automatic Mode

The controller is in the Automatic Mode whenever the mode switch is in the AUTO position. The controller also goes to the Automatic Mode after:

1. Completion of a Manual Program even though the dial is left in the MANUAL PROGRAM position,
2. Completion of Manual Station even though the dial is left in the MANUAL STATION position,
3. Completion of the Check cycle even though the dial is left in the CHECK position.

When a program is watering, the currently watering station is shown in the display for convenience.

Note – To stop and cancel a program that is watering, rotate the MODE switch to SET TIME and then rotate it back to AUTO.

Note – To advance from one station to the next, while a program is watering, momentarily push the INCREASE / DECREASE switch to INCREASE.

3.2   Rain Mode

When no watering is desired, such as when it is raining, turn the MODE switch to RAIN and leave it there.

3.3   Battery Back Up and Power Failures

The controller uses a 9 volt alkaline battery (not included) to keep your program information and time intact during power failures. When power goes out, no watering will occur and the display of the controller will go blank to conserve battery power. When power returns the display will light up.

If HELLO appears in the display, the battery is dead and all program information has been lost. The controller will run the ADP as explained in Section 3.0, until you reprogram it.

Following return or power, the display will show whatever information is appropriate for the position of the MODE switch. Should anything else appear in the display, remove and discard the battery, press RESET button for approximately 5 seconds, reprogram the controller, and install a new battery.

The battery should be replaced after one year whether or not it has been used.

The battery connector is located in back of the lower front panel of the controller. If no battery is going to be connected, place the vinyl insulator over the battery connector to prevent shorts.

Battery type: 9 volt alkaline "transistor" such as Eveready #522.

Note – disconnect the battery if the controller is going to be without power for an extended period of time.

3.3.1 Long Life Rechargeable Batteries

An Automatically rechargeable Nicad battery is available (Model BP2) and may be installed in just a minute using only a screwdriver. The battery is useable for about five to seven years before requiring replacement.

4.0   Basic Programming Examples

Shown below are examples of how to program the controller as well as how to review and clear information.

4.1 Fundamental Information Required in a Program

The basic information required in a controller is:

1. The time of day and the day of the week, and within a particular program,
2. The watering days,
3. The station or stations and the watering length for each,
4. The start time or times at which the watering will begin on the chosen watering days.

4.2 Set Time

(Note: 12:00 Midnight = 12:00 AM, 12:00 Noon = 12:00 PM)

This is used to set the current time of day.
Example: The time is 2:00 PM.

Turn the MODE switch to SET TIME.
Push the INCREASE / DECREASE switch to set the desired time – don't forget to check A for AM or P for PM.

Note – Pushing and holding the INCREASE / DECREASE switch provides a rapid increase or decrease of the time.

4.3 Set Today

This is used to select the current day of the two week cycle.

Example: The day is Saturday in week one.

Turn the MODE switch to SET TODAY.
Turn the WATER DAYS / STATIONS switch to SAT &
Press the ON / OFF switch and a light will appear below SAT & in the display.

4.4 Program

This is used to select the program that you wish to work with. Once selected, you need not change the program # until you wish to program or review information in a different program. There are three programs available for your use. They are referred to as 1, 2, 3.

4.4.1 Program Selection

This is done to select the program you wish to work with, either 1, 2, or 3.

Example: You wish to work with Program 1.

Using the PROGRAM switch, push the switch to the Program 1 position.

4.5   Watering Day Selections

Watering days for each program may be set on a 14 day / 2 week OR a skip days mode. Although you cannot do both within the same program, each of the three programs may be set to either mode. For example, Program 1 may be on a 14-day basis but Program 2 might be on a skip day's basis.

4.5.1 Water Days

This is used to select watering days based on a 14 day / 2 week cycle. Watering will occur on the days selected throughout the two-week period – it will then repeat.

Selected days are shown in the top display by a light **below** the selected days for week 1 and by a light **above** the selected days for week 2.

Example: You wish to water on Sun., Wed. and Fri. of week 1 and on Tue., Thu., and Fri. of Week 2.

Turn the MODE switch to WATER DAYS.
Turn the WATER DAYS / STATIONS switch to SUN 1 and press the ON / OFF switch.
Turn the WATER DAYS / STATIONS switch to WED 4 and press the ON / OFF switch.
Turn the WATER DAYS / STATIONS switch to FRI 6 and press the ON / OFF switch.

Notice the lights in the display below the selected watering days in week 1.

For setting the days in week 2,

Turn the WATER DAYS / STATION switch to TUE 10 of week 2 and press the ON / OFF switch, (on an 8 station controller, TUE of week 2 is unnumbered).
Turn the WATER DAYS / STATION switch to THU 12 of week 2 and press the ON / OFF switch, (on an 8 station controller, THU of week 2 is unnumbered).
Turn the WATER DAYS / STATION switch to FRI 13 of week 2 and press the ON / OFF switch, (on an 8 & 12 station controller, FRI of week 2 is unnumbered).

Notice the lights in the display above the selected watering days in week 2.
To clear a selected watering day, such as Sun in week 1:

Turn the MODE switch to WATER DAYS.

Turn the WATER DAYS / STATION switch to SUN 1 and press the ON /OFF switch.

To review water days information:

Turn the MODE switch to WATER DAYS and view the display.

4.5.2 Skip Days

This is used to establish a number of days between waterings, from 1 to 13, and the day of the two-week cycle on which the first watering will begin.

Note: By using the Skip Day's mode you can have the program water every 2nd, 3rd…or 14th day as may be desired.

Example: You wish to skip 2 days, for every third day watering, and to start it Wed of week 1.

Turn the MODE switch to SKIP DAYS.
Push the INCREASE / DECREASE switch to set 2.

Turn the MODE switch to START SKIP DAYS.
Turn the WATER DAYS / STATIONS switch to WED 4 and press the ON / OFF switch.

Notice the light in the display below the selected watering day of Wed of week 1.

To clear all Skip Days information:

Turn the MODE switch to SKIP DAYS.
Push the INCREASE / DECREASE switch to set --.

To review Skip Days information:

Turn the MODE switch to SKIP DAYS and review the number of days between waterings in the display.

Turn the MODE switch to START SKIP DAYS to review the next day watering will occur.

Note that in our example above, if you were to review START SKIP DAY anytime up to and including Wed, the light would be under Wed of week 1, however, once Wed had passed you would find the light under Sat of week 1 - the next watering day.

4.6   Stations and Watering Lengths

Any stations may be placed in any program. The same stations may be placed in more than one program at a time if desired. The watering length for each station may be set from 1 min. to 99min.

Note – Pushing and holding the INCREASE / DECREASE switch provides a rapid increase or decrease of the time.

Example: You wish to water Station 1 for 10 min., Station 2 for 10 min., Station 6 for 90 min.

Turn the MODE switch to STATION TIMES.
Turn the WATER DAYS / STATIONS switch to SUN 1 for Station 1 and push the INCREASE / DECREASE switch to set 10.
Turn the WATER DAYS / STATIONS switch to MON 2 for Station 2 and push the INCREASE / DECREASE switch to set 10.
Turn the WATER DAYS / STATIONS switch to FRI 6 for Station 6 and push the INCREASE / DECREASE switch to set 10.

To clear a station and its watering length, such as Station2:

Turn the MODE switch to STATION TIME.
Turn the WATER DAYS / STATIONS switch to MON 2 for Station 2 and push the INCREASE/DECREASE switch to 00.

To review all station watering lengths:

Turn the MODE switch to STATION TIME.
Turn the WATER DAYS / STATIONS switch to SUN 1 for Station 1 and view the watering length in the display.
Turn the WATER DAYS / STATIONS switch to MON 2 for Station 2 and view the watering length in the display.
Etc.

4.7   Start Times and Automatic Program Overlap Protection

There are three start times available for each of the three programs. They are referred to as START TIME 1…START TIME 3.

Additionally, the controller features Automatic Program Overlap Protection (APOP). This insures the even if start times overlap, only one program will run at a time. Simply stated, anytime a program is watering and the start time for a program comes up, the conflicting start time will be remembered by the controller but the execution of the program will be delayed until the current program completes its watering.

For example, if Program 1 is one hour long due to the stations and the watering length placed in it, and you set three of its start times to 7:00 AM, the program will water three times – from 7:00 to 8:00, 8:00 to 9:00, and 9:00 to 10:00 thereby providing two repeat cycles.

Another example, if Program 1 was again one hour long and was set to start at 7:00 AM, Mon., Wed., and Fri. and Program 3 was set to start at 7:30 AM on Mon. and Tue., then on Mon. Program 3 would begin at 8:00 AM after Program 1 ended, but on Tue. it would begin at 7:30

AM since there was no conflict with Program 1.

APOP assures you that you will always get the number of watering cycles you desire and at the same time your system will never be under pressurized because two programs are running simultaneously.

4.7.1 Start Times

This is used to set the start time for a program.

Note – Pushing and holding the INCREASE / DECREASE switch provides a rapid increase or decrease of the time.

Example: You wish to start watering at 7:10 AM and 4:30 PM.

Turn the MODE switch to STATION TIME 1.
Push the INCREASE / DECREASE switch to set 7:10 A – don't forget to check A for AM.
Turn the MODE switch to STATION TIME 2.
Push the INCREASE / DECREASE switch to set 4:30 P – don't forget to check P for PM.

To clear a start time, such as START TIME 1:

Turn the MODE switch to STATION TIME 1.
Push the INCREASE / DECREASE switch to set 000 – it can be found just after 11:59 AM or PM.

To review a start time, such as START TIME 1:

Turn the MODE switch to START TIME 1 and view the start time in the display.

4.8   Percent

There is a percent setting available for each of the three programs. By default, Percent is set to 100 in each of the three programs. You need never to change it if you do not decide to take advantage of this feature. The purpose of percent is to provide an easy method of which to increase or decrease the watering lengths of all stations in a program without having to reprogram the watering lengths of each individual station. Generally, Percent would be used to increase watering when a particular hot spell occurs or perhaps to decrease watering if a cool spell occurs.

Percent may be set to 20, 40, 60, 80, 100 (default), 120, 140, 160, 180, or 200. If percent is set to 100 the stations will water for the lengths assigned to them. If you wish to increase the watering length of all stations within a program by 20%, you would set Percent to 120. If you wish to decrease the watering length of all stations within a program by 40%, you would set Percent to 60.

Special note – this controller waters in increments of minutes only – not seconds. By way of example, if a station had a watering length assigned to it of two minutes and the Percent feature was set to 80%, the controller would still run the station for two minutes because 80% of two minutes is 96 seconds which is slightly more than 1 ½ minutes and, consequently, the controller would round up to two minutes of watering. The point is this, when Percent is set to a value other than 100, the controller will perform the mathematical calculation and then round up or down the nearest minute.

Example: you wish to set Percentage to 120%.

Turn the MODE switch to PERCENTAGE.
Push the INCREASE / DECREASE switch to set 120.

4.9   Abort Auto Cycle – Time Delay Between Stations

WARNING: This feature is rarely used or required. Before activating it, be sure you understand it and all its complications as it affects other features in the controller as well as the effects in your system. Its default value is 0 making it inactive.

In AUTOMATIC MODE, MANUAL PROGRAM, and MANUAL CHECK a station normally begins to water immediately after the previous station finishes – there is no time delay between stations. If there is a reason (hydraulic performance of the system, etc.) to have a time delay occur between the stations when they run in any of the three modes mentioned above, this function would be used. The delay can be set between 0 and 255 seconds. The default is 0.

Example: You wish a time delay of 30 seconds between stations.

Turn the MODE switch to ABORT AUTO CYCLE.
Push the INCREASE / DECREASE switch to set 30.

Note – Whatever time delay you set will be subtracted from the run time of the station. By example, assume stations1, 2, and 3 are set for 5, 10, and 15 minutes respectively, and the time delay is set for 30 seconds. When they run, station 1 will run for 5 min., but station 2 will run for 10 min. minus 30 sec., and station 3 will run for 15 min., minus 30 sec.

4.10   Pump Over Pressurization Sense

If desired, while watering, it is possible to sense a contact closure and the controller will automatically turn off the current watering station and advance to the next logical station or end if there is no station due to the following. It is possible to select the amount of time that the contact must be closed before the controller will turn off the station and advance as previously described. This feature is generally used to sense over pressurization sensor.

This feature must be installed by the factory or your authorized distributor for which there may be a charge.

5.0   Manually Activated Functions with Examples

The Manual mode makes available three different functions explained below.

5.1   Manual Program

This is used to run a program one time.

Example: You wish to run Program 1.

Turn the MODE switch to MANUAL PROGRAM.
Set the PROGRAM SWITCH to PROGRAM 1.
Press the ON / OFF.

Program 1 begins to water with the lowest numerical station set in the program. As the program waters, the active station is shown in the display as a convenience. When the program finishes watering the clock goes back to the Automatic Mode.

To stop and cancel the watering program before it completes itself:
Turn the MODE switch away from MANUAL PROGRAM.

Note – While watering is occurring you may stop it at any time by pressing the ON / OFF switch – to restart it, press the ON / OFF switch again.

Note – To advance from one station to the next, momentarily push the INCREASE / DECREASE switch to INCREASE.

5.2   Manual Station

This is used to run a selected station for a selected time up to 99 min.

Example: You wish to water Station 6 for 25 min.

Turn the MODE switch to MANUAL STATION.
Turn the WATER DAYS / STATIONS switch to FRI 6 for Station 6. (Note that the default time shown in the display is the watering length programmed for that station.) Push the INCREASE / DECREASE switch to set 25 (In this example we do not want to use the default time although we could if we wished to do so).
Press the ON / OFF switch.

When the station finishes watering the clock goes back to the Automatic Mode.

Note – While watering is occurring you may stop it at any time by pressing the ON / OFF switch – to restart it, press the ON / OFF switch again.

To stop and cancel the watering station:
Turn the MODE switch away from MANUAL STATION.

5.3   Manual System Check / Syringe Cycle

This will water each station, from 1 to the last station in the controller, for 2 min.

Example: You wish to run the system check cycle.

Turn the MODE switch to CHECK.
Press the ON / OFF switch.

Notice that Station 1 appears in the display to indicate that it is watering. After 2 min. Station 1 will shut off and Station 2 will start. After 2 min. Station 2 will shut off and … when the cycle finishes watering the clock goes back to the Automatic Mode.

Note – While watering is occurring you may stop it at any time by pressing the ON / OFF switch – to restart it, press the ON / OFF switch again.

Note – To advance from one station to the next, momentarily push the INCREASE / DECREASE switch to INCREASE.

Note – To go backwards from one station to the previous, momentarily push the INCREASE / DECREASE switch to DECREASE.

To stop and cancel this cycle:

Turn the MODE switch away from CHECK.

<div align="center">

Caution

</div>

This mode sequentially runs every station in the controller. For example, you have an 8 station unit but only use 5 stations – it will still apply power to the terminals for station 6, then to 7, then to 8 and while doing so will apply power to the master valve / pump terminal. This may damage a system using a pump because during the period that station 6, 7, and 8 are activated the pump will be pumping against a closed system.

If the system uses a master valve, it will be activated during the period that 6, 7, and 8 are activated, and this could cause heating of the master valve's solenoid if the valve depends on water flow to cool it.

So, if all stations are not used, it is strongly recommended that the user cancel the system check / syringe cycle after the last used station has watered.

6.0   A Complex Example

The following complex example demonstrates how you may fully utilize the controller. The example is this:

It is Saturday, 2:00 PM. Your house has a large area of grass, a flower garden and rows of trees along the sides and back. Altogether you have seven stations controlling the irrigation of your landscape and you have an eight station controller. You decide to water and program as follows.

Program 1:   The lawn area is to be watered every 3rd day beginning this Wed.

Station 1 will water for 10 mins.
Station 2 will water for 10 mins.
Station 6 will water for 15 mins.
Station 7 will water for 08 mins.
The program will start at 6:00 AM.

Program 2:   The flower garden is to be watered every day except Sun.

Station 4 will water for 6 mins.
Station 5 will water for 6 mins.
The program will start at 7:00 AM and 1:00 PM.

Program 3:   The trees are to be watered once a week on Fri.

Station 3 will water for 90 mins.
The program will start at 7:30 AM.

6.1   Set Time

First, let's set the time of day. The time is 2:00 PM.

Turn the MODE switch to SET TIME.
Push the INCREASE / DECREASE switch to set 2:00 P – don't forget to check P for PM.

6.2   Set Today

Now, let's set the day in the 2 week cycle. The day is Saturday of week 1.

Turn the MODE switch to SET TODAY.
Turn the WATER DAYS / STATIONS switch to SAT 7.
Press the ON / OFF switch and a bar will light underneath SAT 7 in the week display.

6.3   Program 1

You want to place information in Program 1 first. Note – you could work with any program, but it seems more logical to start with Program 1.

Using the PROGRAM switch, push the switch to PROGRAM 1.

As long as the switch stays in the PROGRAM 1 position, everything you do will apply to Program 1.

6.3.1 Watering Day Selections

Set the watering days for Program 1 to skip 2 days, for every 3rd day watering, and to start this Wed.

Turn the MODE switch to SKIP DAYS.
Push the INCREASE / DECREASE switch to set 2.

Turn the MODE switch to START SKIP DAY.
Turn the WATER DAYS / STATIONS switch to Wed 4 and press the ON / OFF switch.

Notice the light in the display below the selected water day of Wed. of Week 1.

6.3.2 Stations

Set the stations and their watering lengths for Program 1 to water Station 1 for 10 min., Station 2 for 10 min., Station 6 for 15 min., and Station 7 for 8 min.

Turn the MODE switch to STATION TIMES.
Turn the WATER DAYS / STATIONS switch to SUN 1 for Station 1 and push the INCREASE / DECREASE switch to set 10.
Turn the WATER DAYS / STATIONS switch to MON 2 for Station 2 and push the INCREASE / DECREASE switch to set 10.
Turn the WATER DAYS / STATIONS switch to FRI 6 for Station 6 and push the INCREASE / DECREASE switch to set 15.
Turn the WATER DAYS / STATIONS switch to SUN 7 for Station 7 and push the INCREASE / DECREASE switch to set 8.

6.4   Program 2

Select Program 2.

Using the PROGRAM switch, push the switch to PROGRAM 2.

6.4.1 Watering Days Selection

Set the watering days for Program 2.

Turn the mode switch to Water Days.
Turn the WATER DAYS / STATIONS switch to MON 2 of Week 1 and press the ON / OFF switch.
Turn the WATER DAYS / STATIONS switch to TUE 3 of Week 1 and press the ON / OFF switch.
Turn the WATER DAYS / STATIONS switch to WED 4 of Week 1 and press the ON / OFF switch.
Turn the WATER DAYS / STATIONS switch to THU 5 of Week 1 and press the ON / OFF switch.
Turn the WATER DAYS / STATIONS switch to FRI 6 of Week 1 and press the ON / OFF switch.
Turn the WATER DAYS / STATIONS switch to SAT 7 of Week 1 and press the ON / OFF switch.
Turn the WATER DAYS / STATIONS switch to MON of Week 2 and press the ON / OFF switch.
Turn the WATER DAYS / STATIONS switch to TUE of Week 2 and press the ON / OFF switch.
Turn the WATER DAYS / STATIONS switch to WED of Week 2 and press the ON / OFF switch.
Turn the WATER DAYS / STATIONS switch to THU of Week 2 and press the ON / OFF switch.
Turn the WATER DAYS / STATIONS switch to FRI of Week 2 and press the ON / OFF switch.
Turn the WATER DAYS / STATIONS switch to SAT of Week 2 and press the ON / OFF switch.

6.4.2 Stations

Set the stations and their watering lengths for Program 2.

Turn the MODE switch to STATION TIMES.
Turn the WATER DAYS / STATIONS switch to WED 4 for Station 4 and push the INCREASE / DECREASE switch to set 6.
Turn the WATER DAYS / STATIONS switch to THU 5 for Station 5 and push the INCREASE / DECREASE switch to set 6.

6.4.3 START TIME

Set the start times for Program 2.

Turn the MODE switch to Start Time 1.
Push the INCREASE / DECREASE switch to set 7:00 A – don't forget to check A for AM.

Turn the MODE switch to Start Time 2.
Push the INCREASE / DECREASE switch to set 7:00 P – don't forget to check P for PM.

6.5   Program 3

Select Program 3.

Using the PROGRAM switch, push the switch to Program 3.

6.5.1 Watering Day Selections

Set the watering days for Program 3.

Turn the MODE switch to WATER DAYS.
Turn the WATER DAYS / STATIONS switch to FRI 6 of Week 1 and press the ON / OFF switch.
Turn the WATER DAYS / STATIONS switch to FRI of Week 2 and press the ON / OFF switch.

6.5.2 Stations

Set the station and its watering length for Program 3.

Turn the MODE switch to STATION Times.
Turn the WATER DAYS / STATIONS switch to TUE 3 for Station 3 and push the INCREASE / DECREASE switch to set 90.

6.5.3 Start Time

Set the Start Time for Program 3.

Turn the MODE switch to START TIME 1.
Push the INCREASE / DECREASE switch to set 7:30 A – don't forget to check A for AM.

6.5.4 Now that you are done

IMPORTANT – Now that all programming has been completed, turn the MODE switch to AUTO. If you leave the MODE switch in a programming position, the controller will not water.

7.0   Controller Placement

The controller comes in an outdoor case, which is lockable. It should be placed in a shaded and dry environment no subject to direct sprinkler spray or continuous heavy moisture,

7.1   Mounting the Controller

All holes for mounting the controller to the wall or pedestal are provided. DO NOT drill additional holes in the case. Metal shavings will mix with the electronics and damage will result.

1.   On an upright, flat, and secure surface, place the mounting bracket at eye level and fasten securely.

2.   Mate the bracket on the back of the controller to the mounted bracket and hang the controller.

8.0   Master Valve: What is it and Why

A master valve is a valve installed in the supply line prior to field valves which water the landscape. Its purpose is to prevent water from flowing to the field valves when the clock is not activating a field valve.

Conceptually, it minimizes water loss and potential damage to the landscape should a field valve fail and stay open. If a field valve does fail open, water will flow only when the controller is activating field valves. At all other times, the failed field valve will not have water available to it because the controller will have the master valve turned off.

The ability to control a master valve is built into all Rain Master controllers, but whether or not a master valve is installed in the irrigation system is determined by you and your contractor.

9.0   Electrical Connections

1.   Refer to Figure 1 – Power and Field Wiring.
2.   Mount the controller, if you have not done so – see the appropriate section of this manual.
1.   Remove the lower panel.
2.   Using #10 gauge or heavier copper wire, connect the ground screw at the bottom of the controller to a ground rod using a ground rod clamp. The wire should be as short as possible with no sharp bends or kinks. If multiple clocks are being installed in the same location, use a ground rod for each.
3.   Connect the supply line grounded conduit to the condulet.
4.   Make sure that the supply voltage matches the transformer voltage (mismatched voltages are detrimental to the health of your controller).
5.   Connect the main voltage supply line to the transformer wires within the condulet.
6.   Follow all wiring codes appropriate to your locale.
7.   Bring in your field wires to the bottom of the controller through the appropriate electrical fitting. DO NOT ALLOW ANY WIRES WHATSOEVER UP IN BACK OF THE ELECTRONICS PANEL. AND DO NOT LEAVE ANY EXPOSED WIRES ANYWHERE WITHIN THE UNIT. Do not allow the wires to enter the bottom of the controller without going through an appropriate fitting. The fitting keeps out slugs, snails, etc. The hole in the bottom of the controller is sized for 1 ¼" fittings.

Controller Terminal Strip

Figure 1.0 – Power and Field Wiring
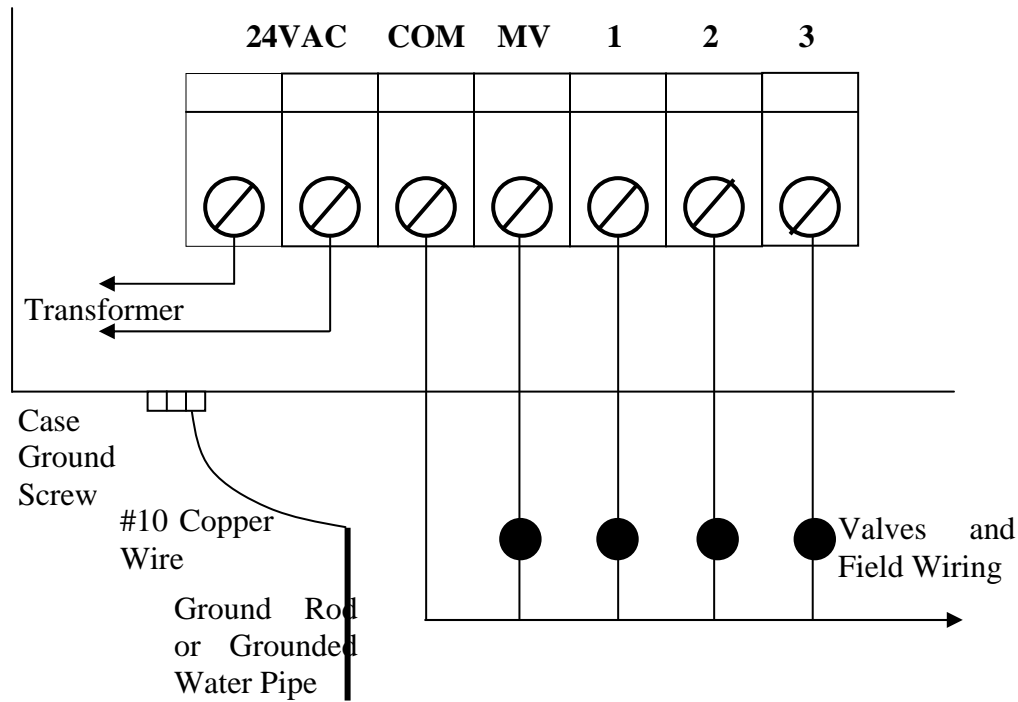
WARNING

1. All electrical connections must be as described above and the box must be properly grounded or warranty is void.
2. Disconnect power prior to making electrical connections or servicing controller.
3. For a complete reset of the controller, remove the backup battery and press RESET momentarily.
4. Never short a station terminal or wire to the common terminal or wire to create sparks for station identification.
5. While a station's terminal is activated do not disconnect the station's wire or the common wire or tap them to the terminal.

9.1 Tapping Wires to Locate Valves in the Field

Do not turn a station on and tap a wire to the controller's station terminal to see what valve in the field is connected to it. This is damaging to both mechanical and solid state controllers. Use the method shown below.

1. Use Manual Station to turn on Station 1, perhaps for one our.
2. Press the ON / OFF switch to turn it off.
3. Touch the wire from the unknown field valve to the controller's Station 1 terminal.

4.   Press the ON / OFF switch to turn it on and the valve on that wire will be activated.
5.   When you know what valve it is, use the ON / OFF switch to turn it off before removing the field wire from the controller's station terminal.
6.   Choose the next field wire and start the process over at Step 3.
7.   When all done, turn the MODE switch to the AUTO position.

9.2   Electrical Specifications and How many Valves per Station

Input power required: 117v A.C., .5 amp, and 50/60Hz.

Output power:

Any station in the unit can supply 24v A.C., 1 amp maximum. This is equivalent to 24 VA (24v times 1 amp). This is also the maximum that the controller can supply including the Master Valve or pump. For example, if a field valve draws .25 amps out of one station then there is .75 amps available from the Master Valve terminal.

Please note that some solenoids are rated in watts and some in VA. A watt is not equivalent to a VA. For purposes of calculation, a conventional 2 watt solenoid will draw approximately 5 to 8 VA depending upon the manufacture. Therefore, assuming an 8 VA solenoid, there may be no more than 3 solenoids (24 VA divided by 8 VA per solenoid) active at any time.

9.3   Electrical Connection For a master Valve

The Master Valve / Pump terminal is a source of 24vac power. It is active whenever any station in the controller is on.

If there is only one clock controlling the master valve, then wire the controller as shown in Figure 1. (Shown in Section 9.0).

If more than one clock is going to control the master valve, the clocks must be isolated from each other. Contact Rain Master for the pamphlet on multiple clock installations with master valves and pumps.

9.4   Electrical Connection For A Pump

If there is only one clock controlling the pump and if the pump has a 24vac starting relay, then wire the MV and COM terminals of the controller to the pump's relay similar to the connections made for the master valve in Figure 1.

If the pump does not have a 24vac relay, then the controller must be isolated as is shown in Figure 2. (Shown In Section 9.5).

If more than one clock is going to control the pump, the clocks must be isolated from each other. Contact RMIS for the pamphlet on multiple clock installations with master valves and pumps.

9.5 Electrical Connection For An Appliance

Shown in Figure 2 are the connections to control miscellaneous appliances such as lighting. Using program 3 (if you did not use it for watering your landscape) to control Station 7 would be an ideal application for outdoor lighting.

CONTROLLER QUICK DISCONNECT

Figure 2.0 – Electric Connection for A Pump and Appliances
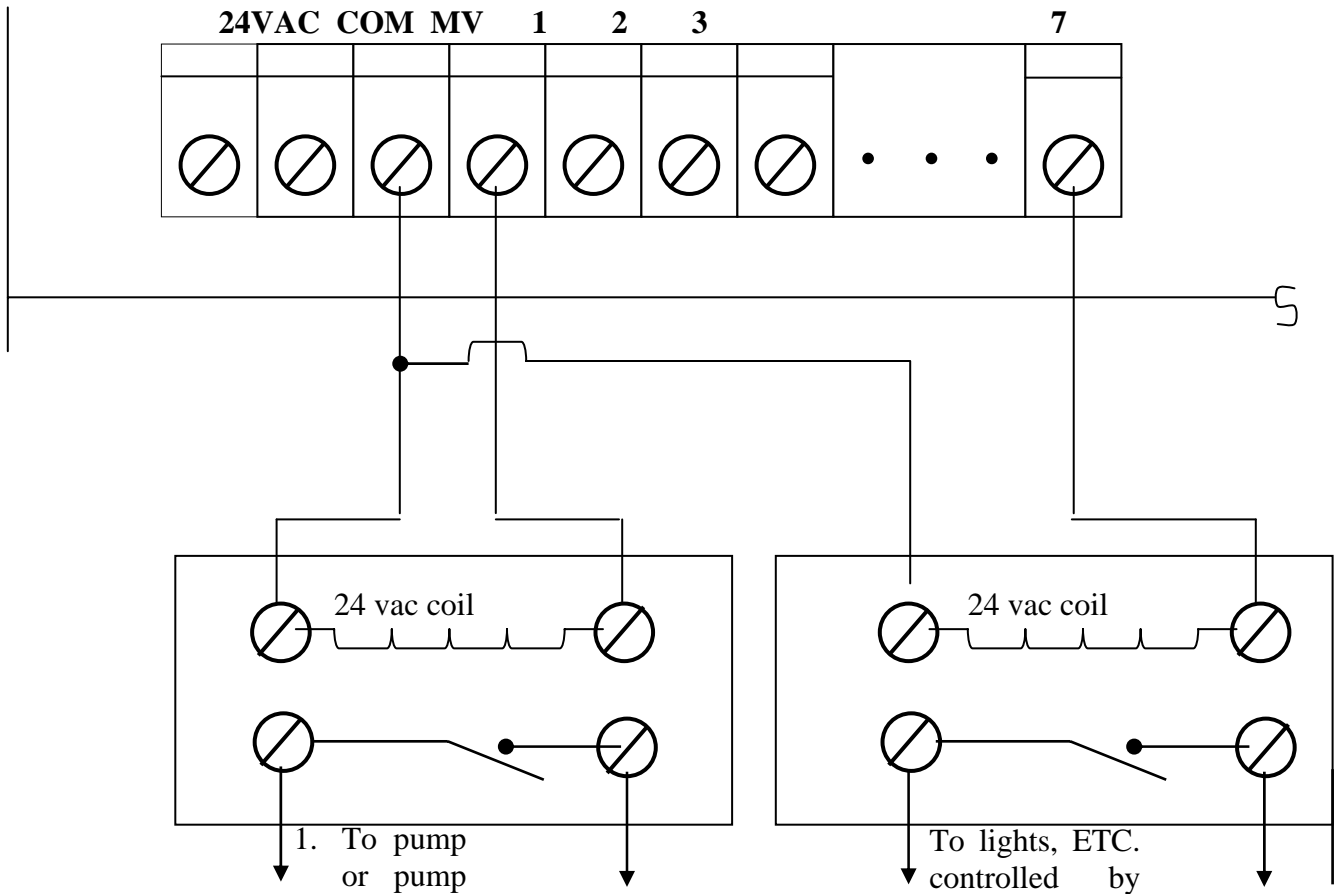
General-purpose relays, with contact ratings appropriate for the load, mounted at least 10' from controller.

10.0 Remote Control Capability

You may use a Rain Master remote control, Model RT5/RRAD, with this controller. This allows you to control the clock for a distance of one mile in congested areas via hand held FM transmitter. Consult the remote control manual for operating instructions.

Never connect anything other than a Rain Master remote control to the clock. **Connection of any other remote control system to any portion of s rain master clock will void all warranties immediately and may well cause damage.**