



**RP-XC-315
Expandable Controller
3, 7, 11, 15 stations
Installation and Programming Guide**

July 1, 2012

**Hit Products Corporation
556 S. Mirage Avenue
Lindsay, California 93247 U.S.A.**

www.rainproco.com

Technical Support (559) 562-5975 Ext #115

Table of Contents

Mounting the controller	3
Connecting power source	4
Connecting valves wires to controller	4
Master Valve/pump start wiring	5
Installing station modules	5
Installing 9V DC battery	6
Rain sensor wiring	6
Default program	7
Programming the controller	8
Input current date and time	8
Program start times	9
Station run times	10
Water calendar, days on/off	11 through 13
Dial position functions	14
• Run	
• Rain off	
• Manual station	
• Manual Program	
• Quick step manual start	
Water Budget	15
Master valve/Pump start options	16
Rain Delay	16
Pause between stations	17
Resetting or erasing memory	17
Trouble shooting guide	18

MOUNTING THE RAIN PRO CONTROLLER

Indoor Model (Plug-in-transformer)

1. Locate the controller within 5 feet of a standard electrical outlet that provides continuous, uninterrupted power. Do not install controller within 15 feet of a pump, pump start relay or any high power junction boxes or electrical motors.
2. Choose desired location and install one screw for top keyhole into wall. Use screw anchors if attaching to drywall or masonry.
3. Hang controller on this screw. Mark wall for two remaining screws holes and install screws accordingly to secure controller to the wall. Use screws anchors if attaching to drywall or masonry. Do not over tighten.

Outdoor Model (Hard wire transformer)

1. Select desired location that is at least 15 feet away from a pump, pump start relay or any high voltage junction boxes or electric motors.
2. Choose desired location and install one screw for top keyhole into wall. Use screw anchors if attaching to drywall or masonry.
3. Hang controller on this screw. Mark wall for two remaining screw holes and install screws accordingly to secure controller to wall. Use screws anchors if attaching to drywall or masonry. Do not over tighten.

Note: The controller should be hard wired to the transformer by a qualified electrical technician. Use approved GFI device and use proper grounding techniques utilizing the green wire lead from the transformer. Install as per all local codes. This will help assure safety as well as performance and reliability of the controller.

CONNECTING POWER SOURCE

1. Leave electrical power unattached until all valve wires and modules are installed in the controller.
2. When attaching power, transformer must be connected utilizing wire nuts and/or other locally approved connections per code.
3. A switching means should be provided in the supply conductors with an air gap separation in each pole.

Note: Some models are fitted with a power lead. This may be used when connecting to a standard electrical outlet.

CONNECTING VALVE WIRES TO THE CONTROLLER

1. Connect wire from each valve to the desired corresponding number on the terminal. Route all valve wires through the large hole in the bottom right of the controller.
2. Connect the remaining valve wire from all valves to the “com” or common terminal. It is suggested to use a different color wire for the common wire to help keep organized. “Common” wires may be bundled or wired together with all other common wires from the valves to the “Com” terminal of the controller.
3. Wire sizing should be of a significant size to allow a maximum of 5 volts drop between the controller and the valves. Use Ohm’s Law to calculate wire voltage drop. Higher operating pressures require higher voltage (less voltage loss) at the valve.

Note: All in-field wire splices should be made using waterproof, gel-filled Hit Products DBC-R/Y type connectors or equivalent.

MASTER VALVE/PUMP START WIRING

If a master valve or pump start relay is being used in conjunction with this controller, wire as follows.

1. Route two wires from the master valve or pump start relay up through the bottom right side large hole. Connect one wire to the “P/MV” terminal and one to the “Com” terminal.
2. if using a pump relay, it must be;
 - Located at least 15 feet from the controller.
 - Have a maximum rated inrush current less than 350MA at 24VAC.
 - Properly sized for your application

Hit Products offers a wide range of pump start relays for most applications that are compatible with the Rain Pro controller.

Note: DO NOT connect controller directly to pump. Controller will be damaged if controller is connected directly to a pump.

INSTALLING STATION MODULES

The Rain Pro controller is shipped from the factory with one 3 station module installed. This is supplied for valves #1, #2 and #3. Additional modules can be purchased separately and are easily installed to increase the controller stations in 4 station increments, from 3 stations, to 7 stations, to 11 stations and to a maximum of 15 stations.

1. Insert additional module(s) in the terminal strip area of the controller as needed. Slide each module from right to left. Firmly slide module in

until it clicks into place. Each module will add 4 stations of additional capacity to the controller. Install modules in sequence from bottom to top leaving no gaps.

9V DC BATTERY REMOTE PROGRAMMING WITHOUT AC POWER

Installing a 9V DC battery on the back of the controller face plate will allow the controller faceplate to be removed from housing and can be programmed without being attached to the controller or any AC power source. The AC power source is required before any valve activation will commence. The 9V DC battery is necessary to keep the “Current Date/Time” active. Without the 9V DC battery, power loss will lose “Current Date/Time” and “Current Date/Time” will have to be reset upon power resumption.

SENSOR WIRING

A rain sensor or any type of normally closed micro-switch sensor may be used in conjunction with this controller. Sensor activation will interrupt controller output to valves.

1. Route two wires from the sensor through the bottom of the controller and connect one each to the two “SEN” terminals. Remove the jumper wire between these terminals if one exists.
2. The “Rain Sensor” switch on the front of the face plate can override the sensor if in the “OFF” position.

Note: If the “Rain Sensor” switch on the front of the faceplate is in the “ON” position and no sensor is

connected (and the jumper wire between the “SEN” terminals has been removed), the display will show “SENSOR OFF” and no irrigation will occur. To override the problem when no sensor is connected, turn the “Rain Sensor” switch on the front panel to the “OFF” position. If no “Rain Sensor” is attached to the controller always leave the switch in “OFF” position.

DEFAULT PROGRAM

The controller has no default program after a power outage. The controller has a non-volatile memory and will retain your custom program.

Note: If no battery is installed or a low battery condition exists and AC power is lost, the “CURRENT DATE/TIME” will be lost. When AC power is restored the “CURRENT DATE/TIME” will default to 12:00 AM and 1/1/06. It is important to check or change the 9V DC battery to prevent losing the “CURRENT DATE/TIME”.

PROGRAMMING THE CONTROLLER

To successfully program the controller, all three programming elements must be completed. They are:
Program start times (Time of day a complete programmed cycle will start.
Station Run Times (The length of time each station/valve will operate)

Calendar/Schedule (The days of the week/calendar that you desire to irrigate.) To program the controller, you are provided + or – buttons that will change the value of the “flashing display”. The ← or → buttons change the subject of information that is flashing. The subject or “flashing display” is in sequence and can be scrolled forward → or ←backwards to access all desired programming options.

BASIC PROGRAMMING FEATURES

1. Three independent programs are available A, B and C.
2. Four program start times per program are available.
3. Calendar/schedule, days of the week, ODD/EVEN or individual interval scheduling options.
4. Individual station runtimes.

INPUT THE CURRENT DATE AND TIME

1. Turn the dial to the CURRENT DATE/TIME
2. Use the + and – buttons to select the current year. Push the → button to activate the month.
3. The month will be flashing. Use the + and – buttons to select the current month. Press the → button to set the day.
4. The day will be flashing. Use the + and – buttons to select the current date. Push the → button to set current time.
5. The time will be displayed. Use the + and – buttons to select the current AM, PM or 24 hr notation. Press the → button to go to hours.

Hours will be flashing. Use the + and – buttons to set the current hour. Push the → button to set minutes. Use the + and – buttons to select current time in minutes.

6. Rotate dial to “RUN” to enter new data into the controller.

SETTING PROGRAM START TIMES

1. Rotate the dial to program “START TIMES”.
2. Choose program A, B, or C. To change program from existing program, push the “PRG” button.
3. Use the + and – buttons to adjust to desired start time. This represents the time of day the irrigation cycles will commence. All Stations with programmed run times on this program (A, B, or C)will come on, one at a time, sequentially on all active days, commencing at this time of day. Up to four start times can be scheduled per day.
4. Push the →button to add another start time or the “PRG” button to set the next program.
5. If all four programmed start times are turned “OFF” then that specific program will never start.
6. To eliminate a start time, set dial to “START TIMES”. Use the + button to scroll to 11:45 PM. Then push the + button once to attain the “OFF” display.
7. Rotate dial to “RUN” to enter new data into the controller.

ESTABLISHING INDIVIDUAL STATION RUN TIMES

This is the setting for establishing how long each independent “valve” or “station” will be on to irrigate. Each station will come on in numeric sequence for this duration as set for each Station Run Time.

1. Rotate dial to the “Station Run Times” position.
2. Choose program A, B, or C. To change program from existing program, push the “PGM” button.
3. Press the + or - button to increase or decrease the length of time you desire for this specific station (valve) to be “ON” each time this valve is activated on this specific program.
4. Press the →button to go to the next station.
5. Repeat steps 3 and 4 for each station that is to be active on each specific program. For stations/valves that are inactive on a specific program, put “Station Run Times at “0:00”.
6. Each individual “Station Run Times” can range from 1 minute to 6 hours in duration.
7. Rotate dial to “RUN” to enter new data into the controller.

Note: Water Budget should be set at 100% when programming station/valve “Run Times”.

SETTING WATERING SCHEDULE/CALENDAR OF “ON” DAYS

1. Rotate the dial to “Calendar/Schedule.”
2. Choose program A, B or C. To change program from existing program, push the PRG button.

3. The controller has 4 active day schedule options: specific days of the week, interval watering (every 2nd, 3rd, 4th day), ODD or EVEN days of the month. Only one of these schedule options is available simultaneously for each independent program. Each independent program can utilize different/same schedule option.

UTILIZING THE “SPECIFIC DAYS OF THE WEEK” TO IRRIGATE

1. Choose program A, B or C. To change program from existing program, push the PRG button.
2. Using the + and – buttons will make a day either active or inactive. “+” indicates an active day or **non-circled**. Press the “-” button to change to a **circled day**, which indicates an inactive day. The days of the week will automatically advance.
3. Repeat step 2 for each day of the week. The → button may be used to advance to a particular day of the week.
4. After programming days of the week as desired, rotate dial to “RUN” to enter this new data into controller.

UTILIZING THE “INTERVAL DAY” SCHEDULE

Interval Day allows you to choose to irrigate at an interval ranging from every day (1), every second day (2), up to every 31st day (31). “Days left” indicates the number of days remaining until the next scheduled irrigation cycle will occur for that specific program. As an example, if 2 is the “interval” and 1 is the “Days Left,” irrigation will occur tomorrow.

1. Push the → button when the cursor is on Sunday. This will change the program to an “Interval Day” schedule.
2. Push the + button to increment the “Interval” indicating the desired number of days from 2 – 31 days between irrigation cycles.
3. Next, push the → button and the number of “Days Left” will flash. Use the + or – buttons to choose the number of days until you desire this irrigation cycle to start. Number of “Days Left” will not exceed the “Interval” schedule selected.
4. Rotate dial to “Run” to enter this data in controller.

UTILIZING “ODD OR EVEN” DAY SCHEDULING

“Odd” or “Even” day scheduling is typically used to comply with regulatory watering rules. ODD/EVEN scheduling allows you to irrigate on only “ODD” numbered or “EVEN” numbered days of the month.

1. Follow the “Interval Day” watering schedule instructions above utilizing steps 1 and 2 and set the “Interval Day” to 1.
2. Push the → button to highlight option **not** desired ODD or EVEN.
3. Push the – button to eliminate either the ODD or EVEN schedule as a “No Water Days.” A circle will appear above the eliminated choice. If EVEN is selected as “No Water Days” only ODD numbered days will irrigate. Select ODD as a “No Water Days” and only Even numbered days will irrigate.

NOTE: If ODD days are active days, February 29 and the 31st of any month will not irrigate.

4. Rotate dial to “Run” to enter data in controller.

UTILIZING THE “NO WATER DAY” OPTION

(Only for overriding the ODD/EVEN or Interval Schedule for a specific day or days of the week when you regularly desire no irrigation to take place for maintenance or other reasons.)

1. Rotate dial to Calendar/Schedule
2. Press the → button until the cursor is on “Sunday.” This will change the program to “Interval Day” schedule.
3. Press the → button and the “Interval” will flash.
4. Push the → button again and the days of the week “Mon” will flash.
5. Press the →button until the day you desire as a “No Water Day” is flashing.
6. Press the – button to designate this day as a “No Water Day.” This specific day will now be circled.
7. Repeat steps 6 and 7 for all desired “No Water Days” on a weekly calendar.
8. Rotate dial to “RUN” to enter data in controller.

DIAL POSITIONS AND FUNCTIONS

RUN – Rotate the dial to the “RUN” position after completing any programming to enter this new data in controller. Leave the dial in the RUN position to have the controller operate as programmed.

RAIN/OFF – Rotate the dial to the “RAIN/OFF” position to stop all output of the controller. All irrigation will stop. To return to normal operation, rotate dial back to “RUN.”

MANUAL STATION – To manually activate a single station once for a programmed length of time.

1. Rotate dial to “Manual Station.”
2. Push → to desired station number.
3. Push + or – buttons to input length of time this station will now operate this one time.
4. Rotate dial to “RUN” position.
5. Upon completion of this station operating manually for length of time input, the controller will revert back to “RUN” and operate as previously programmed.
- 6.

MANUAL PROGRAM

To manually activate one complete cycle of either program A, B or C.

1. Rotate dial to “Manual Program.”
2. Choose program A, B or C. To change program from existing program, push the PRG button.
3. Push the → button to choose the first station in the sequence of the manual program to start.
4. The “run time” for each station will be displayed as currently programmed. **For this cycle only**, you can customize each station run time without affecting the individually programmed station run times within a program.
5. Push the → button to sequence through all the stations, using the + or – buttons to select the desired run times for this cycle only.
6. Push the → button until the station number appears of which you want to start this custom cycle.

7. Rotate dial to “RUN” to start this custom, one-time cycle. It will start with station number displayed in Step 6.
8. Once completed, controller will revert to programmed “automatic” operation.

“QUIK STEP” MANUAL START/ADVANCE OR REVIEW WITHOUT USING THE DIAL

1. Push the → button continuously for 2 seconds.
2. Program “A” values will be displayed.
3. Push the → or ← to view the different stations and their programmed run times. Individual station run times may be adjusted using the + or – buttons.
4. Push the → button to desired station to commence cycle. Station will start in 2 seconds and then sequence through all remaining stations.
5. This will allow for a “Quick Review” of programmed station run times by program and/or a “Quick Review” of system for inspection/performance purposes.

WATER BUDGET

The water budget feature provides a one step universal station run time adjustment in 10% increments up or down. It affects all station run times in all programs. In hotter, drier weather, you can increase the water budget in 10% increments to 150% of originally programmed station run times. In periods of cooler/wetter weather, you can water budget downwards in 10% increments to as low as 10% of originally programmed station run times.

1. With dial in any position, press up arrow to increase water budget or down arrow to decrease water budget.
2. The actual individual station run times as affected by the current water budget setting can be viewed by rotating the dial to “Station Run Times.”
3. To check the current water budget level setting or to get the 100% (original setting/base setting), rotate the dial to the “RUN” position. Press either the up or down arrow. The current setting will be displayed.

BONUS FEATURES

Activate or De-activate Master Valve/Pump Start by Station:

1. Rotate dial to Pump/Master Valve ON/OFF. “ON” will be highlighted.
2. Push the - button to change from ON to OFF.
3. Push the → button to select the station.
4. Rotate dial to the “RUN” position.

NOTE: Pump Start/Master Valve circuit operates during “PAUSE”.

RAIN DELAY

1. Rotate the dial to the “RAIN/OFF” position.
2. Use the + button to select a number 1 – 7 “Days Left.”
3. Rotate the dial back to “RUN”
4. The display will read “OFF” and the number of “DAYS LEFT”
5. The controller will not run until the numbers of days have past. The days will change at midnight.

PROGRAMMABLE PAUSE BETWEEN STATIONS

1. Rotate dial to “RUN” position.
2. While depressing the – button, simultaneously rotate dial to “Station Run Times” position.
3. Leave dial in this position, remove finger from the – button. Delay time will be flashing.
4. Push the + or – buttons to select the desired delay time between each station operation. Range of programmable delay is 1 second to 4:00 (four hours and zero minutes).
5. Rotate dial back to the “RUN” position to enter this new data in controller.

NOTE: Pump Start/Master Valve circuit operates during “PAUSE”.

RE-SETTING OR ERASING CONTROLLER MEMORY

To reset the clock and calendar, push the “RESET” button located in the recessed hole on the panel back. This will reset the clock to 12:00 a.m. and the calendar to 1/1/2006. Program information will not be affected.

To erase all programming information, turn the dial to the “CURRENT DATE/TIME” position, then press the minus (-) the right arrow (→) and PRG buttons at the same time. This will clear all user information.

CAUTION:

This appliance is not intended for use by young children or infirm persons without supervision.

Young children should be supervised to ensure that they do not play with the appliance.

TROUBLE SHOOTING GUIDE

PROBLEM	CAUSE/CORRECTION
No Display Information	Check AC Power Supply, power after transformer should be 24-26 VAC Check AC Wiring Check Fuse or circuit breaker Check 9V DC battery
Display reads "ERR"	Master Module not installed properly Turn off AC Power & Restart after 30 seconds See Remote Control Wiring Instructions
Display Reads "P ERR"	Check for "short" or bad wire connections in the pump start or Master Valve wiring or solenoid wiring
Display Reads Station "ERR"	Check for short or bad wire connections in that station's field wiring or solenoid wiring
Display reads "Sensor Off"	Slide Rain Sensor switch to "off" or install a sensor jumper wire on "SEN" terminals.
Controller Recognizes incorrect number of Stations	With AC power connected, Reset controller – refers to the re-setting or Erasing The Controller Memory section in instruction booklet.
Controller is irrigating at	Check Programming Day, Time, AM – PM Start Times and Active Day

power in the battery to blink “LO BA,” then this will be displayed.

If there is no AC power and no battery power, the display will be blank and the end user will have to reset the real time clock and date when the power returns.

If there is no battery installed or the battery is totally dead, the display will blink “LO BA.”

The Rain Pro controller will operate normally if there is AC power, although no battery is installed or the battery is totally dead.

The battery will last 2 weeks with no power under normal conditions. It is recommended the battery be replaced twice a year.