RPS46™

MINI IRRIGATION CONTROLLER

RAIN®

www.krain.com

STATION MODELS *- Available in 4 OR 6 stations.*

OUTDOOR MODEL *- Supplied with 120VAC x 24VAC inbuilt transformer.*
OPTIONAL LEAD WITH PLUG.

INSTRUCTION MANUAL

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FEATURES

This unit is available in 4 & 6 station configurations Designed for residential applications, this controller has four separate programs with a maximum of sixteen start times a day. This ensures efficient watering of different garden or turf areas.

These different areas may require individual watering programs and often use different types of sprinklers.

Examples: Turf areas generally use pop-up sprinklers and require less frequent but heavier watering. However, flower beds use sprays and require more frequent watering. The valves (stations) which water similar garden areas are often *grouped together and put into the same program as they need to be watered on the same days.*

These stations (valves) will water in sequential order from the lowest number at the start time (or times) nominated and on the days selected. Maximum watering duration for a station (valve) is 12 hours and 59 minutes.

This controller has three types of watering day options. Either, interval watering from everyday to every 15th day, individual day selection per program, or a 365 day calendar for ODD/EVEN day watering.

An innovative feature of this controller is the water saver feature which allows quick adjustment of the station watering times by percentage as the seasons change Another water saving feature is the installation of a rain sensor. This controller has a rain sensor switch in the fascia so your can enable or disable the rain sensor control function.

GLOSSARY

INDOOR CONTROLLER MODEL

SELECTION DIAL
Used for operations & programming

LCD DISPLAY
Easy to read display

PROGRAMMING BUTTONS
Used for adjusting the programmed information

RAIN SENSOR SWITCH
Manually activate rain sensor by switching to ON/OFF position

FUSE LOCATION
Remove cover to access fuse

TERMINAL COVER
Remove to access terminals for solenoid (valve) wires and to annually replace 9 volt block battery

PROGRAMMING INSTRUCTIONS

INTRODUCTION

This controller has been designed with four separate program starts, to allow different garden areas to have their own individual watering requirements.

A start is basically a method of grouping stations (valves) with similar watering requirements to water on the same days. These stations will water in sequential order from the lowest number at the start time (or times) nominated and on the days selected.

THE KEY ELEMENTS WHEN PROGRAMMING YOUR CONTROLLER ARE:

1. **Grouping the stations** (valves)
   Group together garden areas which have similiar watering requirements. Examples are: Turf Areas, Flower Beds, Pergola/ Undercover Areas, or Vegetables. These different groups require individual settings.
2. **Planning out your watering program.**
   Complete your individual watering planner, supplied at the back of this book.
3. **Setting the current time and correct day of the week.**
4. **Setting an automatic program start.**
   Use the following 3 steps to program each group.

   4.1 Set Start(s).
   This sets the time of the day when the watering program will commence.

   4.2 Set Watering Days.
   These are the nominated days when the automatic system will be active.

   4.3 Set Station Run Times.
   This sets the watering duration required for each station (valve).

PROGRAMMING INSTRUCTIONS

OTHER FUNCTIONS

This controller can also manually run a selected program once, or an individual station can be set to run once from 1 minute up to 12 hours and 59 minutes. A test facility for checking the valves and sprinklers is also provided.

GENERAL TIPS FOR EASY PROGRAMMING

Tips to help eliminate programming confusion.

- Complete the spare watering planner.
- When setting, one push of the button will increment one unit.
- Holding one button down will fast scroll through units.
- During programming, only the flashing values are able to be set, use the + or − buttons.
- **Pressing** → will scroll forward through the settings in an orderly sequence.
- **Pressing** ← will scroll back to previous settings and settings can be changed.

Basic Control Operation

Turn dial to required setting

→ Scroll Forward

\+ Increase Value

− Decrease Value

← Scroll Backwards

PROGRAMMING

SET CURRENT TIME & CORRECT DAY

Turn the dial to ***Set Clock/Calendar*** position.

The hour will be flashing. Use + or − to adjust.

> ***NOTE:*** *AM / PM must be set correctly.*

Press the → button and the *"minutes"* will flash.

Use + or − to adjust.

Press → and the *"day of the week"* will flash.

Use + or − to set correct day.

SET CALENDAR (OPTIONAL)

> ***NOTE:*** *The calendar only needs to be set when selecting ODD/EVEN day watering in areas where water restrictions may require this feature.*

Press ← button until the year, month & day are shown. The *"year"* will be flashing. Use + or − to adjust.

Press ← button and the "month" will flash.

Use + or − to adjust.

Press ← and the *"day"* will flash. Use + or − to adjust.

> ***TIP:*** *To return to the clock,* ***Press*** →*, or* ***turn*** *dial to another position.*

Before proceeding, ensure your watering planner has been completed. From this, you should be aware of which stations are allocated to each program.

> ***NOTE:*** *Set one program at a time – this will ensure that all the values are entered correctly.*

PROGRAMMING

SETTING PROGRAM 1

The program number can only be set/changed in the ***Set Start Times*** position.

STEP 1. Set Start Times

All valves will activate in sequential order for each start time. **Turn** the dial to ***Set Start Times*** and ensure that *"Prog 1"* is flashing.

THE DISPLAY WILL SHOW:

Press ➡ & *"Start 1"* willl flash.

Press ➡ & the *"hour"* will flash.

Use ➕ or ➖ to adjust.

> ***NOTE:*** *AM / PM is set correctly.*

Press ➡ & the *"minutes"* will flash. Use ➕ or ➖ to adjust, if required. Each program has up to four start times and should you require a second start time,

Press ➡ twice & *"Start 1"* will flash.

Advance to start 2 by pressing ➕.

THE DISPLAY WILL SHOW:

Press ➡ and proceed as per setting ***Start 1.***

> ***TIP:*** *To turn an active start time off, turn the dial to the Set Start times position, select the start number required using the ➕ button and then press ➡ until the "hour" is flashing. Use ➕ or ➖ until "OFF" is shown.*

> ***TIP:*** *"OFF" position is between 12 and 1pm.*

STEP 2. Set Watering Days

This unit has interval watering or individual day selection from every day to every 15th day or a 365 day calendar with odd/even day selection in areas where water restrictions require this feature.

Turn the dial to ***Set Watering Days***.

INTERVAL DAY SELECTION

THE DISPLAY WILL SHOW:

"Interval 1" will be flashing.

This means that watering will occur every day.

To change the interval day, **press** the + button.

Examples: *Interval 2 means watering will take place every second day, 3 means watering will be every third day etc.*

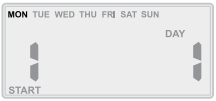
Interval watering can be set from everyday to every 15th day.
*The **Run Day** refers to the number of days press the next watering program will occur.*

INDIVIDUAL DAY SELECTION

Press the → button. This is the **selectable** day option.

THE DISPLAY WILL SHOW:

This refers to Mon being Day 1.



To turn Monday off, **press** button −. To leave Monday active, leave as is & advance to Tuesday (day 2) by **pressing** the → button. Again **press** the − button to set the day off if required followed by → to advance. Continue until all seven days have been set *"on"* + or *"off"* −.

ODD / EVEN DAY SELECTION (OPTIONAL)

In some regions, users are only allowed to water on ODD dates if their house number is ODD, or on EVEN dates when their number is EVEN.

This controller allows this to be done simply by setting the relevant selection of ODD or EVEN and setting the current date into the controller.

If you require the ODD / EVEN day option, simply **press** the → button until *"ODD"* is shown. **Press** the → button and *"EVEN"* will be shown. This feature may be required in areas where water restrictions are enforced.

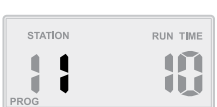
NOTE: *Remember to set the 365 day calendar when setting the clock, or this feature will be out of sequence.*

STEP 3. Set Station Run Times

This is the length of time that each station (valve) is set to water on a particular program. Maximum watering time is 12 hours 59 minutes for each station. A station can be assigned from 1 to 4 starts if required, with different run times.

Turn the dial to the ***Set Station Run Times*** position.

THE DISPLAY WILL SHOW:



This means station 1 has a default run time of 10 minutes in program 1. *"Station 1"* will be flashing.

STEP 3. Set Station Run Times. (Continued)

To adjust the **Run time** in minutes **press**  , and use  or . To set the run time in hours, **press**  and *"0"* will appear and flash. To adjust use  or  . If not required, **press**  and advance to station 2 by pressing the button.

Continue until all the stations in Program 1 have been set with a run time, or if a station (or stations) are not required to be active in this particular program, ensure that the run time is set to *"OFF"*. Remember all stations are set at a default run time of 10 minutes in Program 1.

NOTE: *To set a station to "OFF".*

Use when the *"RUN TIME"* is flashing. This completes the setting up procedure for automatic watering of Program 1.

Should you need a second program.

Turn the dial to *"Set Start Times"* and *"Prog 1"* will flash. **press** and change to program 2 position and follow the same 3 steps to set an automatic watering program.

1. **Set Starts**
2. **Set Watering Days**
3. **Set Station Run Times**

TIP: *Remember to return the dial to the "Auto Run" position after completing the set up of an automatic program.*

This will ensure that the automatic cycles will take place.

SYSTEM TEST FACILITY

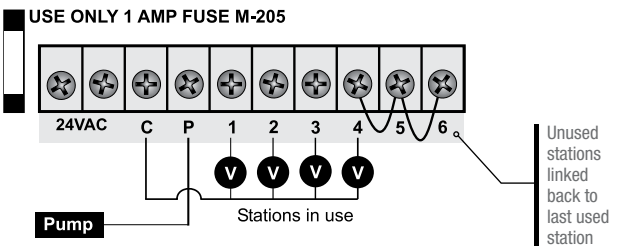
Turn the dial to ***Run Test Cycle.***
There will be a two second pause.

THE DISPLAY WILL SHOW:

Use this feature to check that your valves & sprinklers are working correctly. The unit will run all stations in sequential order. The factory preset time of 2 minutes per station can be adjusted. The new adjusted run time will become the new default time.

TIP: *If the water supply is from a pump system, it is critical to ensure all outputs are connected to a valve. Any output NOT connected to a valve, should be linked back with a wire to the nearest output* ***with*** *a valve.*

This prevents the pump running against a closed head.



RUN A SINGLE STATION

Turn the dial to ***Run Single Station.*** There will be a two second pause.

To adjust the run time, use + or −. To advance to the next station **press** the → button. Maximum run time is 12 hours 59 minutes.

THE DISPLAY WILL SHOW:

RUN A PROGRAM

To manually run a complete program once for the run times as set in the automatic schedule **turn** the dial to the ***Run a Start*** position. *"Prog 1"* will be shown in the display. To run program 1, leave or advance to start 2 by **pressing**  .

OTHER FEATURES

STOP

To stop an automatic or manual watering schedule, **turn** the dial to the ***Off*** position.

> ***TIP:*** *For automatic watering, remember to* ***turn*** *the dial back to the* ***Auto Run*** *position. The* ***Off*** *position will stop any watering from occuring.*

STACKING START TIMES

Should you accidently set the same watering start time on more than one program, the controller will stack them in sequential order from the lowest number. All programmed start times will be watered, but the start times will be shunted along.

AUTOMATIC BACK UP PROGRAM

When the battery is not fitted or is low, there is a backup default program in program 1 watering every day at 12:00 a.m. for 10 minutes per station.

A standard 9 volt battery should be fitted to the battery snap supplied to maintain the clock accuracy and hold the automatic programs during power outs.

> ***TIP:*** *The display has a warning indicator to let you know when the battery is low or not fitted. The word BAT is displayed under the AM / PM indicator in the clock mode.*

OTHER FEATURES

FITTING A RAIN SENSOR (OPTIONAL)

A rain sensor can be wired directly into the terminal block. When the sensor is wet, all **automatic** and **manual** watering will not operate.

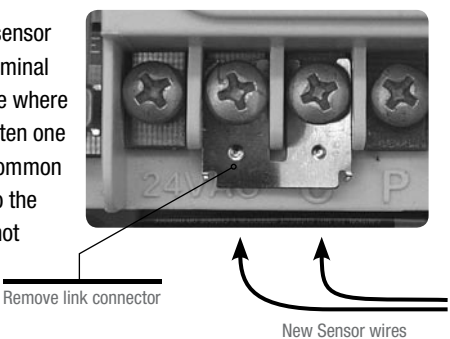
To fit a rain sensor follow this procedure:

1. **The sensor switch, accessed on the fascia, must be up in the "ON" position. To over-ride the sensor when it is wet, simply move the sensor switch down to the *"OFF"* position. This will allow automatic and manual watering cycles to operate.**

2. **Connecting the rain sensor wires:**

   A. Remove the link connector by loosening both screws and slide out. (Link located under the terminal cover.)

   B. Run the new sensor wires into the terminal block and replace where the link was. Fasten one wire under the common (C), the other into the 24VAC. Polarity not applicable.



NOTE: *Far left 24VAC Terminal is active.*

TIP: *It is important to move the sensor switch back to the "ON" position after completing your watering cycle.*

OTHER FEATURES

RAIN OFF MODE

To stop the automatic watering cycles during winter, **turn** the dial to the ***Off*** position. The word *"Off"* will appear in the display. This means the automatic programs will not come on, but the programmed information is still retained in the memory. To reactivate the automatic schedule, **turn** the dial back to the ***Auto Run*** position.

WATER BUDGETING

The automatic station run times can be adjusted by percentage as the seasons change. This will save time and money as the run times can be adjusted quickly in spring, winter and autumn to reduce the amount of water used.

Ensure that the dial is in the ***Auto Run*** position and then **press** the → button.

THE DISPLAY WILL SHOW:

Displayed is the word *"Budget"* and *"100%"*.

This represents the current automatic watering run times as being 100%. The percentage budget can be set in 25% increments from 25% up to 150%.

Example: 50% reduces watering by half.

To adjust in 25% increments, use + or − buttons.

To return to the clock **press** the ← button. The display will show the word **Budget** to indicate that the water budgeting feature is in use.

INSTALLATION INSTRUCTIONS

MOUNTING THE CONTROLLER

This controller unit is an INDOOR MODEL and MUST not be exposed to rain or water ingress, or direct sunlight.

Install the controller near a 120VAC outlet, preferably located in a house, garage or other covered area. For ease of operation, eye level placement is recommended.

Drive one #8 screw into the wall, leaving about 4mm (⅛ inch) of the screw exposed. If necessary, use a toggle bolt or masonary shield.

Hang the controller from the key slot located in the back of the case. Make sure the head is properly seated inside the controller case. Additional screws may be inserted through the holes in the lower corners of the controller case.

ELECTRICAL HOOK-UP

WARNING

1 All electrical work must be carried out in accordance with these instructions following all applicable Local, State and Federal codes, or warranty will be void.

2 Disconnect power supply before maintenance work to controller or valves and when connecting and disconnecting field wiring and pump or master valve hook-ups.

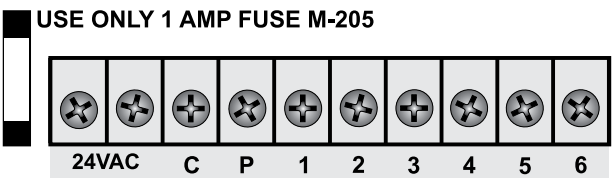
FIELD WIRING CONNECTIONS

PREPARATION

1. Prepare wires for hook-up by cutting the wires to the correct length and stripping approximately 6mm (¼ inch) of insulation from the end to be connected to the controller.
2. Ensure terminal block screws are loosened sufficiently to permit easy access for wire ends. Insert stripped wire ends into the clamp aperture and tighten screws. *Do not over* tighten as this may damage the terminal block.
3. A maximum of 0.5 Amps may be supplied by any output. Check the inrush current of your solenoid coils before connecting more than two valves to any one station.

TERMINAL BLOCK LAYOUT

THE TERMINAL BLOCK IS LAID OUT AS FOLLOWS:



GLOSSARY

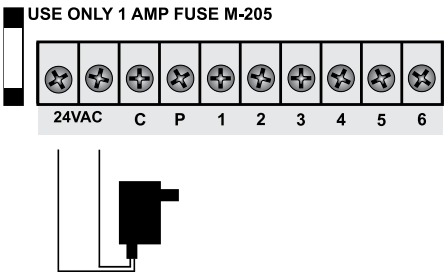
24VAC	24VAC Power Supply
C	Common valve wire input
P	Master valve or pump start active wire
1 to 6	Station (Valve) active wire connection

POWER SUPPLY CONNECTIONS

The controller itself can run off a 120VAC to 24V AC external transformer.

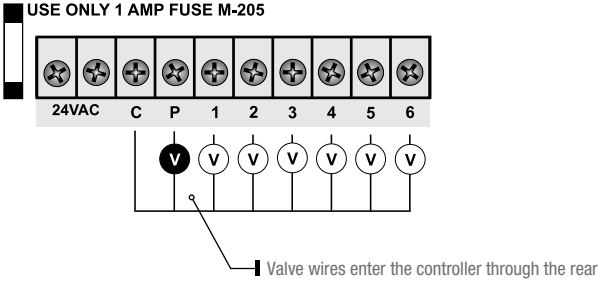
It is recommended that the transformer is not connected to a 120VAC supply which is also servicing or supplying motors (i.e. Air conditioners, pool pumps, refrigerators, etc.) Lighting circuits are suitable as a power source.

CONNECTIONS TO THE UNIT ARE AS FOLLOWS:



CONNECTION OF VALVES

Up to two 24VAC Solenoid Valves can be connected to each station output and wired back to the common (C) thus:

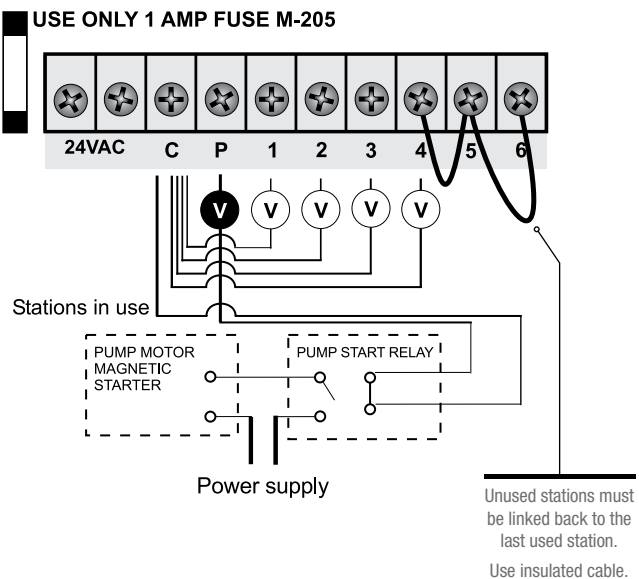


PUMP HOOK-UP CONNECTIONS

Do not attempt to drive a pump starter directly from the controller. Pump start is provided by connecting one side of the coil of a suitable relay to the Master Valve/Pump Start output of the controller and the other side to the controller common.

For systems supplied with water from a pump, unused stations must be connected back to the last used station to eliminate the possibilty of the pump running against a closed head. Failure to do so could lead to pump damage.

The diagram shows an 6 station controller with 4 **active** stations (valves):



ELECTRICAL CHARACTERISTICS

POWER SUPPLY

This unit can run off a 60Hz external transformer, (plug pack), with an output of 24VAC 60Hz @ 0.85 Amp.

PLUG PACK MODEL

The correct wiring installation for the 24VAC plug pack is shown on page 16. The plug pack model is only **suitable for indoor installation.**

ELECTRICAL OUTPUTS

ELECTRICAL POWER SUPPLY

- Input: 24Volts AC 60Hz.
- Electrical Outputs: Maximum of 0.85 AMPS

  To Solenoid Valves: 24 VAC 50/60 Hz 0.5 AMPs max.

  To the Master Valve/Pump Start: 24VAC 0.25 AMPs maximum.

NOTE: *Transformer and fuse capacity must be compatible with output requirements.*

- Overload protection: Standard 20mm 1 Amp fuse.
- Power failure: 9 Volt battery maintains clock and programs for up to 2 weeks.
- The output circuits should be installed and protected in accordance with wiring rules.

SERVICING THE CONTROLLER

The controller should always be serviced by an authorised agent.

Follow these steps:

1. Turn power off to the controller.
2. Disconnect 24 Volt power leads from the plug pack at the controller 24VAC terminals.
3. Clearly mark or identify all valve wires according to the terminals they are connected to, (1 to 6). This allows you to easily wire them back to the controller, maintaining your valve watering sequence.
4. Disconnect valve wires from the terminal block.
5. Remove the complete unit from the wall.
6. Carefully wrap the complete unit in protective wrapping and pack in a suitable box. Return to your service agent or the manufacturer.

NOTE: *Tampering with the unit will cancel the Guarantee.*

7. Replace your controller by reversing this procedure.

TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE	SUGGESTION
No display.	Faulty transformer. Fuse blown.	Check fuse. Check field wiring. Check transformer.
Single Station not working.	Faulty solenoid coil.	Swap faulty station wire on controller terminal block with known working station wire. If the faulty valve still does not work on the known working connection then the solenoid coil is faulty. The panel may need to be repaired.
Fuse blows.	Incorrect wiring or bad wiring connection.	Check wiring and connections.
No automatic start.	Incorrect programming or blown fuse.	If unit works manually check programming. Check fuse and field wiring.
Buttons on keypad not responding.	Short on keypad or programming not correct.	Check instruction book to ensure programming correct. If keypad still not responding return panel to supplier or manufacturer.
System coming on at random.	Too many start times entered on automatic programs.	Check number of start times entered on each program. If programming is correct return panel to supplier or manufacturer.
More than 1 station coming on at once.	Damaged main output driver chip.	Check wiring and swap faulty station wire(s) on controller terminal block with known working station wire. If the same outputs are still locked on, return panel to supplier or manufacturer.
Pump start chattering.	Faulty relay or pump contactor.	Electrician to check voltage on pump relay or contactor.
Display cracked or missing segments.	Display damaged during transportation.	Return panel to supplier or manufacturer.

SPARE WATERING PLANNER

VALVE NUMBER & LOCATION			
1		4	
2		5	
3		6	

PROGRAM	 START TIME	 WATERING INTERVAL	STATION	 RUN TIME (minutes)
1	**Start Time 1:**		1	
	Start Time 2:		2	
	Start Time 3:		3	
	Start Time 4:		4	
			5	
			6	
2	**Start Time 1:**		1	
	Start Time 2:		2	
	Start Time 3:		3	
	Start Time 4:		4	
			5	
			6	
3	**Start Time 1:**		1	
	Start Time 2:		2	
	Start Time 3:		3	
	Start Time 4:		4	
			5	
			6	
4	**Start Time 1:**		1	
	Start Time 2:		2	
	Start Time 3:		3	
	Start Time 4:		4	
			5	
			6	

NOTES

NOTES

GUARANTEE

The manufacturer Guarantees to the original purchaser that any product supplied by the manufacturer will be free from defects in materials and workmanship for a period of two years from the date of purchase. Any product found to have defects in material or workmanship within the period of this Guarantee shall be repaired or replaced by the manufacturer **FREE OF CHARGE**.

The guarantor does not guarantee the fitness for a particular purpose of its products and does not make any guarantee, expressed or implied, other than the guarantee contained herein. The guarantor shall not be liable for any loss from use of the product or incidental or consequential damages including damages to other parts of any installation of which this product is part.

The guarantee shall not apply to any equipment which is found to have been improperly installed, set up or used in any way not in accordance with the instructions supplied with this equipment, or to have been modified, repaired or altered in any way without the express written consent of the company. This guarantee shall not apply to any batteries or accessories used in the equipment covered under this guarantee or to any damage which may be caused by such batteries.

If the Controller develops a fault, the product or panel must be returned in adequate packing with:

1 A copy of your original invoice.

2 A description of any fault.

It is the purchaser's responsibility to return the Controller to the manufacturer or their agent by prepaid freight.

K-Rain Manufacturing Corp.
1640 Australian Avenue
Riviera Beach, FL 33404 USA
+1 561 844-1002
FAX: +1 561 842-9493
1.800.735.7246 | **www.krain.com**