

Irritrol
SYSTEMS

Rain Dial Plus®

Irrigation System Controller



User's Guide
Rain Dial Plus 6, 9 and 12 Station
Indoor and Outdoor Models



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Contents & Specifications

Congratulations. You have purchased the easiest-to-use landscape control system available today. Please read through this guide before you begin installing or programming your Rain Dial Plus controller.

Your Rain Dial Plus package includes:

Outdoor models

- Controller
- 2 keys
- 3 mounting screws
- Installation & Programming Guide
- Mounting template
- One 9-volt alkaline battery (domestic models only)

Indoor models

- Controller
- Plug-in transformer (domestic models only)
- 3 mounting screws
- Installation & Programming Guide
- Mounting template
- One 9-volt alkaline battery (domestic models only)

Specifications

Outdoor Models (Internal Transformer):

- Input: 120 V a.c., 60 Hz, 30 VA (domestic), 230 V a.c., 50 Hz, 30 VA (export)
240 V a.c., 50 Hz, 30VA (Australia)

Indoor Models (External Transformer):

- Input: 24 V a.c., 60 Hz, 30 VA (domestic) or 24 V a.c., 50 Hz, 30 VA (export and Australian) **Note:** Plug-in transformer supplied with domestic models only.

All Models:

- Output: 24 V a.c. at 1.0A total maximum output; 0.5A maximum per station
- Master Valve/Pump Start Relay Output: 24 V a.c. at 0.375A (maximum)
- Operating temperature range: 32°F to 140°F (0°C to 60°C)
- Battery back-up: One 9-volt alkaline

New Feature: Remote Control Compatibility

Rain Dial Plus controllers, manufactured on or after October 4th, 2000 (date code 100400 or later printed in the battery compartment) or marked with the "R/R" symbol are "Remote Ready." The optional KwikStart system allows remote activation of the controller from as far as 160 feet to 100 yards away. The KSR-KIT, connected to your Rain Dial Plus controller allows you to remotely run the valves while out in your yard or garden for system "checkout", fall air "blowout" in freeze-prone areas or system troubleshooting.



Getting the Most Out of Your Rain Dial Plus

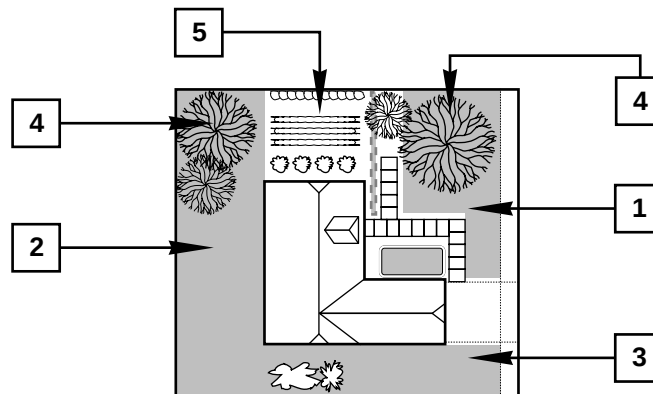
- **The Basic Cycle:** Once a program is given a start time, it causes all valves with run times entered to operate in sequence beginning with the lowest numbered valve. When all valves having run times are finished, the cycle is over.
- **Avoid Unexpected Start Time Delays:** It is possible to set a second start time that begins before the cycle from the first start time has finished. When this happens, the start of the second cycle will be delayed until the first is complete. The start time may not occur when you expect it. Even when you have planned enough time to avoid this, increases in the *water budget feature* may cause an overlap and delay the start of the second cycle.
- **Avoid Unexpected Short Cycles:** If you use *Odd/Even scheduling*, watering will stop at midnight to avoid watering on the wrong day. Be careful when planning start times to allow enough time to run the entire cycle before midnight.
- **Avoid Excessive Watering:** All three programs, A, B, & C, are always on. *Start times* entered for any program will begin automatically when that time occurs. They are meant to water different zones or to supplement watering if one program is not enough. If you need extra water, use more than one start time and/or use the *Water Budget Special Feature*.
- **Avoid Creating a Low Water Pressure Condition:** *Start times* operated by different programs are independent. If you select identical or overlapping start times, all can turn on at the same time. The maximum flow might exceed the water supply available. A precaution is to allow more time between *start times* to reduce the number of valves running at one time. Make sure that different programs have different start times.
- **Dealing with New Lawns:** Having multiple start times in one day is especially useful for newly seeded lawns.
- **Help with Electrical Problems:** Rain Dial Plus will detect (during a watering cycle) and display (after the cycle) a short circuit as "FUS" or an open circuit as "OPN" in addition to the problem valve number. "OPN" also appears when a valve run time has been scheduled but no valve is connected. In addition, if a Rain Sensor is connected and has shut off watering due to rain, "OPN" may continue to be displayed even though the rain has stopped and automatic watering has resumed. To clear the display, simply press the + or - Button while the function switch is in the **Run** ⏻ position.



Getting the Most Out of Your Rain Dial Plus

Here is a Sample Watering Plan

<u>Program</u>	<u>Start Time</u>	<u>Valve #</u>	<u>Location</u>	<u>Run Time</u>	<u>Schedule</u>
A	(#1) 5:00 a.m.	1	Front Lawn	15 min.	Odd
		2	Back yard	15 min.	Odd
		3	Side Yard	10 min.	Odd
B	(#1) 3:00 p.m.	4	Trees drip	2 hrs.	Mon
C	(#1) 4:00 a.m.	5	Garden	5 min.	Skip Days, 1
	(#2) 7:30 a.m.	5	Garden	5 min.	Skip Days, 1



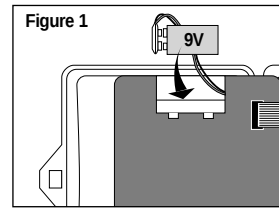
Installations

Installing the Battery

⚠ CAUTION: To avoid hazards from improper battery usage, always replace the battery with the same or equivalent alkaline battery type. Properly dispose of used batteries as recommended by the battery manufacturer.

Open the controller door. Carefully swing the control module open by pulling it from the right edge. Locate the battery compartment at the top of the module. Press down on top of the cover while pulling it outward to remove. Attach the battery wire clip to a standard 9-volt alkaline battery. Position the battery in the compartment and reinstall the cover. A flashing "12:00 AM" should show on the display. See Figure 1.

Note: The battery will power the clock, but it will not operate the valves.



Mounting the Controller

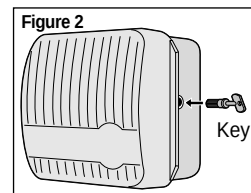
Locate your Rain Dial Plus indoor model in an area protected from weather, such as a garage, within 5' (1.5m) of a grounded electrical outlet. The outdoor model can be installed almost anywhere, but try avoiding exposure to direct sprinkler spray. The controller must be powered by a grounded AC circuit which is not shared with motorized equipment.

Use the mounting template (provided) to locate the mounting holes. Drive the top #10 screw into a wall stud, leaving about 1/4" (6.5 mm) exposed. Open the door to your controller and pull forward on the right edge of the control module. Hang the controller on the screw using the keyhole slot provided. To secure the controller, drive screws through the lower mounting holes provided.

Note: The lower mounting hole locations on the outdoor cabinet have thin webbing which can be easily removed with a 5/32" (4 mm) drill. Also, be sure to use screw anchors if installing the controller on drywall or masonry.



⚠ CAUTION: The outdoor controller cover must be closed and locked to protect the electronic components from moisture damage. Two keys are provided with each controller. Be sure to keep the keys in a safe location.



Installations continued...

Connecting an Earth Ground

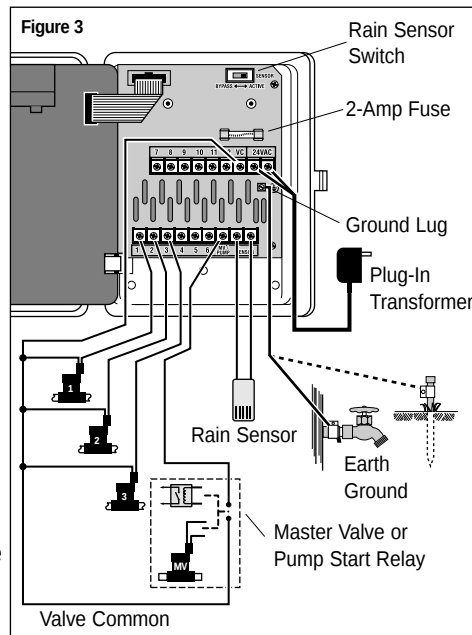
⚠ CAUTION: The built-in circuit protection in all Rain Dial Plus controllers must have an earth ground path to help protect the controller from power surges. This is especially important in lightning-prone areas. A 12–16-gauge (2.0–1.0 mm²) solid copper ground wire must be connected to the ground Ⓛug located on the controller's terminal board and a ground source such as a metal water pipe or copper-clad ground rod.

Connecting the Valves

Route one valve solenoid lead from each valve through the large hole in the bottom of the controller. Secure each wire to a separate numbered terminal. Attach the remaining wire from each valve to a single common wire and attach that wire to the “VC” (Valve Common) terminal.

⚠ CAUTION: Do not link the common wire of two or more controllers together. Use a separate, independent valve common wire for each controller. Linking two or more controllers with a single common wire can cause disruptions or even serious product damage.

Note: This controller is designed to work with 24 V a.c., 0.25A (6 VA) solenoid operated valves. A maximum of two solenoids per terminal may be used (not to exceed 0.5A per station), and no more than three solenoids should be on at any one time plus the master valve and/or pump start, if one is being used. Load requirements must not exceed 1.0A maximum total current draw.



Installations continued...

Connecting a Master Valve or Pump Start Relay

To use a master valve which operates throughout the watering cycle, connect one solenoid lead to “MV” terminal and the remaining lead to the “VC” terminal. Refer to Figure 3 on page 7.

Note: The master valve must be equipped with a 24 V a.c., 0.2 A, 5VA solenoid.

To use a pump start relay, connect one relay lead to the “MV / Pump” terminal and the remaining lead to the “VC” terminal. Refer to Figure 3, page 7.

Note: The pump relay should have a nominal coil voltage of 24 V a.c. at 0.375A maximum. The controller should not be installed within 5' (1.5m) of a pump, pool equipment or other motorized equipment. Consult with a pump dealer for detailed instructions.

Connecting a Rain Sensor

The Rain Dial Plus is designed for use with a normally-closed rain sensor or rain switch. Refer to page 10 for important rain sensor operation information.

1. Route the two wires from the sensor into the cabinet through the valve wire opening.
2. Remove the jumper wire from the two Sensor terminals. Connect the sensor wires to the terminals in either order. Refer to Figure 3, page 7.

Note: Refer to the instructions supplied with the rain sensor or switch for additional installation information.

Connecting the Power Source – Indoor Model

After you have mounted your controller and completed all field wire connections, route the two leads from your transformer through the small hole provided in the cabinet bottom and connect to the terminals labeled “24 VAC”. Refer to Figure 3 on page 7.

Close the control module and plug the transformer into a wall outlet.

Note: The plug-in transformer is supplied with the domestic controller models only.

Connecting the Power Source – Outdoor Model



Outdoor controller models have a built-in transformer which must be connected to a grounded AC power source.

Note: Australian controller models are equipped with a plug-in power cord. For installation, insert the plug into a grounded 240 V a.c. 50 Hz outlet.

Installations continued...

Note: Electrical conduit and adapters are not supplied with the controller but are generally required. Check local building codes and install conduit accordingly.



WARNING: All electrical components must meet applicable national and local electrical codes including installation by qualified personnel.

On outdoor models, these codes may require an external junction box mounted on the transformer 1/2" NPT nipple and a means in the fixed wiring of disconnecting AC power having a contact separation of at least 0.120" (3mm) in the line and neutral poles.

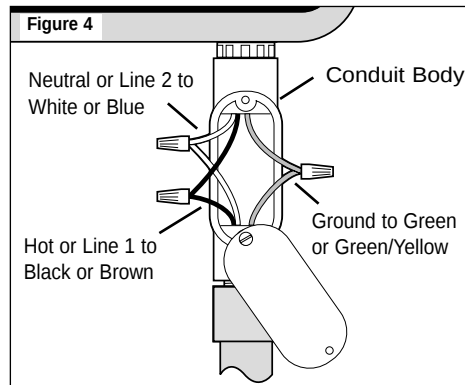
Ensure the AC power source is OFF prior to connecting to the controller.

The wire used for connection to the controller must have insulation rated at 105° C minimum.

1. For the power wire connection, install a 1/2" NPT threaded conduit body to the transformer assembly nipple. From the conduit body, install electrical conduit to the AC power source circuit breaker panel. **Note:** Does not apply to Australian models.

CAUTION: Do not connect the controller to one phase of a 3-phase power system used by a pump or other electrical equipment.

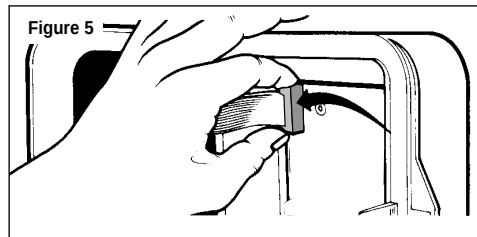
2. Ensure the power source is off. Verify that power has been turned off at the power source by using an appropriate AC voltage meter.
3. Route the Hot (or Line 1), Neutral (or Line 2) and Equipment Ground wires through the conduit into the conduit body.
4. Using the properly size insulated wire connectors, splice the mating wires as shown in Figure 4.
5. Close and secure the conduit body cover.
6. Apply power to the controller and check controller operation. If the controller is not operating, disconnect the power at the source and have a qualified electrician check for possible short circuit.



“Anywhere Programming”

The Rain Dial Plus control module is designed to be easily removed for complete programming in a more convenient setting, or for servicing. The battery keeps the current time and allows changes to settings until the module is connected to AC power.

To remove the module, pull forward on the right edge of the module as if you were going to replace the battery. Unplug the ribbon cable connector from the printed circuit board, as shown in Figure 5, then unsnap the module from its hinges. To reinstall the module, simply reverse the order of the removal steps.



Memory Protection

Program settings are stored in a unique electronic device called “non-volatile” memory and retained for up to 10 years even without battery power. The battery maintains the current date and time.

Rain Sensor Operation

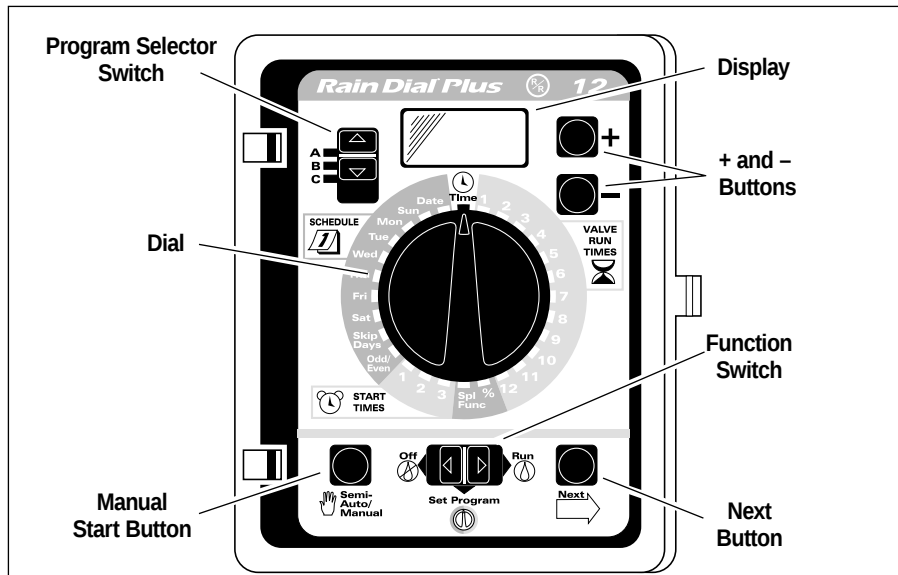
A two-position sensor switch (as shown in Figure 3 on page 7) is provided to bypass the (optional) rain sensor function if necessary.



IMPORTANT: If a rain sensor is NOT connected to the controller, the sensor switch must be in the BYPASS position or the jumper wire attached to both sensor terminals to enable controller operation. The controller will not operate automatically if the sensor switch is in the ACTIVE position without a sensor or jumper wire installed.



What the Buttons and Switches Do



Program Selector Switch

- Schedule up to three, totally independent PROGRAMS to allow custom watering of your landscaping.

Note: Regardless of Program Selector position, all three programs (A, B and C) always run in Automatic operation.

- Use to select a program (A, B, or C) for programming an automatic watering schedules and for manual operation of an automatic watering program (Semi-Auto operation).

Function Switch

- Use **Run**  for automatic operation.
- Use **Set Program**  to set programs and select special features.
- Use **Off**  to cancel all active watering or suspend all planned watering.



What the Buttons and Switches Do continued...

Semi-Auto/Manual Button

- Manually starts an automatic program (semi-auto) or an individual valve.

Next Button

- Advances to the next option for setting time/date and special features.

Dial

- Sets changes or checks program information.

+/- (Plus/Minus) Buttons

- Changes the values of program information. Can be used one step at a time or held down longer to rapidly advance to another setting. Holding down either button for longer than 3 seconds causes the display to rapidly scroll through the digits.

Display

- Shows the value of the selected information.

Time

- Sets the correct time of day on the controller. Note the AM/PM display.

Date

- Sets the correct year, month and day on the controller.

Rain Sensor Switch (located on the circuit board)

- Bypass position disables rain sensor function and allows the controller to operate without a rain sensor connected.



How the Dial Works

Schedule

- Determines the days watering occurs by selecting:
 - Specific days of the week (e.g. watering every MON and THU),
 - Skip Days intervals, e.g., watering every 4 days, or
 - ODD-numbered or EVN-(even) numbered days of the month.

Start Times

- Selects up to 3 different start times for each program.

Valve Run Times

- Sets how long each valve will water.
- The valve numbers correspond to the numbered terminals behind the module. The valves run in numerical order; when one finishes, another begins. You can set each valve to run from 0 to 59 minutes in 1 minute increments, or 1.0 to 5.9 hours in 0.1 hour (6 minute) increments.

SPL FUNC (Special Functions)

- Clears all settings from a selected program
- Selects from among 5 different languages.

“%” (Water Budget)

- Increases or decreases all valve run times for a selected program. Watering can be changed from 0% to 200% in 10% increments.



Getting Started

Set the Time

- Turn the Dial to **Time** .
- Press the +/- Buttons to set the current time (note AM or PM).

Set the Date

- Turn the Dial to **Date**.
- Press the +/- Buttons to change the year shown on the display.
- Press the **Next**  Button; then press the +/- Buttons to change the month (JAN, FEB, etc.) shown on the display.
- Press the **Next**  Button; then press the +/- Buttons to change the date.
- Press the **Next**  Button to display the day of the week that automatically corresponds to the date you have set.

Automatic Operation, Step by Step

1. Set the Function Switch to **Set Program** .
2. Set the Program Selector Switch to **A**, **B** or **C** program.
3. Turn the Dial as follows to select ONE of the watering day schedule options:

Daily Schedule

Turn the Dial to Sun (Sunday). Press the +/- Buttons for ON or OFF.
Repeat for each day of the week.

Note: If a Skip Days or Odd/Evn schedule is in use, it must be set to "OFF" before a Daily schedule can be set. (See page 19, "What the Display Means.")

Skip Days Schedule



Turn the Dial to **Skip Days**. "SKIP" is displayed. Press the +/- Buttons to set the day interval between watering (01 – 15 days). For example, to water every day, set 01. To water every third day, set 03, etc.

Automatic Operation, Step by Step continued...

Press the **Next**  Button to select the current DAY (1–15) of the Skip Days schedule. This determines when the watering interval will begin. At the day change (midnight), the DAY number automatically increases by one. When the SKIP and DAY numbers are equal, watering will occur at the first scheduled start time.

Note: If an Odd/Evn schedule is in use, it must be set to “OFF” before a Skip Days schedule can be set. (See page 19, “What the Display Means.”)

Odd/Even Days Schedule

Turn the Dial to ODD/EVEN. Press the +/- Buttons to select ODD, EVN or OFF.

Note: Odd/Evn schedule overrides the Skip Days or Daily schedules and must be set to “OFF” to use another type of schedule.

Note: ODD days will not water on the 31st of a month or Feb. 29 during leap year.

4. Turn the Dial to **Start Times** .

Turn the Dial to Start Time 1. Press the +/- Buttons to the time you want this Program to start.

Note: OFF settings are located between 11:59 a.m./12:00 p.m., and 11:59 p.m./12:00 a.m.

If desired, add second and third Start Times to this PROGRAM by changing the Dial position to 2 or 3 and repeating the above procedure.

5. Turn the Dial to **Valve Run Times** .

Turn the Dial to the number of the valve you want to operate. Press the +/- Buttons to set the number of minutes to water. The values larger than one hour show as hours and tenths of hours, for example, 1.1 hour means 1 hour and 6 minutes.

Repeat for each valve you want to operate within the selected Program.

To set another PROGRAM, repeat steps 2 through 5.

Your program is now complete and ready to run.

Set the Function Switch to **Run**  and your system will run when the clock reaches the next start time.



Special Features

CLEAR A PROGRAM

Note: The Clear Program process restores the default program. All scheduled watering days, start times and valve run times are eliminated. Water Budget becomes 100%.

1. Set the Function Switch to **Set Program** .
2. Turn the Dial to **Spl Func**. When the display shows "CLR", the controller is ready to clear the program.
3. Set the Program Selector to **A, B, or C** (the program you want to clear).
4. Press the **+** Button. "OK?" is displayed.
5. Press the **+** Button again. "CLR" is displayed and the program is reset.
6. To clear another program, repeat steps 3, 4 & 5.
7. Turn the Dial to another position when you have completed the Clear Program process.

SELECT LANGUAGE

1. Set the Function Switch to **Set Program** .
2. Turn the Dial to **Spl Func**.
3. Press the **Next**  Button.
4. Press the **+/-** Buttons until the desired language appears. The display shows the abbreviation of either the default or selected language, ENG = English, ESP = Spanish, FRA = French, DEU = German, ITA = Italian. English is default.

Water Budget

WATER BUDGET adjusts all watering times in a selected program by a fixed percentage, from 0 - 200% in 10% increments. Each program can have a different Water Budget.

1. Set the Function Switch to **Set Program** .
2. Set the Program Selector to the program you wish to budget, **A, B, or C**.
3. Turn the Dial to **%**.
4. Press the **+/-** Buttons to select the desired Water Budget %.



Review Your Program

1. Set the Function Switch to **Off** .
2. Set the Program Selector to the program you wish to review, **A**, **B**, or **C**.
3. Turn the Dial to the setting you wish to check. This feature reviews settings but cannot change them.
4. Return the Dial to the **Time**  position when your review is complete.

Manual PROGRAM Start

Use MANUAL PROGRAM START to run an entire program immediately as well as when scheduled, for example, to supplement regular watering cycles on especially hot days.

1. Set the Function Switch to **Run** .
2. Set the Program Selector to the program you wish to run, **A**, **B**, or **C**.
3. Turn the Dial to the **Time**  position.
4. Press the **Semi-Auto / Manual**  Button to start the selected program.
5. Press the **Next**  Button to advance through all active stations within a program. Only stations that have run times will operate.
6. When complete, the Automatic schedule resumes.

Manual VALVE Start

Use MANUAL VALVE START to run a valve immediately as well as when scheduled, for example, to supplement regular watering on especially hot or dry days.

1. Set the Function Switch to **Run** .
2. Turn the Dial to the valve number you want to run.
Note: The Program Selector is not used in this feature.
3. Press the +/- Buttons to SET THE AMOUNT OF TIME TO RUN.
4. Press the **Semi-Auto / Manual**  Button to start the selected valve.
Note: The display shows “M” for MANUAL, the valve number in operation and its remaining watering time.
5. Repeat steps 2 through 4 to start more valves.



Stop Watering

1. Set the *Function Switch* to OFF. After 3 seconds, all watering stops .

- Suspends but does not erase programs.
- The display flashes “OFF”.

Note: Watering remains off in this *Function Switch* position. Set the *Function Switch* to RUN to resume all automatic schedules.

What the Display Means

Information Displayed When Changing Settings

With the *Function Switch* set to SET PROGRAM, each Dial position shows:

Time

Displays the current time in hours and minutes, and indicates AM or PM.

A digital display showing the time 10:58 PM. The digits are in a standard seven-segment font, with 'PM' to the right of the minutes.

Date

Displays the current date as year, month (JAN - DEC), or date.

A digital display showing the month 'JAN' in a stylized, outlined font.

Valve Run Times

The selected watering time is displayed in minutes, e.g., 10 MIN, or in hours, e.g., 1.9 HR (the same as 1 hour and 54 minutes). If no watering time is programmed for the valve, “OFF” is displayed.

A digital display showing the value '1.9' followed by 'HR' in a small font.

Start Times

The selected start time is displayed in hours, minutes and AM/PM. If a start time has not been selected or is removed, “OFF” is displayed.

A digital display showing the time 6:20 AM. The digits are in a standard seven-segment font, with 'AM' to the right of the minutes.

What the Display Means continued...

Daily Schedule

Each day of the week dial position displays either “ON” or “OFF”. If “SKIP DAYS” has been selected, the word “SKIP” followed by three dashes is displayed for each of the 7 watering day settings. If an odd or even schedule is in effect, “ODD” or “EVN” is displayed.

SKIP

Skip Days Schedule

“Skip” is displayed along with a number from 01 to 15 which establishes the watering day interval. When NEXT is pressed, the current DAY within the selected interval is displayed with “:DA”. This number automatically increases by one each day. A watering day occurs when the DAY and SKIP numbers are equal. If a DAILY schedule has been selected, “OFF” is displayed.

SKIP 03

SKIP 3:DA

Odd/Even Schedule

“ODD” or “EVN” is displayed. If a DAILY or a SKIP DAYS schedule has been selected, “OFF” is displayed.

EVN

% Water Budget

The current water budget percentage is displayed for the selected program. If water budget has been set to 0%, “OFF” flashes to alert you that no watering will occur.

60%

Special Features: Clear a Program

“CLR” is displayed. When the clear process is started, as a safeguard, “OK?” is displayed. Pressing the + or - button clears the program and “CLR” is displayed again.

CLR

Special Features: Language

The available languages are displayed in order. English, Spanish, French, German and Italian, are displayed as “ENG”, “ESP”, “FRA”, “DEU” and “ITA”.

ENG

What the Display Means continued...

Information Displayed When Operating

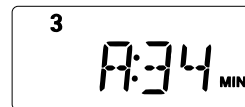
With the *Function Switch* set to RUN, each *Dial* setting shows:

No Program Running – Automatic Mode

The current time with a flashing colon (:) is displayed. If the entire display is flashing, the controller has just been plugged in or there has been a power outage and no battery power was available during the outage. To stop the flashing, press the + or - *Buttons*. If the colon is steady and not flashing, the controller is using battery power.

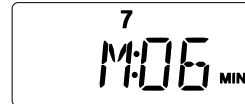


Program Running – Automatic Mode or Manual Program Start shows the current time and all active valves running. Turn the *Dial* to an active valve to display the Program which activated the valve, and the remaining run time. If you turn the *Dial* to a valve that is not running, it will show “OFF” even though time may be scheduled on a program.



Manual Valve Running

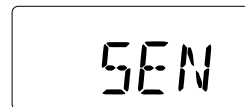
With the *Dial* pointing to the appropriate valve, the display shows “M” for MANUAL, the valve number, and the time remaining for the valve to run.



Short Circuit – Your Rain Dial Plus controller will detect a short or an excessive total electrical load, automatically advancing to the next valve with scheduled run time. When the cycle is over, the display flashes “FUS” and shows the valve number.

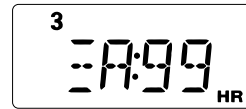


Rain Sensor – If automatic operation is suspended by the rain sensor, “SEN” will flash on the display in all dial positions. The “SEN” display can be disabled for two minutes by pressing the + or - Button, however this will not allow automatic watering operation. Manual operation is not inhibited by the rain sensor. When the sensor is no longer activated and automatic operation has resumed, “SEN” will no longer be displayed.



What the Display Means continued...

Water Budget Adjustments – The run time you set is multiplied by the Water Budget value. If this exceeds 9.9 hours, the display shows one, two, or three bars before the program letter to advise that more time, up to 11.8 hours, is scheduled but cannot be displayed.



Documenting Your Watering Schedules

Complete the watering schedule details found on the back side of the Quick Reference Guide card hanging inside the door of your Rain Dial Plus controller. Update the schedule and chart whenever you make changes to your landscaping that will affect the amount of water you wish to apply.

Testing for Valve Short Circuits

Rain Dial Plus controllers can detect and identify any valve with an electrical wiring short circuit.

To test a valve:

1. Set the Function Switch to **Run** .
2. Turn the DIAL to the valve number you want to test.
3. Press the +/- Buttons to display one or two minutes of run time.
4. Press the **Semi-Auto Manual**  Button to start. If the valve does not begin to operate and the display flashes "**FUS**", that particular valve has an electrical short, or other problem. The valve solenoid and wire connections should be inspected.
5. To clear the display, press the + or - Button.

⚠ CAUTION: Do not test the valves by touching the wire ends to the terminal screws. Serious controller damage may result.



Troubleshooting the System

PROBLEM	POSSIBLE CAUSE	CORRECTION
Some valves don't operate	Solenoid defective Loose wire connection.	Test & replace as required. Secure wire connections. Check for continuity.
No valves operate	<i>Function Switch</i> Off Ⓐ.	Set switch to Run Ⓐ.
	Solenoid defective.	Test & replace as required.
	Loose wire connection.	Secure wire connections.
	Day set to "OFF."	Check current day in display. Set dial to correct day and check setting.
	"SKIP DAYS" incorrectly set.	Check and reprogram. See pages 14 & 15.
	"Start Times" set to "OFF."	Reprogram "Start Times".
Watering at wrong times	"Current Time" of day incorrectly set.	Check and reset "Current Time", note AM or PM.
	"Start Times" incorrectly set.	Check & reset all "Start Times". See page 14.
Program values won't display	Wrong function setting.	<i>Function Switch</i> must be in Run Ⓐ position.
	Controller is in watering cycle.	Check or change program with <i>Function Switch</i> in Set Program Ⓑ position.
Incorrect display following a power outage after being plugged in.	Battery is weak or missing.	Remove AC power and battery for 1 minute. Replace battery, restore power and repeat steps on page 14.
Display blank	No power.	Check circuit breaker panel.
	Transformer unplugged.	Plug in transformer.
	2-amp fuse blown.	Replace fuse.

Troubleshooting the System continued...

PROBLEM	POSSIBLE CAUSE	CORRECTION
Waters on wrong days	Weekly or "SKIP DAYS" schedule incorrectly set.	See pages 14 & 15.
"Current Time" is wrong and flashing	Power outage occurred with no battery or weak battery in controller.	Replace battery and reset "Current Time."
Display is flashing "FUS"	Excessive load. Shorted solenoid or field wires.	Check max. ratings, see pg. 7. Check solenoids and wiring. See page 21.
Display is flashing "SEN" with no rainfall	Rain Sensor operation	Check wiring and connections on rain sensor. If a sensor is not connected, place sensor switch to BYPASS. See page 20.
Valve won't turn off (Function Switch Off )	Valve malfunction.	Check valve for leaks and/or internal debris.
Display is flashing "OFF"	This is a reminder the Function Switch is in the Off  position.	Use Dial to review settings or switch to Run  to begin watering.

Replacing the Fuse



WARNING: The fuse protects the transformer from overload due to a short circuit condition. For continued protection against risk of fire, replace only with the same type and rating of fuse. Ensure power to the controller is off prior to removing or installing fuse.

1. Disconnect power to the controller.
2. Locate the fuse and carefully remove it from the retaining clips.
Refer to **Figure 3** for fuse location.
3. Install a new fuse of the same type and rating. See Warning above.
4. Restore power to the controller.



Electromagnetic Compatibility

Domestic: This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a FCC Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the irrigation controller with respect to the receiver.
- Move the irrigation controller away from the receiver.
- Plug the irrigation controller into a different outlet so that the irrigation controller and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio - TV Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402. Stock No. 004-000-00345-4.

International: This is a CISPR 22 Class B product.

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